# "If I'm Close with Them, It Wouldn’t Be Weird": Social Distance and Animoji Use 

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#### Abstract

Each new type of graphical icon (graphicon) in CMC has been more complex and multimodal than its predecessor. For this reason, and because of their novelty, Konrad, Herring, and Choi (2020) claim that new graphicon types are initially restricted to use in intimate relationships. We explore this proposition qualitatively by interviewing student users of Animoji - dynamic, large-scale emoji on the Apple iPhone - about who they send Animoji messages to and why. The results of a think-aloud card sort task in which participants ( $\mathrm{N}=33$ ) matched seven Animoji with seven relationship categories at different social distances and sent a message to each one were triangulated with responses to open-ended questions before and after the task. Participants sent Animoji to close friends, significant others, and siblings, and to a lesser extent, parents and other family members. They rejected the idea of sending Animoji to more distant relationships such as a teaching assistant, a mentor, and new friends. Different Animoji were considered more or less suitable for each relationship, as well as for recipients of different genders. The reasons given by the interviewees for sending Animoji to each relationship category centered around themes of politeness, (in)formality, familiarity, and self-presentation.


Keywords: Graphicons, Intimacy, Politeness, Relationships

## 1 Introduction ${ }^{1}$

The increasingly multimodal nature of computer-mediated communication (CMC) systems affects users' experiences of social connectedness. In particular, graphical enhancements such as emoticons, emoji, stickers, and GIFs (graphicons; [1]) facilitate playfulness and emotion expression in CMC, both of which are positively associated with intimacy [2,3], or the feeling of closeness with another. Conversely, degree of intimacy as well as degree of multimodality can affect which relationships one uses graphicons with. As intimacy between interlocutors increases, they become more willing to use and accept graphicons, whereas in less intimate relationships, recipients have been known to react negatively, especially to graphicons that are more dynamic and

[^0]visually complex [4, 5]. Thus, senders may avoid using these icons with less intimate interlocutors, for fear of causing offense.

Another factor that influences to whom one sends graphicons is the age of the graphicon type. Konrad et al. [4] posit that a new graphicon type is initially restricted to very close relationships; sharing it with more socially distant relationships is only acceptable after it has achieved widespread adoption. This trend is evident in the evolution of emoticons and emoji, both of which can now be used with a much wider variety of addressees than when they were first introduced. Konrad et al. [4] interviewed and surveyed Facebook Messenger users in 2014 about their use of emoji and stickers. While the participants reported sometimes sending emoji to non-intimate relationships, stickers, which had been introduced more recently, were sent almost exclusively to intimate relationships. The reasons given again involved multimodality: The relatively larger size and greater complexity of stickers made them "intense," and their intensity was less likely to be misconstrued as inappropriate in intimate relationships.

Konrad et al.'s [4] proposal generates predictions about the use of Animoji, which are new and highly multimodal. Introduced in November 2017 with the Apple iPhone X, Animoji are large-format emoji that represent animals (Dog, Cat, etc.), imaginary creatures (e.g., Unicorn), and anthropomorphized objects (Poop, Robot, etc.). Of particular interest in this study, users can record short videos of themselves animating an Animoji with their facial expressions and voice that can be sent to other iPhone users on the iMessage app. Animoji are larger than the stickers described in Konrad et al.'s [4] study and, in addition to their dynamic nature, are visually complex and emotionally expressive. Thus, their use should be similarly restricted to close personal relationships at this relatively early stage of their existence.

We evaluate this proposition through a qualitative, exploratory user study involving 33 university students in the United States. Animoji messages are typically sent in private one-to-one communication, and collecting examples of authentic, private use is difficult. To get around this, we elicited information about the students' Animoji use in three ways. First, we asked them directly who they typically send Animoji to. They then performed a think-aloud card sort task in which they matched Animoji with relationship categories at different social distances and then recorded and sent an Animoji message to each relationship. After, they were asked about which pairings felt most natural or unnatural and why. Thus, the research questions that guided our analysis are:

RQ1: To whom do iPhone users send Animoji?
RQ2: In the card sort task, which Animoji do the users match with each relationship, and why?

RQ3: Which card sort pairings seem most natural or unnatural, and which would be most and least likely to occur in actuality?
RQ4: How, if at all, do the answers to RQs 1-3 vary according to the gender of the interlocutors?

The pairings were quantified using descriptive statistics, and the reasons provided by the participants were analyzed using thematic content analysis [6].

The interviewees reported sending Animoji primarily to close peer relationships (significant other, close friend, sibling) and secondarily to parents and other family. In the card sort task, they paired "weird" and "edgy" Animoji (e.g., Poop) with intimate relationships and paired "normal" (e.g., Dog, Monkey) and "polite" Animoji (e.g., Cat, Robot) with more distant relationships where risk avoidance was a concern, such as with a new friend or a teaching assistant. Additionally, some Animoji were more often described as representing the self, especially when matched with intimate relationships, whereas Animoji described in relation to the addressee were matched more often with socially distant relationships, seemingly as a way to show consideration or pay face to the addressee. However, weird and edgy Animoji were matched more with male addressees, and inoffensive Animoji were matched more with female addressees, independent of social distance. Overall, the participants said that it felt most natural and that they were most likely to send Animoji to social intimates.

These findings support Konrad et al.'s [4] claim that new graphicon types are initially restricted to use in intimate relationships. Further, the findings suggest that some Animoji could eventually be used to manage more distant social relationships.

