

Exploring Gender Differences in Emoji Usage: Implications for Human-Computer Interaction

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Abstract

This study discusses the emojis employment that compensate for the absence of supralinguistic emotive cues in digital communication. Analyzing gender relations (Male-to-Male, Male-to-Female, Female-to-Male, Female-to-Female) as a social influence factor in emoji use, the research explores the use of anger-related emojis (😡, 😠, 😡) and their dual functions as emotion signals and intensifiers. Findings reveal women use more intense emojis toward men and less severe ones toward women, a pattern not observed in men when emphasizing emotions. Hence, the study contributes to the conceptual application of emotional expression via emojis within digital media, raising sentiments on gender variances and improving emotional intelligence in artificial intelligence systems to yield a more accurate human feeling interpretation.

1 Introduction

In everyday life, humans can engage directly with one another in a variety of ways, including gestures, facial expressions, and tone of conversation. However, based on current Internet growth, online interactions lack supralinguistic communication mechanisms, resulting in communication challenges between communicators because language expression alone cannot accurately convey the entire mood (Li and Yang, 2018). Thus, emojis, the small digital pictures or graphic symbols, were born to represent things, feelings, or concepts in communication software. In fact, the rise of emojis has changed the way Internet users communicate, which has not only affected the attention of linguists to this issue but has also led to new changes in the way Internet users communicate. Lupyán and Dale (2016) reported an

increase of 30% to 40% in emojis on Instagram, a type of communication software, compared to two to three years earlier, demonstrating the importance of the role of emojis in online dialogue.

This research analyzes the role of the “emotion signal emoji” and the “emotion intensifier emoji” summarized in Li and Yang (2018). Specifically, “emotion signal emoji” refers to the emoji that describes the emotion not previously mentioned, while “emotional intensifier emoji” refers to the emoji that characterizes the mentioned emotion (usually contains direct emotional words).

Previously, Butterworth et al. (2019) revealed the differences in the cognitive expressions of emojis by gender, while Herring and Dainas (2020) found gender differences in emoji employment. Specifically, females use emojis more frequently than males (Kennison et al., 2025). To investigate the gender variances, this study examines deeper at gender (male and female) and emoji usage interaction under angry scenarios for Taiwanese participants. The present study evaluates four gender relationships—Male-to-Male (*MtoM*), Male-to-Female (*MtoF*), Female-to-Male (*FtoM*), and Female-to-Female (*FtoF*)—to explore the following four research questions:

- (1) Under the emotion signal scenario, do men and women send different intensities of angry emojis depending on the recipient’s gender?
- (2) Under the emotion intensifier scenario, do men and women send different intensities of angry emojis depending on the recipient’s gender?
- (3) Comparing both emotion signal and intensifier scenarios, do men send different intensities of angry emojis? What about female users?
- (4) Is the use of angry emojis of men and women affected by the syntax (affirmative and interrogative)?

Findings reveal women use stronger emojis when communicating with men and less intense ones with women, potentially because women are more emotional and sensitive to emotions compared to men. As emojis become increasingly prevalent in present-day communication, this study may aid in the analysis of human-computer alignments. The results may benefit future investments in resolving emotional misalignments that diminish trust in the medical chatbots.

This paper is organized as follows: *Literature Review* presents past emoji studies and human bias in human interactions; *Online Survey* outlines the survey procedure and questionnaire; *Results and Discussions* addresses the research questions and presents plausible explanations; and *Conclusion* summarizes key findings and suggestions for future research.

2 Literature Review

2.1 Functions of Emoji

With different functions of emojis, [Li and Yang \(2018\)](#) simplified the seven emoji functions proposed by [Yus \(2014\)](#): “illocutionary force modifier,” “turn giving/taking,” “emotion/attitude signal,” “irony,” “emotion/attitude intensity enhancer,” “backchannel device,” and “humor.” To investigate emotions, the present study selects “emotion signal emoji”¹ and “emotion intensifier emoji,”² since both serve to convey the speakers’ emotions.

