

**Emoji use in online communication with emerging adults: The impact on ambiguity, affect,
and social connection**

by

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A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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Iowa State University

Ames, Iowa

2022

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NOMENCLATURE

FtF	Face to Face communication
CMC	Computer Mediated Communication
EMC	Electronically Mediated Communication
Emoticons	(plural noun) emotion icons from punctuation marks
Emojis	(plural noun) standardized set of Unicode characters
SIP	Social Information Processing

PREVIEW

ABSTRACT

The COVID-19 pandemic and subsequent social distancing guidelines has had a great impact on society. Emerging adults (ages 18-29) specifically are struggling as their need for social connection is critical to their mental health. However, the lack of nonverbal cues in electronically mediated communication (EMC) makes maintaining relationships online more difficult. Even before the COVID-19 pandemic, our online communication has been advancing, so that some nonverbal cues, such as gestures and facial expressions, can be replicated in text conversations through emojis. Specifically, this study examined the role of emojis in providing emotional cues to reduce ambiguity, enhance positive affect, decrease negative affect, and increase feelings of social connectedness. Four separate ANCOVAs were conducted in order to explore the differences between emojis conditions (positive, negative, neutral, and no emojis) on the outcome variables while including current levels of psychological distress as a covariate. For each of the four models, there was at least one emoji condition that was statistically different than the others, suggesting that the inclusion of emojis had a significant impact on perceived ambiguity, changes in positive and negative affect, and feelings of connectedness. Additional pairwise t-tests demonstrated that the ambiguous text message was the clearest when it was accompanied by a positive emoji, when compared to both the negative and neutral emoji condition. The statements with a positive emoji, instead of no emoji, contributed to less of a decrease in positive affect. Additionally, the addition of each emoji had a unique impact on negative affect. Furthermore, positive emojis, when added to an ambiguous text message, contributed the most to feelings of connectedness when compared to the negative emoji, the neutral emoji, and no emoji conditions. Limitations and future directions are also discussed.

CHAPTER 1. INTRODUCTION

With the onset of the COVID-19 pandemic and ongoing social distancing guidelines, individuals have significantly reduced their number of face-to-face (FtF) contacts and increased the number of electronically mediated communication (EMC) contacts (O'Connor et al., 2020). This has had a considerable impact on mental health and wellbeing for many individuals (Pfefferbaum & North, 2020). Specifically, results from recent studies suggest that worldwide, there are increased rates of loneliness (Killgore et al., 2020), and psychological distress including depression, anxiety, and stress (Salari et al., 2020). Emerging adults (ages 18-29), who are within a developmental period where social connection is of specific importance, are at a particular disadvantage during the COVID-19 pandemic. Even before the pandemic, research has suggested that they are particularly susceptible to feelings of loneliness and distress (Segrin et al., 2017). In general, EMC is a tool, that many emerging adults have used to socially connect with others (Herring, 1996). However, there is a need to better understand the factors involved in improving the quality of relationships online.

Researchers have suggested that emojis provide specific nonverbal cues when used among online text messages that have the potential to improve online communication (Evans, 2017). Apple's website states that "With a tap of your finger, you can bring words to life with emoji." Emojis are the pictorial representations of facial expressions, objects, and even flags that embellish our online communication, or electronically mediated communication (EMC) (Sampietro, 2020). Specifically, this study will examine the role of emojis in providing emotional cues to improve communication and online relationships including reducing the ambiguity of the message, enhancing positive and reducing negative affect, and increasing feelings of social connectedness.

Scholars have suggested that emojis serve some of a same function that nonverbal cues serve in FtF interactions. As such, literature examining these concepts will be explored. First, Media Richness theory (Daft & Lengel, 1986) indicates that messages susceptible to ambiguity are best communicated through more ‘rich’ ways. The more nonverbal cues a message has, the richer it is and, therefore, less likely to be misinterpreted. Similarly, emojis may add to communication in EMC, by providing richer context, and thus can lead to a reduction of ambiguity. Additionally, Social Information Processing theory (Walther, 1992) suggests that deep interpersonal communication can be communicated through EMC by allowing more frequent and unique interactions. Additionally, the emotional connection between individuals is now easier with emojis, given affect contagion effects (Holtzman et al., 2017). Positive emoji use in text messages can lead to increased positive affect (Lohmann et al., 2017). Finally, the Belongingness hypothesis (Baumeister & Leary, 1995) suggests that individuals are driven to seek and maintain social connection. Relational maintenance through EMC can be aided by the use of emojis in leading to feelings of connectedness between the sender and the receiver. As such, emoji use can make us feel more connected to others (Kelly & Watts, 2015).