## 2 Relevant Literature

### 2.1 Social Distance and Graphicon Use

Social distance is defined by Oxford Languages as "the perceived or desired degree of remoteness between a member of one social group and the members of another, as evidenced in the level of intimacy tolerated between them." The use of graphicons in CMC is an important strategy to establish, maintain, and manage relationships at different social distances. For example, emoji are sent as a form of low-cost phatic communication to indicate that the recipient is "on one's mind" [7]. Similarly, people use stickers in mobile messaging as icebreakers in private and group chat rooms, and also to manage existing relationships by expressing themselves as they wish to appear [8].

Further, graphicon use in online communication enhances feelings of intimacy, which is associated with familiarity, trust, self-disclosure, and personal/private contexts [ 9,10$]$. In an experimental study, Janssen et al. [3] found that increasing the quantity of emoticons used in CMC led to higher levels of perceived intimacy. In another experimental study, Wang [11] analyzed perceptions of intimacy when people receive mobile messages with or without stickers; the combination of text and stickers in a message produced a higher level of perceived intimacy than a text-only response. Emoji, GIFs, and stickers are often sent for fun or to amuse the recipient [4, 12], and playfulness is a strong correlate of interpersonal closeness [2]. Thus when people aim to create proximity with the message recipient, visual elements are preferred over strictly verbal means of communication [13, 14].

The nature of the relationship can also affect which, if any, graphicons are used. For example, one user interviewed by Zhou, Hentschel and Kumar [15] said she actively searches for stickers about NBA stars and sends them to her husband, because she knows that he is a super fan. If the sender does not know the addressee well, though, it
might not be appropriate to send graphicons. Xu et al. [5] posited that "the more intimate the receiver is with the sender ... the more likely that emoticons ... will be utilized and accepted by both parties." Conversely, less intimate recipients may experience irritation when they see emoticons, especially "those animated ones." Thus, the sender may avoid using frequent emoticons with receivers with whom there is a low level of intimacy. Similarly, Konrad et al.'s [4] interviewees reported sending stickers only to intimate relationships, in part because the stickers' "intensity" was less likely to be misconstrued as inappropriate in intimate relationships. Shared or lack of shared knowledge of a graphicon type is also a consideration. In an interview study of GIF users [16], interviewees expressed concern that the older generation would not understand GIFs, including what the reference was, how to "read" it, and whether it was a legitimate form of communication at all.

Finally, graphicon use may depend on the status differential between participants. In an experimental study, when the addressee occupied a higher position in the social hierarchy, people who normally used many emoji tended to use fewer emoji in their text messages, and people who used almost no emoji tended to increase their emoji frequency to match the emoji frequency of the higher status person [17]. It follows that if the higher-status person in a relationship uses no graphicons, their interlocutor might hesitate to use any with them.

### 2.2 Animoji Use

Animoji are a novel, dynamic set of graphical filters that allow users to modify their digital self-presentation and that afford play with identity in mediated communication [18]. Memoji are Animoji in the shape of human heads with customizable facial features. Animoji and Memoji can be used to send short video clips in text messages, to videochat via FaceTime, and to generate sticker sets. This study is concerned with Animoji video clips sent in text messages.

As yet, Animoji have been discussed in few scholarly studies. Paasonen [19] mentions Animoji on the iPhone X in passing as an example of "foregrounding the functionalities of affective interaction" to downplay the "creepiness" of facial recognition technology. The affective nature of Animoji is also highlighted in an early interview study by de Costa and Prata [20]. Users of Animoji, Memoji, and AR Emoji in Brazil said that they mainly use these graphicons with close and trusted people, such as family and friends, as they can help create affective memories and develop friendships. Because of their expressiveness, dynamic movement, and customizability, they are also used to chat with and entertain younger siblings [20].

In an analysis of Animoji videos clips that were shared publicly on YouTube and Twitter, Herring et al. [18] found that users tended to modify their normal speaking voice and enact the Animoji characters in creative and playful ways. Men used the Dog, Monkey, Robot, and Poop Animoji more often, and women used the Unicorn, Pig, Chicken, and Cat more often, consistent with gendered stereotypes (e.g., "men are dogs, women are cats") and color preferences (e.g., brown tones vs. pastel colors). Herring et al. [21] delved deeper into gender differences in Animoji use in an interview study. Female interviewees self-reported using Animoji more often than male interviewees,
and they were more likely to say they used certain ones because they were "cute"; however, the men were earlier adopters of the technology and displayed greater comfort experimenting with it. While both genders expressed a preference for Memoji over nonhuman Animoji, men were more adventurous in creating Memoji and had generated more versions of them, consistent with the Technology Acceptance Model [22]. Most interviewees were positive about Animoji and reported using them mostly for fun or to be amusing or entertaining.

Of the above studies of Animoji use, only de Costa and Prata [20] considered the nature of the relationship between Animoji sender and receiver, although they mentioned it only briefly. Herring et al.'s [18] observations were based on video clips posted publicly for the purpose of entertaining others; such videos may not reflect Animoji use in private communication and in authentic Animoji-mediated interactions. Finally, although Herring et al. [21] interviewed women and men about their actual Animoji use, their study did not take social distance into account. The present study seeks to expand on this early research and address its lacunae by conducting an in-depth analysis of Animoji and social relationships.

