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Author Note

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Abstract

In this project, we examine how including face-like emojis would influence the interpretation of ambiguous text messages presented as sent between friends or between acquaintances. Participants saw screenshots of brief iPhone conversations and selected from four options the most likely interpretation of ambiguous final messages. Without an emoji, participants preferred literal interpretations, and this did not differ by sender-recipient relationship. With the emoji, participants preferred interpretations congruent with the specific sentiment conveyed by the emoji, especially for conversations between acquaintances. People are sensitive to the ways that emojis can convey more specific meanings, and this may vary across communicative contexts.

Keywords: online communication, message interpretation, emojis, social context

Emojis and the interpretation of text messages between friends and between acquaintances

In text-based forms of computer-mediated communication (CMC), users frequently find ways to express extralinguistic meanings (McCulloch, 2019). For example, emoticons like **:(** or **:-p** developed as ways to allow users to convey sadness or to signal a joke (Walther & D'Addario, 2001). With the advent of smartphones and social media, users now more commonly employ *emojis*, visual pictographs that convey meaning through resemblances to physical objects. Although many emojis represent categories like animals (🐸 🐄) or activities (🧘 🏂), some of most widely used emojis represent faces with different expressions, such as 😊 "Face with smiling eyes" or 🥺 "Pleading face." Here, we focus on these so-called face emojis, asking how they influence message interpretation.

Research examining the impact of emoticons and face emojis on recipients' perceptions of what is being communicated (e.g., Derks et al., 2008) have focused mostly on assessments of emotional valence, and less on specific interpretations of message content. In the present study, we are interested in whether the presence of face emoji would cause readers to perceive the message sender as conveying an attitude or meaning notably different from the preferred interpretation of the same message without the emoji. To do this, we presented participants with brief text message conversations and asked them to select the most likely interpretations for ambiguous messages, varying whether a face emoji was present or not.

Importantly, we also varied the relationship between the message sender and recipient. With less shared social context, online language is often expected to be more formal, especially because informality is one way that users express closeness to another person (Pavlick & Tetreault, 2016). On the argument that emoji use is perceived as less formal and therefore more

appropriate to use between friends, we expected that when conversations are presented as occurring between friends, readers would take the presence of emojis to more frequently infer additional pragmatic meanings, whereas when the same conversations are presented as being between acquaintances, readers may still strongly infer something closer to the literal meaning.

Method

Participants

We recruited from Amazon Mechanical Turk 64 college-age participants (M_{age}=21.9) who spoke English as their first language. We excluded four participants for not responding appropriately, leaving a final sample of 60 participants (33 female; 27 male).

Materials

Conversations. We constructed 50 brief conversational exchanges that could reasonably take place via smartphone messaging. Thirty-two conversations represented experimental items while 18 conversations were fillers. The conversations were all 3-5 messages long and concerned a variety of topics likely to be relevant to college-age individuals, such as making plans to get together. Each conversation was written as an exchange between two individuals, and we strived to ensure that the conversations could plausibly occur between acquaintances as well as close friends.

The conversations always ended with a potentially ambiguous message sent by the other person. In the Emoji Absent condition, this critical message was presented alone. In the Emoji Present condition, the message always ended in a face emoji. We selected 32 face emojis from Emojipedia (https://emojipedia.org) and assigned a unique emoji to each critical message, balancing emojis expressing positive and negative affect. Our primary restriction for assigning

emojis to messages was that the emoji had to plausibly suggest a more specific interpretation of the otherwise ambiguous message.

We also created eighteen filler conversations similar to the experimental items; two of the filler items contained face emojis, while the remaining fillers included "non-social" emojis that related in some way to the apparent communicative intention (e.g., "*I'll be there* 💨").

We generated mock iPhone "screenshots" for each conversation using the website https://ifaketextmessage.com. There were four versions of each conversation. In two versions, no emoji was present, while a face emoji was present in the other two versions. This was crossed with our manipulation of sender identity, which we handled by including either "Friend" or "Acquaintance" above the message window, where the sender name would be. Figure 1 presents an example of an item in each experimental condition. Using the same website, we generated mock screenshots for filler conversations as well.

