

Emoji: Representations of Nonverbal Symbols in Communication Technology

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Abstract. This research examines *emoji* messages as a replacement for nonverbal Face-to-Face (FtF) communication that extends the validity of *emoji* used, its significance in text messages, and the deliverance of intended meanings. To examine this topic, an online survey consisting of close-ended and open-ended questions was conducted by recruiting 135 voluntary respondents. The data were analyzed qualitatively using thematic analysis. The results argue that *emoji* serve as emotional expressions for Mobile-Messaging Application (MMA) users. In fact, users believe *emoji* messages function as a complement for nonverbal ones in FtF communication rather than as a substitute since FtF is the most ideal interaction. The last finding proposes *emoji* messages are rarely misinterpreted for they deliver user's underlying intent. The contribution of the present research provides different insights as to the importance of *emoji* in MMAs and alternative resolutions of misunderstanding. The present research then proposes MMA providers to create natural *emoji* and communication settings with aims to raise user's comfort, reduce ambiguity, and increase the role of *emoji* in online communication. In the future, research on *emoji* that minimize misunderstanding and ambiguity in the area of CMC, particularly in enhanced-natural emotion of MMA users is worth examined.

1. Introduction

The role of *emoji*, pictographic forms of facial expressions, objects, and symbols, in text messages have transcended the dimension of Computer-Mediated Communication (CMC) [1]–[4]. *Emoji* can potentially serve as a basis to portray personality traits of its users namely “emotional stability, extraversion, and agreeableness” [1]. Previous research highlights perceptions of *emoji* in romantic relationships, particularly for portraying the relationship interest of a romantic partner through positive and negative replies [3]. In the area of implication, the older version of emoji, emoticon's use aims at enriching the feature of polarity classification [2]. In fact, emoticons demonstrate interpersonal functions such as personal expressions and mood boosters in distinct virtual platforms [4].

An increase in the use of emoji and emoticons has led researchers to investigate user's characteristics and behaviors in different mobile messaging applications (MMAs) particularly in Snapchat and WhatsApp [5]–[7]. Employing uses and gratification theory, Snapchat functions more on social connectedness to its users who are younger, multitasking, and graphic communication reliant [5]. Correspondingly, the use of Snapchat influences the behavior of its users including addictions, needs, and satisfaction [6]. As a multimodal instant messaging tool, WhatsApp, emphasizes on its pragmatic use and “discursive realizations” in the use of WhatsApp status, in which emoji, one of the most prominent devices, is embedded [7].



Within the context of emoji used in MMAs, scholars have previously argued *emoji* may not necessarily substitute face-to-face (FtF) interactions[8]–[10]. Comparing offline and online group communication, self-disclosure is likely to occur in FtF group interactions as they require fewer efforts and appeal more to the group members [8]. Furthermore, online communication in the field of health encounters few constraints namely less positive responses and negative impacts for patients [9]. One plausible alternative to resolve these constraints involves technological development of *emoji* with aims to emotional bonds and social connectedness [10].

Despite numerous studies on *emoji* and emoticons particularly on how they enhance online interpersonal communication in MMAs [1], [3]–[7], [10]–[12], there is a lack of research addressing *emoji* as representations of FtF nonverbal symbols. In fact, this fundamental question involving the validity of *emoji*, their shared meanings, misunderstanding incurred and resolutions has been inadequately investigated.

Therefore, this research examines the validity of *emoji* used and its significance in text messages as well as its shared meanings. The scope of research expands to the possibility of failure in perceiving *emoji* and resolutions in case such misunderstanding occurs. In so doing, an online survey was launched and received 135 voluntary responses. The data sets were analyzed qualitatively using thematic analysis. The result indicates *emoji* as a complement to FtF interactions, which reflect user's emotion even though they may convey unnatural and exaggerated expressions. Fewer misunderstandings in interpreting *emoji* messages suggest their validity in online communications. Nevertheless, user's preference in offline communication remains high for *emoji* lack emotional bonds and connections.

2. Methods

Participants were 135 undergraduate students who were asked to complete a questionnaire entitled “Computer-Mediated Communication Survey”. Participants were directed via a web-link to an online questionnaire that was sent through a WhatsApp Broadcast, and a message to Line Undergraduate Official Account. They were recruited voluntarily to participate in the research. Results of the questionnaire were in the forms of percentages for close-ended questions and elaborations for open-ended ones. Analysis of the close-ended data was undertaken qualitatively, whereas the open-ended one was analyzed using thematic analysis.

