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RESEARCH PAPER

The Impact of Emojis on Text Perception: A Descriptive Analysis of WhatsApp Users

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ABSTRACT

Social media platforms have become central to millennial communication, influencing emotions and behaviors despite their virtual nature. Emojis, ubiquitous social media cues, are often viewed as replacements for vocal tone. This study investigates the manipulative effect of emojis on user perception of textual messages. A series of experiments explored the interplay between text comprehension and emoji use. The research aimed to elucidate the motivations behind emoji usage and the impact of incongruent emojis (emoticons that contradict the message) on the recipient's mental state. Employing a theatrical perspective, the study conducted experiments with 50 participants using convenient sampling method. The results of the study clearly demonstrated that the usage of emojis intensifies the effect of message. The positive message shown to the respondents was perceived as more positive with the addition of cheerful and happy emojis. Similarly, the negative message was more inclined to the perception of negative or discouraging emojis. These findings were especially pronounced for the control group where the respondents perceived the message as slightly positive. It was found that using more emojis with the text message amplifies the perception of emojis. Future studies should explore the long-term psychological impacts of emoji use in digital communication and consider how this phenomenon can be leveraged for more effective emotional engagement in both personal and professional contexts.

KEYWORDS Emojis, Text Perception, WhatsApp Users

Introduction

In this saga of technological advancements, the computer mediated system CMC has mediated in our lives to a much greater extent. Though it has provided the human race with plethora of advantages that includes continuity of human communication, developing stronger relationships, and strengthening the emotions involved in communication. (Bai et al., 2019). However, there is still an ongoing debate that whether presence, prevalence and perception of non-verbal cues in CMC such as gestures, facial expressions, and annotations can highly influence the effectiveness of information transmission or not. (Archer & Akert, 1977; Qureshi, et al., 2021).

The actual meaning for the Japanese word emoji is “picture word.” The origin of the term can be tracked down to the 19th century, when usage of cartoons was widespread for humorous writings. Smileys were first employed in 1964 for promotional merchandize of an insurance company primarily to level up the team spirit of its employees. (Boutet, et al., ,2021). Emojis are crucial components of millennials communications with the prevalence of social media channels. Many researches have been conducted experiments to analyze the effectiveness of these social media cues. (Muzaffar, Chohdhry & Afzal, 2019;

Fullwood, Quinn, Chen-Wilson, Chadwick & Reynolds, 2015; Miller, 2018; Muzaffar, Yaseen. Safdar, 2020).).

Moreover, emojis are also conceived as devices for demonstrating the feeling, tone and intent of the message that would normally be conveyed by non-verbal cues in personal communications but which cannot be achieved in digital messages. (Thomas Holtgraves, 2020; Riordan, 2017)

Analyses of usage and previous works have shown that Emojis can have universal meanings. Emojis, as a language format, may be able contribute to greater cross-cultural communication clarity. However, further research is necessary in order to fully comprehend the role of emojis as visual languages for all generations. This includes those who are not millennials or young tech-savvy people. (Alshenqeeti, 2020; Bai, et al., 2019)

Emoji increases the semantic value of visual messages, which has been partially demonstrated by earlier research to help people express their personalities and feelings more honestly. According to Hancock (2007), some significant applications of emoticons are not taken into account by their design. He gave a succinct synopsis of speech act theory and utilized it to support his explanation of emoticons. They also served as markers of illocutionary force, according to that. The findings made it clear that nonverbal clues are not the only basis on which people perceive one another. Without a doubt, the spoken message is crucial. Furthermore, how one interprets the message has a significant impact on how one perceives the other (Hancock et al.,2007, Dresner & Herring, 2010).

Based on the social information processing theory (Walther, 1992) humans perceive information based on the relationship they want to maintain with the respective person. The primary function of these nonverbal cues in any CMC is to regulate the social interaction. With the power of perception these quasi-verbal cues have the tendency to tone down or intensify the emotional valence of any message (Lee & Wagner, 2002). The research on social practices and lexical placement in messages concluded that emojis have complex and diverse social and linguistic functions, and that supporting them can help facilitate important conversational functions. Cramer, et al., 2016; Miller, 2018).

Fullwood, Quinn, et al., (2015) stated that one must always consider the context in which the communication is being made. While it is important to make a first impression, certain online contexts might perceive emoji differently. The use of emoji may not be the best way to communicate with older people, such as lecturers, in professional relationships, work settings, or when communicating with older adults. This study aimed at understanding the effect of emoji usage on the perception of text. Alongside it also provided the idea of the effect of using emojis with meanings opposite to the text on the text perception, whether the emoji intensify the positive or negative perception of emotions.