## 3 Method

### 3.1 Participant Recruitment and Demographics

To investigate how and with whom individuals use Animoji, in-depth semi-structured interviews were conducted with self-identified Animoji users between November 2019 and March 2020. Participants were recruited via email and flyers from the population of a Midwestern university town and screened by an online questionnaire to confirm that they had an Apple iPhone X, XR, or 11 (hereafter referred to as an iPhone). The screener also asked questions about their device preferences, demographics (age, gender, first language, education level), and frequency of Animoji use.

A total of 33 participants, including both undergraduate and graduate students, were interviewed face-to-face in a laboratory setting. All participants had some experience with Animoji. The majority of participants ( $58 \%$, $\mathrm{n}=19$ ) identified as female; $39 \%$ $(\mathrm{n}=13)$ identified as male; and $3.0 \%(\mathrm{n}=1)$ identified as non-binary. Since there was just one non-binary individual, only data from the self-identified males and females are included in the analysis of Animoji gender patterns. Participant ages ranged from 18 to 29 ( $\mathrm{M}=21.8, \mathrm{SD}=3.48$; Females: $\mathrm{M}=21.9, \mathrm{SD}=3.72$; Males: $\mathrm{M}=21.2, \mathrm{SD}=3.11$ ). The majority of participants were monolingual American English speakers ( $55 \%, n=18$ ). Of those who did not speak English natively or reported English and another language as their native languages, $15 \%$ spoke Mandarin Chinese, $21 \%$ spoke a South Asian language, and $9 \%$ spoke other languages.

### 3.2 Interview Procedures

Interviews lasted approximately 60 minutes. After signing an informed consent form, each participant was seated diagonally across from the interviewer at a small table in
front of a camcorder on a tripod and a laptop computer running a Zoom video conference, each of which recorded the participant's face and speech. The interviews were semi-structured, and questions were designed to elicit narratives about how participants made choices about the individuals with whom they used Animoji and their reasoning for particular Animoji-related decisions. ${ }^{2}$ This included asking participants directly: "Who do you usually send Animoji to?"

Following this, participants were asked to complete a task aimed at understanding how they selected particular Animoji characters for different types of addressees. A second task was also conducted by asking participants to alternate between using Animoji and not using Animoji during FaceTime chat with a member of the research team. In this study, we focus on the first task, which is described in detail below.

Animoji and Social Relationship Card Sort Task. Participants were given two decks of cards. The first deck depicted seven Animoji characters: Dog, Cat, Monkey, Rabbit, Dragon, Robot, and Poop. The first four Animoji were selected based on Herring et al.'s [18] finding that Dog, Cat, Monkey, and Rabbit were popular Animoji used in video clips posted to social media platforms. The other three Animoji were selected to round out the representation of Animoji characters that were available at the time of the study: two anthropomorphized objects (Robot, Poop) and a fantasy character (Dragon).

The second deck described seven relationship categories: significant other (SO), close friend (CF), sibling (S), older relative or mentor (OR/M), ${ }^{3}$ new female friend (NFF), new male friend (NMF), and teaching assistant (TA). These categories were selected to represent common relationships that our study participants, who were university students, were expected to have, and to whom they could potentially send Animoji messages. The relationships represent varying degrees of social distance. SO, CF, and $S$ relationships are intimate, whereas a TA and new friends are typically not intimate, and an older relative or mentor typically falls in between. The relationships can be categorized more precisely according to the presence or absence of five features associated with intimacy [e.g., 23]: sexual intimacy, blood relationship, frequently shared social activities, long acquaintanceship, and low power differential, as shown in Table 1. ${ }^{4}$ These five features together differentiate among all seven relationship categories except for NFF and NMF, which differ only by gender. ${ }^{5}$ The sums of the features show SO and CF tied in terms of intimacy, but the individual features indicate that they are intimate in different ways (e.g., sexual vs. non-sexual).

[^1]Table 1. Feature profiles of seven social relationships.

|  | SO | CF | S | $\mathrm{OR} / \mathrm{M}$ | NFF | NMF | TA |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sexual/Romantic | 1 | -1 | -1 | -1 | -1 | -1 | -1 |
| Frequently Shared Activities | 1 | 1 | -1 | -1 | -1 | -1 | -1 |
| Blood Relative | -1 | -1 | 1 | 1 | -1 | -1 | -1 |
| Long Acquaintance | 0 | 1 | 1 | 1 | -1 | -1 | -1 |
| Low Power Differential | 0 | 1 | 0 | -1 | 1 | 1 | -1 |



Fig. 1. An example of matches made in the card sort task
The participants were asked to shuffle the decks, review the cards in both decks, and choose the Animoji that they would send to a person in each relationship category. Even if they did not have a particular relationship (such as a SO), they were asked to imagine that they did. As participants were selecting among different matches, they were instructed to think aloud and describe their reasoning behind each choice. Figure 1 shows an example of how one person completed the Animoji-relationship matching task. ${ }^{6}$
After the participant finalized the matches, the researcher left the room while the participant recorded a 15-30 second, asynchronous video clip for each Animoji-relationship pair and sent it to the researcher's phone, as if they were sending it to the relationship for whom it was intended. They were told to use their imaginations and to say anything they wanted in the Animoji clips. The participants were instructed to make a screen recording of their phone during this part of the task.

