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Interpersonal Impressions of Emoji Use in Computer-Mediated Decision Making

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INTERPERSONAL IMPRESSIONS OF EMOJI USE IN COMPUTER-MEDIATED DECISION MAKING

by

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Text-messaging is among the most popular forms of computer-mediated communication (CMC). However, the lack of most nonverbal cues in text-messaging interaction limits communication in certain contexts. Some recent innovations, such as emoji, attempt to enhance nonverbal limitations in text messaging. However, despite ample scholarship in text messaging, nonverbal communication, and CMC, a smaller body of research explores their intersections. This study reviews literature in these areas and, through the lens of Media Richness Theory, offers several hypotheses regarding the effects of emoji on interpersonal impressions in a decision-making scenario. It then experimentally tests and quantitatively measures how emoji usage in decision making impacts perceptions of message source interpersonal attractiveness, CMC competence, and credibility. Results demonstrate that sources of text-messages are rated as more CMC competent when they employ emoji than when using verbal-only messages. There were no significant differences in ratings of source interpersonal attractiveness or credibility on the basis of emoji or emoticon message enhancement, but that may be a function of sample size. Implications for theory and practice, research limitations, and directions for future study are discussed.

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-Austin Jonathan Beattie

TABLE OF CONTENTS

Table of Contents -- Continued

Table of Contents -- Continued

LIST OF TABLES

CHAPTER I

INTRODUCTION

Most people familiar with text messaging would probably agree that at some point they have experienced difficulties clarifying meaning behind received text messages, or have struggled to convey the desired nuance to messages they send. Facilitating nonverbal communication is challenging in text and instant-messaging computer-mediated communication (CMC) environments, which have traditionally existed as predominantly verbal channels (Huang, Yen, & Zang, 2008). This challenge will continue as CMC's popularity continues to grow. According to Pew Research (2015), 83% of people in the United States own a cell phone (approximately 75% of which are internet-capable smart phones), and nearly three-quarters of them (73%) use text messaging or "texting." Although texting is one of the most popular forms of communication, many people remain critical of its use. Some negative perceptions of texting, such as potential negative impacts on writing ability (Dansieh, 2011), stem from research. Other critics offer wholesale condemnation. Online opinion bloggers often assert texting is awful for society (LaFata, 2014) and that it threatens face-to-face (FTF) conversation skills (Irvine, 2012), often citing texting's improper contextual use (Gunther, 2011), or the its inadequacy to properly establish and maintain social relationships (Michele, 2016).

This study explored interpersonal impressions of CMC texting behaviors to offer insight into a limitation many might encounter while texting: the relative lack of nonverbal cues that help contextualize conversation. Although texting critics' opinions stem from scientific research to bandwagon opinion, nonverbal cues are indeed critical to communication. Many people are familiar with the adage "It's not what you say, but how you say it." Famous for his "7%-38%-55%" rule, psychologist Albert Mehrabian (1972; 1981) argued the verbal code accounts for less

than seven percent of message attribution. Edward Sapir claims "We respond to gestures with an extreme alertness and, one might almost say, in accordance with an elaborate and secret code that is written nowhere, known by none, and understood by all (1927, p. 556).

Nonverbal communication facilitates many purposes in conjunction with the verbal channel and research indicates its importance in human communication. Texting and other forms of CMC, however, often lack many nonverbal codes (O'Neill, 2010) This verbal-only quality can often hinder the creation of effective and appropriate messages, posing a threat to thorough and individualized communication (Cupach, 1982). The separation of verbal and nonverbal channels can introduce ambiguity to even the most basic messages. A simple two-word statement such as "I'm fine" is challenging to interpret fully without its accompanying nonverbal indicators. But, even when adding text-based nonverbal modifiers like punctuation marks (e.g., "I'm fine.", "I'm fine…" and "I'm fine!") text messages, they can still be deciphered many different ways. Examples like these messages and others are a central concern of communication in text channels, especially in goal-oriented and decision-making scenarios.

Texting is widely available, inexpensive, user-friendly, and instant. Texting's wide adoption results its use in many different communicative contexts (Cole-Lewis & Kershaw, 2010; Rice & Katz, 2003), some of which involve making important or detail-oriented decisions (e.g., Battestini, Setlur, & Sohn, 2010). However, people are more likely to misunderstand each other and become aggressive over CMC than they are in FTF settings (e.g., Daft & Lengel, 1984; Kiesler & Sproull, 1992). Scholars argue CMC is low in person-centeredness (e.g., Dubrovsky,1985; Walther, Anderson, & Park, 1994), further complicating important conversations being held over the medium.

Like other CMC technologies, however, advancements continue to be made in texting. A recently popularized feature, "emoji" present significant opportunities to bridge the gap between verbal and nonverbal channels over CMC. Emoji are rich, small digital images or icons that are used to express emotions and ideas (Oxford, 2016). Although emoji share similarities with other ASCII and graphical emoticons, emoji are distinct. In contrast to simplistic ASCII emoticons or platform-specific graphical emoticon, emoji are designed upon open-source Unicode format, and can be sent across every major computer operating system and device (Warren, 2014; Unicode, 2016). Due to the similarities in function between emoticons and emoji, however, this study will review literature on both to further contextualize usage of nonverbal behaviors over CMC.

The distinction between previous emoticon variants and emoji grows more prevalent as smartphones and tablets now surpass the traditional laptop or desktop PCs as the internet device of choice in the United States (Anthony, 2014), underscoring the importance of understanding nonverbal communication over texting. However, few studies examine interpersonal impressions of nonverbal CMC or emoji use. Because the production of appropriate and effective messages is a requisite for communication competence, communication scholars are uniquely concerned with particular message choices (Clark & Delia, 1979). This study will review literature in CMC, text-messaging, nonverbal communication, and media richness theory. Following this literature review are three hypotheses and an experiment which examines whether and how the use of nonverbal texting (operationalized as emoji use) during decision-making may influence perceptions of interpersonal attractiveness, CMC competence, and credibility.

CHAPTER II

LITERATURE REVIEW

Computer-Mediated Communication

Computer-mediated communication (CMC) refers to "any human symbolic text-based interaction conducted or facilitated through digitally-based technologies" including the internet, cellular phone text, and instant messaging (Spitzberg, 2006, p. 630). Although CMC originally referred to communication through traditional desktop and laptop computers (e.g., email, chatrooms, online forums, and social networking sites), it now encompasses communication mediated by several forms of computer technology (e.g., cell phones, tablet computers) and practices (e.g., SMS text messaging) (Thurlow, Lengel, & Tomic, 2004). This expansion becomes increasingly justified and relevant as smartphones and tablet computers become more powerful and eclipse traditional desktop and laptop PCs as the primary means through which people connect to the internet (Bonnington, 2015; Miceli, 2015). Nearly a third of the world's population, approximately two billion people, own a smartphone (Statista, 2016).

