Emoticons as Paralinguistic Information in Japanese

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Abstract

We report two questionnaires providing evidence that emoticons are an integral part of text messages for college-age students in Japan. First, emoticons emphasize emotional content even when the message contains explicitly empathetic verbal expressions, and their effects are not restricted to messages with truncated verbal content. Second, emoticons increase the expectation for more empathetic responses.

1. Emoticons as paralinguistic information

The use of emoticons (or *kaomojis* in Japanese, depictions of facial expressions using punctuations and letters) illustrates the adoption of simplified, non-linguistic cues in text exchanges. We report data investigating the extent to which emoticons have been integrated into text communication between Japanese college-age students.

The high demand for pictograms can be seen in various emerging business models, such as those providing free apps and making a profit by selling stickers (Techcrunch, 2015). This is a modern twist to razor-razorblade business models where the razor is sold with heavy discounts and profits come from blades sold at a premium.

Emoticons are one of the earliest forms of pictorials to be widely embedded in on-line communication. The following describes three ways of characterizing emoticon uses.

1.
   a. Decorative use: Emoticons and other embellishments (e.g., stars, geometrical shapes) increase visual appeal and are similar to pretty stationery. Their role in expressing an emotion, although discernible, is limited.
   b. Utilitarian use: temporal or physical constraints (e.g., the tiny keys of a mobile phone) lead to truncated, incomplete messages. Emoticons are a quick and easy way to disambiguate the intended meaning and express what would take much longer to express explicitly in words. But emoticons are makeshift solutions and only effective when verbal content is incomplete or ambiguous.
   c. Emphatic use: emoticons emphasize emotional content even when the words in the message explicitly express the emotion intended.

The categories above can be fuzzy in their boundaries but they should help determine how integrated emoticons are in communication (see Derks, Fischer & Bos, 2008, for a review of related results and various possible uses of emoticons). That emoticons can add affective content to text is not particularly striking. Even text layout or stationery choice may augment verbal information (e.g., cute, colorful stationery may imply a happy, perhaps childish, sender). Given previous results (e.g., Arakawa & Suzuki, 2004; Derks, Bos & von Grumbkow, 2007), emoticons are unlikely to be just decorative. But a utilitarian use would suggest that emotions are poor substitutes and are ignored in normal circumstances when verbal information is explicit.

A possible argument against utilitarian uses is that emoticons are not necessarily easier to type than linguistic expressions. Many recent mobile phones contain canned verbal expressions, easily retrievable with as few clicks as any emoticon. Picking an appropriate linguistic expression may seem more complex given the nuances of language, but choosing an emoticon can be almost as daunting, given the extensive range of alternatives at users' disposal (see Kato et al., 2007, Table 2, for 163 facial emoticons). Moreover, they are not always restricted to the face alone and can include culture-specific ones such as **m(_ _)m** (a bowing head; eyes closed in contrition or gratitude; face level with the two *m*s representing the hands), as well as those with the whole body such as **orz** (a person banging the head on the ground in frustration or desperation; *o* for the head, *r* for the arms, and *z* for the legs).

We report data indicating that emoticons are used emphatically adding affect to explicit verbal content and imposing expectations on ensuing replies.

2. Experiment 1
2.1 Method
2.1.1 Participants
Sixteen native speakers of Japanese, undergraduates at the University of Tsukuba (9 female), were paid to participate in the experiment.

2.1.2 Materials
Twenty-four messages were created. To add variation, half described happy events (*positive contexts*) and half, upsetting events (*negative contexts*). The following is an example of a positive context with a smiley face at the end.

2.　先週の先輩のケガ、あと数日で治るんだって(ˆ-ˆ)
　　"It seems our friend's injury last week will heal in a couple of days [smile]"

Each message had four versions in a 2× 2 within-participants design. The first factor was whether an emoticon or a full stop ended the message. The emoticon in (1) was used for positive contexts and ⟨ˆ︿ˆ⟩ for negative contexts. Emoticons were chosen

based on their common uses in Japan (see Kawakami, 2008, for judgments on these and other emoticons). The second factor manipulated was the role that the participant was instructed to assume: as the sender or as the receiver of the message. We avoided using words and morphological endings that are stereotypically associated with one gender, so that both male and female participants could identify as the sender of any message.

2.1.3 Procedure and Data Analyses

Each message was printed on a separate page within a frame depicting a mobile phone display. On top of the page a line of instruction indicated whether the participant was to assume the role of sender or receiver of the message. At the bottom of the page, participants rated how much the message expressed an emotion (where '1' was labeled not at all, and '7' very much).

The 24 sets of messages (each set containing the four versions of each message) were distributed into four lists according to a Latin Square design, so that each list contained exactly one version from each set. Each list was stapled in a block in pseudo-random order so that messages belonging to the same condition did not follow in succession. Each participant saw one list with 24 messages.