Literature Review

With the widespread of computer-mediated communications, the usage of emojis has become a significant topic for researchers, with the volumes of research reaching a peak in 2017- 2019. The digital expressions and their effect on the valence of emotion and perception of the message is quite a well-researched area (Bai, et al., 2019).

Derks, Bos, and Von Grumbkow (2008) concluded that the presence of emoticons does strengthen the intensity of both neutral and positive verbal messages, furthermore they stated that it is possible to express sarcasm and express ambiguity in messages by

varying the valance of emoticons and messages. Their resulted emphasized that those emoticons have effects in CMC that are quite parallel with non-verbal cues in Face-to-face interactions. (Daantje Derks, 2008)

Lo (2008) further testified this statement and termed the apparent verbal cues of emoticons as quasi nonverbal cues. According to which emoticons can be used as a tool of communication and presented them to a sample to instant message service users the emotional textual conversation was provided either as pure text or with one or two emoticons. The individual rated this conversation on the balance of attention, emotion and attitude. The addition of emoticons influences and strengthen the intensity of all messages thus inclining them towards emotion's valence (Liu, 2018; Willoughby, 2018).

The usage of emojis or emoticons deeply influence interpersonal communications (Chairunnisa & Benedictus, 2017). Based on the media richness theory the researchers concluded that CMC verbal cues can be used as a substitute for nonverbal cues. Moreover, the usage of emojis or emoticons in interpersonal communication enhances the perceived meaning of the text and conveys emotions in pretty, much the same way as in face-to-face communication (Beattie, 2017). While most of the researches was based on the effect of emojis of faces just as Riordan (2017) studied the communicative effects of emojis of objects. The experimental data driven out by a random sample of the population suggested that emojis of objects mostly communicate positive effects especially joy. The findings were then framed in the sociological theory of emotional work and stated that emojis of objects aids in the maintenance of social relationships. (Riordan, 2017)

A few experimental studies highlighted that the participants were more likely to judge the indirect meanings of reply with the inclusion of emojis. Which showed that emojis can sometimes facilitate the comprehension of meaning (Holtgraves and Robinson, 2020). There is a higher rating of responsiveness in positive disclosures where there was convergence in emoji usage. Though, no effects were found of emojis on negative self-disclosures. Moreover, participants and respondents have more positive perceived responsiveness of each other when both emojis were converged. (Coyle & Carmichael, 2019).

The emojis are also used to strengthen a message, express emotion, and express humor. Another study (Boutet, LeBlanc, Chamberland, & Collin, 2021) examined the impact of emojis on social attribution, emotion interpretation, and information processing. Emojis that mimic different expressions were used in the messages, also the emojis valance and sentence valence were fully cross-designed. The negative emojis intensify the perceived negativity and by adding positive emojis the perceived wrath of the sender was increased. The usage of emojis in the reaction Bot and artificial entities is a well-researched field.

Liu, et al., (2018) in their experiment presented a system named Reaction Bot in which he attached emojis based on the user's facial expressions on text messages in SLACK. Through a study of 16 dyads, they found out that it was able to help reduce the need for participants to communicate in a much better way as compared to self-react, however it did reduce behavioral interdependence between participants and dyads. But it comes with concerns on anxiety over negative emotional leakage. Furthermore, it may also result in unwanted distractions and thus attribute to reduced behavioral interdependence (Alshenqeeti, 2020).

According to Hancock & Tyler (2007), several of the significant applications of emoticons are not taken into account by their original design. He gave a succinct synopsis

of speech act theory and utilized it to support his explanation of emoticons. They also served as markers of illocutionary force, according to that. The findings made it clear that nonverbal clues are not the only basis on which people perceive one another. Without a doubt, the spoken message is crucial. Furthermore, how one interprets the message has a significant impact on how one perceives the other (Hancock et al.,2007, Dresner & Herring, 2010).

Another study was done to determine the impact of emoticons on impression formation. Fullwood & Martino (2007) examined the impact of emoticons on impression generation in computer-mediated communications (CMC). The sample was comprised of college students. The use of emoticons can make people more open-minded and extroverted, according to their findings. The results showed that emoticons were perceived as more stable by female participants, while emoticons made it clearer to male participants that they perceived their chat partners as less extroverted if emoticons were not present.