According to Portio Research (2015), there are 7.1 billion registered mobile numbers in the world. Out of the 7.3 billion world population, 6.1 billion people possess an SMS-enabled phone. Mobile devices and wireless networks are at the forefront of millions of lives around the world. However, like Gutenberg's printing press or the telegraph, new technologies throughout history threaten the status quo and are often questioned (Zeigler, 1997). Texting criticism comes from many angles. Some CMC criticism concentrates on a perceived affront to traditional language conventions (Fowlkes, 2012), or CMC's role in regard to future generations' ability to operate a functioning society (Kluger, 2012). For instance, regarding language conventions, some people claim CMC facilitates too many acronyms which make it difficult to interpret

messages (Humphrys, 2007), and individuals expressing concern about society's ability to function in the future claim CMC allows people to disobey too many laws of FTF communication and leads to anxiety (LaFata, 2014).

Conversely, some research indicates more empowering texting implications, and indicate many choose texting as a primary means of communication. Research in healthcare indicates texting is a preferred channel of correspondence among people in HIV prevention interventions (Cornelius et al., 2012), tobacco cessation (Obermayer, Riley, Asif, & Jean-Mary, 2004), and type-1 diabetes glucose management (Franklin, Waller, Pagliari & Greene, 2006). Research by Pettigrew (2009) explored connectedness between romantic and nonromantic dyads, and results suggested romantic partners perceived text messaging differently than nonromantic partners. For romantic partners, text messages were sufficient for relational maintenance and facilitated both connectedness and autonomy needs for both partners. Despite wholesale criticisms, communication research suggests texting provides multiple benefits for its users. However, scholars still note CMC's limitations.

Some scholars cite the lack of nonverbal cues as a leading disadvantage to CMC (e.g., Culnan & Markus, 1987; Gunawardena, 1995; Kiesler, Siegal, & McGuire, 1984; Rutter, 1987). The focus on cues was especially common during early CMC scholarship, and many scholars argued the lack of nonverbal information of CMC interfered with the exchange of feelings (Carnevale, Pruitt, & Seilheimer, 1981; Krauss, Apple, Morencz, Wenzel, & Winton, 1981). The source of CMC criticism has ranged from scholarly insight to outright condemnation, such as the "linguistic ruin" of society (Axtman, 2002) or "wrecking [the English] language" (Humphrys, 2007). However, critics focusing on strict adherence to rules governing language

usage or interaction may be overlooking CMC's benefits. In contrast, some communication scholars offer perspectives that consider the positive impacts of CMC.

Walther (1992) challenged the notion that CMC environments must be rich in social cues to facilitate relational development, and argued relationships could develop online to the same degree that they do FTF. Furthermore, Walther's (1996) hyperpersonal model suggests CMC poses an advantage for some communicators, such as the ability for users to develop intimate relationships despite fewer cues than FTF communication. The hyperpersonal model individuals move through three distinct stages marked by their disclosure and self-presentation over CMC: a.) *impersonal*, b.) *interpersonal*, and c.) *hyperpersonal*. Once people reach the *hyperpersonal* phase, Walther argues they are more empowered in CMC than FTF to make favorable impressions in part to the ability for users to select which "self" to present (Walther, 1996). Walther's social information processing theory (1992) and hyperpersonal model (1996) offer insight into how people form meaningful relationships with fewer cues, but still acknowledge CMC limitations, and emphasize the importance of impressions from what cues are still available.

Nonverbal Communication

Nonverbal communication behaviors work to contextualize, reinforce and clarify verbal messages, and are essential to conversation by conveying feelings and attitudes (Duncan, 1969). Although sometimes repeated to the point of cliché, there is research behind the phrase "it's not *what* you say, but *how* you say it", and its mainstream popularity (e.g., Hardy, 2014; Tobak, 2011) underscores the importance of nonverbal communication. Mehrabian (1972; 1981) argued the verbal code accounts for less than seven percent of message attribution in his concept known

as the "7%-38%-55%" rule. Given this, should CMC facilitate (at minimum) seven percent of "*what*" is said, it would become necessary to continue studying "*how*" things are said.

Nonverbal messages enhance communication through several primary functions. Some scholars categorize them into three main concept: (a) *providing information*, such as nodding in agreement to reinforce a verbal message, (b) *regulating interaction*, such as looking at a wristwatch to suggest an interaction is taking too long, or (c) *expressing intimacy*, such as smiling at somebody (e.g., Ekman & Friesen, 1969; Harrison, 1973). This study assumes nonverbal messages serve similar functions in texting.

Texting often disconnects nonverbal and verbal codes (O'Neil, 2010), which makes selecting appropriate and effective messages more challenging (Cupach, 1982), and at times leaves the meaning of even simple messages ambiguous. As any potential receiver can interpret CMC text messages in any possible way, effective and appropriate communicators over CMC must make their language clear by itself and regardless of context (Ong, 1982). This study recognizes these notions pose a challenge when nonverbal communication is mostly absent in CMC.

Nonverbal Communication over CMC

Early perspectives on CMC focused on the varying levels of "richness" (Daft & Lengel, 1986), "social presence" and "psychological distance" (Short, Williams, & Christie, 1976). These earlier perspectives often emphasized a weakness of CMC was the filtering-out of nonverbal behaviors such as facial expressions, vocal tone, pitch, gestures, and other variables of body language (Kiesler, Siegel, & McGuire, 1984; O'Neill, 2010). Cues-filtered-out perspectives posit that media allow nonverbal cues on a continuum of "rich" (e.g., video conferencing, FTF) to "lean" (e.g., email, text-messaging), and argue the degree to which media facilitate these

qualities may indicate their capacity to convey shared meaning and to facilitate sociable, immediate, and personal interaction (Zornoza, Ripoll, & Pieiro, 2002). As such, media richness is highest in FTF interaction and decreases gradually from video to audio, and eventually to text communication. Cues-filtered out perspectives generally suggest FTF communication is superior for its ability to reveal current emotional and cognitive states.

Scholars argue that the consequences of fewer cues--which include difficulty taking turns and disorganized syntax during conversation--impede interpersonal and group processes and result in depersonalization and de-individuation (Kiesler, Siegel & McGuire, 1984; Sproull and Kiesler, 1989). Hiemstra (1982) claimed: "As bandwidth narrows from face-to face interaction, the communication is likely to be experienced as less friendly, emotional, and personal, and more serious, businesslike, depersonalized, and task-oriented" (p. 883), suggesting texting may be less suitable for important or detailed interactions.