[^2]After the participants finished sending the seven Animoji, the interviewer reentered the room. The participants were then asked three debrief questions about their experiences sending the Animoji to the relationships represented in the card sort task:

1. How natural did you feel when you recorded those Animoji messages?
2. Did you feel more natural with some more than others? Which ones?
3. Which of the hypothetical people you imagined sending the Animoji to are you most likely to send Animoji to in reality? Which people are you least likely to send Animoji to in reality? Why is that?

### 3.3 Analysis

Pairings produced during the card sorting task were aggregated and sorted. The reasons given by the participants for their matches were analyzed using a grounded theory approach [25]. Each reason was coded for themes in an iterative process, where each was open coded, followed by axial and selective coding. The codes were assigned jointly by at least two of the authors, and $100 \%$ agreement was reached. The findings were also sorted by gender. In light of the qualitative, exploratory design of the study and the small sample size, results are presented using descriptive statistics. Thus, no claims are made regarding the significance or generalizability of the findings.

## 4 Results

### 4.1 Open-Ended Question: Who do you send Animoji to?

When asked about the people to whom they send Animoji, the study participants typically provided more than one answer. Of the 33 participants, most mentioned close friends ( $58 \%$ ) and/or their significant other ( $55 \%$ ). Many participants also reported sending Animoji to their siblings ( $30 \%$ ), and some reported sending them to their parents or grandparents ( $24 \%$ ) and other family members ( $12 \%$ ) such as cousins, aunts, and uncles. No one reported sending Animoji to any other relationships. However, other possible Animoji recipients were probed in the task that followed.

### 4.2 Card Sort Task

Relationship Type and Animoji Selection. The matches made in the Animoji-relationship card sort task are summarized in Table 2. The order of the first four columns reflects the relative frequency of Animoji use reported in Section 4.1; the order of the last three columns is from Table 1. The Animoji rows are ordered in the table to show the main associations between Animoji and relationship type on the diagonal as much as possible. (Boldface indicates the high value for the column; italics indicates the high value for the row.)

Table 2 shows that certain Animoji were paired more with some relationships than others. The Poop Animoji was restricted to intimate relationships - significant other
(SO), close friend (CF), sibling (S) - while at the other extreme, Robot was paired most often with the teaching assistant (TA). Similarly, Cat was selected most for a new female friend (NFF) and Dragon for a new male friend (NMF), although Dragon was also the most popular choice for an older relative or mentor (OR/M). Monkey was paired often with both NFF and SO, whereas Dog was paired with all the relationships, especially SO and NMF. Monkey was also paired with all relationships except TA. Reasons for the preferred Animoji-relationship pairings are described in the next two sections.

Table 2. Animoji selected for relationships.

|  | \% CF <br> $(\mathrm{n}=32)$ | \% SO <br> $(\mathrm{n}=32)$ | \% Sib <br> $(\mathrm{n}=32)$ | \% OR/M <br> $(\mathrm{n}=31)$ | \% NFF <br> $(\mathrm{n}=31)$ | \% NMF <br> $(\mathrm{n}=31)$ | \% TA <br> $(\mathrm{n}=32)$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Robot (n=31) | 6 | 9 | 6 | 10 | 3 | 16 | 47 |
| Dragon (n=32) | 19 | 3 | 6 | $\mathbf{2 3}$ | 3 | 35 | 13 |
| Cat (n=31) | 9 | 6 | 9 | 16 | 29 | 13 | 16 |
| Rabbit (n=30) | 3 | 13 | 16 | $\mathbf{2 3}$ | 32 | 3 | 6 |
| Monkey (n=33) | 16 | 22 | 16 | 16 | 23 | 10 | 3 |
| Dog (n=32) | 13 | 19 | 13 | 13 | 10 | 19 | 16 |
| Poop (n=32) | 34 | $\mathbf{2 8}$ | 34 | 0 | 0 | 3 | 0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Reasons for Sending to Relationships. We conducted a thematic content analysis of common reasons given by participants to explain why they paired an Animoji with a particular relationship type. A reason needed to be mentioned for a given relationship type at least five times to be included as a category in this analysis. Six themes (with variants in parentheses) were identified: weird (novel, surprising); edgy (risky, "could send them anything"); funny (fun, silly, goofy, playful); cute; normal (unthreatening); and polite (wise, respectful, or professional). The themes can be situated along a continuum from most risky (weird, edgy) to least risky (normal, polite), or, in the terms of politeness theory [26], from most to least threatening to the addressee's face.

The distributions of the reasons given for each relationship are shown in Table 3. The table is arranged to reveal the main associations between relationship type and reason on the diagonal as much as possible. (Boldface indicates the high value for the column; italics indicates the high value for the row.) Because participants sometimes mentioned more than one theme in the reason they gave for a given relationship, the totals in Table 3 add up to more than the total pairings in Table 2.