The analysis of how smartphone users use Emojis was presented by A research based on large amounts of data from the popular emoji keyboardAccording to an analysis of 6.06 billion messages sent by 3.88 million smartphone users across 212 nations and regions, the most popular emojis were found to be emotionally expressive. Lu and colleagues (2016). Emojis could also be used to indicate that a message was received even if there is little to say back (Kelly & Watts 2015). The emojis have complex and diverse social and linguistic functions, and that supporting them can help facilitate important conversational functions (Cramer, De Juan & Tetreault, 2016). Emoticon made someone being perceived as more friendly and competent. Emoticon also helped participants on remembering the content of information (Kalyanaraman & Ivory, 2006).

Miller (2018) investigated whether differences in emoji renderings across platforms can lead to different interpretations of emoji. They analyzed both the sentiment and the semantics of the emoji to determine which ones are most likely to be misinterpreted. These disagreements increase when you consider renderings across platforms. They found that there was significant miscommunication both between individual emoji renderings as well as across different platforms.

Despite growing popularity, not much available studies precisely suggest the effect of emoji usage on interpersonal trust connections in online communication. Zhang et al. (2021) investigated the impact of emoji's disposal on college students' online interpersonal trust in a trio of studies. The initial experiment disclosed that positive emoji elevated the trust scores among participated in the trust game, whereas the control group member has little to no little influence on the level of the initial online trust.

Emojis are increasingly being used in risk message communication to minimize the potential for ambiguity, convey meaning accurately, and express emotions. The Global Emoji Trend Report by Adobe published in 2021 finds that 90% of respondents believe emojis make it easier to express themselves. 89% of respondents find emojis easier to communicate across languages, and over half of respondents are more comfortable expressing their emotions through emojis than over the phone or in person (Ebel & Dutra, 2022).

The use of emojis in communication has been found to facilitate interpersonal relationships and maintain social relations (Tigwell & Flatla, 2016), and previous studies have emphasized the functional role and usefulness of emojis in facilitating communication (Li & Yang, 2018). Despite this, relatively few studies have examined the impact of emojis on risk communication during crises. Similarly, Zhang et al. (2023)

highlighted the importance of considering the impact of emojis in risk communication strategies for firms during crises.

The current study looked at whether responding to self-disclosures through text messaging with an emoji promotes favorable attitudes and responsiveness, given the variety of uses for emojis and their potential to improve discussions.

Hypotheses

The research hypotheses of the study are stated below:

H 1: Under the same text using an emoji intensify the positive perception of emotion.
H2: Under the same text using an emoji intensify the negative perception of emotion.
H3: Under the same text, using an emoji quite opposite to the text affect the perception of emoji.
H4: Using an emoji of in textual communication develop excitement between sender and receiver
H5: Under the same text Repeated usage of positive emojis reinforce the positive emotion of text.
H6: Under the same text Repeated usage of negative emojis reinforce the negative emotion of text.

Theoretical Framework

For this research the umbrella of social information processing theory was used. It primarily focuses on the relative absence or paucity of nonverbal cues in computer-based messages as compared to face to face communication. (Caughlin, McAninch, Berger, et al., 2015).

Many studies have indicated that rather than transforming the nonverbal cues to the verbal ones the communicators have new nonverbal cues in CMC that acts a subtitle for FTF verbal cues (Like capitalization for shouting, exclamation marks, emojis for facial expression) (Harris & Paradise, 2007; Riordan & Kreuz, 2010). Based on the social information processing theory, a number of research were conducted shortly after Utz (2000) discovered that with time, emoticon use increased among multiuser dungeon players and that emoticon use was positively connected with the building of online friendships. According to Walther and D'addario (2001), a frown emoticon lessened the optimism of a positive message but did not make negative messages appear more negative. A happy emoticon when combined with a positive text conveyed greater positivity than a positive text alone (Tang & Hew, 2019).

Material and Methods

The quantitative research methodology has been adopted for this study. The experimental research design has been used. The population of the study comprised of all post graduate and graduate students of school of communication studies of Punjab University. By using convenient sampling, a set of n=40 respondents were taken for experimentation belonging to different age and educational groups. Researchers have performed a field experiment by showing the sample with the slides of different chat with the same background as of WhatsApp with and without emojis.

Research Tool

For this study, posttest only questionnaires based on six points 6 points sematic differential scale will be used for measuring the perception of emojis through text messages. The questionnaire is employed with both experimental and control group of the experimental study. Eighteen questions were administered in both the groups. Each group were shown a number of slides with WhatsApp background. And a message with or without emoji insertion. Participants were asked to rate their perceived emotion of the message provided.

Hypotheses Testing

Table 1
Independent sample T test for positive effect of using a positive emoji with the text

Independent t Samples Test									
		T test for equality of means					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Equal variance assumed	emotion of emojis control and experimental group	6.92	.410	.2884	6.34004	7.499	-23.991	48	.000

The Independent sample T test was applied on data to investigate the positive effect of using a positive emoji with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with and without emojis.