Analyses of variance were conducted over means for participants (F_1) and for messages (F_2). Mean squared errors in the F_1 analyses were used to calculate *95% confidence intervals for differences between means* (95% CIs, for short), which provide a lower bound for pairwise comparisons (Loftus & Masson, 1994).

2.2 Results

Overall, messages with emoticons elicited higher scores (5.6) than messages without emoticons (4.4; $F_1(1,15) = 48.4$, $p < .001$; $F_2(1,22) = 113.6$, $p < .001$), suggesting that emoticons help express emotions. This enhancing effect was observed in the positive contexts (1.64) as well as in the negative contexts (.84), and it was statistically reliable in both cases (a difference was reliable when larger than the 95% CI = .79).

Nevertheless, the larger effect for the positive contexts lead to an interaction ($F_1(1,15) = 4.5$, $p = .05$; $F_2(1,22) = 11.6$, $p < .01$). This is perhaps because without emoticons, the negative messages were rated higher (4.7) than the positive messages (4.04); hence, the negative messages left less to be expressed with the emoticons. This may be utilitarian if emoticons only complement what is not said in words. But the negative and positive contexts differed in a number of ways, not just in how emotions were expressed in words. The next experiment is a more systematic test of this possibility.

There was no reliable effect of role (recipient or sender; main effect: $Fs < 1$; interaction with other factors: $p > .1$), perhaps because just asking participants to alternate between roles does not allow for strong identification with the role.

3. Experiment 2

In this experiment, participants were asked to rate pairs of messages (a message sent and its reply) in order to determine how their reactions to the reply message varied depending on the nature of the message sent. Moreover, we also manipulated the amount of verbal content to determine whether explicitly expressing empathy with words would cancel out the effectiveness of emoticons.

3.1 Method

3.1.1 Participants

A new group of 28 native Japanese speakers, undergraduates at the University of Tsukuba (11 female), were paid to participate.

3.1.2 Materials

The 24 messages from Experiment 1 were used as *messages sent*, which participants were asked to assume they had sent to a friend. An item consisted of a message sent paired with a response (the *message received*). Each item had eight versions according to a 2×2×2 within-participants design where the three factors manipulated were as follows.

- *emoticon sent*: whether the message sent contained an emoticon,
- *emoticon received*: whether the message received contained an emoticon, and
- *empathetic phrase*: whether the message received included an explicitly empathetic phrase.

The message received always contained a neutral expression that did not give away the friend's feelings (e.g., *sokka. fukki dekirunda*, "oh, so he/she will be able to make a comeback" as a response to (2)). An emoticon should have a clear effect following such a neutral expression, as it complements its meaning.

The crucial question addressed in this experiment is how an emoticon interacts with an empathetic phrase (e.g., *HONTOni yokattane~* "that is REALLY great"). If emoticons only have decorative or utilitarian uses, their effect should be neutralized by an overt expression of empathy as the verbal content becomes the focus of attention. Therefore, an emoticon would not increase the emotional response of the empathetic phrase. In contrast, if there is emphatic use at play, the emoticon should add to the emotional content already expressed by the verbal message. We kept the empathetic phrases short. They expressed empathy, but were not so verbose to the point of saturation where nothing (an emoticon or any other cue) could possibly increase ratings.

Participants answered four 7-point scale rating questions ('1' not at all, and '7' very much). Question 1 was shown immediately after the message sent and asked how much this message conveyed a feeling (*yorokobi* "happiness" or *ikari* "anger"). The last three questions were shown immediately after the message received, which was rated as

follows. Question 2 asked how much the message received expressed a feeling (same as in Question 1). Question 3 asked whether the message received was a satisfactory reply. Question 4 asked whether the message received was a natural reply.

3.1.3 Procedure

Each trial was comprised of a message sent and a message received from an item, printed on four successive pages. On the first page, the participant was told that they were about to send a message to a friend. Page 2 had the message sent within the frame of a mobile phone and Question 1 at the bottom. On page 3, the participant was told that a response from the friend was being received. Page 4 had the message received and questions 2 to 4 (see Figure 1 for a schematic representation of a trial).

Page 1	Page 2 Message you sent:	Page 3	Page 4 Message received:
You are about to send a message to a friend.	*It seems our friend's injury last week will heal in a couple of days.*	You are about to receive a reply from your friend.	*Oh, so he/she will be able to make a comeback. That is REALLY great.*
	Question 1		Questions 2 to 4

Figure 1. Experiment 2: Schematic representation of the four pages of a trial

The 24 sets of items (each set containing eight versions) were distributed into eight lists according to a Latin Square design, so that each list contained only one version from each set. Each list was stapled in a block in pseudo-random order so that items of the same type did not follow in succession. Each participant saw one list with 24 items. Data analyses were conducted as in Experiment 1.