Although many nonverbal cues are nonexistent, texting still shares features and approaches typically associated with FTF interaction. To this end, some scholars regard CMC as "a hybrid language variety displaying characteristics of both oral and written language" (Ferrara, Brunner, & Whittemore, 1991, p. 10), raising questions about how linguistic and behavioral states are communicated, shaped, and interpreted over the medium; and supporting a notion that while CMC and FTF are different, one is not necessarily or always better than the other. Walther and Burgoon (1992) noted: "CMC produces much different affective and relational patterns than do other types of communication, due to the reduction and types of cues available to participants" (p. 51). Walther and Parks (2002) further considered these different affective and relational patterns, and illustrated the potential of CMC to filter out possible undesirable social or dyadic behaviors, such as interruptions, distracting vocalizations, irregular eye gaze patterns, and

unattractive physical characteristics. Current research continues to illustrate the benefits cues-filtered-out CMC qualities have on people, such as empowering interactants with communication apprehension (e.g., Caplan, 2005; High & Caplan, 2009), and supports Walther's (1992, 1996) notion that media richness is not a prerequisite for communication quality.

Scholars argue people can indeed communicate and develop relationships in relatively lean environments (Walther, 1992; 1996), but even for the most skilled and experienced online communicators message clarification may still be needed. Feenberg (1989) suggested ways to overcome obstacles of text messaging interactions, and argued the solution lies within explicit meta-communication. He suggested participants must strive to continuously fully express themselves, overcome their inhibitions and demand further information by requesting clarification of tone and intent from others.

Emoji. Well before the transistor was invented, CMC nonverbal behaviors started in the nineteenth century when people communicated nonverbally using numeric short-hand in telegrams. For instance, the number 73 meant "best regards" and 88 indicated "love and kisses" (Alcorn, 1997; Phillips, 2015). Years later, the United States Government and Bell Laboratories developed the foundational technologies of the internet for military purposes in the 1960s, but the experience was strictly verbal-only, and did not take recognizable form until Tim Berners-Lee invented hyper-text markup language (HTML) in 1989 (Stokes & Wilson, 2006). The verbal-only nature of CMC and the internet prior to HTML provided a significant challenge for online communicators, but was soon enhanced by emoticons: "visual cues formed from ordinary ASCII [American Standard Code for Information Interchange] typographical symbols that when read sideways represent feeling or emotions" (Rezabek & Cochenour, 1998, p. 201). Dr. Scott Fahlman, a professor at Carnegie Melon University created the first emoticons in 1982 when he

posted to an online electric bulletin “I propose the following character sequence for joke markers: :-) Read it sideways.” (Bignell, 2012, p. 1). Fahlman noticed the ways simple attempts at humor were misunderstood, and sought to enable people posting on the university's online bulletin board the ability to distinguish humor in their online messages. Once he posted the “:-)” and “:-(” figures they quickly spread to other university bulletin boards (Krohn, 2004).

Years later, Japanese computer scientist Shigetaka Kurita was impressed and intrigued with the promise of mobile CMC to connect people. Similar to Dr. Fahlman, Kurita also noticed frequent misunderstandings in CMC contexts and was concerned they would offset CMC benefits (Blagdon, 2013). As a result, Kurita programmed small pictographs that could be transmitted over simple-messaging service (SMS), facilitating the transfer or richer media without robust data networks. Although emoji share similarities with previous nonverbal CMC tools (i.e., the emoticon and graphical emoticons) and are used similarly, some differences are noteworthy. While the original ASCII emoticons utilize preexisting one-bit characters to construct meaningful symbols (e.g., :-(, ;-), :-D), and graphical emoticons provide further detail (e.g., ☺, ☹), emoji not only include emotive facial displays (e.g., 😀), but also physical objects ranging from pizza slices (🍕) to office buildings (🏢), symbols like national flags (🎌), to abstractions of celebrations like fireworks (🎆) (Emoji, 2016).

This array of transmittable symbols between virtually any active smartphone featuring hundreds of symbols presents a significant enrichment over character-based and platform-specific predecessors. Emoji have become a cultural phenomenon since their widespread adoption in the United States during the early 2010s (Blagdon, 2013). Some teachers include emoji in their curricula to help students learn critical reading skills (King, 2016). Device designers and manufacturers like Apple, Google, and Microsoft (the three largest software

companies for mobile devices) all offer emoji preinstalled into their software (Sternbergh, 2014), and due to their open-source Unicode programming (Unicode, 2016), virtually every modern smartphone, tablet and computer can display emoji (Warren, 2014). Although this study will argue emoji enhances the richness of text-messaging and CMC to a greater degree than previous innovations, it will consider literature studying all emoticon variants to further contextualize and explore the larger phenomenon of nonverbal communication in texting.

Researching emoticons and emoji. Some research exploring emoticons indicated their power to reinforce verbal messages, such as Walther and D'Addario's (2001) study of emoticons on perceptions of chat messages, which found negative emoticons shifted the interpretation of those messages in the direction of the negative message elements. Dindia and Huber (2009) replicated this study using graphical emoticons instead of ASCII text-based emoticons (e.g., "☺" instead of ":-)") and likewise found the negativity effect to be relatively strong. The valence and social context of an interaction also plays a role in interpretation. Derks, Bos and Von Grumbkow (2007) explored this by operationalizing context valence as a negative or positive meeting about a school project which featured task-oriented or person-oriented messages, respectively. Their research indicated valence and context predicted emoticon use, such that as people are more likely to use them in both positive and negative socio-emotional contexts, and less likely to use them in positive or negative task-oriented contexts.

Although studies continue to offer more insight into emoticons, some scholars highlight issues studying their use. Dresner and Herring (2010) argued that some research limits the interpretation of emoticon use because emoticons over CMC are not necessarily reflective of emotive states. In fact, much research presumptively interprets the contribution of emoticons to conversation as strictly reflective of emotive construal (e.g., Merchant, 2001; Morahan-Martin,

2000; Utz, 2000). Scholars (e.g., Dresner and Herring, 2010) highlighting issues such as these argue emoticons may be used to serve more purposes than expressing the idea of a felt emotion, such as impressing upon the receiver personality traits. Some research suggests emoticon usage conveys a nuance of playfulness (Danet, 2001), which may make CMC more personable. Research by Skovholt, Grønning, & Kankaanranta, (2014) furthers this line of scholarship, arguing emoticons are used as *attitude markers* following signatures, as *joke markers* following attempts at humor, and for their hedging function as *strengtheners* to expressive messages and *softeners* to task-oriented messages. The *attitude marker* and hedging functions perhaps have the most important implication for this study, as they suggest emoji draw message recipients' attention to the attitude of the sender (making messages more expressive) suggesting they may be used as attempts at more person-centered communication. Therefore, for the purpose of this study, emoji will be explored as nonverbal communication symbols that may be used to coordinate and regulate interaction, as well as manage impressions.