However, there has been limited direct research, especially not since the COVID-19 pandemic, on the impact of emoji use on improving communication. The studies that have examined emoji use have primarily been descriptive in nature, where participants are asked to simply self-report past emoji use (Kaye, Wall, & Malone, 2016; Sampietro, 2020) or provide a download of their text messages for researchers to code their emoji use (Tossell et al., 2012; Miller et al., 2017). Participants have also been asked to clarify the meaning of specific emojis to sort them into established categories of positive, negative, and neutral (Brito et al., 2019). While these studies have found that self-reported emoji use is correlated with communicating

uniqueness (Pavalanathan & Eisenstein, 2015) and better relationships (Rodrigues et al., 2017; Miller et al., 2017), it is not clear if it is the past use of emojis or if other factors are involved. Additionally, the few studies that have used an experimental design to test the differences between conversations with emojis and those without (i.e., positive, negative, and no emoji) have lacked some aspects that are typically present in text messages among acquaintances and friends (Rodrigues et al., 2017; Wang, 2016). Moreover, the text messages presented were often written with seemingly meaningless statements, without any facilitation of connection of the participant (Miller et al., 2017; Derks et al., 2008). The current study builds on this work by empirically examining the effects of different emojis during messages relevant to interpersonal connection in order to present more “real life” dialogues to participants to best find increases in connectedness.

Current Study

This study aims to assess the impact of emoji use on reducing ambiguity, improving affect, and increasing connectedness. This will be tested with participants randomly assigned to one of four conversation conditions (positive emoji 😊; negative emoji 😡; neutral emoji 😐; no emoji). In each condition, the emoji (or no emoji) will append at the end of a sentence that is both neutral and personal (e.g., “I just wanted to let you know that I hear what you are saying”). The evaluation will include three potential outcome variables of ambiguity, affect, and connectedness. Additionally, psychological distress, known to be elevated during the time of COVID-19, particularly for emerging adults (Volk et al., 2020), is likely connected to all the outcome variables (e.g., increasing difficulty interpreting ambiguous messages [Blanchette & Richards, 2003]; increasing negative affect [Fujita, Diener, & Sandvik, 1991], and reduced connectedness [Child & Lawton, 2019]). As such, psychological distress will be assessed as a covariate in the model.

Hypotheses

Ambiguity

It is hypothesized that text messages with emojis (positive, negative, or neutral) will all reduce ambiguity of the message. However, I also expect positive and negative emojis will be rated as less ambiguous than a neutral emoji as they provide more information to the receiver. Specifically, I hypothesize that text messages with emojis (positive, negative, and neutral) will show significantly less ambiguity of the message when compared to the text messages with no emojis. No significant differences are expected in the participant's perception of ambiguity between the positive and negative emoji conditions.

Positive Affect

It is hypothesized that text messages with positive emojis will increase positive affect. It is hypothesized that text messages with negative emojis will decrease positive affect. It is hypothesized that text messages with neutral and no emojis will have no impact on positive affect. Specifically, it is hypothesized that there will be no significant difference in the absolute value of positive affect between *positive* and *negative* emoji conditions. Additionally, it is hypothesized that there will be no significant differences between the participant's rating of positive affect between the *neutral* and *no* emoji conditions.

Negative Affect

It is hypothesized that text messages with positive emojis will decrease negative affect. It is hypothesized that text messages with negative emojis will increase negative affect. It is hypothesized that text messages with neutral and no emojis will have no impact on negative affect. Specifically, it is hypothesized that there will be no significant difference in the absolute value of negative affect between positive and negative emoji conditions. Additionally, it is

hypothesized that there will be no significant differences between the participant's rating of negative affect between the neutral and no emoji conditions.

