Emotional Experience and Interaction Design

Youn-kyung Lim[1,*], Justin Donaldson[1], Heekyoung Jung[1], Breanne Kunz[2], David Royer[1], Shruti Ramalingam[1], Sindhia Thirumaran[1], and Erik Stolterman[1]

[1] School of Informatics, Indiana University,
Bloomington, IN 47408
{younlim,jjdonald,jung5,dproyer,sramalin,sinthiru,
estolter}@indiana.edu
[2] Imaging & Printing Group,Hewlett-Packard Company,
Boise, Idaho 83714
breanne.kunz@hp.com

Abstract. The emotional experience of an interactive system has been the subject of a great deal of recent interest and study in the HCI community. However, many of researchers have pointed out the extreme difficulty in predicting or controlling these emotional experiences through intentional design choices. However, the user study we conducted proposes a different point-of-view than these claims. Although these emotional responses were not always tied directly to the device itself and influenced by contextual factors, we discovered that certain controllable aspects of interactive products showed clear patterns of emotion in the responses of our participants. We discuss our findings and provide implications for the design of emotional experiences in interactive devices.

Keywords: Emotion, affect, user experience, interaction design.

1 Introduction

The importance of "affect and emotion in HCI" has become increasingly significant when we face so-called "the third wave" or "the third paradigm" of HCI [6, 12]. One of the clearest comments on the notion of the third wave in HCI is introduced in Bødker's keynote article in NordiCHI 2006 [6] where she builds on Bannon's view that there is a shift "from human factors to human actors" [3]. Grudin [11] also mentioned the movement from the non-discretionary use of technologies to the discretionary use where users use technologies for personal purposes, which indicates the opening-up of this new paradigm.

As we move in this direction, researchers and professionals in HCI have started to redefine the meaning of "user-centered design" from an emphasis on efficiency and usability to a broader holistic context of human behavior. In this behavioral context, we start to adapt the terms like "human-centered" or "experience–centered" design. This

* Current address: Department of Industrial Design, KAIST, 373-1 Guseong-dong, Yuseong-gu, Daejeon 305-701, Republic of Korea, Tel.: +82-42-869-4522, Fax: +82-42-869-4510, younlim@kaist.ac.kr.

C. Peter and R. Beale (Eds.): Affect and Emotion in HCI, LNCS 4868, pp. 116–129, 2008.

direction promotes the understanding of human-computer interaction as embodied in the meanings, experiences, and values relevant to personal or cultural contexts [21].

This movement has led researchers to explore the nature of human experience that emerges in interactions with technologies. This research direction has opened up deeper investigations of the meaning of affect, emotion, and experience. It is natural that this has become the trend within HCI. After all, we cannot truly design something *human-centered* without a deep understanding of the emotional experiences prevalent in our own human nature. However, it is also clear that focusing on such human aspects alone does not necessarily lead to successful design outcomes [23].

Several noted researchers have made discouraging comments in relation to emotional design practice. A few representative sentiments include: "emotion cannot be designed" [13], "… not the design quality … but what the person did with it and what the interaction meant to the person …" (p.120 in [7]), etc. Although to a certain degree these claims are true, we also must accept that *emotions are significantly influenced by the design of interactive products*. This view is demonstrated and validated by various researchers [15, 8]. Norman and Ortony [22] also clearly mentioned that emotion *can* be designed in their explanation of "emotion by design" contrasting with the notion of "emotion by accident" which obviously also exists.

We make the simple claim that *a given emotional response to an interactive design feature is not entirely predictable*, but at the same time, we show that *the various emotional responses to a given product quality are not completely random*, either. Going further, we can identify which emotions are prevalent for a given product quality, and can seek to characterize the true source and nature of these emotions, looking for commonalities among the representative population.

Before we discuss the method and results, we will define some of our terminology. The phrase "product quality" relates to product attributes such as color, size, function, interface, etc. The phrase "experience quality" relates to abstract experiential attributes such as usability, usefulness, pleasantness, etc.

Interestingly, we show the three levels of emotional experience originally proposed by Norman [20] including visceral, behavioral, and reflective levels of emotion are affected by different proportionate distributions of the product qualities. This result clearly shows that each level of emotional experience has its own characteristics and relationships with product qualities. Our promising initial results leads us to believe that we should not be discouraged to continue the search for a better understanding of how these relationships are correlated, and that such research should lead to results that would inform designers.

In this paper, we start with a discussion of the definitions of affect, emotion, and experience that help researchers and designers establish appropriate strategies for design research and design practice in HCI. The objective of our research is not to establish or discuss theory, but to understand *in which ways design influences people's emotional experiences*. However, our discussion about theories and definitions provides the background for the design of our study.

In our study, we explore the relationships between the qualities people experience and the interactive product qualities inherent in the device. From these qualities we discuss what needs to be considered in design practice when concerning the emotional aspects of HCI. Finally, we conclude with important design implications of the study results in relation to emotion in HCI.