The Effect of Induced Priming on Product Perceived Usability

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Abstract. The usability testing by users have considered as an important process in the development of a product. However, users do not always judge rationally in the context of the evaluation. Two experiments were carried out to investigate the effect of induced priming on perceived usability evaluation. The results revealed that temporally induced affective priming affected users' usability evaluation. The present study suggests that people who engaged in the fields of usability testing or the marketing consider unexpected priming and take delicate care in handling the affective variable.

Keywords: usability, evaluation, affective priming.

1 Introduction

At this very moment, numerous new electronics launches are occurring all over the world. The usability evaluation of the user before an official launch is regarded as an important process in product development in recent years. Usability is defined as the ease of use and comprehensiveness of a human-made object, and this character is judged by humans highly-complicated multiple perceived human factors. Decades of psychological research have shown that positive affect brings users various kinds of physical and psychological advantages [1] and negative affect accordingly [2]. Moreover, this also impacts human decision making [3], however in spite of the importance of positive emotion, combining with HCI, relevant research is still insufficient. We hypothesized that the user's temporal emotion could influence the perceived usability evaluation. Two studies were carried out to investigate and reveal the effect of induced priming on user usability evaluations with unknown mobile phones in Korea.

2 Methods

The effect of affective priming was found only at the subliminal level [4]. Therefore, many tricks were designed in the process of the experiment to prevent participants

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from recognizing our experimental hypothesis. Firstly, In Session 1 participants were primed to believe they will receive automated feedback compared to that of other participants according to how proper and vivid the sentence is. However positive or negative feedback was automated dependent on the priming group. Secondly, the objective of posting comments as a task in the session 2 was introduced to reflect good comments made by participants to promote of the product. Finally, the mobile phones were presented as a product expected to be out which might reflect the rating result regarding the development and promotion of the product.

Participants. Sixteen students were paid 5000 won ($5) and 24 students received course credit.

Materials. Two different mobile phones were evaluated by each participant in the first and second session (Fig1). The mobile phones used for this research were Japanese mocks to minimize fixed ideas about domestic brands on the participant. To eliminate the order effect, the order of the two mobile phones was regularly switched prior to each participant's experiment. Software for this experiment was developed by Microsoft visual basic 6.

The evaluation questionnaire consisted of several questions about overall reactions to the software taken from the questionnaire for user interface satisfaction [5]. Other questions were about perceived usefulness and perceived ease of use [6]. These were rated on a 7-point likert scale.

In session 1, 30 positive valance and 30 negative valance pictures were selected from the International Affective Picture System (IAPS) [7]. In session 2, three words were presented with a photo randomly extracted from 10 photos of electronic devices such as a vacuum, monitor, and headphones, not including mobile phones. Sample words consisted of positive or negative adjectives. Positive adjectives were, for example, cutting-edge, improved, wonderful, new, best, vivid, etc. Negative adjectives were old-fashioned, difficult, heavy, broken-down, destroyed, ugly, etc..

Fig.1. Mobile phones that were evaluated in this experiment

Procedure. Twenty Participants were randomly assigned to the positive priming group and the other 20 were placed in the negative priming group. In the first session, participants were asked to make a sentence associated with the presentation of three

pictures. With each question three pictures were presented randomly from positive or negative valence images. The positive priming group as showed only positively affective pictures and the negative priming group as showed only negatively affective pictures. Participants were directed to express the descriptions that came to mind because the score was set according to how proper and vivid the sentence was. The positive priming group got relatively high scores with positive feedback such as "that was a proper descriptive", "better than any other participants" or etc. in every sentence. The negative priming group received relatively low scores and provided negative feedback such as "needs more effort"," not enough", or etc. in every sentence. The task stopped after five minutes in order to control the same affective priming time across participants. "Congratulations, you are going to get candy" for the positive priming group or "sorry, you are not going to get candy" for the negative priming group at the end of the session. Subsequent usability testing was conducted. Participants opened a box that lay before them, and took out the product and questionnaire paper in the box. After completing the evaluation, participants turned in the product and questionnaire paper to the experimenter and started the second session, receiving a new box.

In the second session, participants were given a scenario that: they are a student promoter of a certain company and need to make a comment including the presented three words about a photo of product. The objective of the task was to promote the product with positive adjective words for the positive priming group, or to slander the product of the competing company with negative adjective words for the negative priming group. To reduce the effect of the previous session's emotion, the session order was allocated in order.

3 Results and Discussion

ANOVA was conducted to compare between the groups. Main effect results revealed that the positive priming group (M = 4.65, SD = .51) rated products as having higher usability than the negative priming group (M = 4.03, SD = .83) did, F (1, 38) = 8.320, p = .006, only in the affective priming session, not in the adjectives priming session. A brief interview was conducted after the experiments in order to ask if participants recognized or were able to guess at any experimental hypothesis such as casual relation between each task session and the evaluation phase. None of the participants was able to recognize the research hypothesis.

This demonstrates that temporally induced emotion of two different priming methods could affect users' usability evaluations. The results support the argument that temporal emotion can be one of the major factors for users' judgments, implying that a user's current emotional mood can be an important influential factor to their response. Could we say a human is a really rational being for sure?

Our experiment upholds our hypothesis: the evaluator's temporal induced emotion could affect his or her decision making. Therefore, those engaged in the fields of usability testing or the marketing should consider unexpected emotional priming and take great care in handling the emotion variable among the users. Future research should continue exploring these priming subtleties on a user's evaluation.

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