Interpretation options. For each conversation, we generated four possible interpretations of the final message. These interpretations corresponded to Congruent, Incongruent, Literal, and Irrelevant options. Congruent interpretations plausibly suggested a meaning that matched the emotional sentiment suggested by the emoji assigned to that message. For the message shown in Figure 1, "I'll barely be out of bed then 😅," the Congruent interpretation was "*They are nervous because 7am is really early for them*." Incongruent interpretations in some way involved a meaning opposite that suggested by the emoji while still being plausible; e.g., "*They are infuriated because 7am is really early for them*." The Literal interpretation represented a literal paraphrase of the message meaning without the emoji; e.g., "*They are letting you know that 7am is really early for them*." Finally, the Irrelevant interpretation involved an interpretation that was extremely unlikely or not related to the likely

message meaning; e.g., "*They are proud because 7am is really early for them*." We also generated four potential interpretations for the final message in each of our filler items.

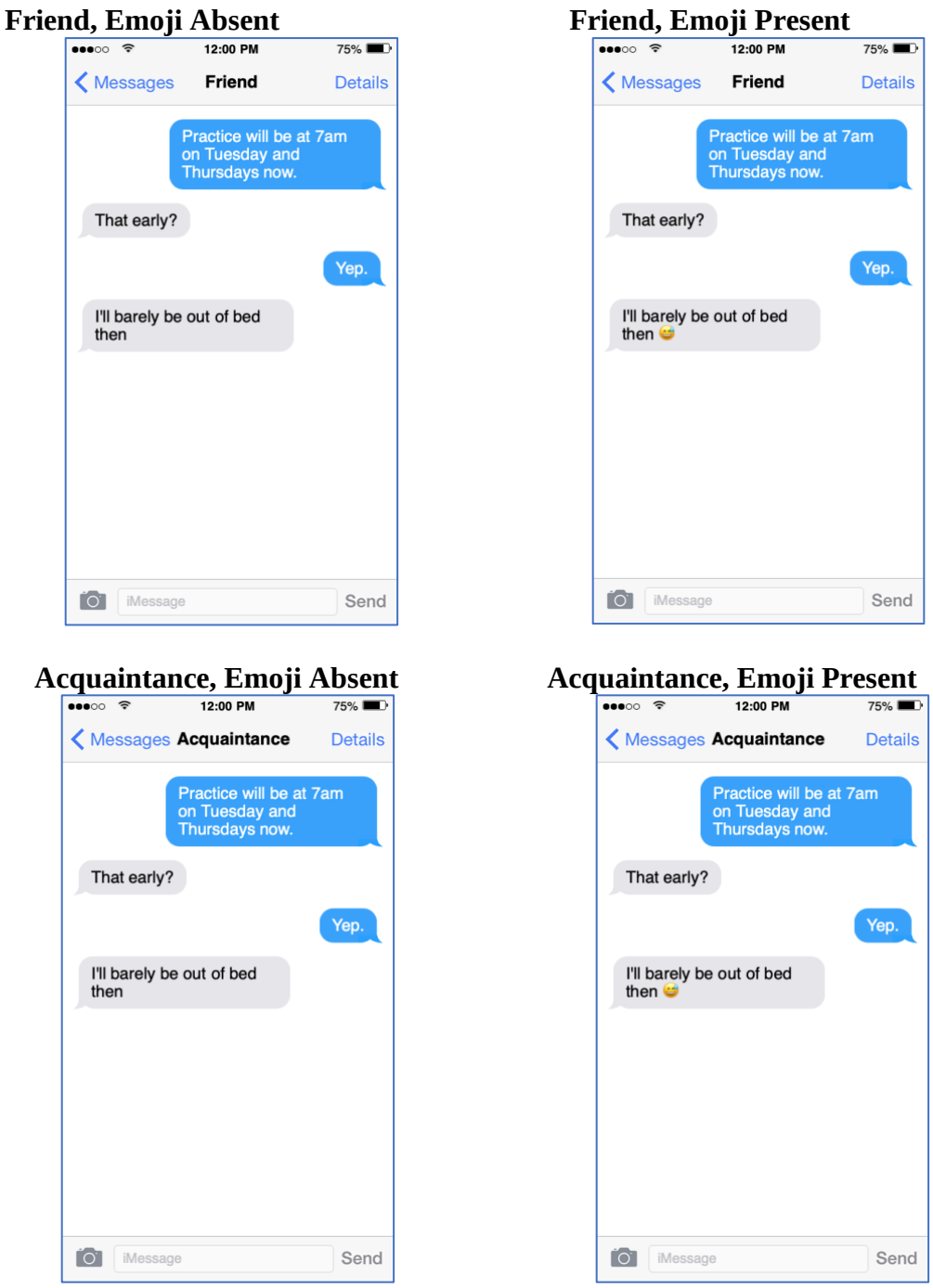

Figure 1. Screenshots of a sample item in each experimental condition.