Certain reasons were more likely to be mentioned for certain relationships. For example, weird Animoji were paired especially with CF, edgy Animoji with CF and SO, and funny Animoji with CF, S, and SO - all intimate relationships. Conversely, cute was the main reason for matching an Animoji with a NFF, and polite the main reason for choosing an Animoji to send to a TA or OR/M, while Animoji considered normal

Table 3. Reasons sorted by relationships.

|  | \% Weird <br> $(\mathrm{n}=17)$ | \% Edgy <br> $(\mathrm{n}=22)$ | \% Funny <br> $(\mathrm{n}=35)$ | \% Cute <br> $(\mathrm{n}=33)$ | \% Normal <br> $(\mathrm{n}=44)$ | \% Polite <br> $(\mathrm{n}=20)$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{CF}(\mathrm{n}=29)$ | $\mathbf{3 5}$ | 41 | $\mathbf{2 9}$ | 9 | 2 | 0 |
| SO (n=28) | 18 | 45 | 17 | 27 | 0 | 0 |
| S (n=16) | 24 | 14 | 20 | 6 | 0 | 0 |
| NFF (n=21) | 0 | 0 | 9 | 30 | 18 | 0 |
| NMF (n=18) | 12 | 0 | 14 | 3 | 23 | 0 |
| OR/M (n=30) | 0 | 0 | 6 | 18 | 25 | 55 |
| TA (n=29) | 12 | 0 | 6 | 6 | $\mathbf{3 2}$ | 45 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

were paired with a TA, OR/M, and new friends of either gender - all less intimate relationships. Managing face is especially important in less intimate relationships [27], and thus participants paired normal Animoji with more distant relationships and polite Animoji with relationships where there is a power differential. OR/M and TA appear next to each other in Table 3 for this reason.
The six themes are illustrated in the following quotes from study participants. (Participant ID and gender are indicated in parentheses.)

1. Weird (to CF): "I feel like if I am close with them, it [Poop] wouldn't be weird." [p30, M]
2. Edgy (to SO): "Because I don't think poop is something that everyone will appreciate. I feel like, being an SO, you have built up to the relationship. Even though you're sending the poop Animoji it's like acceptable. I don't know if it will be appreciated but people won't like get mad" [p32, F]
3. Funny (to S) "If I am thinking of my sister, I would definitely put the monkey. Just because the only thing that I think of is funny business. Monkeys are always like ... just messing around. That's just how siblings are." [p28, F]
4. Cute (to NFF): "[The rabbit] is not as exotic as the dragon or robot, and it's kinda cute. Girls like these little animals." (p17, F)
5. Normal (to NMF): "Personally I would only send a new male friend like just a plain smiling face, that's all... I don't want to send them something too cute or to make them feel like I'm interested or something. I don't want to send something that may make them feel like I crossed the line ... So probably just a monkey." (p10, F)
6. Polite (to $\mathrm{OR} / \mathrm{M}$ ): "A dragon is like an old wise person. Older relatives and mentors are like that. I'm saying they are like the dragon by sending the dragon." [p29, M]
7. Polite (to TA): "[The robot] might be one of the more professional Animojis. You should be professional with a TA." $[\mathrm{p} 21, \mathrm{~F}]$.

Reasons for Animoji Selection. We further sorted the reasons given for the pairings by individual Animoji, and this also revealed patterned regularities. That is, characteristics were identified for each Animoji that are somewhat independent of the relationship it was intended for, as shown in Table 4. The column order is the same as in Table 3; the rows are ordered to reveal the main associations between Animoji and reasons on the diagonal. (Boldface indicates the high value for the column; italics indicates the high value for the row.)

The clearest association in Table 4 is for Rabbit, which was most often described as cute. Monkey was described as funny and cute, Dog as normal and cute, and Cat and Robot as polite and normal, although Robot was also sometimes characterized as funny and weird, depending on the relationship with which it was matched. Dragon also split depending on intended addressee, between weird (for CF and NMF) and polite (for OR/M). Finally, Poop was described variously as edgy, funny, and weird. ${ }^{7}$

Table 4. Reasons sorted by Animoji.

|  | \% Weird <br> $(\mathrm{n}=17)$ | \% Edgy <br> $(\mathrm{n}=22)$ | \% Funny <br> $(\mathrm{n}=36)$ | \% Cute <br> $(\mathrm{n}=34)$ | \% Normal <br> $(\mathrm{n}=44)$ | \% Polite <br> $(\mathrm{n}=19)$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Robot (n=21) | 12 | 9 | 14 | 0 | 16 | 26 |
| Cat (n=15) | 0 | 0 | 0 | 9 | 18 | 21 |
| Dog (n=25) | 0 | 5 | 0 | 26 | 32 | 5 |
| Rabbit (n=29) | 0 | 9 | 6 | 44 | 18 | 11 |
| Monkey (n=24) | 0 | 5 | 33 | 21 | 9 | 0 |
| Poop (n=30) | 29 | 59 | $\mathbf{3 3}$ | 0 | 0 | 0 |
| Dragon (n=28) | 59 | 14 | 14 | 0 | 7 | $\mathbf{3 7}$ |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

Most of the top associations in Table 4 are illustrated in examples 1-7 above. The following participant quotes illustrate two others.
8. Dragon (weird): "Because it's a close friend so I can send her weird stuff. Dragon is kind of like weird stuff. ... It's like an old man, but also intimidating. So uh, I don't know, just uh weird stuff to close people." $[\mathrm{p} 10, \mathrm{~F}]$

[^3]9. Dog (normal): "Just because it is very neutral. Maybe it can be a connecting point like 'Oh I have a dog, you have a dog'. I'd say it's pretty neutral to the TA, not unprofessional like the poop or the robot." (p28, F)

Summary of Card Sort Task Results. The overall findings from the card sort task are summarized in Figure 2. The column order follows Table 2, and the rows are ranked in order of descending pairing frequency (e.g., CF was most often paired with Poop, which was described as edgy, followed by Dragon, which was described as weird, etc.).
Close

Friend | Significant |
| :---: |
| Other |



Fig. 2. Summary of card sort task results.
As Figure 2 shows, certain Animoji were preferentially associated with certain relationships, although the reasons for choosing them often vary depending on the relationship. For example, an interviewee would orient toward Dog's cuteness when sending it to a SO but focus on its normalness when sending to a NMF or a TA. Dragon could be weird when sent to a CF but polite (wise) when sent to an older relative or mentor. In these split uses, a different aspect of the Animoji was highlighted as the reason for pairing it with each relationship (e.g., the Dragon's unusual appearance vs. what it symbolizes).