Although offering useful insight on emoji use, current research does not fully explore interpersonal impressions of emoji source. This study will analyze whether emoji are tools for creating interpersonal impressions, rather than focusing on their use as indicators of the emotional states of others or as products of their contexts. The broader gamut of emotions and other nonverbal behaviors across virtually all devices that emoji allow (Blagdon, 2013; Warren, 2014; Unicode, 2016) provide more cues than text-only environments and their emoticon predecessors, and thus a richer medium (Daft & Lengel, 1986) through which to communicate over CMC.

Media Richness Theory

Media Richness Theory (MRT), originally proposed by Daft and Lengel (1986), provides a framework for understanding how accurately different communication mediums are able to replicate the information being sent over them. MRT posits that media vary in ability to facilitate changes in understanding between partners. MRT suggests communicators will be more effective and efficient when they use richer media for equivocal tasks and leaner media are used for less equivocal tasks, with "richness" referring to the level at which cues are present in a particular environment. Daft, Lengel, and Trevino (1987) argue the richness of a medium is based on four main criteria: (a) *feedback*, or how immediately available responses are, (b) *multiple cues*, which regards how much communication information is available, (c) *language variety*, which concerns how much meaning can be made through symbols, and (d) *personal focus*, which regard how customized messages can be crafted for their recipients.

All of Daft et al.'s MRT (1987) criteria are relevant to this study. Participants may evaluate emoji higher than emoticon and text-only conditions due in part to emoji's enrichment of MRT's four main criteria for evaluating medium richness. First, they enhance the *feedback* criterion by providing richer nonverbal messages which may be interpreted faster than verbal-only messages. Emoji also might perform better under the *multiple cues* criterion as their use alone is a further cue. Emoji feature over one thousand individual symbols (Emoji, 2016), which enhance the *language variety* and *personal focus* criteria by allowing more symbols over CMC, which then in turn may be used to further personalize interaction.

MRT claims a primary purpose of communication should be to reduce uncertainly and equivocality (Daft et al., 1987), and argues media must facilitate sufficient levels of information. MRT further states media must avoid fostering equivocality during ambiguous situations and

negotiations. According to Daft and Weick (1984), people struggling to define meaning must utilize media possessing higher degrees of immediate feedback so that meaning can be coordinated properly. Thus, MRT argues the role of media in communication tasks, such as decision making, is to enable immediate processing of rich information.

Decision Making

A significant portion of MRT's assumptions derive from earlier studies that indicated a positive linear relationship between task complexity and perceptions of uncertainty, such that as the more intricate a task, the more ambiguous communication between people will seem (Daft & Macintosh, 1981; Tushman, 1978). Because of varying individual differences, misunderstandings and misinterpretations are more likely to occur when CMC is higher in equivocality (Daft & Macintosh, 1981). Some scholars refer to this as *analyzability*, or the degree to which the content of a task can be understood. The lower analyzability a communication context presents, the richer communication medium it requires (Perrow, 1967). This suggestion, however, may be violated by current technological habits.

Although people are more likely to miscommunicate when making decisions over CMC than in FTF contexts, research by Battestini, Setlur, and Sohn (2010) indicated that planning (in their study, interactions focused on planning social activities, coordinating family meal times, and arranging car rides) accounted for almost one-third of CMC texting conversations, further compound the likelihood of miscommunication during decision making. Daft and Weick (1984) indicated difficulty categorically interpreting and representing communication in these contexts, arguing the ability to interpret or represent communication in a system of categories or rules is a key indicator in exploring task uncertainty. In such situations (e.g., planning events), more feedback can clarify the communication between individuals resulting in a higher chance of

completing the task, and a lower chance of miscommunicating (Randolph & Finch, 1977; Zmud, Lind, & Young, 1990).

With previous literature and MRT considered, emoji may benefit interpersonal decision making several ways due to their enrichment of richness (Daft, Lengel, & Trevino, 1987) and analyzability (Perrow, 1967). First, emoji bolster the capacity of CMC text-messaging to transmit multiple cues, which will facilitate further conveyance of interpretation and meaning. Secondly, because emoji feature facial expressions, physical objects, and many other items, they enhance linguistic variety, which communicates broader ideas and concepts. Finally, and similarly to the hedging qualities that may increase person-centeredness suggested by Skovholt et al. (2014), emoji empowers the further personal focus capacity, allowing texters more nuanced expression and interpretation of emotions and feelings.

With regard to emoticon richness, an experiment by Ganster, Eimler, and Kramer (2012) tested the difference between graphical emoticons (in their study referred to as "smilies") and character-based (ASCII) emoticons on message evaluation, receiver mood, and perceptions of the sender's characteristics (e.g., strong, reliable, determined). Results indicated users receiving smilies experienced significantly improved moods post stimulus compared to the ASCII emoticon condition. Furthermore, the smiley condition total score midrange was higher than ASCII emoticons across all dependent variables (although not statistically significant). These results demonstrated that the selection of nonverbal indicators in texting results in actual effects on people's wellbeing. Results such as these may partially account for why people choose to communicate emotional displays in CMC.

Research indicates individuals use their emotions to fulfill interpersonal goals during social interaction. People utilize their emotions primarily for prosocial, manipulative, and

impression management motives (Fischer, Manstead, Evers, Timmers, & Valk, 2008). Their wider range of expression affords users a higher degree of cues than previous enhancements. According to MRT and cue-filtered out theories, more cues facilitate more sociable, immediate, affective communication (Zornoza, Ripoll, & Pieiro, 2002). Furthermore, they empower users to enact some of the main functions (e.g., Ekman & Friesen, 1969; Harrison, 1973) of nonverbal communication (*providing information*, *regulating interaction*, and *expressing intimacy*). The *providing information* function in particular may enhance CMC, as it can help reinforce information and make communication more ambiguous. In this study, emoji used will focus on a *reinforcing* function.

Interpersonal Impressions

Walther (1992; 1996) argued that with enough time people may still develop relationships over CMC to the same degree of quality as they would in face-to-face contexts, but also stressed the limited cues available in CMC are especially important to developing relationships and interpersonal impressions. Cues can be either user-generated, such as an online profile picture or status update, or system-generated such as a friend count or membership tenure in a chatroom. This study will contextualize emoji use as a user-generated cue upon which others may base interpersonal impressions of the source.