3.2 Results and Discussion

3.2.1 Question 1 (about the message sent)

Question 1 replicated the results of Experiment 1. There was a main effect of emoticons as messages sent with emoticon (5.93) were rated higher than those without emoticon (4.18; $F_1(1,27) = 94.22$, $p < .001$; $F_2(1,22) = 128.41$, $p < .001$). As in the previous experiment, there was also an interaction, albeit marginal here, between context and emoticon ($F_1(1,27) = 3.49$, $p = .073$; $F_2(1,22) = 10.01$, $p < .01$) as the emoticon effect was larger for positive (2.02) than for negative contexts (1.49).

Table 1. Experiment 2: mean responses to Questions 2 to 4

emoticon sent:	without				with			
emoticon received:	without		with		without		with	
empathetic phrase:	without	with	without	with	without	with	without	with
Question 2:	3.01	4.54	4.69	5.57	2.75	4.33	4.55	5.30
Question 3:	3.63	4.73	4.83	5.67	3.08	4.58	4.73	5.36
Question 4:	4.54	5.14	5.05	5.82	4.17	5.21	5.19	5.76

3.2.2 Question 2 (about the message received)

See Table 1 for the results for questions 2 to 4 according to the following three factors.

3.

  a. *emoticon sent*: whether the message sent contained an emoticon,
  b. *emoticon received*: whether the message received contained an emoticon,
  c. *empathetic phrase*: whether the message received contained an empathetic phrase

Note that Questions 2, 3 and 4 are about the message received, but we included *emoticon sent* as a factor in the analyses to determine how the message sent affected participants' reaction to the message received.

For Question 2, all three main effects were reliable. In the main effect of emoticon sent, messages received were rated higher if they were responses to a message sent *without* an emoticon (4.45) than if they were responses to a message sent with an emoticon (4.23; F_1 (1,27) = 7.31, $p < .05$; F_2 (1,23) = 7.18, $p < .05$). Thus, sending a message with an emoticon heightens the expectation for an empathetic response, leading the judgments about the message received to be stricter (see Question 4 for a similar but more elaborate effect).

In the main effect of emoticon received, messages received with an emoticon elicited stronger responses (5.03) than messages without an emoticon (3.66; F_1(1,27) = 107.12, $p < .001$; F_2(1,23) = 170.07, $p < .001$).

In the main effect of empathetic phrase, messages received with such a phrase were rated higher (4.93) than messages without them (3.75; F_1(1,27) = 139.28, $p < .001$; F_2(1,23) = 57.6, $p < .001$). This guarantees that the phrases we used were effective in expressing an empathetic response.

Moreover, there was an interaction between emoticon received and empathetic phrase ($F_1(1,27) = 9.43$, $p < .01$; $F_2(1,23) = 9.93$, $p < .01$) as the effect of the emoticon was smaller when there was an empathetic phrase (1.0) than when there was no such a phrase (1.74). This is unsurprising. What is more crucial is that although smaller the effect of the emoticon is reliable even when there is an empathetic phrase (95% CI= .49). In other words, the emoticon increased the empathy conveyed beyond what was already expressed in words. All other interactions were not reliable (Fs < 1). Trends in Question 3 were similar to Question 2 and results are omitted.

3.2.3 Question 4 (about the message received)

In Question 4, there were main effects of emoticon received (message received with emoticon eliciting higher ratings, 5.46, than without, 4.76; $F_1(1,27) = 19.86$, $p < .001$; $F_2(1,23) = 32.6$, $p < .001$) and of empathetic phrase (messages received with the phrase were rated higher, 5.49, than those without, 4.74; $F_1(1,27) = 19.86$, $p < .001$; $F_2(1,23) = 38.83$, $p < .001$).

The 3-way interaction (emoticon sent, emoticon received and empathetic phrase) was marginally reliable in the participant analysis ($F_1 (1,27) = 3.93$, $p = .058$; $F_2 (1,23) = 2.21$, $p = 0.15$). Such a trend may be attributed to the effect of the emoticon sent on the perception of the message received. For example, a message received without an emoticon and without an empathetic phrase was rated reliably higher when it was the reply to a message sent without emoticon (4.54) than to a message sent with an emoticon (4.17; where 95% CI= .33). That is, a message sent with an emoticon creates the expectation for an empathetic reply. So, a plain reply feels more natural if the message sent was also low in affect.