2.2 Emotion Expression in Chinese

Studies have shown that cultural conditions affect participants’ expressions of emotion and complaints ([De Vaus et al., 2018](#); [Fischer et al., 2004](#); [Lim, 2016](#)). [Wu \(2013\)](#) examined Hakka-speaking men’s and women’s complaint behavior, discovering that female Hakka speakers, a branch of Chinese, are more polite and sensitive, highlighting the significance of gender influence in angry communication. Moreover, [Yu \(2005\)](#) and [Chen et al. \(2011\)](#) both investigated complimenting acts in Mandarin and American English, finding differences in cultural influences on human strategies to express anger in dialogue. Specifically, [Yu \(2005\)](#) discovered that Chinese participants prefer to indirectly express compliments as

American English participants are more likely to speak out directly. Furthermore, [Chen et al. \(2011\)](#) reveal cultural effects on two groups of participants’ strategies of complaining, as Americans expressed complaints across all the situations, while Taiwanese participants, another branch of Chinese culture, are sensitive to social power and will carefully choose proper expression in situations.

2.3 Online Cross-gender Communication

[Butterworth et al. \(2019\)](#) investigated the impact and correlation between Internet users’ gender and the recipient’s gender. Using a Likert scale, the researchers asked 40 men and 39 women about their opinions on four different workplace emoji usage scenarios: female send to male (*FtoM*), female send to female (*FtoF*), male send to male (*MtoM*), and male send to female (*MtoF*). The study shows that people’s perceptions of the sender and the message are influenced by their use of emojis, in addition to their gender. It’s important to note that these results support conventional gender preconceptions in communication, highlighting the social gender effects on people’s opinions that may influence their choice of emoji. Accordingly, the study implies that gender is related to emoji selection.

3 Online Survey

3.1 Questionnaire Collecting

3.1.1 Participants

The study recruited 36 men and 46 women (aged 11 to 20 years old). [Herring and Dainas \(2020\)](#) studied participants from 18 to 70+ and mentioned that older people over 30 generally do not understand the meaning and application of emojis. Given that the main group of people who use Internet software to communicate in modern times are teenagers, this study only analyzed the responses of respondents aged between 11 and 20 years old. To reduce potential harm to underage participants, they are required to finish the questionnaire under their guardian’s supervision. In addition, they attended school in Taiwan (New Taipei City, Taipei City, and Keelung City) and their mother tongue was Taiwanese Mandarin (Traditional Chinese) before the age of seven.

¹ This study modifies the “emotion signal emoji” from [Li and Yang \(2018\)](#) “attitude/emotion signal” to specify the emotion in the emoji.

² This study modifies the “emotion intensifier emoji” from [Li and Yang \(2018\)](#) “attitude/emotion intensity enhancer” to simplify the name and specify the emotion in the emoji.

Respondents who did not fill in “Traditional Chinese” as their native language will be considered as not familiar with Traditional Chinese applications and will not be included in the analysis.

3.1.2 Questionnaire Procedure

The survey was conducted online anonymously from 0:00 on April 26, 2023, to 23:59 on May 9, 2023, for a period of two weeks. Participants must first read a brief test description, including the purpose of the study, research process, confidentiality, and potential risks. Next, the subjects were asked to provide basic identity information, including age, native language, and gender, to verify their eligibility to be interviewed. Finally, the subjects were asked to answer a questionnaire that should require less than five minutes to finish.

3.2 Questionnaire Questions

This study will be analyzed in two parts in Traditional Chinese. First, this study refers to the research framework of [Butterworth et al. \(2019\)](#) and conducts a 2 (Subjects) × 2 (Recipients) gender cross-comparison to investigate the difference between men and women using emotion signal emoji and emotion intensifier emoji.

Referring to [Li and Yang \(2018\)](#), this research selected emotion signal and emotion intensifier emojis as they are relatively direct conversational sentence patterns in daily life and express emotion, as illustrated in (5) and (6).

- (5) Emotion Signal Emoji: I have been waiting for you online for two hours. You are still offline_(emoji)_.
- (6) Emotion Intensifier Emoji: I’ve been waiting for you online for two hours. I “hate” people like you who make others wait_(emoji)_.