Connectedness

It is hypothesized that text messages with positive emojis will increase connectedness. It is hypothesized that text messages with negative emojis will decrease connectedness. It is hypothesized that text messages with neutral and no emojis will have no impact on connectedness. Specifically, it is hypothesized there will be significant differences between the participant's feelings of connectedness between positive and negative emoji conditions. Additionally, it is hypothesized that there will be no significant differences between the participant's feelings of connectedness between neutral and no emoji conditions.

CHAPTER 2. LITERATURE REVIEW

COVID-19 Framework

The world is facing unprecedented challenges from the global outbreak of “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2),” and the disease COVID-19 that results from infection (‘CO’ stands for ‘corona,’ ‘VI’ for ‘virus,’ and ‘D’ for ‘disease’ of 2019” (CDC, 2020). COVID-19 has been labeled a pandemic, which is defined as the spread of a disease that affects a large number of individuals in multiple countries or continents (CDC, 2020). COVID-19 has now reached almost every country in the world (Roser et al., 2020), and resulting in approximate 1,060,000 million deaths worldwide (213,000 in the US) and leaving many survivors with potential long-term health effects after surviving the course of the coronavirus (Mayo Clinic, 2020). Furthermore, pandemic also has far-reaching impacts on the mental health and well-being (IASC, 2020) and the use of negative coping skills (Volk et al., 2020) such as substance use (Wei & Shah, 2020). For example, Pfefferbaum and North (2020) note:

“... may affect the health, safety, and well-being of both individuals (causing, for example, insecurity, confusion, emotional isolation, and stigma) and communities (owing to economic loss, work and school closures, inadequate resources for medical response, and deficient distribution of necessities). These effects may translate into a range of emotional reactions (such as distress or psychiatric conditions), unhealthy behaviors (such as excessive substance use), and noncompliance with public health directives (such as home confinement and vaccination) in people who contract the disease and in the general population. Extensive research in disaster mental health has established that emotional distress is ubiquitous in affected populations — a finding certain to be echoed in populations affected by the Covid-19 pandemic (p. 510).”

As such, there is a clear need to address and improve the many areas in which COVID-19 is leaving a negative impact. Given that communication is directly affected by the pandemic, the goal of this study is to investigate ways in which online communication can foster positive relationships that might mitigate the adverse psychosocial effects of COVID-19. Specifically,

this study will examine whether the use of emojis (i.e., positive, negative, and neutral) is associated with ambiguity, affect, and connectedness.

In the literature review, I will first examine research related to the COVID-19 pandemic social distancing guidelines. Second, I will review the research on loneliness and the recommendations on how to address it, given the restrictions. Subsequently, I will discuss online communication, specifically text messages, and the potential benefits and limitations. Then, I will investigate ways in which online communication can be improved, specifically through three ways (i.e., reduced ambiguity, increased affect, and perceived closeness) in which online communication can be improved to function more similarly to face-to-face communication. Media Richness Theory (Daft & Lengel, 1986) indicates that emoji use can lead to a reduction in ambiguity. Additionally, Social Information Processing theory (Walther, 1992) suggests that emoji use can increase affect. Finally, the Belongingness hypothesis (Baumeister & Leary, 1995) is used to inform us that emoji use can make us feel more connected. Then I will present the current study design and hypotheses.

Impacts of the COVID-19 Pandemic

Although new, there have been some initial findings related to the COVID-19 pandemic and experiences of stress. Research based in China, the epicenter of the outbreak, reports the increased symptoms of stress and trauma (e.g., Hoay Khoo, et al., 2020; Ho, Chee, & Ho, 2020). For example, a study with a sample of 1,210 Chinese citizens found that anxiety was present in 28.8% of the participants, followed by depression (16.5%) and stress (8.1%; Liu et al., 2020). In August 2020, an article was also published by Wu and colleagues with results from a national cross-sectional survey with 24,789 participants from China assessing mental distress during the COVID-19 outbreak. They found that symptoms of distress were increased with a change estimated between 24.5 to 51.6% since the pandemic began (Wu et al., 2020).

