

Repurposing Emoji for Personalised Communication: Why 🍕 means “I love you”

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ABSTRACT

The use of emoji in digital communication can convey a wealth of emotions and concepts that otherwise would take many words to express. Emoji have become a popular form of communication, with researchers claiming emoji represent a type of “ubiquitous language” that can span different languages. In this paper however, we explore how emoji are also used in highly personalised and purposefully secretive ways. We show that emoji are repurposed for something other than their “intended” use between close partners, family members and friends. We present the range of reasons why certain emoji get chosen, including the concept of “emoji affordance” and explore why repurposing occurs. Normally used for speed, some emoji are instead used to convey intimate and personal sentiments that, for many reasons, their users cannot express in words. We discuss how this form of repurposing must be considered in tasks such as emoji-based sentiment analysis.

Author Keywords

Emoji, Computer Mediated Communication; Personalisation; Digital Intimacy

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

INTRODUCTION

Emoji are a popular way to communicate over digital media, with Swiftkey (a mobile phone keyboard company) estimating that 6 billion messages containing emoji are sent every day using their keyboard [via 24]. In 2015, the Oxford English Dictionary declared, for the first time ever, a “pictograph” as their word of the year – the *Face With Tears of Joy* emoji (😄) [15]. The website emoji tracker.com, which updates the number of emoji being used in real time on Twitter, also places the *Face With Tears Of Joy* smiley as the most popular emoji on the microblogging site. The use of

images, rather than text, has tempted some researchers to claim that emoji represent a type of ubiquitous language, capable of being understood by people from varying languages and cultural backgrounds [11]. This claim has been questioned by others, as evidence suggests that there are significant differences in the patterns of emoji use between countries, languages, and cultures [18,19]. Moreover, even if emoji usage and frequency were similar between groups, a common alphabet does not mean that the emoji will be used in similar ways or retain their meaning between groups.

Critics of the ubiquitous language theory highlight that cultural differences may lead interpretations of emoji to vary [13]. Emoji are images, and are presented without textual descriptions (although each emoji has a formal, Unicode-assigned description). This ambiguity can cause emoji to have multiple differing interpretations from culture to culture.

In November 2016, Apple device users were upset when the company changed the rendering of the Peach emoji [10]. People were angry because they had assigned a meaning to the emoji that no longer made sense after the emoji had been redrawn. As the website Emojipedia reported, the Peach emoji (🍑), when used in messages or in social media, was more likely to refer to buttocks than to the fruit [1]. By altering the way the emoji was visually rendered, users felt that Apple had removed their ability to assign a second meaning to the symbol. Emoji are inherently flexible in their semantic meaning. The Unicode consortium, which determines which emoji will be brought into use, acknowledges this fact and states on their website that emoji are “encoded in Unicode based primarily on their general appearance, not on an intended semantic” [22].

In this paper, we investigate the idea that varying interpretations can lead to emoji being assigned different meanings. We focus specifically on usage at small scales, looking at the “micro cultures” that exist between partners, friends and family. We investigate how certain emoji are repurposed between small communities, for example two friends, and given additional or alternative meanings which exist solely within those micro cultures.

RELATED LITERATURE

Understandability of emoji

The variable meaning of emoji can cause potential problems between users communicating via digital media. One key issue is that of understandability. Miller et al. [13] highlight a theory of psycholinguistics that states that issues of miscommunication can occur between a speaker and addressee if the addressee does not successfully interpret the speaker's message. This problem is heightened when communicating using emoji, which have no set meaning – or whose meaning is presently developing. Having Unicode tags assigned by committee does not guarantee that the 'intended' semantic meaning of a given emoji will be shared by senders and recipients. After all, it is likely that most people never encounter the formal definitions the Unicode Consortium assign to each emoji.

