

Analysis of Laugh

Abstract

The purpose of our research is to investigate the mechanism behind human communication. Among various factors, laugh is said to be an emotional expression unique to mankind, and is an essential factor in facilitating smooth communication. We have focused on laugh, and are investigating the mechanism of laugh quantitatively.

Effect of attention on classification of smiles

In our previous work, we found that temporal differences of eye and mouth movements in facial expressions of smiles affect the classification of smiles [1]. While thinking this was because subjects were paying attention to some specific part of the face, we carried out an experiment for verification purpose [2]. Several animations of smiling faces were created, each differing only in the starting time of eye motion and mouth motion. Prior to each animation, a location marker was displayed for 0.7 sec. at either the position of the eyes or mouth. Then, after the animation ended, a 5-digit random number was displayed for 0.3 sec. at the same position as the marker. Subjects were asked to classify each smile, and to write down the displayed number. As a result, we found that when subject's attention was forced to the mouth, the ratio to classify smiles as pleasant ones raised significantly.

Analysis of forced laughter in time differences of facial and abdominal movements

There are two typical kinds of laughters; spontaneous laughter by something humorous and forced laughter to maintain a social relationship. We have clarified properties for characterizing these two types of laughter [3]. Laughter was analyzed when subjects (five males and ten females) were watching comical movies. Among various expressions of laughter, we analyzed abdominal movements in addition to facial expressions (movements of the eyes and mouth).

Surface EMG (electromyography) signals of the eye and mouth movements, and abdominal movements (using a strain gauge around each subject's abdomen) were measured. As a result, we found that abdominal reactions to forced laughter are later than those to spontaneous laughter for males, but no significant difference exists for females.

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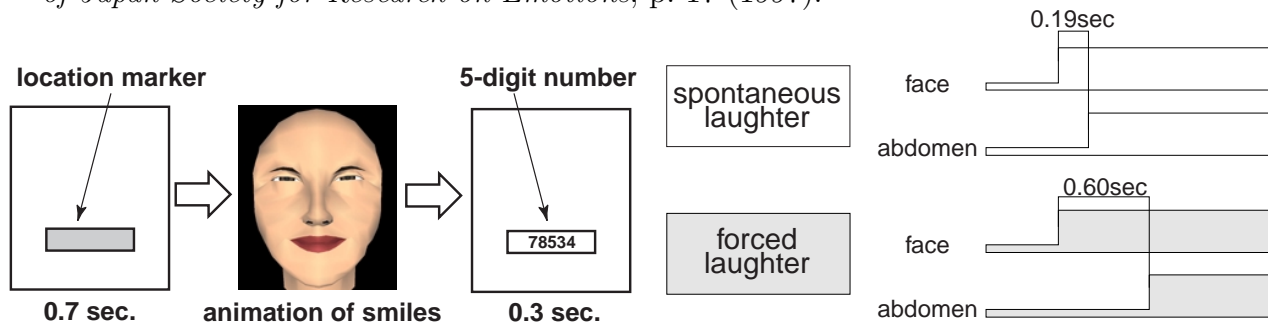


Fig. 1: An example of stimulus (eye condition)

Fig. 2: Time differences of reactions in both types of laughter