### 4.3 Self vs. Addressee Orientation

An unanticipated finding that emerged from the reasons given for the Animoji-relationship pairings was that the participants tended to adopt one of two perspectives: The Animoji in some way represented the participant's self, or the Animoji was representative of, or associated with, the addressee. The addressee orientation is illustrated in examples 3,4 , and 6,7 above, while self-orientation is illustrated in 10-11 below.
10. "When I put myself as a rabbit, I see myself as like- somehow, rabbit makes me feel like I am younger, cute, innocuous ... safe to send to older people." [p14, M]
11. "Dragons kinda have a special meaning in China... Like all the emperors have dragons on their shirts. It's a figure of, like, power... [Interviewer: so you use it with a male friend to assert dominance?] Yes." [p32, F]

Both orientations were expressed for each relationship type, although the addressee orientation was more common, as shown in Figure 3. As the figure shows, more reasons
given for intimate relationships (i.e, SO and CF) were oriented toward the self, while reasons given for the less intimate relationships (NMF, NFF, and OR/M), with the exception of S and TA, were more focused on the addressee.


Fig. 3. Self vs. addressee orientation and relationships.


Fig. 4. Self vs. addressee orientation and Animoji.
Reasons for Animoji choice also differed in self vs. addressee orientation (Figure 4). Most Animoji choices were oriented toward the hypothetical addressee, especially Cat, Robot, and Dragon; these were also described as polite. In contrast, the reasons given for the Rabbit were mostly about the sender, as illustrated in example 10.

Taken together, the patterns in Figures 3 and 4 suggest that more socially distant recipients are accorded greater consideration by Animoji senders, who imagine what their addressees are like and what they might appreciate, and who pay them face through the use of polite Animoji. In contrast, representing oneself (or how one wishes to be seen) is more acceptable with intimate recipients, e.g., through cute Animoji.

### 4.4 Naturalness

After the participants had completed the card sort task and sent Animoji clips to the hypothetical addresses, they were asked debrief questions about how natural or unnatural it felt to record the Animoji messages, and how likely or unlikely they were to send Animoji to those relationship categories in reality. The answers to these questions overlapped considerably, since all referred to the same pairings. We combined them into two categories (relationships, Animoji) for the purpose of the analyses in this section.

Relationships. Similar to the responses to the open-ended question in section 4.1, participants overwhelmingly said that they would be most likely send Animoji to close relationships - SO, CF, and/or S. A smaller percentage specified they would send to an OR who was not a mentor. No one said they would send an Animoji to a mentor. Conversely, participants were least likely to send an Animoji to a TA - although NMF and MFF were also mentioned by some people as unlikely. See Figure 5.


Fig. 5. Most and least likely relationships to send to.
Animoji. We also asked which Animoji felt most natural to send in reality. Most participants focused on relationships, but some mentioned Animoji in their answers. Dog and Monkey were the most natural, while Robot, followed by Dragon and Poop, were the least natural Animoji to send, as shown in Figure 6. Miscellaneous responses such as "Animoji with a lot of movement" and "all of them" were coded as Other.

The most likely Animoji to be used are those described as normal, and the least likely Animoji are described as weird and edgy (Dragon and Poop). However, Robot, which was often described as professional (polite), was the least likely of all the Animoji to be used. In part, this was because it was usually paired with the TA, and sending an Animoji to a TA was felt by all participants to be unnatural and inappropriate.


Fig. 6. Most and least natural Animoji to send.

Reasons for saying certain relationships/Animoji are natural/likely. Next, we categorized the reasons given for the naturalness and likeliness responses. Nine categories emerged from this analysis out of a total of 71 reasons.

The most common reasons involved politeness. Animoji were viewed as very informal ( $28 \%$ ), so a relationship that called for formality was not right for Animoji. One participant explained that Animoji were too new to be used in a formal context:
"I think Animojis are an extremely informal way of communication, so definitely I would not personally send them to someone that I would have not known very well. ... It's not a traditional form of texting. It's something new, and I just feel it's just targeted to people who are young as a fun way [to communicate]." [p31, F].

There was also concern about both appropriateness (6\%) and the possibility of giving offense ( $1 \%$ ) to someone you do not know well.

Four of the categories that emerged are qualities associated with intimacy. Study participants said they would send Animoji to relationships where there was familiarity $(13 \%)$ and closeness ( $13 \%$ ) between the two, where the interviewee had a personal relationship with the receiver ( $7 \%$ ) and was comfortable ( $13 \%$ ) with them. One participant said that she would only send Animoji to someone she was familiar with, "because I know them pretty well, so I feel very comfortable just being silly or goofy." She added, "I feel like Animojis are especially about recording yourself, like are more personal, you have to know someone for a while in order to send them." [p27, F]

Related to this were cases where the participant already sent Animoji to that relationship type, having made a habit ( $13 \%$ ) of it, which made it easier to pretend to send Animoji to them in our study. One participant said he was most likely to send Animoji to his brother and to his best friend "because I send them Animoji all the time" [p4, M].