The problem of shared understanding is exacerbated by variations in how emoji are rendered. Although the Unicode consortium name the emoji and assign them a code, it is up to individual platforms to decide how emoji are rendered. Currently the website Emojipedia lists nine different versions of each emoji, each from a different operating system or device manufacturer. This can result in serious miscommunication when two users are sending messages using different technology¹. Studies have shown that the meaning of an emoji, as assessed by human raters, can change depending on the platform in which that emoji has been displayed [13,21]. The valence of the same emoji can vary from positive to negative depending on how it has been rendered.

However, it is not only the variation in rendering that can lead to differing interpretations of the same emoji. People ascribe widely varying sentiments to emoji that are identically rendered [13,21]. This highlights that sometimes the assessment of sentiment is based solely on the viewer's individual interpretation. Establishing this kind of shared understanding – and the confusion that arises when it does not exist – is a common challenge in interactional contexts, whether they be animations [8] or gestures [4]. Of course, these ambiguities often exist in written language too. Indeed, emoji are often used to make up for the difficulties in communicating emotion and intent in short text messages [9].

The work we have considered so far assessed emoji on their own, with no textual context. Additional work has shown that it is also possible to misunderstand the intention of an emoji even when paired with text [12]. This makes using emoji during conversations an interaction full of nuance that often requires conversational partners develop a shared understanding [6].

The literature shows that emoji take on manifold meanings depending on both the sender and receiver's perception of the emoji, and is further complicated by divergent renderings of emoji on different platforms. This flexibility of semantics is acknowledged by the Unicode Consortium who, in response to a question regarding the specific meaning of emoji state *"In fact, when used as emoji, many of these characters acquire multiple meanings based on their appearance"*[22].

Cultural variability in emoji use and understanding

Prior to emoji, the emoticon was another visual method of expressing an emotion or non-verbal cue [23]. Emoticons, unlike emoji, were created by the user from punctuation marks and symbols (an example being ':)') to represent a smiley face). A study of emoticon usage across cultures highlighted a difference in emoticon style between Asian- and European-countries, with Japan and South Korea preferring to use vertical emoji (e.g., '^_^') and European and English speaking countries preferring horizontally aligned emoji (e.g., ':)') [16].

Cross-cultural studies have been conducted with the use of emoji, too. Lu et al. [11] conducted a study of emoji usage across 212 countries, gathering data on how 3.88 million users use emoji in their messaging. This data highlighted differences between countries in terms of emoji use. For example, whilst, on average, emoji were used in 7.1% of messages sent during the study across all countries, in France the average number of messages containing emoji was 19.8%. It was not just frequency that varied between countries, but types of emoji – the top ten most frequent emoji were different for the top 10 countries by number of participants. However, all of these countries used emoji relating to face, hands and hearts most commonly.

There does appear to be a link between the way in which emoji are used and the language spoken in the country. Lu et al. [11] showed that there are great similarities in the patterns of emoji used by countries that speak the same language. However, this also related to geographic proximity, as the emoji patterns between Brazil and Portugal were not as similar as those between Brazil and other South American countries.

This literature suggests that there is a high level of variability between cultures in how emoji are used. Culture can also affect how an emoji is understood [3]. When translating between two languages, translators need to be aware of how certain emoji are interpreted in different countries – for

¹<https://www.engadget.com/2014/04/30/you-may-be-accidentally-sending-friends-a-hairy-heart-emoji/>

example where Crying Face (😭) can mean sadness in one culture, in another might mean sleeping².

Technology mediated personal communication

Much of the emoji literature has focused on cross-cultural and cross-language differences in meaning and understanding at national and continental scales. However, technology mediated communication platforms are often used to create very personal and private places for communication [14] meaning differences in usage can be observed in much smaller communities. Previous work has found that emoji can play an important role in the digital creation and maintenance of personal relationships. Kelly and Watts explored how people “appropriate” emoji for purposes other than expressing emotion, show that people use them to simply maintain connections with another person, to add a playful element to communications, or to create a “shared uniqueness”, for example by telling stories generated from randomly chosen emoji [9]. However, this behaviour was reported from a small proportion of participants and the usage was ephemeral; the meaning of certain emoji did not permanently change.