3. Results and discussion

Results of demographic data and participants' behavior toward their smartphones are relevant to an earlier research; i.e. younger generations are identical to and comfortable with technology, particularly in working numerous assignments. The length of time spent with the smartphone which ranges 5-7 hours daily suggests that the younger generations highly rely on digital forms of communication[5]. Consequently, the function of smartphones expands to broader concepts with aims to meet customer needs involving social and entertainment. Obviously, human characteristics should be embedded into MMA features such as *emoji* to avoid perceptions that they are too mechanic and less human [5], [6].

A typical behavior of inserting *emoji* in text messages has become a habit for MMA users as they represent their emotions and glue interpersonal relationships [4], [12], [13]. This idea corresponds to the findings of the present research describing a proportion of 84.44% of closer relationships experienced by the respondents. What is more, the data sets containing types of *emoji* used, numbers of *emoji* messages as well as the most frequently used of *emoji* propose the reliability of *emoji* through which the respondents express their emotion. Even though a larger percentage shows that *emoji* used in text messages are valid, *emoji* have not been considered a replacement of nonverbal symbols in FtF interactions for they lack three important elements. Namely, in online communication *emoji* have less positive experiences, less satisfaction, and few natural emotion expressions [8], [14]. Nevertheless, research has investigated ways to resolve those weaknesses by designing affective-awareness and emotion-adaptive systems. Given this improvement of technology in CMC, challenges on measurement of emotion and uncertainty co-present and need further investigations in the future [15].

The open-ended questions illustrated elaborations from the participants regarding their experiences in using *emoji* text messages and opinions of *emoji* as emotion expressions, the absence of *emoji* in messages, *emoji* as a replacement of FtF communication, equality of FtF and *emoji*, and misunderstanding caused by *emoji* as well as its resolution that are illustrated in **Table 1**.

Table 1. The percentages of *emoji* topics

Topics	Percentages			
	Yes	No	Sometimes/Not Necessarily	Undecided
<i>Emoji</i> as emotion representations	73,70%	22,03%	4,27%	-
A missing element of non- <i>emoji</i> messages	32, 25%	64, 21%	3,54%	
<i>Emoji</i> as a replacement of nonverbal messages in FtF communication	29,47%	68,22%	-	2,31%
Equity of nonverbal messages in FtF communication and <i>emoji</i> in MMAs	13, 34%	74, 11%	11,81%	0,74%
Misunderstanding due to <i>emoji</i> messages	80,10%	19,90%	-	-

Experiences of the respondents in using *emoji* occurred in broad frameworks: functions, perceptions and methods in receiving intended meanings of sender. First, respondents discussed distinct functions of *emoji* including emotional expressions in different contexts, ice breakers, and interpersonal relationship enhancer.

"The emoji I frequently use include smile, thumbs up, and rocker's signature to indicate my agreement."

"Emoji only serves as an ice breaker so that the chat won't get too serious."

"My lecturer used to send text messages without emoji and they seemed formal. Currently, he inserts some emoji and I response the same way. Now we are close to each other and our chats are less formal due to emoji text messages."

Second, their perceptions of using *emoji* comprised hypocrisy, lip services, cute, exciting and fun as well as practical. One respondent perceived *emoji* as an MMA feature taken for granted and claimed that there was nothing special of *emoji*.

"To me, emoji is hypocrisy as it does not represent what individuals feel."

"It is faster to reply with emoji than texts and they have the same meaning."

"When I wake up in the morning and my friends ask me, I am too lazy to type words. I just respond it with emoji."

"I take emoji for granted. I use it when I need it."

Third, the respondents experienced that *emoji* help them enlighten receivers to understand their intended meanings. However, their excessive use in an online group chat might cause confusion and ambiguity.

"I use emoji to ensure my friend understand my message."

"Emoji serves as a complement to my text messages to help my friend understand my intention."

"In a group chat, my friends keep posting emoji continuously that leave me in confusion. It takes me some time to finally understand what it means."