Note that an emoticon sent requires an empathetic reply, but empathy need not be expressed with an emoticon. With a message sent with an emoticon, a reply with an empathetic phrase but without an emoticon (5.21) is as natural as a reply with an emoticon alone without an empathetic phrase (5.19). This suggests that an emoticon does not require a reply with an emoticon, unlike pretty stationery that may have to be answered in equally pretty stationery. It is not the visual appeal of emoticons that matters since an empathetic response in words without any embellishments is as effective. Contrary to other types of non-verbal cues (e.g., facial expressions, gestures, postures) in which *mimicry* is often seen (Derks, Fischer & Bos, 2008, for a summary and comparison to emoticons), we did not see an advantage for pairs of sent-received messages in which both contained an emoticon. But it is conceivable that such an effect would be observed in a production task, where the participant has to actually reply to a message containing an emoticon.

All other interactions were not reliable (ps > .2). In particular, as opposed to Questions 2 and 3, the interaction between emoticon and empathetic phrase was not reliable in Question 4 ($F_1(1,27) = 1.17$, $p > .28$; $F_2(1,23) < .5$) perhaps because

reactions were wearing off after answering the other two questions. Another possibility is that sounding natural (as measured in Question 4) does not entail being satisfactory as a reply (Question 3) or that it expresses an appropriate emotion (Question 2).

4.   General Discussion

Emoticons may have started as stopgap, utilitarian measures to complement truncated messages, but according to our results their current uses suggest a high integration to text messages. First, emoticons increase affect of verbal content even when it already overtly expresses empathy. Second, using an emoticon increases expectation for a more empathetic response. The third point is a further refinement. Sending a message with an emoticon does not necessarily require a reply with an emoticon, what is required is a reply that expresses empathy, which can be expressed with an emoticon, with words or both.

The experiments were conducted with college students in Japan, hence the trends cannot be generalized to the overall population in this or other countries, especially to older generations that are less likely to use emoticons. However, the results suggest that, under the right circumstances, new cues such as emoticons can become an integral part of communication.

One concern in the studies reported is in the type of analysis used. Analysis of variance may not be appropriate for the types of ratings collected. However, preliminary analyses using ordered regression models (Christensen, 2015; see also Agresti, 2012) revealed similar trends, in the effect of emoticons in questions 1 and 2 of Experiment 2 in particular.

Another limitation of the studies reported is that they explicitly asked for participants' judgments. We are currently analyzing another study measuring responses without asking for direct judgments. Participants were asked to write replies to the messages in Experiment 1 using their own cellphones. One question is whether messages that contain emoticons will elicit responses that are more empathetic. Another question is whether emoticons in a message sent, can elicit more emoticons in the response, in the kind of mimicry that is seen in other types of non-verbal cues.

Given the special status of facial depictions even in their crudest forms, another possible line of research is to explore non-facial symbols that young Japanese are using (e.g., geometric shapes), perhaps in lieu of pretty stationery, but that do not seem to be merely decorative. The question is whether non-facial symbols can be incorporated as effectively in messages.

4.1 Beyond the face value of emoticons

Some recent discussions suggest a darker side to emoticons. Technology can improve how we interact with the surrounding environment. For example, various recent technologies have made it easier for people to drive cars. Perhaps too easy, as they

make us less engaged by allowing us to pay less attention to what is going on as we drive. In some cases the convenience has come at the cost of coarser feedback. Mechanical feedback (e.g., in car breaks) is continuous and often multi-sensory (e.g., tactile, auditory, even olfactory if something is very wrong). In contrast, electronic parts and their interfaces provide only discrete feedback limited to a few degrees (sometimes only binary: on/off) in scales that can be as arbitrary and removed from the actual physical motion as engineers choose them to be (Crawford, 2015).

Emoticons have some eerie parallels in the price their convenience demands from users. There is a trade-off between the loss of control and feedback, for the sake of the convenience of having to pay less attention to nuance. Emoticons' categorical options are in sharp contrast to the continuum offered by language. Although there is a wide range of emoticons to choose from, they are more limited than the virtually infinite many subtle shades of emotion that linguistic expressions can convey.

But the parallel with cars only goes so far. Buying a car commits us to the type of technology and feedback it offers. In contrast, buying a cellphone or an app with emoticons does not restrict us to using emoticons only. We would still be able to resort to nuanced linguistic expressions, if we so chose. Crawford's larger point in the car example is that more often than not we choose the path of less resistance. Emoticons are not the cause of over-simplified communication. Instead, emoticons just play a role that we would fill somehow anyway. Even if emoticons were to be banned from all devices, most of us would still limit our language use to a few canned expressions available from menus or that recent devices can easily complete from partial inputs. Emoticons are just one of the many ways that recent technology has allowed us to shorthand communication by creating artificial, mediated interfaces that lack subtlety and cater to our weaknesses, often too well.

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