In this paper we consider the specific cultures that develop in small groups: partners, families and friends. In particular, we focus on how these groups actively repurpose emoji to serve new functions, their motivations for these repurposings, and how the affordances of different emoji influence how they get repurposed. We define “repurposing” as giving an emoji a specific and constant meaning beyond the initial “intention” of the emoji designer; this meaning would be inaccessible to an outside observer without explanation. What is specific to this paper, is the consideration of *personalised* repurposing. The act of repurposing has been reported in large groups (e.g., [1]), but here we consider emoji repurposing in smaller micro communities. We contribute a three dimensional analysis of emoji repurposing, exploring why users need to use an emoji at all, why that particular emoji was chosen, and what sentiment they intend to convey.

Method

A brief web-based survey was created using the Google Forms web app. The survey was piloted before dissemination and the questions unchanged. However, Question 4 had further instructions appended to help participants enter an emoji if they were on a desktop computer. The survey contained the following questions (with response types are *in italics*):

1. How old are you? *Age range response*
2. Is there an emoji you use that has a special meaning for just you and the recipient? (The meaning would be unclear to a third party seeing that emoji) *Yes/No response*

3. With whom do you use the special emoji? *Multiple choice answer with ‘other’ free-text option*
4. Which emoji is it? *Short text response*
5. What does that emoji mean? *Short text response*
6. Why do you use this emoji? *Short text response*
7. Why do you have an emoji shorthand for this thing? *Short text response*

None of the questions were compulsory. If a participant answered “No” to the Question 2 then they were thanked for the time and the survey ended, they were not asked any further questions.

For Question 4, simple advice was given to participants on how to bring up the emoji keyboard on a Mac device (ctrl+⌘+space). Entering emoji on Windows and Linux devices is more complicated and so participants using these platforms were advised to type a description of the emoji if they were unable to locate the emoji pictogram when responding to the survey. Of the 72 valid responses, 17 participants reported the emoji in text description form.

Procedure

The survey was advertised on Twitter and Facebook. We attempted to use snowball sampling by requesting “retweets” or “shares” from both participants and non-participants. In total the survey was retweeted 37 times on Twitter and shared 7 times on Facebook. The survey was also advertised on the research ‘subreddit’ of Reddit, the content aggregating website. Survey completion was not reimbursed in any way, so there was no particular incentive for participants to mindlessly work through the whole survey. Given this lack of incentive, the survey was kept purposefully succinct and did not require a large amount of demographic data from the participants. By keeping the survey short, we aimed to reduce the drop-off rate. The survey could comfortably be completed in two minutes.

Participants

The survey was completed by 134 participants. Fifty-seven participants (43%) reported that they did not use a repurposed emoji so did not provide any further data. One participant was removed for providing fabricated data intended to be amusing. Four participants’ data were removed for reporting emoji use considered to be widely understood and therefore neither repurposed nor personal (for instance, the 😊 emoji to represent happiness and the 😏 to be suggestive). In total 72 responses were used in the data analysis. Of these participants, three were between 0-17 years old, 28 were between 18-29, 35 were between 30-39 and six were over 40.

Data Processing

The survey was open for 14 days to collect responses. After this, the data was cleaned to remove null responses and responses that were not considered to fit the request of being

²<https://www.acuitytranslations.com/blog/item/becky-kinnersley>

personal or repurposed. Emoji were all assigned their Unicode name (e.g., 🛀 would be *person taking a bath*) and were categorised according to the common categories used on Emojipedia, Apple’s iOS keyboard, and Google’s Android keyboard (*Smileys & People, Animals & Nature, Food & Drink, Activity, Travel & Places, Objects, Symbols, Flags*). The free text data from questions 4-7 were then openly coded for common themes. A Content Analysis procedure was followed, with open codes being generated to cover the question of how that emoji was chosen (relating to Question 6 of the survey), why an emoji is needed (relating to Question 7 of the survey) and what theme the emoji covered (relating to Question 5 of the survey). These codes were generated by one researcher, and validated independently by a second researcher. Discrepancies were discussed and a final code assigned. For each of the three components (e.g., “Why an emoji is needed”), only one code was assigned for each response. No component could have more than one code.

