Remote Meeting Tension Relief through Transformation of Interviewer's Face

Ziting Gong[1] and Hideaki Kanai[2]

[1] Japan Advanced Institute of Science and Technology, s2120015@jaist.ac.jp
[2] Japan Advanced Institute of Science and Technology, hideaki@acm.org

Abstract. In this study, we propose a method for transforming an interviewer's face into that of an acquaintance in a remote meeting. We examine whether this method could reduce the tension of the speaker through the experiment. The results of a subjective questionnaire and a facial skin temperature measurement showed that the speakers' tension in the case of facing the scenes of an acquaintance was lower than that in the case of facing the scenes of a stranger. Therefore, this demonstrates that the proposed method is effective in relieving the speaker's tension during a remote meeting.

Keywords: Remote meeting · Tension relief · Face transformation · Acquaintance · Facial skin temperature measurement.

1 Introduction

A presentation is a common event in modern society. For example, students often need to make presentations for their classes and job interviews. In Japan, 80% of adults make presentations at work one to five times every month [1]. However, when giving a presentation, the speaker commonly feels tension and anxiety. When one experiences a great deal of tension while speaking in public, it often unconsciously causes actions that adversely affect the quality of the presentation [2]. Therefore, in this study we focus on alleviating the tension that speakers experience during presentations.

Currently, most presentations and interviews are conducted online due to the COVID-19 pandemic. Behaviors that usually only occur in intimate relationships, such as long-term direct vision and close-up face viewing (below about 60cm), have now become a way for us to interact with strangers during videoconference meetings [3]. As in the elevator example, exceeding social distance with strangers causes discomfortable and anxiety [3]. One method for managing this is to shrink the interviewer's screen, but this negatively affects the speaker's vision and causes difficulties in receiving the interviewer's feedback. Therefore, a more effective way to reduce the speaker's tension during an online interview is needed.

In previous studies, it was confirmed that when people talk to a more familiar and pleasant audience, anxiety decreases, and willingness to speak increases [4] [5]. However, digitally transform the interviewer's face into an acquaintance's face in a remote meeting will also bring the same effect? To solve

the question, we conducted an experiment to verify whether this method could relieve the tension of the speaker in one-on-one interviews.

2 Related works

From the result that feedback a calm voice to one person under interpersonal conflict helps to relieve the anxiety of two people, it is suggested that changing the perception of one's voice can effectively relieve the tension of the speaker [6]. However, in a remote conference we need to receive the voice of the others, which makes it infeasible to feedback the changed voice of our own.

"Presentation Sensei" is a system that analyzes presentations by combining speech and image processing technologies. The system provides immediate feedback on the speaker's rate of speech, eye contact with the audience, and duration of the speech. It also alerts the speaker when certain metrics exceed the predetermined warning thresholds. The goal is to reduce inappropriate behavioral patterns during speeches [7]. Although many presentation training systems have been proposed and are considered effective for improving presentation skills, the tension experienced during the speech is difficult to replicate in practice. Thus, there is still residual tension while the speaker is giving their presentation. In light of this fact, this study aims to relieve the speaker's tension through real-time conversion of the interviewer's face in a remote meeting.

3 Experiment

In the experiment, we divided the cases into themes (high likability, low likability) and facial expressions (smile, frown). We clarified the effect of familiarity (acquaintance, stranger) on the speaker's tension.

3.1 Experimental environment

The details of the experimental environment are presented in Fig. 1. Twenty people (6 males and 14 females) aged between 25 and 31 participated in the experiment. The subjects were divided into two groups to minimize the influence of the order in which the interviewers appeared, and two experiments were performed. The first experiment involved giving a presentation on a theme with high likability. The second was conducted a week later and involved giving a presentation on a theme with low likability. Each experiment consisted of four presentations on the condition of smile, frown, stranger, and acquaintance.