Social Attraction

With emoji facilitating higher degrees of nonverbal emotive affect and immediacy (e.g., Danet, 2001; Dresner & Herring, 2010; O'Neill, 2010; Skovholt, Grønning, & Kankaanranta, 2014), their use may result in higher degrees of interpersonal attraction to the source. Research indicates immediacy is positively correlated with interpersonal attraction (Rocca & McCroskey, 1999). Furthermore, Norton, Pettegrew, and Land (1977) found people who are perceived as

animated (i.e., energized, lively) are liked more than people not perceived as animated. Emoji facilitate higher amounts of MRT's *multiple cues*, and *personal focus* criteria, and allow higher amounts of immediacy than emoticons and verbal-only messages. Therefore, I propose the following hypothesis:

H1: Message sources using reinforcing emoji will be perceived as more socially attractive than sources using emoticons or verbal-only messages.

CMC Competence

Competence generally refers to the ability to perform actions successfully and appropriately. In the context of communication, scholars argue varying definitions of the term, but suggest communication competence is essential to maintaining healthy relationships (McCroskey, 1982; Rubin, Martin, Bruning, & Powers, 1993; Wiemann, 1977; Wrench & Punyanunt-Carter, 2007). Bubaš (2001) agues CMC competence is a necessary factor toward collaborative behavior, thus decision making may be enhanced when partners perceive each other to be competent in the medium. Spitzberg's (2006) view of CMC competence asserts participants must be motivated to be competent, have an understanding of the systems they use, and learn the social conventions that underlie CMC interaction. Spitzberg further argues competent CMC users show attentiveness and concern for their interaction partners (related to MRT's *personal focus* criteria), actively control the time and relevance of communication, and are emotionally expressive (enhancing MRT's *feedback* criteria) (Spitzberg, 2006). Because increased cues are associated with more person-centeredness (Walther, Anderson, & Park, 1994) and emotional expression (e.g., Danet, 2001; Blagdon, 2013) in the CMC environment, under MRT's *multiple cues* and *language variety* criteria Emoji may facilitate richer online

communication. With consideration of these studies, as well as emoji possibly enhancing MRT's richness criteria, I propose the second hypothesis:

H2: Message sources using reinforcing emoji will be perceived as more CMC competent than sources using emoticons or verbal-only messages.

Credibility

Credibility refers to the attitudes of the receiver regarding the degree to which a source is perceived as believable (McCroskey, 1998), and consists of three dimensions; competence, character, and caring. *Competence* refers to a person's knowledge or expertise (McCroskey, 1998), *character* refers to the perceived goodwill or trustworthiness of a person (Frymier & Thompson, 1992), and *caring* involves concern for another's welfare (McCroskey & Teven, 1999; Brann, Edwards, & Meyers, 2005). Scholars argue credibility is among the most valuable interpersonal impressions (e.g., Andersen & Clevenger, 1963; McCroskey & Young, 1981).

The use of emoji may contribute to all three dimensions of credibility. First, emoji are communication tools, so the use thereof may make communicators appear more competent. Second, emoji use may lead to higher impressions of character due to their ability to increase *feedback* (Daft et. al, 1987, p. 8) as the use may make users seem more straightforward and open. Finally, their use may increase perceptions of caring. Some research indicates a positive relationship between credibility and immediacy, which involves responsive nonverbal displays (Teven & Hanson, 2004). Thus, I pose a final hypothesis:

H3: Message sources using reinforcing emoji will be perceived as more credible than sources using emoticons or verbal-only messages.

CHAPTER III

METHODS

To test the hypotheses, the researcher utilized a three-group experimental design, with participants randomly assigned to view one of three mock decision-support scenarios. The basic (or kernel) scenario featured a simulated text-messaging conversation between two interactants, the first of whom solicited a restaurant recommendation from the second. Through the mock conversation, suggestions were made and rebuked, and a decision was reached. Participants were exposed to either: (a) verbal only, (b) emoticons or (c) emoji conditions, asked to study the conversation, and then rate the first interactant on the dependent variables of social attraction, CMC competence, and credibility.

Participants

The sample consisted of 78 students enrolled in undergraduate courses at a large Midwestern research university. Of the participants, 66.7% (n = 52) identified as female and 33.3% (n = 51) identified as male. The majority (73.1%, n = 121) identified as Caucasian, followed by African-American (9%, n =7), multi-racial (9%, n =7), and Hispanic/Latino (6.4%, n = 5). Participant ages ranged from 18 to 37 years, with a mean age of 20.78 (SD = 2.93) and a median age of 20.00. Participants were recruited using convenience sampling and invited to participate by the primary investigator through use of the Midwestern University's SONA research system. Upon completion, student participants were provided with SONA research credit. This sample was part of a larger sample to be used in analyzing a different set of relationships at a later date.

Procedure

Following informed consent (Appendix A), participants were randomly assigned to view one of the three conditions (text-only, emoticon, emoji). They were instructed to carefully read the conversation and to give special consideration to the messages on the right side contributed by the partner named "Alex." In the emoticon and emoji conditions, the symbols used were chosen for their ability to replicate the *reinforcing* function (e.g., Ekman & Friesen, 1969; Harrison, 1973) of nonverbal communication. For instance, when Alex mentions a restaurant had good reviews, a smiling face was used, and when it had bad reviews, a frowning face was used. See Appendix B, C, and D for the three experimental stimuli. After participants viewed the conversations, they were directed to the survey portion where they responded to three standard measures: social attraction (McCroskey & McCains, 1997), CMC competence (Spitzberg, 2006), and source credibility (McCroskey & Teven, 1977). After completing the standard measures, participants were asked how often they use emoji, and several brief open-ended questions about emoji use (e.g., "what are your motives for using emoji" or "what do you think about people who use emoji"?). A brief demographic section followed this questionnaire. After completing the survey portion, the SONA system thanked them for their time.

Decision-making scenario. Once the session initiated, participants viewed a text message thread featuring a mock decision-making scenario between two interactant partners, Sam and Alex. In the threaded conversation, Sam solicits Alex for a restaurant recommendation. The two exchange ideas until a decision is reached. The focus of the interaction around a relatable CMC task where participants interact with the intent to come to a consensus replicates real-world situations many people might encounter via CMC text messaging.

Measures

Social attraction. Participants responded to a modified version of McCroskey and McCain's (1974) measure of interpersonal attraction. The researcher measured attraction to Alex across the measure's *social* (general liking, wanting to be around the person) dimension. Participants reported their social attraction toward Alex across Likert-type scale items (e.g. "I would like to have a friendly chat with Alex") ranging from 1 ("strongly disagree") to 5 ("strongly agree"). In this study, a reliability coefficient of .87 (Item M = 3.56, SD = .95), demonstrated good reliability.

Computer-mediated communication (CMC) competence. Finally, participants responded to Spitzberg's (2006) measure of computer-mediated communication (CMC) competence along the appropriateness (4 items) and effectiveness (4 items) dimensions of the scale. Item wording was modified to refer to the CMC competence of Alex (e.g., "Alex consistently achieves goals in interactions"). Participants rated each item on a Likert-type scale ranging from 1 ("not at all true of the person") to 5 ("very true of the person"). For CMC competence, a reliability coefficient of .78 (Item M = 3.72, SD = .98) was attained, demonstrating acceptable reliability.

