Using Personalized Persuasive Strategies to Increase Acceptance and Use of HCI Technology

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Abstract

Loss of voluntary muscular control while preserving cognitive functions is a common symptom of neuromuscular disorders. This leads to a variety of functional deficits, including the ability to operate software tools that require the use of conventional interfaces like mouse, key-board or touch-screens. As a result, the affected individuals are marginalized and unable to keep up with the rest of the society in a digitized world [1]. In recent years, new technologies have been developed for this purpose, such as joy- sticks for the hand or the chin, suck-and-puff control and voice control. However, for those seriously affected by neuromuscular conditions, assistive devices are in general very limited and may not work with a sufficient level of performance over an extended period of time [11].

Motivated by this fact, the European project Multimedia Authoring and Management using your Eyes and Mind (MAMEM) set the overarching goal to facilitate the social integration of individuals with muscular disabilities (i.e. Parkinsons disease, neuromuscular diseases and spinal cord injury disease) by stimulating their use of social media. To achieve this, the MAMEM project aims to deliver the technology that will allow them to operate software applications and execute multimedia tasks, using novel and more natural interface channels. These channels will be controlled by eye-movement and brain commands, and thus have the potential to significantly stimulate communication and exchange in both social and workplace contexts.

Within the MAMEM project, it is acknowledged that the adoption of a certain technology is not only an issue of technological excellence. Simply providing the technology is not enough, since people can be reluctant to adhere in practicing a new technology, even though they may be fully aware of its benefits.

Personalized persuasive technology could be a key to successful adoption of the technology used in the MAMEM project. Previous research has identified various persuasive strategies, such as goal setting and encouraging feedback, which can motivate the desired behavior and/or attitude change [4, 9, 2].

Although persuasion can be effective to change a behavior and/or attitude, there are individual differences in the way that people are motivated. Thus, a strategy that influences the behavior of one type of person may not have

the same effect on another type of person or even to prevent him/her from such an accomplishment. It is only recently that researchers started to examine the moderating role of users characteristics and individual differences in the persuasiveness of the strategies and the essential role of tailoring to reinforce its effectiveness [10].

Kaptein and colleagues [6] examined the effectiveness of personalized short messages in reducing snacking behavior. For this, they developed a questionnaire that predicts individuals susceptibility to different social influence strategies identified by [2], called Susceptibility to Persuasion Scale (STPS), and adapted the messages according to participants scores. The results suggested that tailored-to-the-individual messages result in a stronger decrease of snacking behavior, compared to randomized messages or non-tailored messages. In addition, [5] investigated whether there is an escalation of the effectiveness of a persuasive appeal when the message framing is aligned with the recipients personality profile. Thus, they framed persuasive messages based on a users score on Big Five personality traits. The findings revealed that adjusting the persuasive messages to the peoples personality traits can increase their effectiveness.

Nonetheless, despite their remarkable efforts, it is still unclear which persuasive strategies are most effective for which type of person [10, 8, 7].

In the current research project, our aim is to adapt persuasive technology interventions to our target group characteristics, in order to increase their effectiveness. Therefore, our first step is to create user profiles of our target population based on relevant characteristics. The user profiles will, then, be used as an input to increase our understanding of which persuasive strategies can influence which type of user.

Next, in order to come to the selection of the most effective persuasive strategies, it is intended that the Intervention Mapping (IM)approach, a theoretical framework for developing and implementing interventions, will be used [3]. Different iterative steps will be taken to select theoretical foundations and persuasive strategies, for the MAMEM target audience.

Driven by this theoretical approach within the MAMEM project, our objective is to investigate individual differences in effective methods to increase compliance to a persuasion request. In the above sentence, one can identify three aspects that could lead to compliance. Firstly, the users relevant characteristics, the relevant persuasive methods and lastly the specific request. Therefore, our research questions, although quite broad at this initial stage of research, are:

 – What is the role of user characteristics and individual differences in selecting effective persuasive strategies?
 – What is the moderating role of the persuasion request in the effectiveness of persuasive strategies?

This area of research would contribute to the current state of the art of designing persuasive technologies taking into consideration both the user characteristics and the behavior in request. The output of this research project will be relevant for increasing acceptance and usage of assistive technology by the

MAMEM target groups, but also for the scientific insights in personalization of persuasion.

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