Table 1. also describes the percentage of *emoji* as reflections of feeling/ emotion. The underlying rationale behind the respondent's agreement was *emoji* resembled nonverbal messages in FtF interactions, thus functioned as emotion expressions. In addition, *emoji* enabled virtual interactions serving as situated interacting environment at which users were able to understand their facial expression and mood through various *emoji* offered by MMAs. On the contrary, those who disagreed with the fact that they believed *emoji* were fake and funny. *Emoji* text messages were often not trustworthy as they hid the true emotion of sender. "*Emoji only expresses what I want to show rather than what I truly feel.*" It is worth noting, however, that the creation of jokes required *emoji* insertion to some respondents. Lastly, few respondents assumed *emoji* did not always express their feeling well due to a limited number of *emoji* in MMAs. In other words, the unavailability of various emotion expressions prevented users to convey their particular emotion. These results match previous research on the function of *emoji* in interpersonal relationships [3], [4], [6]. Moreover, these findings elicit innovations for MMA providers to create more natural *emoji* in communication settings in which users are keen to express their true and distinct emotion.

The absence of *emoji* in text messages might lead to failures in comprehending the underlying of respondent's emotion. A larger proportion presumed *emoji* played a less vital role in online interactions mainly due to its usage is contextual. In fact, the absence of *emoji* was necessary when individuals built online formal interactions with their lecturer during working hours. Conversely, to avoid misunderstanding and ambiguity, *emoji* were required in text messages. Suppose if text messages were without *emoji*, online interactions would seem flat and dull. This finding is presented in **Table 1.**, which obviously corresponds to the second largest proportion. The last group of respondents elaborated that the use of *emoji* was subject to the underlying intent deliverance. Needless to say, a key success to online communication was characterized by obtaining a shared meaning among individual with or without *emoji*. If written texts met this objective, *emoji* would not be obligatory. Considering the use of *emoji* depends on the platforms of communication and receivers [4], technological advancement may develop on the basis of suitability and role of *emoji*. For instance, MMA providers offer features to detect users written messages and suggest suitable *emoji* in different platforms. By so doing, *emoji* will then play a crucial role in online communications.

To further examine the role of *emoji*, the third open-ended question inquired respondent's opinions on the possibility of *emoji* as a substitute for FtF communication. As detailed in **Table 1.**, FtF communication remained the first preference of social interactions. The reason behind this preference comprised clear distinctions between virtual and real nonverbal communication particularly eye contacts, touch, intonation, and facial expressions [8], [9]. Those nonverbal symbols in FtF communication were believed to be more diverse and trustworthy compared to *emoji* in MMAs. Given the specific characteristics of FtF communication, this form of communication was perceived as the most ideal communication in attempt to a successful delivery of shared meanings. In so doing, it portrayed individual's faithful nonverbal messages, minimized risks of misunderstanding, and provided a dynamic take turns in the interaction. Assuming *emoji* as a substitute for FtF communication, 30% of the respondents argued *emoji* served as communication enhancer and emotion expressions in absentia. Various *emoji* including face and non-face ones attracted MMA users to utilize them in online communication. The final argument of this topic described *emoji* text messages as a supplementary component to FtF communication. In other words, some interactions required FtF communication, while others only needed *emoji* text messages. Therefore, natural communication setting is necessary to increase user's comfort in expressing his emotion naturally as in FtF interactions using *emoji* text messages.

In the context of FtF communication, the result shed more light on the possibility of *emoji* being equal to nonverbal messages in FtF interaction. The largest percentage showed in **Table 1.** refused this idea for *emoji* lacked intonation and exaggerated facial expressions [8], [9]. Compared to online communication, facial expressions appeared to be fair in FtF communication. Nevertheless, dramatized *emoji* helped audiences figure out what an individual felt. The second largest percentage pertained conformity of equal role for nonverbal messages and *emoji* in FtF and online

communications respectively. *Emoji*, on one hand, provided various expressions and styles which were basically more straightforward than written messages. As argued by the respondents, those characters, on the other hand, were in line with nonverbal symbols in FtF communication. A similar argument as stated in the aforementioned result, the absence of *emoji* in text messages, the use of *emoji* rested on contexts and situations aiming to maintain MMA user's mood. Only one respondent remained undecided toward the equality of *emoji* and nonverbal symbols in online and offline communication. In the end, despite numerous and distinct emoji offered [14]–[16], challenges to improve emotion-enhanced interaction remain on accurate measurement of emotion embedded in *emoji*, e.g. intonation.

