Personality Bias in Volunteer Based User Studies?

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ABSTRACT

We present findings, which suggest that volunteer participants for user studies are not a representative sample of the general population, but are more extrovert and open personalities. Since it has been shown by other workers that personality and other social factors influence user evaluation of computer media, this suggests a need for the field of HCI to consider the possible non-representativeness of user studies based solely on volunteer participants.

KEYWORDS: Personality, user-studies, representativeness-bias.

INTRODUCTION

The importance of social responses to media and computer-based interfaces has come more and more into focus in the HCI community, following the pioneering work of Reeves and Nass (1996). A wide range of factors studied within social psychology and related disciplines have been shown to influence human-computer interaction in the same way they influence interaction between people. In this paper, we are concerned with how personality factors might influence user studies, and how the selecting methods could bias the outcome.

PERSONALITY SIMILARITY-ATTRACTION

As humans we prefer to interact with personalities that resemble our own (Byrne & Nelson, 1965). In a series of studies Reeves and Nass and co-workers have shown that we also prefer to interact with interfaces that manifest signs consistent with our own personality (e.g. Nass & Lee, 2000). These studies have primarily concerned variations in language or bodily postures of characters. In a recent study, Karsvall (2000) applied the same research paradigm to graphical interfaces; in this case the interface of an interactive TV-channel. Three contrasting interface designs were developed. They were based on the color theory research of Hård, Sivik, and Taft (Taft, 1995) in addition to general design theories concerning the relationship between extroversion-introversion and graphical design elements. For the study, 27 volunteer participants were recruited. The participants had a varied occupational background, varied between 24 to 56 years of age, and were balanced in gender. Some were working at the company where the study was performed, but in roles not associated with this work, and some were recruited externally and paid two cinema tickets for their participation. (No differences could be found between the two groups in the data analysis described below.)

As part of the experimental procedure, they were given the Swedish version of the *Revised NEO Personality Inventory* (NEO PI-R), with five personality domains: *Neuroticism*; *Extroversion*; *Openness*; *Agreeableness*; and *Conscientiousness*. We are here not concerned with the general findings of the study. Instead we focus on the effects of not pre-screening participants' personality to ensure an even distribution along these dimensions, but instead using all and only volunteers that signed up for participation in the study.

SKEWED DISTRIBUTIONS

As can be seen from figures 1 and 2, the participant distributions on the extroversion and openness dimensions are highly skewed, making it very difficult if not impossible to regard them as representative of the population at large. Only one of the participants was classified as low or very low on extroversion, 12 as neutral, and 14 as extrovert in varying degrees. The skewness of the distribution on the Openness dimension is even more marked. Eighteen participants were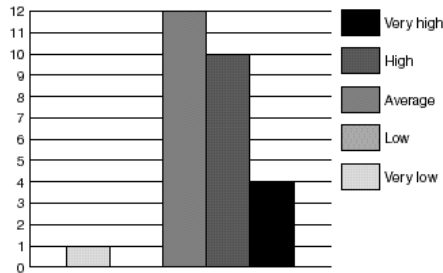 classified as high or very h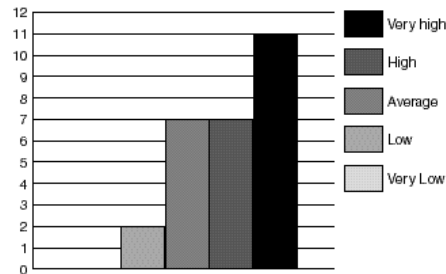igh on Openness, only seven as neutral and just two were below average. Our interpretation of these results is therefore that volunteer participants tend to be extrovert and open personalities. Yet, this pattern could possibly be explained by other factors. One such would be that we have a general skewness in the distribution of our test scores, but on the other three dimensions this was not the case. Another alternative explanation would be that this is an effect of cultural differences between Sweden and the U.S. However, the personality dimensions appear across cultures (Costa & McCrae, 1990) and the translators of the NEO PI-R into Swedish claim that they find very small differences between the Swedish and the American populations. We therefore believe that the effect of the selection procedure is the more likely explanation.

Figure 1: Extroversion count

Figure 2: Openness count

CONCLUSIONS

Previous work has shown that personality factors influence the users' design preferences. The results presented here suggest that volunteer participants have another distribution on important personality dimensions than the general population. This entails that if we rely solely on volunteer participants in evaluation studies we risk a selection bias, which might make the results obtained in these studies less representative of the population at large than what has hitherto been assumed. Our results not only suggest that volunteers in user studies are different from the population at large—they suggest that they are different in a way that might make a difference.

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