Procedure

After following a link to the online survey, participants read the study instructions, which explained that they would be presented with a series of screenshots of brief text message conversations and that they would be asked to imagine that these conversations were taking place between themselves and another person. For participants assigned to the Friend condition, the instructions explained that they should imagine that this other person is a close friend and someone they know well. For the Acquaintance condition, participants were told to image that this other person is merely an acquaintance who they know well enough to exchange messages via text, but otherwise not someone they are close to. The instructions then explained that each conversation would end in a message from this other person, and the participants' task was to choose the most likely interpretation of this final message from a list of four options. Participants were also told that they would be asked to judge how appropriate they thought each final message was in the context of the conversation. Participants then completed the message interpretation and appropriateness judgment tasks for all 50 items, presented in a unique random order for each participant.

Design and Analysis

For this study, Relationship type (Friend, Acquaintance) was a between-subjects and within-items factor, while Emoji presence (Present, Absent) was manipulated both within-subjects and within-items. For each experimental item, we recorded which of four options (Congruent, Incongruent, Literal, Irrelevant) participants selected as the most likely interpretation of the critical final message. We also recorded participants' judgments of the appropriateness of the final message on a 7-point scale that ranged from "Extremely appropriate" to "Extremely inappropriate."

Results

Message interpretation. For the interpretation judgments, our interest is in how participants' selections would be influenced by the presence of the emoji. Given that the Congruent interpretations in particular were intended to reflect a specific reading of the critical messages based on information conveyed by the emoji, we focused our analyses on the proportions of Congruent selections versus the other three options. To analyze participants' interpretations, we fit these selections as binomial responses (Congruent = 1; all others = 0) via generalized linear mixed effect models in R (version 4.0.3; R Core Team, 2020) using the *lme4* package (version 1.1-23; Bates et al. 2015). All models included Relationship, Emoji (both sum coded) and their interaction as fixed effects. All models included by-participant and by-item random intercepts. When possible, we fit the maximal random effect structure justified by the design (Barr et al. 2013).

Figure 2 shows the relative percentage that each interpretation option was selected for each combination of experimental conditions. Focusing specifically on Congruent selections, participants were more likely to select Congruent interpretations when the emoji was present (M=0.60, SD=0.49) than when the emoji was absent (M=0.21, SD=0.40). Fitting a linear mixed model to these data revealed a significant effect of emoji presence (B=2.54, Z=8.36, p<.001). However, the likelihood of selecting the Congruent interpretation was similar in conversations between friends (M=0.39, SD=0.49) and between acquaintances (M=0.42, SD=0.49). (no effect of relationship context: B=-0.12, Z=-0.57, p=0.56).

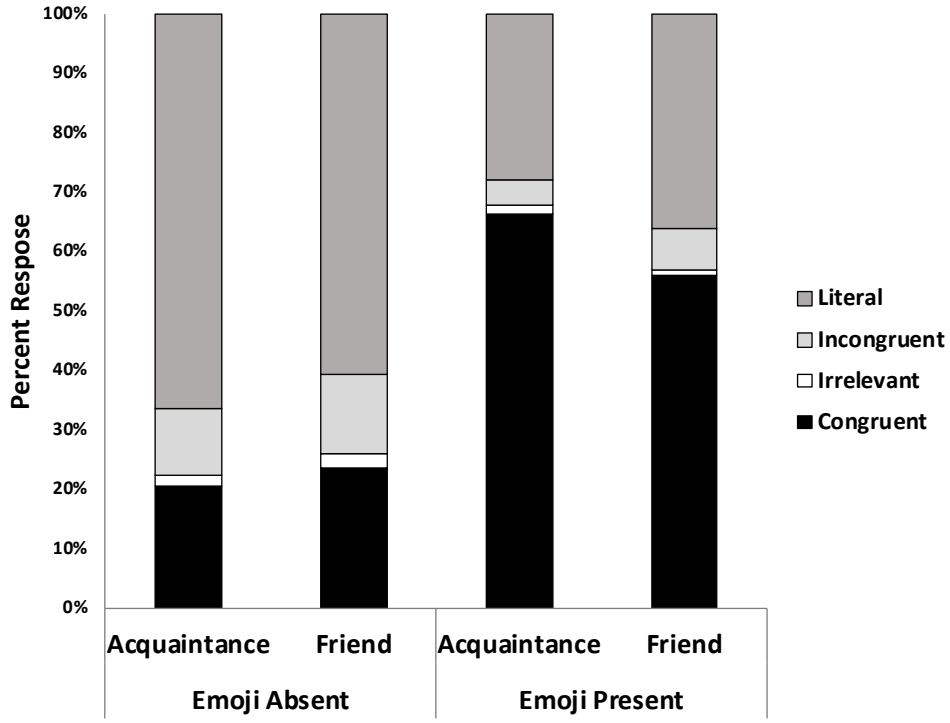

Figure 2. Relative percentage of the time each interpretation option was selected within each combination of Emoji and Relationship type.

