

# Fostering Wellness of Older Adults while Performing Usability Testing

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## ABSTRACT

This paper presents part of the research result from the project eCAALYX – Enhanced Complete Ambient Assisted Living Experiment in which the authors were responsible for the design and evaluation of a TV-based user interface for older adults with chronic conditions. The curiosity to understand the impact of performing usability testing had in older adults led the authors to evaluate the feelings of happiness and fatigue before and after usability testing. This evaluation was conducted five times in a set of eight usability tests performed over thirteen weeks. Results show that these two feelings improved in the usability tests. In this paper, the authors develop an understanding of what may justify this improved self-sense of happiness and fatigue; following principles that favor older adults wellness during usability testing may be the main reason for these results.

## 1. INTRODUCTION: THE IMPORTANCE OF PERSONAL CONTACT TO THE OLDER ADULT

The opportunity to establish personal contact is very important to a person, mostly because this type of contact gives them the chance to express ideas, beliefs and opinions [8]. Due to the loss of loved ones, family and friends, older adults may face a reduction in personal contact. As a result, their needs of recognition, love and status might get decompensated [8]. When lacking personal contact, older adults may seek for occasions to express themselves, which explains, for example, why loneliness predicts the frequency of visits to the general medical practitioner [5]. The lack of personal contact can contribute to decrease one's wellness, a feeling that Ryff [9] points out to be related with the quality of the relation between the elder and his adult children. Feeling alone has also been associated with an impaired health condition and a greater rate of mortality [2]. Optimism, on the other hand, has been associated with better management of the disease and faster recovery [3].

## 2. PERFORMING USABILITY TESTING WITH OLDER ADULTS

Usability testing enables design teams to evaluate and get

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feedback from users on their proposed solutions. The information gathered not only helps detecting flaws in the designs being tested but also gives the means to deepen the understanding of users' needs and goals. When designing for very specific audiences – like older adults – usability tests become even more important since they are the way to get to know the user better and to reduce the 'distance' between the designer and the end-user.

While performing usability testing, users are typically asked to complete a number of tasks, which is often seen as a boring activity. Also, usability testing is likely to be a new situation for the older adult because of the lack of formal education [4]. Therefore the usability test situation can be confusing for older adults if they do not know what is going to happen. However, it does not need to be this way. To avoid this uncertainty situation, it is important to put the older adult in control during the usability test, for instance by i) letting them decide if they want to participate in the tests and if so give them the right information; ii) informing them of the purpose of the work; iii) making them aware of the intended plan; and iv) communicating the overall results of the tests when these finish. If usability tests are prepared in such a way that they give older adults the space to express their feelings and to perform tasks at their own pace while respecting their current condition, they may even be considered as a pleasant activity that ultimately fosters older adults' wellness.

## 3. DESIGNING USABILITY TESTS

The authors' previous work [7] reports on a set of guidelines derived from their experience when running eight usability tests over thirteen weeks with older adults. These guidelines are three-fold: i) User Drive and Control; ii) Test Settings and Preparation; and iii) Care, Communication and Listening. These guidelines stress: i) that facilitators of usability tests should give the control of the test situation to the older adult; ii) that physical and cognitive age related changes should not limit the tests but ought to be considered when doing them; and iii) that the right conditions for the older adults to express their opinions and feelings and tell their stories should be created.

Health practitioners have demonstrated that listening to the patient creates an environment of trust and security that enables the expression of feelings [1]. During the usability tests, hearing stories unrelated to the test was common. Although these moments did not contribute to the test itself, they contributed to the well being of the person that was being tested and revealed details about that person that were useful in later phases of the project.

When preparing usability tests for older adults, it is important to keep in mind physical and cognitive age related changes. Limitations can impact, for example, the time older adults take to

complete the set of tasks and their ability to move from one place to other.

#### 4. MONITORING OLDER ADULTS HAPPINESS AND FATIGUE DURING USABILITY TEST

To understand the effects of usability tests on older adults, the authors evaluated older adults' self-sense of happiness and of fatigue before and after each usability test; results showed that participants self-sense of happiness and of fatigue had improved in almost every test.

The test consisted of presenting two scales of images (Figure 1) to the older adult in the beginning and at the end of the test. From these images participants had to choose the image that resembled their feelings the best. Results shown that, at the end of the test, participants were on average happier (Table 1) and less tired (Table 2).

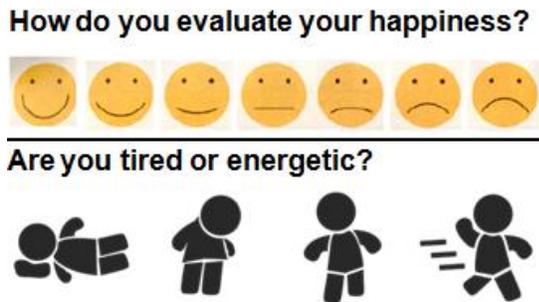


Figure 1 - Image scales used to evaluate happiness [6] and fatigue.

Table 1 – Average Results per Test on Happiness Evaluation.

Test 1		Test 2		Test 3		Test 4		Test 5	
S	E	S	E	S	E	S	E	S	E
2.7	-	3	2	3	1.5	2.8	3	3.6	3
S=Start; E=End									

While the fatigue average image chosen in the beginning was the second from left, at the end it was the third. Happiness was initially situated at the third face, at the end of the test it would be at the second face.

Table 2 – Average Results per Test on Fatigue Evaluation.

Test 1		Test 2		Test 3		Test 4		Test 5	
S	E	S	E	S	E	S	E	S	E
2.5	-	2.3	3	2.7	3.1	1.7	1.8	2	2.8
S=Start; E=End									

The results gathered with these tests lack scientific validity and are insufficient but they still triggered the authors' interest into their determinants and consequences.

The authors believe this ameliorated feeling of being happier and less fatigued had not only to do with the attention they had putted on the preparation of the tests, but also with the special care and respect given to the older adult (guidelines synthesized in [7]). It seems that having someone to hear older adults' historical narratives can make them feel better and to 'forget' some of their problems. Another interesting aspect was the fact that older adults were always eager to help, so it is also likely that they felt better also because they acknowledged their help was useful.

Usability tests may also create a friendly environment to the expression of opinions and feelings. Even if this is not their purpose, usability tests seem to have contributed to the wellness of the tests participants.

#### 5. CONCLUSIONS

The authors' experience indicates it is possible to create usability tests that are not boring and that contribute to the wellness of older adults just by giving the control and the opportunity to express themselves to the elders. Tests conducted in the context of the eCAALYX project showed the happiness and fatigue can be improved by applying such guidelines.

From the authors' point-of-view, practitioners should not only be concerned about the techniques that can be applied in a user-centered design process, but also if the techniques take into consideration participants' characteristics and needs. In this sense a more humane approach should be employed when working with older adults.

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