Finally, age ( $8 \%$ ) was a concern as regards older relatives, who were sometimes believed to be unable to understand either Animoji or technology [cf. 16]. A female
participant said, "For an older relative, they probably don't know what it is. They wouldn't particularly, maybe even get it" [p27, F]. Conversely, several people commented that they would be likely to send Animoji to a younger sibling, e.g., to tease or amuse them [cf. 20].

### 4.5 Gender Variation

Although a full analysis of gender-based variation is beyond the scope of the present paper, several gender patterns must be noted briefly here.

First, the women more than the men reported sending Animoji to their significant other ( $63 \%$ vs. $38 \%$ ) and close friends ( $63 \%$ vs. $46 \%$ ), whereas fewer women than men sent Animoji to siblings ( $26 \%$ vs. $38 \%$ ) and (grand)parents ( $21 \%$ vs. $31 \%$ ).

Moreover, women and men matched different Animoji with their SOs and CFs in the card sort task. Women overwhelmingly chose Poop for their SO, while men mostly chose Dog and Monkey. With CFs, women mostly chose Dragon followed by Dog, and men mostly chose Poop. Assuming a default cross-sex bias in SO relationships and a same-sex bias in CF relationships, ${ }^{8}$ it appears that participants of both genders preferentially send risky or edgy Animoji to men and normal and polite Animoji to women.

A similar pattern is evident in the Animoji that were paired with new female and male friends. Both genders paired NMF with Dragon (weird, funny) followed by Dog (normal) and Robot (funny). For NFF, both genders mostly chose Rabbit (cute), Cat (normal), and Monkey (normal). Again, more normal Animoji were chosen for the hypothetical female recipient.

Women and men generally agreed on the reasons for choosing particular Animoji. The exception is polite: Robot was described as polite (professional) by $36 \%$ of women and $0 \%$ of men, while Dragon was described as polite (wise) by $60 \%$ of men and $29 \%$ of women. In contrast, men often described Robot as normal, and most women described Dragon as weird. This may reflect differences in attitudes towards the entities that the Animoji represent (e.g., robots may be more 'normal' for men than for women).

No gender differences were found in self vs. addressee orientation or in perceptions of naturalness in the card sort task. In the reasons given for why certain pairings felt more or less natural, however, more men mentioned familiarity, and somewhat more women mentioned closeness, personal connection, and age-related considerations.

## 5 Discussion

### 5.1 Research Questions Revisited

Our first research question asked: "To whom do iPhone users send Animoji?" The students we interviewed send Animoji predominantly to close peer relationships: close friends, significant others, and siblings. They also reported sending Animoji to parents and other extended family members, albeit to a lesser degree.

[^4]Our second research question asked: "In the card sort task, which Animoji do the users match to each relationship, and why?" Based on the task results, normal Animoji such as Cat, Monkey, and Dog can be sent to anyone and were often paired with more distant relationships. Polite Animoji (such as Dragon and Robot) were paired with relationship categories with a larger power differential and where risk avoidance was a concern. Weird (i.e., Dragon and Poop) and edgy (i.e., Poop) Animoji were only appropriate when sent to close relationships. The principle underlying the pairings seems to be: Use safe Animoji with risky relationships, and risky Animoji with safe relationships. At the same time, although with certain Animoji there were strong specialized associations, there was considerable spread in our data, especially in Table 2. Intended addressee played a crucial role in how Animoji choices were rationalized, such that, for example, Dragon was weird when sent to a close friend but polite when addressing an older relative. The rationales for these choices focused variously on the recipient and on properties of the Animoji itself, such as its appearance. ${ }^{9}$

Third, we asked: "Which card sort pairings seem most natural or unnatural, and which would be most and least likely to occur in actuality?" Interviewees reported that they found sending Animoji to close personal and familial relationships most natural, and that they were most likely to send Animoji messages to those relationships. These are the same relationship categories reported in response to RQ1. They all rejected the idea of sending an Animoji to a TA and expressed discomfort at the idea of sending Animoji to new friends of either gender (although this may have been partially caused by the difficulty of thinking of a new friend to send to), as well as to an older relative or mentor. The most normal Animoji seemed the most natural to use, while weird and edgy Animoji were the least natural, although Poop was included in both categories. Robot stood out as being mostly polite (professional), while also being the least natural to use. The main driver of whether or not interviewees found pairings natural or unnatural was the (in)formality of the relationship, followed by whether they were familiar or comfortable with the person they imagined sending it to, as well as if they already had a habit of sending Animoji to them. Age was also mentioned, in that sending Animoji to younger people seemed natural and likely, but sending them to members of older generations could cause misunderstanding and thus was unlikely to occur.

Last, we asked: "How, if at all, do the answers to RQs 1-3 vary according to the gender of the interlocutors?" With regard to RQ1, female interviewees sent Animoji more often to their SO and close friends, whereas male interviewees reported sending Animoji more often to a sibling or parent. With regard to RQ2, participants preferentially sent weird and edgy Animoji to male recipients and inoffensive (i.e., cute and normal) Animoji to female recipients. This suggests that women were perceived to be more sensitive to face threats [26]. Our female and male participants also differed in which relationship they most often described in terms of politeness (TA or OR/M) and which Animoji they considered most polite (Robot or Dragon). As for RQ3, no gender differences were found in whether interviewees found Animoji-relationship pairings natural or unnatural.