Mental health symptoms may be increasing not only due to concerns about contracting COVID-19 and also due to the implementation of social distancing practices. To slow the spread of COVID-19, the CDC recommended limiting close face-to-face contact with others outside of their household (CDC, 2020). Although guidelines urged people to stay home if they could, and many employees transitioned to working from home, that was not possible for many occupations. If people have to leave their homes, they advised them to follow 'social distancing' guidelines of maintaining a 6 feet distance from others, as well as wearing a mask that covers the nose and mouth, two areas known to spread the virus (CDC, 2020). As a result, many planned activities with large audiences (e.g., concerts, conferences, weddings, sporting events) were canceled as well as smaller gatherings (e.g., house parties, church services).

For the first time in the modern era, how many individuals used to socialize has changed. The unprecedented reduction in travel, participating in community events, and decline in the use of the service industry have led to a nationwide economic crisis. Initial research from China gives a glimpse into the severity and scope of the effect. Xiao and colleagues (2020b) collected mental health information from 170 individuals in self-isolation for 14 days and found that anxiety was positively correlated with stress for these Chinese individuals. Moreover, anxiety was negatively correlated with sleep quality and social capital, a variable assessing personal relationships, and the amount of trust and prestige associated with those connections (Xiao et al., 2020b). Castaldelli-Maia, Marziali, Lu, and Martins (2020) conducted a meta-analysis of the impact of COVID-19 physical distancing measures on mental health worldwide. They found that studies that included measures of both depression and anxiety (i.e., using PHQ-9 and GAD-7 scales) during the COVID-19 pandemic and found 24.0% and 21.3% prevalence rate, respectively. This meta-analysis coded an additional variable for the 'containment and closure

policies' and found that the effect of public transportation closures had the most noticeable impact on anxiety levels across the globe.

Evolutionary, we prefer to be engaged socially and have likely survived this long due to our nature as social beings (Fiske, 2018). The pivotal research in the field tells us that social interactions are consistently related to positive affect (Clark & Watson, 1988). Studies have shown that people perceive their experiences with others to have a greater positive emotional impact than their solitary experiences (Jaremka et al., 2011). Some research suggests that even when individuals are engaging in solitary activities (e.g., Jenga), we have more fun in the presence of others (Reis et al., 2017). However, the current state of the world does not allow for as frequent, if any, social interaction.

While some researchers have used the term ostracism to describe the exclusion from common privileges or social acceptance (Williams, 1997), the terms social isolation and loneliness are used more frequently in today's work. Child and Lawton (2019) highlight some differences between loneliness and social isolation. Social isolation tends to refer to physically being apart from others, like in the case of quarantine or self-isolation, whereas loneliness is the feelings of perceived social isolation.

Subsequently, Galea, Merchant, and Lurie (2020) emphasize the need for prevention and early intervention worldwide due to experiences of social isolation. They suggest that there will be substantial increases in many aspects of poor psychological health, including anxiety and depression, substance use, and loneliness within the United States. Researchers draw attention to the potential side effects of unemployment, working from home, and school closings, include domestic violence and child abuse or neglect if not carefully monitored (Galea, Merchant, &

Lurie, 2020). As such, the United States is facing a glaring need for interventions targeted at the mental health and well-being of its citizens.

Recommendations

The need to maintain relationships and well-being during the pandemic is apparent. Although there are some recommendations specifically to bolster mental health and well-being for those in quarantine (Torales et al., 2020), or for high-risk individuals (e.g., those close to someone who has contracted COVID-19, health care workers, and those with prior psychiatric conditions; Ho, Chee, & Ho, 2020), interventions should be aimed at the general public due to the wide-spread experiences of symptoms. The World Health Organization recommends to "stay connected and maintain your social networks (WHO, 2020)." They also advise that if "health authorities have recommended limiting your physical and social contact to contain the outbreak, you can stay connected via telephone, e-mail, social media or video conference (WHO, 2020)." But how does one adequately 'stay connected'?

