Manipulating Emotional Experiences: The Pseudo Generated Bodily Response

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This research investigates the method to manipulate human emotions and to evoke virtually various emotional experiences. It is challenging to manipulate directly human emotions within the conventional approach of human-computer interaction. To address this difficulty, I proposed a new method for evoking emotions virtually with an integration of the knowledge of cognitive science and virtual reality.

Psychological studies have revealed that the recognition of changes within bodily responses unconsciously evokes an emotion. William James, an American psychologist, best expressed this phenomenon in these terms "We cry, therefore we are sad." Thus, the facial feedback hypothesis indicates that changes to facial expressions affect emotional experience: smiling enhances pleasant feelings while attenuating unpleasant feelings. I therefore hypothesized that emotion could be manipulated by having people recognize what I describe as "pseudo generated bodily responses" as changes to their own bodily responses. I focused on the effect of facial expressions on evoked emotion and assumed that, by showing a facial expression that differs from the actual one, this may change the user's emotional state. Therefore, I developed a mirror-like system that deforms user's facial expressions, i.e. smiling face and sad face, in real-time by image processing techniques (facial feature tracking and image deformation).

The user studies confirmed that the visual feedback of deformed facial expression could manipulate emotional experiences; not only positive and negative affect, but also preference decisions. Moreover, this feedback could change the users' actual facial expressions.