Therefore, the questions in the first part will be in the form of affirmative sentences, with a total of four situations (the participants will play the role of the sender and will choose an emoji to send messages to recipients of both genders): emotion signal emoji send to male, emotion signal emoji send to female, emotion intensifier emoji send to male, and emotion intensifier emoji send to female.

In the second part, this study aims to examine the use of angry emojis by men and women in affirmative and interrogative sentences. Due to the

lack of previous literature, this study will initially explore whether syntax causes differences in the use of emojis between genders. Therefore, the questions will not be distinguished as being sent to males or females but will investigate men’s and women’s emoji usage in affirmative and interrogative sentences.

In addition, according to the Unicode Standard, a system for organizing and encoding text across most platforms, the emojis that include anger were selected for this study: 😡 (Angry Face/ Angry/ U+1F620), 😡 (Enraged Face/ Burning with rage/ U+1F621), 🗨️ (Face with Symbols on Mouth/ Angry enough to curse/ U+1F92C) ([Unicode, 2022](#)). Participants can choose from the three options, with the first part of the research questionnaire also providing a “do not use emoji” option in case the subjects will not use emojis in this situation.

3.3 Questionnaire Design

3.3.1 Semantic and Contextual Relevance

Different situations can affect how humans express their emotions. Therefore, this questionnaire limits the scenarios to three groups, each with six questions (two emotion signals, two emotion intensifiers, and two syntax). In addition, even in the same context, the way a sentence is delivered can affect how the listener feels or the tone conveyed. The two sentences “我真的很生氣 😡” (I am really angry 😡) and “我超生氣” (I am super angry 😡) may cause the tone of the former to be less intense than the latter, resulting in different corresponding emojis. To reduce the influence of semantics, this study limits the use of degree, including “很” (very), “真的” (really), “超” (super), etc., words in similar sentences.

3.3.2 Numbers, Word Count, and Fillers

The varying lengths of sentences may place a burden on the reader’s short-term memory, so the number of words per sentence and the number of sentences (the number of commas and periods) per question in the questionnaire were controlled. For example, in Scenario 1, each question has 2 sentences and 26 words. Finally, to further reduce the phenomenon of transfer, in which participants will carry their emotions to the next question, the questionnaire’s order was shuffled. In addition, this study designed filler sentences (1/3 of the total

number of valid questions). Among the research questions, there are 18 valid questions, including 6 filler questions, and the whole questionnaire has a total of 24 questions.

3.3.3 Affirmative and Interrogative

To explore the influence of syntax, the second part of the questionnaire did not reveal gender, allowing the subjects to focus on the use of sentence patterns. In addition, the study used “?” to distinguish between affirmative sentences (without “?”) and interrogative sentences (with “?”).

4 Results and Discussions

4.1 Statistics and Data Processing

In the first part of the questionnaire, this study received 432 valid responses from males and 552 valid responses from females. In the second part of the questionnaire, this study received 216 valid responses from males and 276 valid responses from females. The study excludes invalid responses such that the participants do not complete the whole questionnaire or select multiple emojis for the same question. Since the response numbers differ in gender, the present study converts the number of responses into percentages. To discuss statistical significance, this study used the chi-square test with the significance level set to 0.1. If the significance value is lower than 0.1, it will be considered a significant difference or change.

4.2 Emotion Signal Emoji

4.2.1 Frequency of Emotion Signal Emojis

There was no significant difference in the use of emojis in emotion signal emoji sentences between men and women ($p = 0.2225$). From the overall distribution, the result shows the most popular choice among both men and women is not to use emojis (M=38.43%, F=39.13%), followed by 😡 (M=23.15%, F=25.00%).

