Frequency of Sticker Use for Expressing Emotions in Text Messaging

Effects of Gender and Text-Messaging Dependency

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***Abstract*—In online learning, emotional support for the learner is important for increasing learning effectiveness. Graphical symbols, such as emoticons, work as emotional expressions in text-based online interactions. This study focuses on "stickers", a new form of graphical expression. Using questionnaires, we asked participants how frequently they used stickers to express seven types of emotions. This study examined the effects of gender and text-messaging dependency on frequency of sticker use for expressing emotions in text messaging. As a result, the effects of gender and dependency were confirmed.**

Keywords—sticker; emotional expression; gender difference; text-messaging dependency; text messenger.

I. INTRODUCTION

In online learning, emotional support for the learner reduces dropout and is important for increasing learning effectiveness. Social presence theory frequently refers to such support as a theoretical framework [1]. This theory was proposed in early media research and holds that media offering few non-verbal cues have a low social presence in comparison with face-to-face communication [2]. Subsequent online learning research has shown that social presence can be increased by various means, even in Computer-Mediated Communication (CMC) [3][4]. Increased social presence is receiving more attention as an important factor for helping online learning students [5]. In personal CMC, emoticons and emoji, mutual greetings, shared empathy, and self-disclosure are important necessary means of increasing social presence [4]. Emoticons and emoji in particular are closely related to emotional expressions [6]. However, in recent years, a new type of graphical symbol known as "stickers" (illustrations, often containing characters or text, sent in lieu of messages on many messaging platforms) have emerged. These can be used in text messenger apps while using mobile devices. Originally, a sticker was an illustration that could be attached to a text message in LINE from 2011, an instant messenger application mainly used on smartphones in Japan [7]. By 2013, Facebook messenger was also equipped with similar features, followed by Facebook timeline in 2014. In 2016, iMessage for iPhone added sticker functionality.

As many previous studies have pointed out, given the impact of symbols such as emoticons on text-based CMC [6], stickers are considered to have potential capabilities [8]. However, few studies have investigated stickers in text messaging. In this study, we conducted a basic survey on stickers in text messaging with smartphones.

Specifically, we examined the effects of gender and text-messaging dependency on sticker use in text messaging. Many studies have shown gender differences in socioemotional interactions in online communication [9], and some studies have found that women use more emoticons [10]. Therefore, we aimed to clarify gender differences in sticker use for expressing emotions in text messaging. Further, studies on text-messaging dependency have shown that high-dependency users tend to exhibit excessive use of text messaging to build socioemotional relationships [11]. High-dependency users who place importance on text-based interactions to maintain human relationships are thought to make greater use of graphical symbols available for communications. Accordingly, we also investigated the effects of text-messaging dependency on sticker use for expressing emotions in text messaging.

The rest of the paper is structured as follows. In Section 2, we present the method of this study. In Section 3, we present the results of this study. Finally, we conclude in Section 4.

II. METHOD

The survey participants were 300 Japanese students (152 women, 148 men; mean age = 20.12; standard deviation (SD) = 1.26) at universities in the Tokyo area. They were not students in an online course. Participation in this survey was voluntary. Participants were asked to answer a paper-based questionnaire. We asked participants to report their frequency of sticker use in text message exchanges to express each of seven kinds of emotion (joy, surprise, sadness, anxiety, anger, guilt, and love) using a 6-point Likert-like scale from 1 (not at all) to 6 (almost every time). In addition, we asked participants about the frequency of their daily use of stickers in text-messaging. We measured messaging dependency using the 15-item short version of the Text-Message Dependency Scale [11] modified by the authors. This scale comprises emotional reaction, perception of excessive use, and relationship maintenance subscales, each with five questions scored on a 5-point Likert-like scale from 1 (strongly disagree) to 5 (strongly agree).

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III. RESULTS

Participants were grouped according to degree of text-messaging dependency by calculating each participant's score on each subscale. Next, we used IBM SPSS Statistics 24, which is a statistical package for the social sciences, to perform a two-step cluster analysis using the three subscale scores as variables to comprehensively reflect their scores in this classification. This resulted in participants' division into two clusters: Cluster 1 (N = 154) contained the high text-messaging dependency group and Cluster 2 (N = 146) the low dependency group.