Galea, Merchant, and Lurie (2020) give guidelines for maintaining relationships, including planning for the inevitable loneliness and long-term impacts by utilizing digital technologies to connect others socially when they are not able to connect physically (Galea et al., 2020). This has left some researchers to wonder what the optimal arrangement is for a psychologically healthy life in the time of COVID-19 and physical distancing (Holmes et al., 2020). The Inter-Agency Standing Committee shares several psychosocial principles that should be incorporated across interventions. They highlight the importance of maintaining relationships that foster hope, safety, peace, social connectedness, and self- and community-efficacy (IASC, 2020). They specify that WeChat, WhatsApp, and other social media platforms, can be used to maintain social support, reduce loneliness and psychological isolation, especially those who are quarantined (IASC, 2020). Holmes et al. (2020), based in the United Kingdom, specifically

mention that research is needed on the risks and buffers for loneliness to protect well-being. Holmes et al. (2020) highlights the new "online life" that many are now living and speculate that engagement in online platforms might inform research moving forward, either with descriptive studies or with interventions developed this year. Not only should individuals develop strategies to deter over-exposure to anxiety-provoking broadcasting, but they should be working to initiate or maintain social connections in their online communication (Holmes et al., 2020).

At a global level, the above research demonstrated the impact that the COVID-19 has had on mental health and well-being. Connecting with others online is one way to maintain social bonds and reduce loneliness, despite social distancing guidelines. As such, there is a clear need to examine online communication during the time of COVID-19. The next section of this review will provide a necessary framework of information relevant to online or electronic-mediated communication (EMC). Then, research will be presented on the importance of reducing perceptions of loneliness for the population of interest, emerging adults. Next, I will review the role nonverbal communication plays in both face to face and online communication. Finally, I will address some of the psychological disorder known to interfere in this process so that the current study can control for them.

Electronically Mediated Communication (EMC)

Since the advent of the internet, communication has been occurring more frequently online and less often face-to-face. What once started in instant messaging chat rooms accessed through slow desktop computers has now moved to social media that we access through high-speed Wi-Fi on our smartphones. Early research in the field refers to online communication as computer-mediated communication or CMC, but more recent authors indicate that it is a dated term. Observations of online communication point to use on device other than computers, such as smartphones and tablets. Thus, it is perhaps more useful to think in terms of electronically

mediated communication (EMC; Dunlap et al., 2016). The general trend, even before the COVID-19 pandemic, was communicating online much more regularly, and now communication, for some individuals exclusively, is online.

EMC occurs in a number of venues. The first instances occurred over electronic mail or e-mail. Early on, instant messaging was used through phone carriers SMS text messages, and then on computer programs like AOL instant messenger. At this time, the use of punctuation marks to signify emotional icons or emoticons like :) :(:D and :P, aided in communication (Krohn, 2004). In the last decade, private messaging has been hosted through WeChat, WhatsApp, Facebook instant messenger, etc. Communication through social media sites is also common. For example, people can communicate publicly through things like Facebook status updates, Twitter tweets, Instagram posts, Reddit comments, etc. As technology has evolved, the use of emojis now replaces emoticons in everyday contexts (Pavalanathan & Eisenstein, 2016). Additionally, EMC can occur in both professional and personal contexts (Skovholt et al., 2014), making EMC a large part of our emotional lives (Derks et al., 2008). Although EMC also includes things like video chat, which occurs through platforms like Zoom, WebEx, and Skype, etc., access to consistent internet or a reliable device is not accessible to all of the general public. Individuals marginalized by structural inequalities may only have access to a cell phone with cell service, and not a laptop with Wi-Fi (Dahab et al., 2020).

Benefits of EMC

As mentioned above, communication online has benefited from the use of additions of nonverbal cues in the way of emoticons and emojis (Pavalanathan & Eisenstein, 2016; Carter, 2003). There are a number of aspects of nonverbal communication that has been examined in the literature (Schneider et al., 2011). Of particular interest are the gestures, also known as speech illustrators, and the facial expressions we use to communicate affect. The first type of nonverbal

cues is speech illustrators (Matsumoto et al., 2012). They are bodily movements, such as hand gestures and eye contact, which add information to add to our message. The gestures could imply a feeling, like crossed arms for anger, or agreeance, with the most common example being a 'thumbs up' for ok (Matsumoto & Hwang, 2013). Some of these gestures appear as non-face emojis (e.g., 👍 🙏 Riordan, 2017).