Past research has shown that in negative circumstances, individuals don't feel compelled to communicate their feelings. (Derks et al., 2007). Therefore, in the anger emotion of this study, it is reasonable to explain that the majority of subjects chose not to use emojis. In addition, 😡 remains the second most frequently used word is largely due to the compromise method. When encountering three

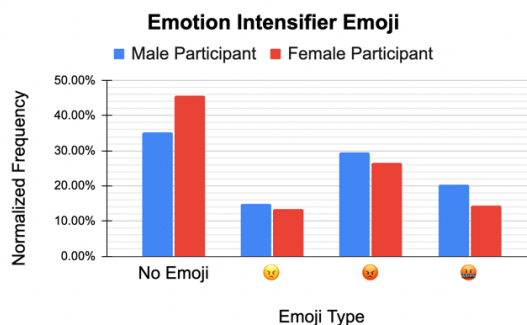


Figure 1: Male and Female Emotion Intensifier Emoji Responds Frequency.

levels of emoji intensities, the subjects generally believe that 😡 cannot fully express anger, while 😠 over-expresses emotions (Unicode, 2022). An interesting observation is that females use 😡 (M=17.59%, F=21.74%) more frequently than 😠 (M=20.83%, F=14.13%), while the opposite is true for males. This study justifies this phenomenon since women are more inclined to use strategies to weaken emotions. Detailed past literature and reasons will be discussed in “4.3 Emotion Intensifier Emoji.”

4.2.2 Recipient Gender in Emotion Signal

Within each gender, there was no significant difference in the results whether sent to male or female recipients (M: $p = 0.6389$; F: $p = 0.8409$). Overall, both men and women used emotion signal emojis similarly. Additionally, neither men nor women changed their choice of emojis based on the recipient's gender.

4.3 Emotion Intensifier Emoji

4.3.1 Frequency of Emotion Intensifier Emojis

There was a significant difference between males and females in the use of emotion intensifier emoji sentences ($p < .1$)³. As shown in Figure 1, unlike the emotion signal emoji, in the emotion intensifier emoji, both men and women tend to use 😠 rather than 😡. In addition, females were more likely to choose not to use emojis than males (M=35.19%, F=45.65%), while males were more likely to use 😡 (M=20.37%, F=14.49%). This implies that women generally prefer to use fewer intense emojis (do not use emojis), while men are relatively accustomed to using more intense emojis. In this regard, in emotion intensifier emoji sentences,

³ p -value = 0.09721.

women have strategies to weaken anger compared to men. As shown in Figure 1, the proportion of emoji usage frequency is arranged from most to least as follows: no emoji, 😡, 😡, 😡.

4.3.2 Recipient Gender in Emotion Intensifier

There was no significant difference in the choice of emojis by male subjects when sending messages to the two genders ($p = 0.9713$). The number of emojis used has the same trend as the emotion signal emoji, from the most to the least: no emojis ($MtoM=35.19\%$, $MtoF=35.19\%$), 😡 ($MtoM=29.63\%$, $MtoF=29.63\%$), 😡 ($MtoM=19.44\%$, $MtoF=21.30\%$), 😡 ($MtoM=15.74\%$, $MtoF=13.89\%$).

Figure 2 shows that, in contrast to the previous results, there are slight variances between female individuals when it comes to mailing to men and women. Female participants were more inclined to avoid using emojis while sending messages to other women than when sending messages to men ($FtoM=42.03\%$, $FtoF=49.28\%$). Furthermore, in the responses Female-to-Female scenario, 😡 ($FtoF=15.94\%$) was more frequent than 😡 ($FtoF=13.77\%$), proving women are more likely to use less angry responses when sending to women. To see if there were differences in the selection of emojis with stronger or lesser emotions, this study combined the responses with no emoji and 😡, which were less emotional, and combined the responses with 😡 and 😡, which were more emotional, as shown in Figure 3. After calculating the combined results, there was a significant difference in this change between females and males ($p < 0.1$)⁴. In light of these differences, this study has two additional findings in (7) and (8).

- (7) Women tend to choose less intense emojis to express emotions in the same gender ($FtoF$) in the emotion intensifier emoji condition.