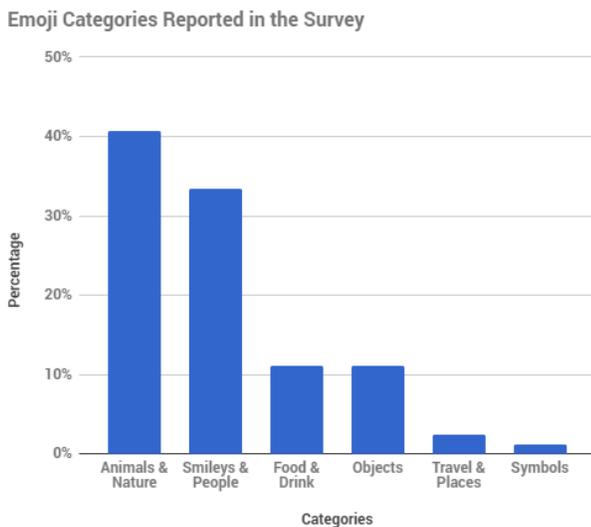


Figure 1 Percentage of repurposed emoji originating from the emoji keyboard categories

RESULTS

Reported Emoji

Eighty-one emoji were reported in the survey. This set comprised 69 unique emoji. Sixty-six emoji were used on their own and 15 were used in sequences of two or three emoji. The most commonly reported emoji was the octopus (🐙) which was reported by four separate participants. Figure 1 shows the number of emoji reported in each of the emoji categories found on the standard emoji keyboard. The most common category was *Animals & Nature*, representing 41% of the emoji reported in the survey. Note, there were no emoji used from the *Activity* or *Flags* categories.

Emoji Recipients

In Question 3, participants were asked to report who they used the emoji with. Set answers were provided: *Partner,*

Friend, Family Member, Family group chat, friend group chat, other. Partner was the most commonly reported recipient for the repurposed emoji, with 47% of participants reporting they used a special emoji with a partner. Figure 2 shows the distribution of people with whom participants used their repurposed emoji.

Five participants used the “Other” category to report their emoji recipient. Two reported a sexual partner, two reported using the emoji in a public space (e.g., Twitter) and one reported using it for themselves. Out of all 72 responses, 85% of respondents reported using the emoji with just a single other person, whereas only 15% reported using it in a group situation.

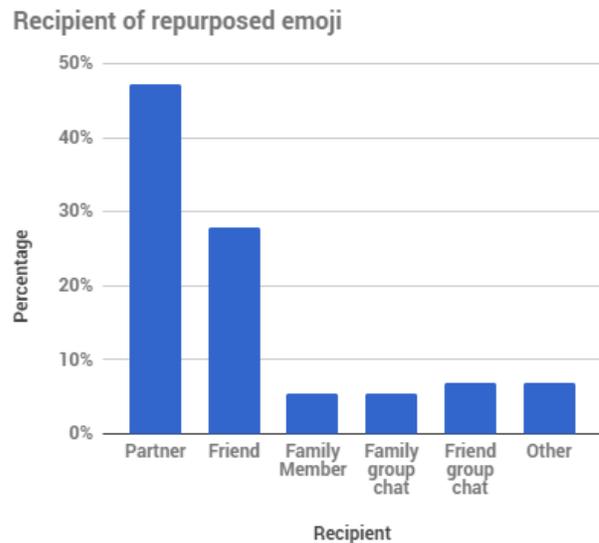


Figure 2 Percentage breakdown of the recipients of the repurposed emoji

Emoji Sentiment

The sentiments of the emoji were determined from the answers to Question 5 of the survey. The reported emoji were coded based on the meaning the participant told us that they were aiming to express. These codes were then grouped to produce the following categories, reported here with their explanations, percentage coverage and examples. Not all emoji reported fit into these categories, 4% fell within an “Unknown” category if the participant did not report the sentiment or it was not detectable from their other responses.