Credibility. Participants rated Alex using McCroskey and Teven's (1999) measure of source credibility. This measure is an 18-item, seven-point semantic differential scale designed to assess impressions of an individual's credibility across three dimensions: competence (e.g., "trained" or "untrained"), character ("trustworthy" or "untrustworthy"), and caring ("has others' concerns at heart" or "does not have others' concerns at heart"). Because of the size of the sample, the multi-dimensional structure of the model was not tested. In this study, a reliability

coefficient of .93 (Item $M = 5.33$, $SD = .93$) was attained for the entire instrument, demonstrating good reliability.

CHAPTER IV

DATA ANALYSIS AND DISCUSSION

Results

In order to test H1-3, three univariate Analyses of Variance (ANOVAS) were conducted to measure the effects of the manipulated independent variable level (verbal-only, emoticon, emoji) on the dependent variables of source social attraction, CMC competence, and credibility. See Table 1 for the correlations between the dependent variables

Table 1

Correlations among the Dependent Variables

	CMC Competence	Credibility
Social Attraction	.43*	.53*
CMC Competence	--	.53*
Credibility	--	--

* $p < .01$.

Social Attraction

In order to test if an emoji sender would be rated more socially attractive than a sender using verbal-only or emoticon messages (H1), a one-way analysis of variance (ANOVA) was conducted. See Table 2 for means and standard deviations of the experimental conditions. Levene's test for equality of variances was not significant, $F = .142$, $p = .935$, indicating the assumption of homogeneity of variance was tenable. The ANOVA was not significant, $F(3, 152) = 2.50$, $p > .05$. There was no significant difference in perceived social attractiveness of a text-messaging source on the basis of emoticon or emoji use.

CMC Competence

In order to test if message senders using emoji would be perceived more CMC competent than verbal-only or emoticon senders (H2), a second ANOVA was conducted. Levene's test for equality of variances was not significant, $F = .782$, $p = .51$, indicating the assumption of homogeneity of variance was tenable. The ANOVA was significant, F (3, 152) = 2.84, $p < .05$. As a result, we reject the null hypothesis. The strength of the relationship between Emoji use and CMC competence, as assessed by η^2, was strong, with Emoji use accounting for 53% of the variance in CMC competence. Post hoc tests using Tukey's HSD were conducted to evaluate pairwise differences among the means. To control for Type 1 error across the three pairwise comparisons, we set alpha for each test at .017 (.05 / 3 = .017). Results indicated that message sources using Emoji were rated significantly higher in CMC competence than sources using verbal-only messages.

Credibility

In order to test the hypothesis that credibility would be rated higher as a function of emoji use (H3), a final ANOVA was conducted. Levene's test for equality of variances was not significant, $F = 1.179$, $p = .320$, indicating the assumption of homogeneity of variance was tenable. The ANOVA was not significant, F (3, 152) = 1.77, $p > .05$. There was no significant difference in the perceived credibility of a text-messaging source on the basis of emoji or emoticon use.

Table 2

Means and Standard Deviations for the Dependent Variables

	Verbal-only		Emoticon		Emoji	
Variable	*M*	(*SD*)	*M*	(*SD*)	*M*	(*SD*)
Social Attraction	3.34[a]	(.69)	3.55[a]	(.73)	3.80[a]	(.78)
CMC Competence	3.50[a]	(.67)	3.79[ab]	(.51)	3.94[b]	(.58)
Credibility	5.01[a]	(.88)	5.51[a]	(.72)	5.52[a]	(1.06)

Note: means in a row with differing subscripts differed significantly at $p < .017$

Discussion

The purpose of this study was to determine whether emoji would function as media enrichment to influence impressions of message source. Results demonstrated that a message source using emoji was rated higher on the dependent variable of CMC competence (Spitzberg, 2006) than were sources using emoticons or verbal-only messages. Furthermore, mean scores for the emoji condition were higher along all three dependent variables, although they were not significant for credibility or social attraction. The results of this study demonstrate support for MRT (Daft et al., 1987) in several ways.

Theoretical Considerations

Implications for MRT and CMC competence. MRT accounts for the reason message sources using emoji were rated more CMC competent than sources using the leaner mediums of emoticon-reinforced and verbal-only texts. In particular, MRT's four criteria for determining media richness--*feedback*, *multiple cues*, *language variety*, and *personal focus*--are all possibly met by emoji to a greater degree than verbal-only messages, which is consistent with previous research (e.g., Ganster et al., 2012).

Emoji enhances CMC by meeting MRT's criteria in several ways. For instance, the *feedback* criterion states the ability to rapidly process information enhances CMC. Neurological research by Kuzmanovic et al. (2012) indicates the human brain processes nonverbal communication (facial gestures and body language) significantly faster than verbal communication. Additionally, post hoc analyses indicated 61.6 % (n = 98) of participants used emoji several times per day, and 11.9 % (n = 19) used them at least once per day. Participants' familiarity with emoji, and the human brain's ability to recognize nonverbal messages faster than verbal messages likely contributed to faster message processing, thus enhancing *feedback*. Due to recognizing nonverbal expressions faster than verbal messages (Kuzmanovic et al., 2012), participants exposed to the emoji condition might have evaluated messages faster or more efficiently than those in the text-only and emoticon conditions. More efficient processing may have led to higher impressions of source CMC competence due to potential impressions from participants that the message source is mindful of the time and relevance of communication, which Spitzberg (2006) claims is a quality of competent CMC communicators (p. 432). Alternatively, the addition of emoji may have been simply interpreted as possessing an extra skill, making a source appear more competent.

Participants may have rated emoji sources higher in CMC Competence due to the *language variety* criterion. Unicode currently supports 1,126 individual emoji symbols, but with customizable features (e.g., changing color of skin or inanimate objects) on some versions, the number of displayable symbols continues to grow and is difficult to approximate (Emoji, 2017). Possessing and interpreting symbols beyond ASCII text directly enhances the *language variety* criterion by allowing users to communicate in novel and creative ways. Some internet commentators humorously acknowledge emoji allow people to communicate in ways that may

have previously been awkward or taboo (e.g., Aldred, 2014; Purewal, 2016), a noteworthy varietal improvement to CMC that further research could explore.