This study attributes the difference in (7) to women being more sensitive to emotions than men (Fischer et al., 2018; Barrett and Bliss-Moreau, 2009). When women send emojis to other women, they subconsciously assume that the other party will be more likely to receive their anger, and thus use less intense emojis. In addition, in Gordon's (1997) study, women were more

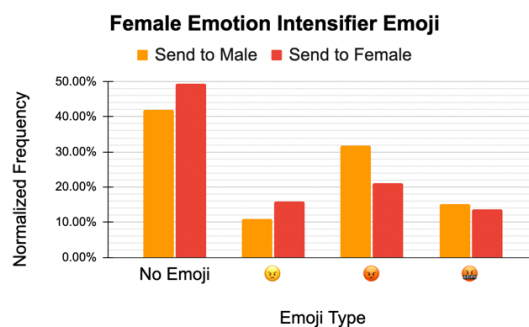


Figure 2: Female Emotion Intensifier Emoji Responds Frequency When Sending to Male and Female.

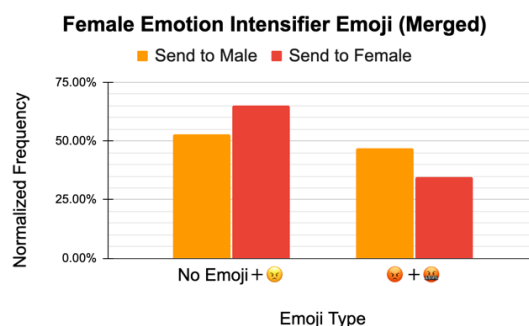


Figure 3: Female Emotion Intensifier Emoji Responds Frequency When Sending to Male and Female (Merged).

restrained in expressing anger than men, indicating that women would restrain themselves from using stronger words and emojis when sending texts or emotions. That is, in the emotion intensifier emoji sentence pattern, the sentence already contains angry words with direct condemnation; in order to restrain themselves from using strong expressions, women generally choose not to use emojis, the least angry option, to stop emotions from intensifying. Therefore, in terms of the results of this study, female subjects prefer not to use emojis when using the emotion intensifier emoji and reduce the other three options.

- (8) Women tend to choose stronger emojis to express toward different gender ($FtoM$) in the emotion intensifier emoji situation.

In the case of 😡 ($FtoM=31.88\%$, $FtoF=21.01\%$), female participants used this emoji more often when sending messages to men than when sending messages to women. In addition, among the responses from women to messages sent to men, 😡

⁴ p -value = 0.04994.

($FtoM=15.22\%$) were more likely to be selected than 😡 ($FtoM=10.87\%$). This is a significant finding as it supports that women are more likely to employ angrier emojis when sending to males.

According to past literature, women are more likely than men to be able to sense the emotions of others, as is suggested by traditional stereotypes. The sender must therefore frequently convey more emotions to the males, using more intense emojis for men, in order for them to comprehend the feelings that the sender wishes to convey. Fischer et al. (2018) suggested there are two possible reasons why men are less capable of emotion perception. First, men pay more attention to subtle facial expressions and are therefore able to perceive more complex emotional features in the face. However, there are no detailed differences in emojis, only major changes in color, text, etc.; thus, men are less likely to detect differences in emotional intensity in emojis than women. Second, when asked to rate the intensity of multiple emotions, males are more prone to be perplexed and unsure about their own emotional perception. Similarly, Herring and Dainas (2020) found that men are more likely to be confused and annoyed by emoticons. The results are very likely to trigger the transfer phenomenon in the series of emotional questions and answers in this study.

In summary, there is no significant difference in men's responses to emotion intensifier emoji messages, nor does their original emotional expression change due to the gender of the recipient. However, women have a particularly significant difference in emotion intensifier emojis, meaning they choose less intense emojis for the same gender and more intense emojis for the different gender. This difference affects the frequency of the overall expression of emotion intensifier for both men and women.

4.4 Emojis in Different Emoji Types

4.4.1 Male Emoji Distribution in Emotion Signal and Emotion Intensifier Emojis

There was no significant difference in the use of emotion signal emojis and emotion intensifier emojis among male subjects when sending messages to males and females ($MtoM: p = 0.4375$; $MtoF: p = 0.9376$).