Affection – 21%

This category covers emoji that relate to affectionately used emoji. This might mean emoji used to express romantic love between partners, or platonic love and affection between friends and family. In 80% of cases this sentiment was reported between partners or sexual partners, however in 20% of cases it was used between friends. It was never reported in group or public chats; it was only ever seen in one-to-one conversations.

These emoji were used to express intimacy, *“Hug, cuddling. Just generally being there for each other and reaching out”* – P46, to simply say *“I love you”* or as *“A way of saying ‘hi, I’m thinking of you”* – P49.

Person – 19%

This category relates to emoji that are used in place of a specific person (or animal). This emoji could represent someone external or internal to the conversation. Emoji expressing this sentiment were used for a range of recipients, around a fifth of the time this sentiment was used, it was used in group chats.

The emoji were generated by using an emoji that is known to both to represent that person or animal, *“We use it to symbolise our Scottie dog”* – P12 (a dog emoji was not used in this instance). Many of these instances related to pet names that the participant reported using *“Fish is our nickname for each other”* – P17.

Emotion – 15%

Some emoji were repurposed to allow the participant to express an emotion they were feeling. This form of repurposing was found more commonly amongst friends and family with fewer than a third (27%) of instances being used with a partner.

Emotions expressed in this way ranged from negative *“We use it if one of us is feeling a bit down for no reason.”* – P8 to positive *“Expression of excitement”* – P55. Some emotions expressed using repurposed emoji were neither positive or negative, representing a feeling instead *“We’re big and greedy”* – P13.

Conversational words – 8%

Some participants reported using repurposed emoji for simple conversational words to quickly express acknowledgement.

Conversational emoji included confirmation *“Yes/OK/thumbs-up/understood”* – P23 (note, the emoji was not the thumbs up symbol) or to confirm receipt of the message *“I have read and understood your message”* – P3.

Logistics – 8%

The category of Logistics refers to emoji used when talking about a place or plan. These emoji were used as direct substitutions. For example, 🗼 (Tokyo Tower) instead of typing ‘Tokyo’.

An illustrative example would be that two different participants reported directly translating the name of their local pub into the emoji form. Another used a landmark from the country that they were going to visit to refer specifically to a holiday that was being planned.

Sex – 7%

These emoji were used when referring to sex. They were largely used with participants’ partners, however one participant reported using a sex-related repurposed emoji with a friend, suggesting the emoji is not just used when

having flirtatious conversation but can be used to simply discuss sex.

Mainly, however, these emoji would refer to specific sexual acts or be used to express arousal between partners.

Funny – 7%

Some emoji were used for humour between the participant and recipient. Many emoji in this category referenced an ongoing joke that began outside of the digital communication.

Opinion – 6%

Four participants reported using emoji to express an opinion about either the recipient (*“you/we are right”* – P21) or about a situation (*“naff/overdone/not-to-my-taste”* – P42).

Power – 4%

The category of power relates to emoji used in a direct response to a perceived threat to show solidarity or power. This category was used both with friends and also with a wider audience on message boards and other forms of social media where multiple “recipients” can be expected.

Examples of the use of emoji power repurposing include using the Triangular Flag or Red Circle (🚩 or 🚫 [both symbols are coloured red]) to show solidarity with the “#REDInstead” movement (A movement against an Autism “curing” campaign). Another included the use of the Flexed Biceps and Woman Dancing (💪🕺) to represent feminism. This participant directly reported needing it due to *“the patriarchy”* – P34.

Reasoning behind chosen emoji

Participants were asked to report why they chose a particular emoji for the sentiment they were trying to convey. The responses were coded and categorised. Some participants did not explain the reasoning behind the emoji choice and so 4% of responses were not coded.