Table 2
Independent sample T test for negative effect of using a negative emoji with the text

Independent t Samples Test									
		T test for equality of means					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Equal variance assumed	emotion of emojis control and experimental group	6.32	.410	.37577	-7.70718	-5.56447	-16.112	48	.000

The Independent sample T test was applied on data to investigate the negative effect of using a negative emoji with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with and without emojis.

Table 3
Independent sample T test for investigate the effect of using an emoji with meaning opposite with the text

Independent t Samples Test									
		T test for equality of means					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Equal variance assumed	Positive emotion of emojis control and experimental group	-14.32	.410	.2907	-.818	-.586	-25.3	48	.000

The Independent sample T test was applied on data to investigate the effect of using an emoji with meaning opposite with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with consonant and dissonant emojis.

Table 4
Independent sample T test for the excitement and normalcy effect of using an emoji with the text

Independent t Samples Test									
		T test for equality of means							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
					Lower	Upper			
Equal variance assumed	Positive emotion of emojis control and experimental group	6.44	.410	.3600	5.716	7.163	-17.889	48	.000

The Independent sample T test was applied on data to investigate the excitement and normalcy effect of using an emoji with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with and without emojis.

Table 5
Independent sample T test for the positive effect of using a repeated emoji with the text

Independent t Samples Test									
		T test for equality of means					**T**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
Equal variance assumed	Positive emotion of emojis control and experimental group	2.12	.410	.37417	1.367	2.872	5.666	48	.000

The Independent sample T test was applied on data to investigate the positive effect of using a repeated emoji with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with low concentration high concentration of emojis..

Table 6
The Independent sample T test for the negative effect of using a repeated negative emoji with the text

Independent t Samples Test									
		T test for equality of means							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
					Lower	Upper			
Equal variance assumed	Positive emotion of emojis control and experimental group	-5.28	.410	.333	-.818	-.586	-18.84	48	.000

The Independent sample T test was applied on data to investigate the negative effect of using a repeated negative emoji with the text. A significant difference 0.000 was found. So, the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a significant difference in the perception of respondent s watching text with low concentration high concentration of emojis.

Discussion

When control group of respondents was asked that how positive there would feel on the scale of 1 to 10 in form of three question. All of the question slacked the stimuli material of repeated emoji. 52 % of respondent reported the message "you did a great job (with a single thumbs up emoji)" as slightly positive and 32% of respondan6ts termed the message as neutral. Further proving the hypothesis that minimizing the effect of emojis affect the emotions perceived by the respondents.

In second question the same pattern of emojis usage was repeated and respondents was asked how funny their perceived the message "I love to eat (with a single yummy emoji)" on the scale of 1 to 7 40 % of respondents termed the message as neutral and 32 percent as slightly funny.

While the respondents were asked how positive they would perceive the message "that was funny (with a single laughing emoji)" the scale of 1 to 7 if they receive this message from a close friend. 52 percent of respondents rated the message as slightly positive an 44% as neutral. Which testified that the valence of positivity perception was low on control group where low concentration of emoji was used.

The experimental group was also shown with the same series of text. The stimuli material of five repeated emoji was added into the text instead of a single emoji. For Q1 of experiments group 76%of respondents perceived the message as positive and 20% as moderately positive now only 4% perceived the message as slightly positive. In Q2 the same message as control group with the addition of stimuli material was shown 32% of respondents perceived the message as moderately funny. 84% of respondents perceived the message of Q3 as positive and 12% as moderately positive.

Another series of three question with negative text and low emoji concentration was shown to the same control group acne their response was recorded. While rating the message of Q4 "I am sad (with a single sad emoji)" 48% of respondent termed the message as neutral and another 48 % termed the message as slight negative. In Q 5 the 64% of control group perceived the message "the event didn't end well (with a single disappointed emoji)" as neutral and 32 % rated it as slightly negative. The result of Q 6 was also in line with the other two question where the respondents were asked by the researchers to rate the emotion they felt about the message "your performance was not good" with the same concentration of text and emojis as the previous two question 52%of respondents termed the message the message as 44% as slightly negative whereas one 1% of population termed

the message as slightly positive. This proved our other hypothesis that perception of a negative text m message is altered by changing the concentration of emojis.

In the experimental group of experiment researchers showed the same negative text with the addition of five same emojis instead of one. The results demonstrated that in Q1 52%, in Q2 56% and in Q3 45% perceived the message as negative and 44%, 36% and 56% perceived the message as moderately respectively.