[^5]
### 5.2 Additional Findings

Initially, it was unclear whether to posit SO or CF as more intimate (Table 1). In fact, most of our results point to CF as more intimate in terms of Animoji use. However, interviewees were more self-focused (and self-revealing) when addressing a SO than a CF (Figure 3), which suggests that SO is more intimate. Gender confounds these findings, in that women sent more and "riskier" Animoji to their SOs than men did, while men sent more of both to CFs. This suggests that for the women but not the men, the SO relationship was the most intimate. It could also be that women and men understand intimacy with a SO differently, as suggested by [29].

Another unexpected finding was the self vs. addressee distinction in reasons for An-imoji-relationship pairings. The participants represented themselves with an Animoji more often when messaging a SO or CF. Overall, however, they more often oriented to their addressees. From their comments, it appears that our interviewees felt they could express their "true" natures (via Animoji) only to their closest intimates, while in less intimate relationships, which the card sort task required them to consider, they had to pay face to their addressees. They did this by appealing to their interests and sensibilities. With sibling relationships, particularly with younger siblings, this took the form of sending Animoji to entertain or reference private family jokes.

The Animoji that were used more to represent the self were Rabbit and Dog. Rabbit in particular was used to frame the sender as cute, small, and innocent in relation to the recipient, e.g., a grandparent or a SO. Much of the reasoning around representing the self with an Animoji focused on making the sender appear normal or non-threatening. At the same time, the rationale varied according to the relationship context and the Animoji. For example, the (female) self was represented as powerful and dominant over a NMF when sending the Dragon (ex. 11). Varied rationales were also given for Animoji that were used more often to represent the addressee, i.e., Cat, Robot/Dragon, and Poop, such as that the addressee might like or be amused by what is represented by the Animoji, or that the Animoji resembles the addressee in some way.

## 6 Conclusions

CMC platforms are commonly used as a means of maintaining relationships with family and friends. These environments foster a sense of belonging, shared space and time, and perceived proximity [28]. In this qualitative user study, we triangulated methods, including interviews and a think-aloud protocol, to answer the question: To whom do Animoji users send Animoji? The main contributions of this research are as follows.

The study is the first to report on why users do or do not send Animoji to particular relationships. As such, it contributes to the small but growing body of research on social distance and graphicon use. Moreover, it identified politeness, (in)formality, familiarity, and self-presentation as reasons for Animoji choices. It also uncovered differences in which Animoji are preferentially sent by and to women and men. These findings complement previous findings of gender differences in Animoji use [18, 21].

Last, the Animoji results provide strong support for the claim that new, multimodal graphicons tend initially to be restricted to use in intimate relationships, where they are
less likely to be misconstrued or seen as inappropriate [4, 5]. Animoji pattern similarly to GIFs and stickers in this regard, and if their use catches on, they can be expected to follow a similar evolutionary trajectory. Our results suggest that normal Animoji such as Dog, Monkey, and Cat will be the first to extend to more distant social relationships.

### 6.1 Limitations and Future Directions

We acknowledge several limitations to this exploratory, qualitative user study. First, our small sample size $(\mathrm{n}=33)$ combined with the study design meant that it was not possible to analyze our data using statistical methods. Future studies could build on this study by examining larger numbers of Animoji users with statistical analysis in mind. The artificiality of the card sort task is a limitation, as well. Future studies should aim to analyze actual Animoji messages sent by iPhone users outside of a lab environment. Also, the messages sent in the card sort task were not analyzed in this paper. Future research should examine how Animoji message content and vocal performance [1] vary depending on the social distance between sender and addressee. A methodological limitation is that OR and Mentor were combined in our analyses, yet they patterned differently in terms of naturalness, suggesting that they should be treated as separate categories in future research. Finally, our study interviewed Animoji senders. The perceptions and behaviors of Animoji recipients should also be investigated.

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[^0]:    1 This work was partially funded by the Office of the Vice Provost of Research at Indiana University Bloomington through the Grant-in-Aid Program. Special thanks are due to Madeline Adams for assisting with the interviews and Dana Skold for modeling Fig. 1.

[^1]:    2 We also asked participants to describe their experiences and perspectives on Animoji use for self-representation; those findings are reported in [21].
    3 Mentor was included as an alternative to Older Relative to provide options for people who did not have or who did not speak with older relatives.
    4 This classification follows the approach of semantic feature analysis in linguistics; see, e.g., [24]. A value of 1 indicates that a feature is present, -1 indicates it is absent, and 0 indicates that the feature is sometimes present and sometimes absent.
    5 Women have been found to use Animoji more than men do [21]. Accordingly, NFF is ordered before NMF in Table 1.

[^2]:    6 Three pairings were excluded from analysis because the participants declined to match an Animoji. The other matches made by those participants are included in the analysis, however, resulting in 228 observations out of 231 total possible pairs.

[^3]:    7 Each Animoji was also sometimes chosen last in the card sort "by process of elimination." This occurred roughly the same number of times for each Animoji.

[^4]:    ${ }^{8}$ At least two female and two male interviewees were in same-sex relationships, however.

[^5]:    9 Animoji may also have different associations in different cultures. Unfortunately, the small size of our sample and the diversity of backgrounds of the non-native English speakers made meaningful comparison of the native and nonnative participants impossible.