The second type of nonverbal communication, facial expressions, gives the listener a deeper understanding of the message that the speaker is trying to convey. In 1990, Fridlund suggested that the face provides a "readout" of an underlying emotional state. This may be true for infants and young children, but as we age and act with social awareness, the expression and experience of emotions are not likely congruent (Buck, 1994). In face-to-face communication, the ability to understand, label, and effectively communicate one's feelings leads to increased feelings of connectedness (Phutela, 2015). An accurate appraisal of the facial expressions of others, in addition to context, is a social affordance and is evolutionarily favored (Hogan, 2003).

Given that online communication can occur regardless of environmental factors such as geographic location, the accompanying nonverbal communication online must make sense to individuals with various geographic locations. The first category, facial expressions, has a large body of literature supporting pan-cultural displays of emotion (Ekman et al., 1969). The second category, speech illustrators, will vary by culture, but the function is the same across different cultures (Matsumoto & Hwang, 2013). Kaye, Malone, and Wall (2017) urge psychological researchers to use emojis to re-examine concepts relating to communication, including emotional expression pragmatics and intention detection. They encourage the use of emojis in novel ways in order to add to the field of cyberpsychology and, ultimately, knowledge of human nature (Kaye et al., 2017).

Nonverbal Communication and Emojis




In order to reduce miscommunication that occurs over EMC, an analog to nonverbal communication is needed. Online communication provides individuals the opportunity to communicate quickly, but miscommunication can happen if the messages do not include relevant cues (Derks et al., 2008; Dunlap et al., 2016). Specifically, it has been asserted that the use of emoticons and emojis may help to provide these clues and thus clarify the meaning of the message (Riordan, 2017).

Emoticons are communication tools that have been defined as punctuation marks that, when viewed sideways, resemble facial expressions (Extejt, 1998; Lo, 2008). Emoticons have been found to appear in messages sent and received around the world (Park et al., 2013). Tossell and colleagues (2012) examined emoticon use by analyzing text messages sent privately without contextual data in a naturalistic study of twenty-one college students. Of the more than 150,000 text messages sent and received, only 4.2% contained emoticons, and the three most common emoticons used were :) :(:D (Tossell et al., 2012). A more recent study conducted with more than 85,000 Facebook users tells us that about 90% of their sample used emoticons (e.g., :) :p :') (:), and 15 popular emoticons accounted for 99.6% of all emoticons used (Oleszkiewicz et al., 2017).

Dresner & Herring (2010) argue that emoticons are not solely used to convey emotion but to communicate pragmatic meaning, and therefore deserves a linguistic lens, not an affective one. Researchers identify emoticons as serving three functions "(a) as emotion indicators, mapped directly onto facial expression; (b) as indicators of non-emotional meanings, mapped conventionally onto facial expressions; and (c) as illocutionary force indicators that do not map conventionally onto a facial expression (Dresner & Herring, 2010)." Dresner and Herring (2010) report that emoticons are used as a way for the user to clarify the intent of what they type.

Researchers suggest that a shared understanding of emoticons leads to a better connection between the sender and recipient (Niezabitowska et al., 2019). Some researchers would say that a smiling emoticon has a mitigating function "such as the polite but bored smile used to disengage from an uninteresting conversation at a cocktail party (Dresner & Herring, 2010)." Mitigation through sarcasm has also been found from some emoticon use (e.g., winking; Thompson & Filik, 2016). Other researchers speculated that emoticons help the sender communicate their actual or intended emotional state or thoughts in online communication that is absent of non-verbal facial and vocal cues (Oleszkiewicz et al., 2017; Yang, 2020).