However, as shown in Figure 2, there is evidence for an interaction between relationship and emoji presence (B=-0.99, Z=-2.35, $p<.02$). When the emoji was absent, the likelihood of a Congruent interpretation did not differ for conversations between acquaintances (M=0.19, SD=0.39) versus friends (M=0.22, SD=0.42), but when emoji was present, participants were more likely to select the Congruent interpretation for conversations between acquaintances (M=0.65, SD=0.48) than conversations between friends (M=0.55, SD=0.49).We examined this interaction by fitting two separate models, one for Emoji Absent conversations and another for Emoji Present conversations. For Emoji Absent conversations there was no effect of relationship type (B=0.39, Z=1.33, p=.18), but this effect was significant for Emoji Present conversations (B=-0.59, Z=-2.05, $p<.05$).

Appropriateness judgments. After choosing the interpretation they felt best captured the meaning of the final message, participants judged the appropriateness of this message using a 7-point scale. We converted the scale responses to numeric values ranging from -3 (Extremely inappropriate) to +3 (Extremely appropriate), and in Figure 3 we present participants' average appropriateness ratings broken down not only by emoji presence and relationship context, but also by the actual interpretation selected by participants. We excluded appropriateness ratings following Irrelevant interpretations since such interpretations were rare, occurring less than 2% of the time.

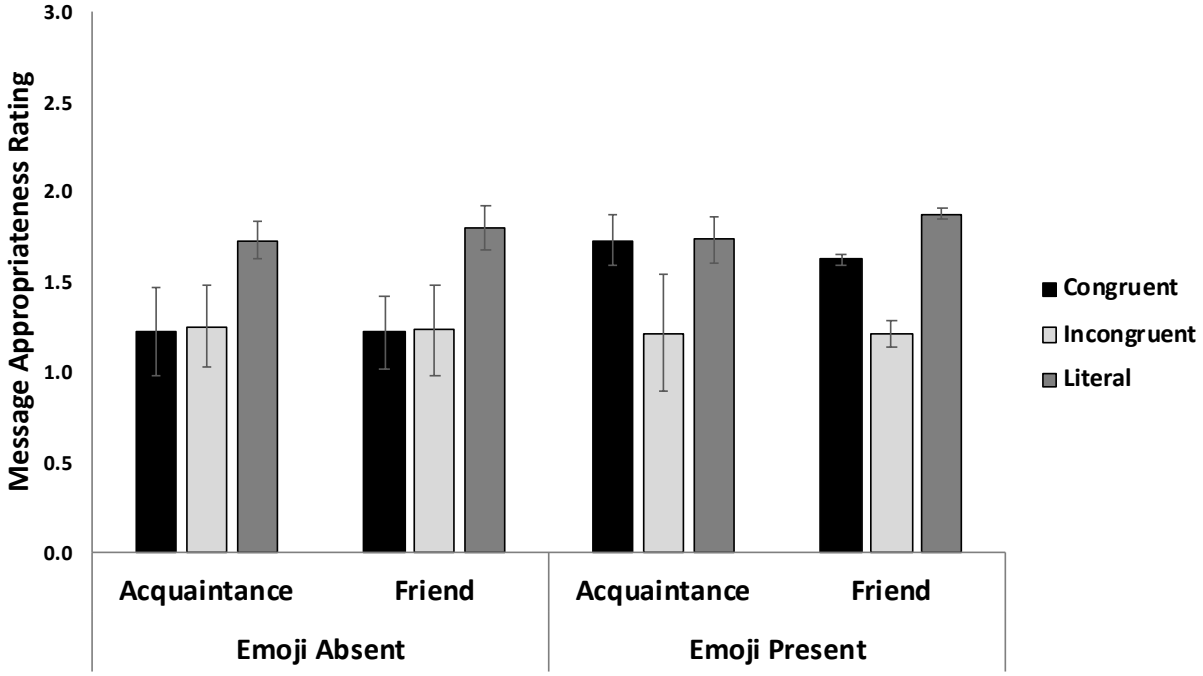

Figure 3. Average ratings of the appropriateness of final messages, by emoji presence, relationship context, and participants' message interpretation selection.