Since male subjects did not change their choice of emojis in both sentence patterns, it indicates that men do not change the emotions they originally

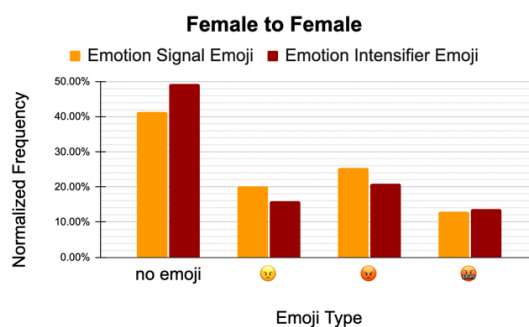


Figure 4: Female Emotion Signal Emoji and Emotion Intensifier Emoji Responds Frequency When Sending to Female.

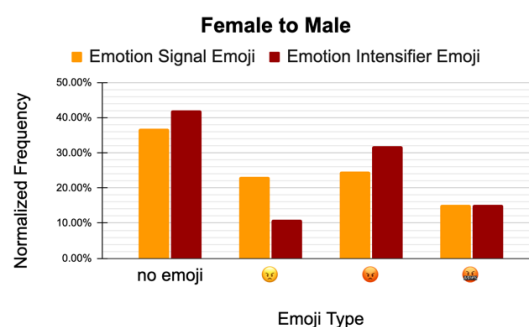


Figure 5: Female Emotion Signal Emoji and Emotion Intensifier Emoji Responds Frequency When Sending to Male.

wanted to express, even if the sentence pattern changed. Given the notion that women are too emotional, Barrett and Bliss-Moreau (2009) noted that men express their emotions when the situation calls for it, demonstrating that men are more objective and unaffected by emotions. Women express their emotions because they are “emotional creatures.” That is, the emotion intensifier sentences in this study contain angry words. Since women are more easily affected by the words, the emojis they choose also change according to the sentence pattern. On the contrary, men are objective and less susceptible to emotions. They were not swayed by the angry words, supporting the finding that men did not differ significantly in their use of emotion signals and emotion intensifier emojis.

4.4.2 Female Emoji Distribution in Emotion Signal and Emotion Intensifier Emojis

Although there is no statistically significant difference in the female subjects' responses to the two sentence types ($p = 0.5168$), 😊 and 😡 have a decreasing trend in emotion intensifier emojis, while the value of not using emojis (increase 7.98%)

has an increasing trend, as shown in Figure 4. This supports that women tend to use less intense emojis when sending messages to the same gender under emotion intensifier emoji conditions.

Unlike the results for the same gender, female subjects showed significant differences when sending to males ($p < .1$)⁵. As shown in Figure 5, in the case of the emotion intensifier, the value of 😏 (-12.32%) has a downward trend, and the value of 😡 (+7.24%) has an upward trend. Thus, the finding reveals women tend to use more intense emojis, as the more intense emojis were chosen when expressing themselves to the opposite gender in emotion intensifier emojis.

4.5 Emojis in Different Sentence Structures

4.5.1 Syntax Influences on Emoji

There is no significant difference in the performance of men in affirmative (A) and interrogative (I) sentences ($p = 0.9690$). The most used by men is 😏 (A=39.81%, F=41.67%), followed by 😏 (A=36.11%, F=35.19%), and finally 😏 (A=24.07%, F=23.15%), shown in Figure 6. In terms of the emoji usage frequency, 😏 is similar to the emotion signal type as the usage frequency of 😏 remains the highest.

Besides, there was no significant difference in the performance of female subjects in affirmative sentences and interrogative sentences ($p = 0.5309$). However, as shown in Figure 7, this study found that the distribution of different emojis in different sentence types was slightly different. Among them, compared with affirmative sentences, interrogative sentences have stronger emotional 😏, and their usage ratio has increased (A=38.41%, I=44.20%, increased 6.52%); on the contrary, 😏 has decreased (A=44.20%, I= 37.68%, decreased 5.79%). This study speculates that women tend to use stronger emojis in interrogative sentences, which will be discussed in 4.5.2.