The *personal focus* and *multiple cues* criteria are perhaps the most research-supported components of MRT. The notion that person-centeredness leads to higher evaluations of communicative partners is a concept that permeates interpersonal communication scholarship (see review by High & Dillard, 2012), and extensive communication research generally indicates a positive linear relationship between contextual cues available and communication quality (Walther, 1992). Participants in this study may have felt that the use of emoji further oriented messages toward recipients and/or that emoji sources were supplying cues to further contextualize and qualify communication. Spitzberg (2006, p. 642) highlights the importance of these adaptive and expressive qualities, further contextualizing why participants in this study rated the emoji condition higher than emoticon or text-only sources on the dependent variable of CMC competence.

Credibility and social attraction. Although results indicated significant differences between verbal-only and emoji conditions on CMC competence, results were not significant between conditions on the dependent variables of credibility or social attraction. There are several potential reasons results were not significant for these variables. First, McCroskey and Teven's credibility scale features several items relating to character (e.g., "concerned about me/not concerned about me" or "honest/dishonest") that may have been difficult to determine by only analyzing a texting thread. For instance, results may indicate a significant relationship between the independent conditions and the *competence* dimension due to the significant results of CMC competence (Spitzberg, 2006). Furthermore, results might be significant for the *caring* dimension due to its similarity to MRT's *person focus* and *language variety* criteria.

In similar ways to the limitations of the dependent variable of credibility, results for social attraction (McCroskey & McCain's, 1974) may also have not been significant due to the experimental design and application of the instrument. Although the *task* and *physical* attraction dimensions were omitted due to the limited exposure participants had with the condition, the *social* attraction dimension might share similar limitations. For instance, scale items such as "I think Alex could be a friend of mine" or "we could never establish a personal friendship with one another" might have been difficult for participants to accurately answer after a brief exposure to the conditions. Walther (1992) argues that CMC interactants can form meaningful relationships online, but they take more time that FTF contexts.

Skills and characteristics. The lack of significant results for credibility and social attraction may have also been partially predicted by SIPT, as the experiment's design perhaps violated the time participants needed to form impressions of social attraction. The more skill-oriented variable of CMC Competence (a scale which includes items such as "Alex is effective in conversations with others") might be quickly interpreted by seeing emoji, whereas it may take more time for participants develop impressions of credibility of social attraction (scales which include items like "Alex could be a friend of mine" or semantic differential items such as "intelligent" to "unintelligent"). Further limitations also might include receiver emoji use. For control, emoji were only used by Alex. However, participants may have noticed Sam's lack of usage, possibly contributing to an impression of no emoji reciprocity. It is possible Alex's use despite Sam's non-use may have made Alex appear lacking mindfulness of context or partner, leading to the non-significant impressions of social attraction or credibility.

Practical implications. Although results were only significant for one dependent variable, everyday communicators may still benefit from the knowledge that emoji may

positively influence interpersonal impressions of CMC competence. CMC permeates the current workplace, and an increasing number of people work from home and communicate with coworkers via CMC (Rapoza, 2013). Understanding what behaviors may influence impressions of CMC competence will prove to be more valuable as more workers than ever before become telecommuters, as employers will likely be drawn to workers that are skilled not only in their jobs, but their ability to do their jobs and manage relationships with others over CMC. Educators and students also may benefit from increased cognizance of their online impressions because online interactions are commonplace in both traditional "on campus" environments and distance learning. With 5.8 million students enrolled in at least one distance course between 2015 and 2016 (Allen & Seaman, 2016), educators will need to be able to communicate proficiently online with students, and students will be able to "get more" out their online learning the better they are able to use CMC media.

Limitations and Future Direction

Sample. The largest limitation to this research was the sample size. Because this study utilized a sample of 78 participants, it could only detect effect sizes that were moderate to large in magnitude. In reality, there may be real, albeit smaller, effect sizes of emoji and emoticon use on social attraction and credibility. Although analysis indicated positive linear relationships between condition richness and means for social attraction and credibility, there was not enough data to determine significance. Future research should work to ensure enough statistical power to detect smaller, but still potentially socially meaningful levels of effects.

Design. The next limitation was the design of the independent variable conditions. Limited time, funding, and implementable experimental designs in accordance with human subjects and internal review board procedures prescribed manipulated screen-shot images of

conversations between two fictional people as the best way to represent the independent control, emoticon, and emoji conditions. Although previous studies manipulating CMC cues have used a similar design in which participants are exposed to screenshots (e.g., Tong et al., 2008; Edwards et al., 2014), the static nature of the texting screenshots, as well as participants' status as observers may have caused participants not to feel engaged or truly connected to the experience, endangering ecological validity.

Future studies should explore the controllability of a live experiment where participants get first-hand experience, or perhaps explore the viability of computer-animating a texting conversation that participants then view. Viewing messages while they are sent and received more closely replicate actual texting, is higher in social presence, and thus and could make participants feel engaged and better equipped to judge dimensions of source.

Contextual. This experiment used an unknown (to participants) dyad and a common decision-making scenario. However, individuals make incalculable numbers of decisions over CMC ranging from relatively trivial (e.g., a coffee order), to ones impacting the course of a day (e.g., arranging a ride, a restaurant recommendation), to those impacting overall quality of life, such as diabetes management (e.g., Franklin et al., 2006). The decision-making scenario used in the manipulations involved one person soliciting advice from another to make a decision, rather than a negotiation between two partners wherein an agreement must be made.

The contextual-based limitations of this research grow when accounting for different interactant partners. People might welcome and/or use emoji in the context of planning a social event with a partner like a longtime friend, but they might not be receptive to receiving emoji from healthcare provider during uncertain or life-altering events. For instance, the message "We apologize for the inconvenience 😕, but we need you to return to the office for further testing

😁😬" may result in entirely different perceptions of credibility, social attraction, and CMC competence than a message from a friend such as "Hey, what do you think about having the reunion at our favorite hangout 😉, it could be just like our college days 😂." Although these examples may be slightly farfetched, they nevertheless highlight the importance of social and situational context, and the relationship between interactants when considering what ways emoji might impact interpersonal impressions.

Future research should continue exploring contexts because people use CMC to make virtually all types of decisions (Battestini, Setlur, & Sohn, 2010) with various partners, and thus the contextual elements of emoji use likely impacts interpersonal impressions of its use (e.g., Derks et al., 2007). For instance, due to the healthcare implications mentioned earlier, there are likely different impressions formed based on emoji agency or the information being shared over texting. For example, emoji use may be interpreted differently between patients dealing with routine medical visits and those facing terminal illness. Although this is one example, the many combinations of context and partner underscore why future research should continue exploring the interplay of partner, context, and emoji to greater understand how these factors impact interpersonal impressions.