In the experiment, we used Adobe Premiere Pro (PR) to create videos of people smiling and frowning. Then, we used Adobe After Effects (AE) to transform the people's faces in the videos, having them wear the same clothes. Fig. 2 shows a screenshot of one of the videos used in the experiment.

In order to evaluate the subjective tension level, we used the subjective evaluation with a seven-point bipolar scale (0: neutral) and an infrared thermography

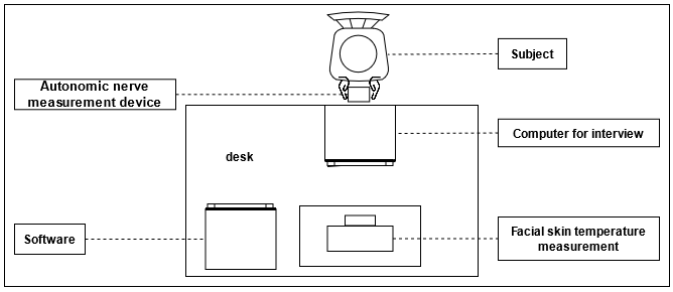

Fig. 1. Experimental environment.

Fig. 2. Video screenshot.

system (R300SR, Biotix Japan) as a sensor-based tension measurement method. Because higher levels of stress and tension can result in lower nose temperatures, and the forehead skin temperature is the most stable body surface [8], we used the value of the forehead temperature minus the nose temperature to measure changes in tension [9]. The larger the temperature difference, the higher the tension.

3.2 Experimental results

For the subjective questionnaire, the tension level (-3: tense, 0: neutral, 3: relaxed) during the speeches for the acquaintance (M=1.14, SD=1.77) and stranger (M=0.44, SD=1.81) conditions are shown in Fig. 3. The results of the Mann-Whitney U test showed a significant difference in the tension (p=0.012). By transforming the stranger's face into an acquaintance's face, the speakers' tension level decreased. The satisfaction also clearly increased (p=0.041).

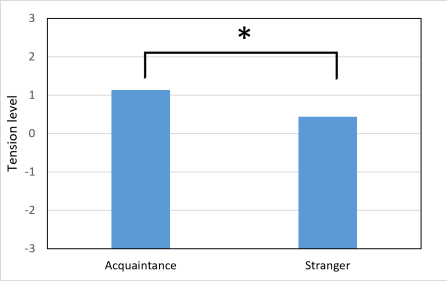

Fig. 3. Tension level results based on questionnaire.

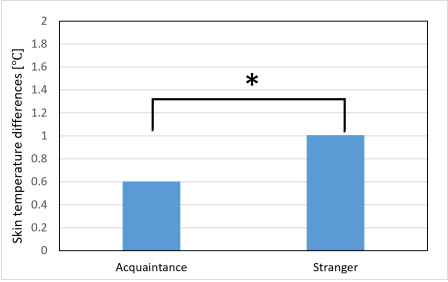

Fig. 4. Results of facial skin temperature difference.

According to the facial skin temperature measurement system, the values of the forehead and nose temperature difference during the speeches for the acquaintance (M=0.60, SD=1.49) and stranger (M=1.01, SD=1.67) conditions

are shown in Fig. 4. As with the results of the subjective evaluation, the speakers' tension in the case of facing the scenes of an acquaintance was lower than that in the case of facing the scenes of a stranger (p=0.047).

4 Summary

In this study, we examined whether the method to transform the interviewer's face into that of the speaker's acquaintance during an online interview could alleviate the tension of the speaker through experiments.

Twenty subjects were interviewed about their tension while giving speeches in front of both acquaintances and strangers. We measured tension using an infrared thermography system, and a subjective questionnaire. The results showed that transforming the stranger's face into that of an acquaintance increased the speakers' satisfaction and decreased their tension while speaking in an online interview. Therefore, this demonstrates that the feasibility of this method used to relieve the tension of the speaker during an online interview.

In the future, we plan to construct a system that implements this method in real time and to verify its usefulness in a more realistic remote conference environment.

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