To investigate the influence of gender and degree of text-messaging dependency on usual frequency of sticker use, we assigned gender and dependency groups (high and low) as between-subjects factors and then performed a two-way analysis of variance. The results of the analysis of variance were as follows: the main effect of gender, $F(1, 295) = 46.92$, $p < 0.001$; and the main effect of dependency, $F(1, 295) = 0.93$, ns. There was no significant interaction. This result indicates that, compared with men, women used more stickers in text messaging on a daily basis.

Next, to investigate the influence of gender and degree of text-messaging dependency on frequency of sticker use for expressing each of seven emotions, we assigned gender and dependency groups as between-subjects factors, and then performed a two-way analysis of variance in each emotion. A significant main effect of gender was seen in the following five emotions: joy: $F(1, 296) = 73.79$, $p < 0.001$; surprise: $F(1, 296) = 6.03$, $p < 0.05$; sadness: $F(1, 295) = 40.71$, $p < 0.001$; guilt: $F(1, 296) = 22.66$, $p < 0.001$; love: $F(1, 295) = 45.72$, $p < 0.001$. A marginally significant main effect of dependency was seen in the following three emotions: joy: $F(1, 296) = 3.55$, $p = 0.061$; sadness: $F(1, 295) = 3.15$, $p = 0.077$; anxiety: $F(1, 295) = 3.19$, $p = 0.075$. There was no significant interaction for all seven emotions. These results are as follows. Joy and sadness were affected by both gender and dependency. Surprise, guilt and love were affected only by gender. Anxiety was affected only by dependency. Anger was not affected by either gender or dependency. These results are shown in Figure 1.

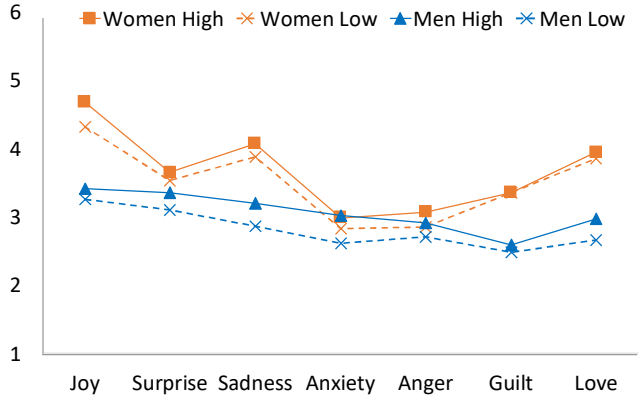

Figure 1. Comparison of frequencies of using stickers to express seven kinds of emotions by gender and dependency.

IV. CONCLUSION AND FUTURE WORK

This study investigated emotional expression using stickers as preliminary research into new emotional support in online learning via smartphones. To date, there have been almost no reports of research on stickers internationally. Our findings showed that, compared with men, women used stickers more frequently on a daily basis, and more frequently used them to express joy, surprise, sadness, guilt, and love. These gender differences are consistent with the results of previous studies on symbols such as emoticons used in text-based CMC [10]. In addition, our findings showed that individuals with high dependency use stickers more frequently than those with low dependency to express joy, sadness, and anxiety. Within the context of dependency, the most characteristic result was considered to be expression of anxiety, where no gender difference was noticed. This result may be attributable to individuals with high dependency tending to often feel uneasy about maintaining human relationships in online communication [11]. There was no difference between individuals with high dependency and individuals with low dependency regarding the usual use of stickers. Stickers are not only used to express emotions – they can also be used to convey various communicative intents such as expressing opinions and attitudes [8]. Individuals with low dependency may use stickers more for purposes other than emotional communication. Verification of this is work for future research. The findings of this study and subsequent works will provide valuable information for mentors who communicate (chat) with learners to increase social presence and prevent dropouts in online learning.

The primary limitation of this study was that all the participants were undergraduate students at Japanese universities. Thus, it is unclear whether the current findings can be generalized to users of various ages from other countries and cultural backgrounds. Finally, future work is needed to examine in detail the role of various graphical symbols (including stickers) collected in real online learning environments, to propose ways of increasing learners' social presence and fostering their learning activities.

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