4.5.2 “?” as an Emotion Intensifier Symbol

This study justifies the result in 4.5.1 by explaining that interrogative sentence patterns also affect the use of emojis. Sagum et al. (2019) highlight the role of ending punctuation in emotion intensity level (Karami et al., 2023). Specifically, the question mark in the anger scenario is classified as

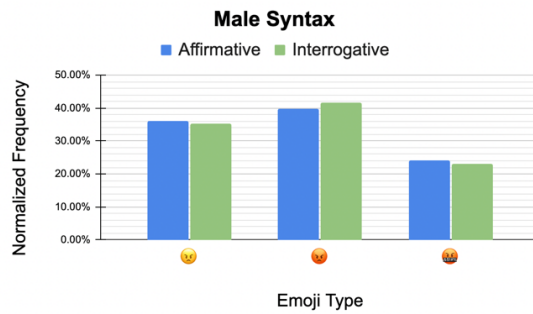


Figure 6: Male Affirmative Sentence and Interrogative Sentence Responds Frequency.

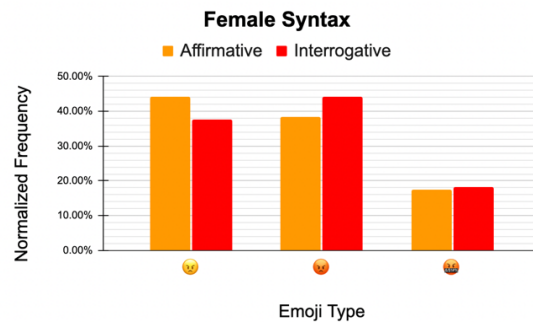


Figure 7: Female Affirmative Sentence and Interrogative Sentence Responds Frequency.

medium or high intensity. As women encounter interrogative sentences, their distribution pattern is similar to the emotion intensifier emoji pattern of women, making it easier for female subjects to influence their choices for this symbol. This study hypothesizes two possible reasons for this result: first, women will unconsciously treat the other party as a man during the conversation, which will have an emotionally reinforcing effect on the opposite gender during the emotional enhancement period; second, “?” is a special kind of “emotion intensifier symbol” (not an emoji, sentence, or word). Hence, its results are different from the emotion intensifier emoji in this study, meaning that when female subjects encounter symbolic emotion enhancement, there is an effect of intensified tone. Thus, the present study proposes the addition of the symbolic emotion intensifier symbol to the emoji intensifier symbol. However, whether this phenomenon is affected by gender remains to be clarified. In view of the lack of previous literature, the above conclusions about “?” are only speculations and need to be corroborated by more literature and experiments.

⁵ p -value = 0.04855.

5 Conclusion

The study found notable differences in how men and women express anger through emojis. Women use stronger emojis when communicating with men and less intense ones with women, potentially because women are more emotional and sensitive to emotions compared to men (Barrett and Bliss-Moreau, 2009; Fischer et al., 2018). Women also choose more intense emojis in interrogative sentences than in affirmative sentences. This study proposes two explanations for this result: first, women may unconsciously treat the recipient as a man during the conversation, resulting in an enhanced situation. Second, the “?” in question sentences may be an “emotion intensifier symbol,” which has an emotion-enhancing effect on women that is different from other sentence structures.

Today, the activeness of online conversations has led to communications between humans and artificial intelligence, among which the ability of artificial intelligence to distinguish emotions is highly valued for its development. Based on the results of this study, the expression of emotions by men and women is affected by sentence patterns. If the gender is different, will artificial intelligence provide different responses? Since the scale of this study is not large enough to cover all Internet users worldwide, some results need to be confirmed. However, this study provides a preliminary discussion on the emotion of data—emojis, pioneering first-hand research into the new generation's communication.

Limitations

The present study only investigates human responses in the Chinese Traditional language, which covers a partial aspect of Chinese culture. Yet, since emotional responses are linked with culture and gender, the present study requires future research to investigate how other cultures behave and respond. Besides, this research primarily investigates the syntax's effects on emoji selection, also calling for future studies to look in-depth at the phenomenon.

Ethical Considerations

This paper was conducted through a digital survey and recruited 36 men and 46 women. Each participant's information is secure as the survey is anonymous. Furthermore, participants are required to read through brief test descriptions, including the purpose of the study, research process,

confidentiality, and potential risks, and they can opt out of the experiment at any time. Since the participants are aged 11 to 20, they are required to finish the questionnaire under their guardians' supervision, reducing potential harm to the participants.

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