As can be seen in Figure 3, when the emoji was absent, participants who selected the Literal interpretation judged the message as more appropriate on average (M = 1.76) than participants who selected either the Congruent (M = 1.22) or Incongruent (M = 1.24) interpretations. This is consistent with the idea that, without the emoji, participants generally saw

literal interpretations as most likely. When people selected an interpretation that was congruent or incongruent with the (absent) emoji, that message was judged less appropriate. This pattern did not vary by the relationship context of the conversation.

When the emoji was present, however, both Congruent (M = 1.69) and Literal (M = 1.81) interpretations were seen as more appropriate than the Incongruent (M = 1.22) interpretation. This suggests that the presence of the emoji allowed Congruent interpretations to be seen nearly as appropriate as literal interpretations. However, there is an indication that this pattern varied by relationship type. When judging messages ending in an emoji in conversations between acquaintances, participants selecting Congruent interpretations of final messages again rated them as appropriate (M = 1.73) as participants selecting Literal interpretations (M = 1.74). For the same messages (plus emoji) between friends, however, participants selecting Congruent interpretations judged them as less appropriate (M = 1.62) than those selecting Literal interpretations (M = 1.88).

Discussion

Overall, we found that when a face emoji was present, readers preferred interpretations congruent with the specific sentiment suggested by the emoji. In contrast, with no emoji there was an overall preference for literal interpretations. This is consistent with research showing that users can use emojis to make inferences about the general valence of a sender's affective state (Derks et al., 2008), but also suggests that recipients are sensitive to more specific meanings conveyed via emojis. Beyond this, we also found evidence that our participants have intuitions about the emoji-based meanings likely to be conveyed between friends vs. between acquaintances. Somewhat surprisingly, we found that, when emojis were present, readers selected Congruent interpretations more often when messages were sent between acquaintances

than between friends. We speculate that imagining a more distant relationship may have led participants to more frequently prefer the most straightforward 'congruent' interpretation suggested by the emoji, whereas imagining a closer relationship could have allowed participants to entertain a wider range of possibilities, somewhat ironically reducing the overall preference for the emoji-congruent meaning. Asking participants to directly generate interpretations of critical messages in different relationship contexts could shed light on this possibility.

We did not, however, find support for the possibility that participants would view messages with emojis as generally more appropriate in the context of a conversation between friends than in conversations between acquaintances. We suspect that the fact that the overall content of the conversations was always identical across contexts may have swamped any differences in perceived appropriateness due to the presence or absence of an emoji. We did however observe some relevant patterns based on *which* interpretation was selected for the critical message. When the message lacked an emoji, participants who chose Literal interpretations rated the messages as generally more appropriate than did participants who chose the other interpretations. This makes sense if one accepts that participants who chose these other interpretations may have recognized that those readings were less supported, or riskier, and thus potentially less appropriate. This is further reinforced by the observation that when the message did end in an emoji, participants who chose the Congruent interpretation now rated this message as more appropriate. Plus, there is the suggestion that this may not have been as strong in the context of a conversation between friends. Consistent with the pattern present in the interpretation selections, participants generally seemed to view the most straightforward emoji-Congruent reading as not only more likely in the context of a conversation between acquaintances, but more appropriate as well.

In sum, this work reinforces the idea that emojis are more than whimsical appendages to online messages. When encountering a message ending in a face emoji, recipients are able to incorporate the sentiment conveyed by the emoji into their overall interpretation of the sender's communicative intention. In the present work we focused on face emojis, but we believe that similar processes would occur for other categories of emojis as well. Emojis derive their communicative power from the ways they allow senders to convey attitudes and meanings beyond the words being typed.

References

Derks, D., Bos, A.E., & Von Grumbkow, J. (2008). Emoticons in computer-mediated communication: Social motives and social context. *Cyberpsychology & Behavior*, *11*(1), 99-101.

McCulloch, G. (2019). *Because internet: Understanding the new rules of language*. Riverhead Books.

Pavlick, E., & Tetreault, J. (2016). An empirical analysis of formality in online communication. *Transactions of the Association for Computational Linguistics*, *4*, 61-74.

Walther, J.B., & D'addario, K.P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social Science Computer Review, 19*(3), 324-347.