Platform Variance. Another significant limitation to this research is the variation of emoji display between operating systems. Emoji are transmittable through virtually every current device, but their representation between devices provides an immeasurable source of variance. Although Unicode standardizes the name and general facial expressions (where applicable) for each symbol, their representation across platforms (e.g., Apple iOS, Google Android) is not consistent (Blagdon, 2013). Differences in emoji appearance between platforms are most significant when representing facial expression and pose a serious limitation to device-inclusive

emoji implications. A recent study (Miller et al., 2016) experimentally tested the perceived sentiment of the "grinning face with smiling eyes" (Emoji, 2016) emoji on a -5 (negative sentiment), 0 (neutral) to 5 (positive sentiment). Results of Miller et al.'s (2016) study determined that sender and the receiver interpretation of emoji differed by several (2.04) scale points when sent across platforms (e.g., Apple iPhone to Samsung Galaxy). Furthermore, even within the same platform (e.g., Apple iPhone to Apple iPhone), the average perceived sentiment difference was nearly two points (1.88), indicating that people still may not agree on emoji meaning even when viewing the exact same design.

Future research could examine how people with within and between platforms may communicate differently as a result of their specific interpretations of emoji semantic and emotional construal. Results such as Miller et al.'s (2016) that demonstrate large variances in emoji interpretation pose significant challenges to understanding the impacts of emoji on interpersonal impressions, yet also provide ample room for further inquiry. For instance, with how popular the iPhone is, it may be possible people on different phone platforms (e.g., Samsung, LG) may be hesitant to use emoji because they are unsure what they are exactly sending to others' phones, and understanding how users between platforms make sense of each other despite these differences could provide insightful data.

The strength of emoji may lie within their broad application rather than as specific meaning-markers. Representations and interpretations can vary, so research should continue exploring the differences between operating systems and the interpretations of emoji meaning because despite these translational differences emoji continue to be an immensely popular behavior in texting. CMC habits carry throughout culture regardless of specific applications and devices. This phenomenon was recently reported by Instagram, claiming that nearly half the

messages on the website featured emoji (Novak, Smailović, Sluban, & Mozetič, 2015). Future research might find significant results regarding emoji use across varying CMC environments. These results may indicate significant similarities or differences in how people use emoji, and perhaps open up countless other questions regarding contextual implications. For instance, one may favor using emoji on Snapchat, but not on Facebook.

Conclusion

The previous section outlines only the most obvious limitations and opportunities for future research the primary investigator has heretofore recognized. There are countless opportunities, directions, and contexts for continued emoji and nonverbal CMC research. Regarding this, Walther (2006) writes "as new technologies develop... the need for conceptual and empirical specificity about nonverbal cues, their functions, and their re-representations will become even more consequential...In future, more specific consideration of nonverbal cues, those missing and those that are replaceable, will be critical to the development of more sophisticated theories and better interfaces" (p. 473, 474). While limitations exist with emoji (e.g., Miller et al., 2006) Walther argues that research must continue focusing on emerging nonverbal cues to create better CMC for everyone. Hiemstra (1982) claims: "As bandwidth narrows from face-to face interaction, the communication is likely to be experienced as less friendly, emotional, and personal, and more serious, businesslike, depersonalized, and task-oriented" (p. 883), further emphasizing the implications of potential barriers and limitations to CMC that competent communicators must take into account.

From this research are several implications for MRT and CMC competence. Although this study did not demonstrate significant differences between the independent conditions of text-only, emoticon, and emoji message sources on the dependent variables of social attraction and

credibility, results indicated a significant relationship between emoji use and CMC competence. The interplay between emoji and the four MRT medium richness criteria (*feedback, multiple cues, language variety,* and *personal focus*) in how they relate to impressions CMC competence will be a growing concern for competent communicators in an increasingly technological and mobile world.

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Appendix A

HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: February 28, 2017

To: Autumn Edwards, Principal Investigator
Austin Beattie, Student Investigator for thesis

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 17-02-30

This letter will serve as confirmation that your research project titled "Interpersonal Impressions of Nonverbal Emoji Use in Decision Making" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study***)." Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: **February 27, 2018**

1903 W. Michigan Ave., Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276
CAMPUS SITE: 251 W. Walwood Hall

Appendix B

Text-only (Control) condition


●●●○○ Wireless
7:16 PM
89 %
Chats
Alex Lee
online
Hi. I'm looking for a place to eat tonight. Where should I go?
Sam 6:29pm
Always happy to make food recommendations. What type of meal do you want?
Alex 6:30pm
I'm in the mood for steak.
Sam 6:31pm
Devin's Steakhouse on South Street has good reviews, so it might be a good place to try
Alex 6:32pm
That's a little far out of the way. Do you know anything about Martha's Grill?
Sam 6:33pm
I don't recommend Martha's Grill. It has bad reviews
Alex 6:34pm
Oh, okay, any other suggestions?
Sam 6:35pm
You could try Stanley's Steaks, it's well-reviewed, and is closer to your location
Alex 6:36pm
Got it, maybe I'll try them. Thanks for the help
Sam 6:37pm
My pleasure, always happy to help
Alex 6:37pm
Message

Appendix C

Emoticon Condition


●●●○○ Wireless
7:16 PM
89 %
Chats
Alex Lee
online
Hi. I'm looking for a place to eat tonight. Where should I go?
Sam 6:29pm
Always happy to make food recommendations :D What type of meal do you want?
Alex 6:30pm
I'm in the mood for steak.
Sam 6:31pm
Devin's Steakhouse on South Street has good reviews, so it might be a good place to try :)
Alex 6:32pm
That's a little far out of the way. Do you know anything about Martha's Grill?
Sam 6:33pm
I don't recommend Martha's Grill. It has bad reviews :(
Alex 6:34pm
Oh, okay, any other suggestions?
Sam 6:35pm
You could try Stanley's Steaks, it's well-reviewed, and is closer to your location ;)
Alex 6:36pm
Got it, maybe I'll try them. Thanks for the help.
Sam 6:37pm
My pleasure, always happy to help :)
Alex 6:37pm
Message

Appendix D

Emoji Condition


●●●○○ Wireless
7:16 PM
89%
Chats
Alex Lee
online
Hi. I'm looking for a place to eat tonight. Where should I go?
Sam 6:29pm
Always happy to make food recommendations 😃 What type of meal do you want?
Alex 6:30pm
I'm in the mood for steak.
Sam 6:31pm
Devin's Steakhouse on South Street has good reviews, so it might be a good place to try 😊
Alex 6:32pm
That's a little far out of the way. Do you know anything about Martha's Grill?
Sam 6:33pm
I don't recommend Martha's Grill. It has bad reviews 😕
Alex 6:34pm
Oh, okay, any other suggestions?
Sam 6:35pm
You could try Stanley's Steaks, it's well-reviewed, and is closer to your location 😉
Alex 6:36pm
Got it, maybe I'll try them. Thanks for the help.
Sam 6:37pm
My pleasure, always happy to help 😊
Alex 6:37pm
Message