The ultimate question requested participants illustrate any misunderstanding occurred using *emoji* text messages and alternatives resolving this problem. Unlike respondents who never experienced misunderstanding in interpreting emoji text messages, those who underwent misinterpretations shared the greatest percentage. To resolve such problem, most respondents opted for explanation and apologies. The explanation was meant to revise messages and clarify the underlying intention of messages. Some assumed it was better to send a Voice Note, a feature in WhatsApp application, providing message clarities. Interestingly, only few respondents proposed immediate calls and FtF interactions to overcome such misunderstandings. What is more, the respondents also felt it was necessary to follow up on this problem as an individual had a right to interpret the message the way he wanted. In other words, "*never sweat on little things*" and "*forget it*" might possibly be the alternatives of misunderstanding as suggested by the respondents. It is interesting to note however, users find comfortable using actual FtF interaction features such as Voice Note and Video Call in online communication. Therefore, providing *emoji* that resemble FtF nonverbal messages does not only minimize risks of misunderstanding, but also increase the role of emoji as well as create a comfortable feeling for MMA users [15].

The overall current findings have important theoretical implications as they support previous research on positive functions of *emoji* usage in written messages [3]–[6], [9], [10], [12], [13]. *Emoji* in virtual platforms serves as a complement rather than a substitute to offline communication [9]. This, however, probes a fundamental question of how to reduce risks of misunderstanding and ambiguity of *emoji* messages in online communication for future research. The findings also qualify for *emoji* as emotional expressions used with particular contexts serving to enlighten the mood of users [4]. Meanwhile, fake *emoji* that represent insincere emotions of users suggest that FtF interactions function as a platform for individuals to disclose their privacy [8]. It is intriguing to record that "*emoji plays a less vital role in online communication*." This finding highlights FtF communication remains irreplaceable for it brings more emotional benefits and fewer costs to individuals both in given (patient – counsel; and romantic partners) and general contexts [8], [9]. To replace nonverbal messages in FtF communications, *emoji* hardly meet this objective as their exaggerated and cute facial expressions only attract playfulness and disbenefit partners in romantic relationships [3], [10]. With regards to misunderstanding, there is a higher demand for MMA users to resolve it to maintain their social capital and connectedness [5], [10], [12]. Alternatives to follow up such misunderstanding involve *emoji* as "face-saving strategies" providing explanations, apologies as well as message revisions [13]. In case *emoji* alternative fails, FtF communication is required through the forms of calling, video calling, and voice notes offered in WhatsApp [8], [9]. This assistive technology of FtF interaction formats helps individuals to truly sense emotional expressions leading to clarity of intended messages. In addition, creating natural *emoji* and communication settings that resemble FtF communication will contribute to user's greater comfort, minimum risks of misunderstanding, and improvement of *emoji*'s role in online communication [14]–[16].

Despite the fact that most findings in this research conform the previous ones, the limitation of this research rests on unequal proportions of male and female respondents. Therefore, an equal proportion of respondent's gender has to be ensured in future research for this may potentially affect whether or not *emoji* plays a crucial role to a particular and/or across gender. However, the findings somehow provide different insights as to the importance of *emoji* in MMAs and resolutions of misunderstanding

that have been inadequately investigated. At the same time, natural *emoji* that lead to a minimum risk of misunderstanding and ambiguity will enrich research in the area of CMC, particularly enhanced-natural emotion of MMA users.

4. Conclusion

In this research, three valuable topics of *emoji* text messages have been investigated including the validity of *emoji*, its significance as well as deliverance of the underlying intent. The validity of *emoji* rests on how they can represent individual's emotion, whereas their significance lies on their function as a complement rather than a substitute for FtF interactions. In addition, the deliverance of intended *emoji* messages proves to be successful as there are only a few of misunderstandings occur. Nevertheless, nonverbal messages in FtF interactions remain irreplaceable for it offers natural emotion expression as well as communication setting that construct positive experiences and greater satisfaction. To be more accurate, FtF communication triggers individuals to feel comfortable in disclosing themselves. Consequently, technological innovation is necessary to enable the creation of natural *emoji* and communication setting with an aim to resemble FtF interaction. In the future, investigations on additional *emoji* with the aims to reduce misunderstanding and ambiguity, to create natural communication settings, and to stimulate a comfortable feeling and satisfaction will be worth researching.

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