In the third section respondents were asked to rate three positive messages without any emojis. The respondents rate each message separately. In Q7 a message with the text "I am happy" without any emoji were shown by the researchers to the respondents. 50% of respondents termed the message as neutral and 40% as slightly positive which showed that the perception of these messages more inclined to being neutral.

64% of respondents termed the message of Q8 "I feel so blessed" as neutral which means stated that the emotional valence of the message oils low, while the other 32 persons termed the same message as slightly positive. In Q9 a message with the text "Oh my God you are superb" was shown to the respondents 48% of the respondents termed the message as slightly positive and another 48% as neutral whereas 4% of the respondents also termed the message as moderately positive. The response of these three questions again provides the basis of our hypotheses as the positive impact of the message was not highlighted without the emojis usage.

In the experimental group the same three question was presented in front of respondents with the addition of two emojis. The results clearly demonstrated that there was a significantly difference in the perception of receiver for the text with or without emojis.

The fourth series of question constituted of three different text images with WhatsApp chat background. Participants were asked to rate the negativity of these text as the control group was shown the text without emojis. 48% of respondentias termed the message "I hate university" in Q10 as slightly negative, while 44 percent termed it as neutral also termed the message as slightly positive. In Q11 a message with text " I had a bad day" was shown and 32% of respondents perceived it as slightly positive and a whopping 56% of respondent tired the emotional valance of message as neutral, there a gain a 4% of population that surprisingly previewed the message as slightly positive 64% of respondents termed the message " I am not feeling good" shown in Q12 as neutral and 32% as slightly negative and surprisingly again there was a 4% of respondents that termed the message as slightly positive. So again, the negative meaning of the text was not highlighted in a significant way without the presence of negative emoji.

The faith series of three questions was designed with compilation of three text messages along with consonant emojis. In Q13 the respondents of the control group were shown a message "I love my country (with a red heart emoji) an 88% of population considered the message as positive and 12 % perceived it as moderately positive. The respondents 48% perceived the message "you are beautiful (with an angel emoji)" shown is Q14 as positive, while a 52% of respondents termed it as moderately positive.

In the third question(Q15) of the series the respondent were shown the question "you have impressed me with a happy emoji" 80% of respondents perceived the message as positive and t6he remailing 20% as moderately positive. Which showed that usage of emoji that is in line with the text does increase the text perception.

The final sixth series of questions was based on the attachment of the respondents with the message without emoji. They were asked to rate the message between normalcy to excitement. In Q16 the message "I won a scholarship am I am so happy" was rated as neutral by 48% of respondents as slightly excited as 36% of respondent 12 % of respondents also termed it as moderately excited. 36% of respondents in Q17 as termed the message" I had a test coming upon and I am stress" as slightly excited and 44% as neutral also 14 percent termed the message as slightly normal. In Q18 48% termed the message "My heart broke today" as neutral and 40% as excited. Which implied that the perception was between neutral and slightly excited for these messages that are without emojis. When in experimental group the same set of text was presented with the addition of two related emojis the researchers noticed that there was a significant difference in the perception if receiver.

Conclusion

Emojis are crucial components of millennials communications with the prevalence of social media channels. Many researches have been conducted experiments to analyze the effectiveness of these social media cues. The purpose of the study was to investigate the effect of emojis on the reception of receiver. The study was divided into two parts. In one part the control group was shown the question with low concentration or no emojis. different visuals of the text message were shown to the participants and they were asked to rate the messages between negative and positive. While in the second part experimental group was shown emojis with high concentration of emojis and they were asked to rate their perception of messages.

The results of the study clearly demonstrated that the usage of emojis intensifies the effect of message. The positive message shown to the respondents was perceived as more positive with the addition of cheerful and happy emojis. Also, the negative message was more inclined to the perception of negative with the addition of negative or discouraging emojis. The results of our study were somehow in line with the previous studies and it showed that emojis have un consciously taken the place of nonverbal cues in computer mediated systems.

When the perception of repeated emojis was analyzed the experimental and control group were exposed with the same series of text. The stimuli material of five repeated emoji was added into the text of experimental group instead of a single emoji. These statics was considerable high for the control group where the respondents perceived the message as slightly positive. It was found that using more emojis with the text message increase the perception of emojis. the negative emojis increase the negative effect of message and positive emojis intensify the positive perception of message.

The theory postulated that when people engage in social relationships, they can convey emotions and engage via CMC they can do so in quite the same manner as FTC communication, but time is required to adapt with these changing patterns. (Berger, Roloff, Wilson, Dillard, Caughlin, & Solomon, 2015) and the results of the experiments also demonstrated that the usage of emojis in computer mediated communication is same as the nonverbal cues in face to face communications.

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