With the advent of the smartphone, new "emotion icons" could be formed. Created by Apple for use on their iPhones in Japan in 2008 (although not standard on devices worldwide until 2011), emojis are pictorial representations of emotions, and initially were yellow circles that depicted a facial expression. Emojis have evolved from the emoticons once used in early online communication to give users a wide range of embellishments to supplement and clarify their text messages or emails (Plessis, 2020). They can be selected or "typed" from a virtual keyboard across different devices and platforms, such as smartphones and laptops, and various social media sites. The variety of emojis has been growing with their popularity, especially across social media platforms (Ge & Gretzel, 2018). A few books have been written on the pop culture and linguistic function of emojis (Danesi, 2016; Evans, 2017). Emojis even have their own animated movie (Sony, 2017).

Current emoji developers are continually innovating and adding new emojis. The last update, Unicode 13.0, updated some emojis to be more gender-inclusive (e.g., a person  not just male  and female , which as of March 2020, includes 3,304 emojis (Unicode, 2020). Emoji use has become so widespread that emojis have been applied in other research as a way to

endorse or like something, as in online consumer reviews (Huang, Chang, Bilgihan, & Okumus, 2020; Sharma & Dangwal, 2018), and feedback between students and teachers (Dunlap et al., 2016; Moffitt, Padgett, Grieve, 2020). Emojis have even made their way into the development of Artificial Intelligence (Yaswanth & Deepa, 2020; Jiang et al., 2020; Pohl et al., 2017).

Emojis represent a wide range of concepts (e.g., "smileys and people", "animals and nature", "food and drink", "travel and places", "activities", "objects"; Unicode, 2020). Some researchers suggest that emojis can help reduce confusion among homonyms (e.g., shot and ticket) Riordan, 2017). Emojis have many uses, as they can depict nonverbal communication gestures such as shrugging 🤷 or praying 🙏 as well as facial expressions of happy 😊 and angry 😡. Prada et al. (2018) discuss nine motives for emoji use: emotional expression, strengthening or softening the content of the message, adding sarcasm to the message, or making the content of the message more comical, serious, positive, or negative. Similarly, Escoufflaire (2020) provides seven functions of emojis in EMC: expressive, interpretive, relational, politeness, emphatic, structural, and referential. The expressive function, for example, adds emotional value to verbal content by indicating the emotional state of the sender. The relational and politeness function mimics nonverbal cues in interpersonal relationships to make the conversation more pleasant and enjoyable. Additionally, young people often have a favorite emoji with which they identify or that they often use in their online communication or social media profiles (Challenor et al., 2018).

Each mobile operating system (e.g., Android, iOS) has their own depiction of the same Unicode. While emotion words may have dictionary definitions, emojis are nuanced and function in a way that is more open to interpretation, especially if different platforms do not display the same image for the identical Unicode of an emoji. One study used a qualitative design to

examine emoji use with a small pool of users and software developers (Luo et al., 2018). Results suggested that emojis do not always get used in the way they were initially developed. The 'face value' of an emoji may not be how it is used among friends, or there may be cross-platform differences of emojis. As such, there is a need for collecting information from participants to get closer to an understood meaning of emojis, not just subjective experience.

Furthermore, it appears that research supports the use of emojis from Twitter over Apple and Android for many reasons. First, it is less susceptible to software differences between android and iOS devices, as the twitter emojis appear the same across platforms (Morstatter et al., 2017). Second, the twitter emojis' Unicode are open source, so it is much easier to put it into the survey platform (Cappallo et al., 2019).

The researchers indicated that emojis might serve a paralinguistic function to aid in digital communication by giving cues somewhat akin to facial displays in face-to-face communication (Kaye, Wall, & Malone, 2016). Due to the important nuances of face-to-face communication, EMC may struggle to compete as an adequate communication medium due to the lack of nonverbal cues. Online communication does not include nonverbal cues unless the writer consists of things like font size, font style, and punctuation. Some font styles convey a tone of voice in EMC. For example, text written in all caps, LIKE THIS may communicate intensity or a loud voice. Font with varied capital letters, LiKe tHis conveys a sarcastic tone of voice in EMC (Spears et al., 2002; Samermit, 2018). In the earlier days of EMC, punctuation could be used to express emotions as well, so that a colon next to a parenthesis was a creative smiley face. This quickly caught on for use across platforms, including text, e-mail, and social networking sites.