Image of word – 19%

Often emoji were chosen because they represented a word used in participants’ real world conversations. Often this type of emoji was used as a direct translation of a “pet name” (with penguin 🐧 being most popular, appearing twice). Another participant reported using the Pig Face emoji (🐷) to refer to the local pub, called The Three Piggies. The repurposing that occurs in these scenarios requires that the image represents something which is special to both parties. Although, for example, the penguin emoji is being used to mean ‘penguin’, there is more meaning attached to that word in these scenarios. Here ‘penguin’ does not refer to the bird, but to a particular person, meaning the emoji has been repurposed.

Historical – 17%

“Historical” refers to emoji that are used specifically due to a shared story between the users. The emoji would represent a particular aspect of that story, or could be the result of the story. For example one participant reported using a particular emoji because *“I made a typo once and it stuck”* – P23.

Historical was used to code any emoji where understanding of the emoji relied on a specific shared story *“It refers to something that happened early on when we met”* – P53 or simply translating a shared joke in real life into a common shorthand *“It’s been a running joke for many years”* – P71.

Evocative – 15%

Evocative emoji refer to those that represent a shared metaphor between two people. Unlike *Historical* emoji, these do not refer to a particular incident or occurrence, but a common understanding. For one participant, the use of the *Spouting Whale* emoji (🐳) could express an emotion that both participants understood *“Definitely feels like it evokes that feeling!”* – P8. Another participant also reported a shared understanding but for an opinion, rather than a feeling *“Because it represents frivolities for us”* – P68 when using the *Nail Polish* (💅) emoji.

Two participants reported using a shared love of food to evoke feelings towards their partner by using *Pizza* (🍕) *“because we both love each other as much as we love pizza”* – P12 and *Cheese Wedge* (🧀) *“Because it’s cute and succinct and we both love cheese.”* – P28 to mean romantic love. These do not relate to specific stories in their past, but a shared understanding of common feelings.

Visual Affordance of emoji – 14%

This category introduces the concept of ‘visual affordance of emoji’. These emoji are used for a particular situation only because of the way that they are rendered, not because of their semantic meaning. These often arose from participants seeking an emoji for a concept that they were unable to express using the standard set of emoji. For example, one participant reports using the bath emoji (🚿) in place of a coffin *“my friend wanted a person in a coffin emoji, couldn’t find one and used this instead, arguing it was ‘the closest thing’”* – P48.

Another participant saw the possibility to read one of the smileys as though it were communicating in sign language. The participant used the ‘thinking face’ (🤔) to mean lesbian, as the position of the thumb and forefinger on the chin denotes “lesbian” in American Sign Language.

These emoji were all used not because of what they represented, but specifically because of the way they have been drawn.

Avatar – 11%

Avatar-coded emoji are those that represent a particular person or place. The defining feature of the avatar is that this is a purely digital way to refer to that person or place. Unlike the *image of word* code, the avatar has not been directly translated from conversation, there is no real-world verbal equivalent for it. For example, two participants (P6 and P66) reported using two animal emoji (🐱 and 🐶) to represent themselves and their partners. Another participant (P24) used an avatar to refer to their partner on some websites specifically to avoid using their real name. These

avatar emoji are not spoken aloud, but are used just for written digital communication.

Play on Words – 8%

Some emoji were chosen due to a play on words with the emoji being used to spell out words phonetically (e.g., the word “Hatchet” spelled out with 🪓 – P16).

Random – 8%

Some emoji were used because they were once typed randomly and later took on a particular meaning. Other times a random emoji was chosen to convey a sentiment. For example, P59 uses the octopus emoji (🐙) to simply make contact with their partner, stating *“An octopus seemed as random as any other emoji.”*

Irony – 3%

Emoji in this category were chosen because they represented the complete opposite of the sentiment they were intended to convey (for example picking a purposefully unattractive emoji to represent love [P47] or sexual attraction [P1]).

Reason for using an emoji

Participants were asked to explain why they used an emoji at all – why was it necessary for them to include an icon rather than just using words? These reasons were coded by two researchers, the following categories were found. As before, some participants did not report a reason and so could not be included in this analysis (17%).

Ease – 28%

The most commonly reported reason for using an emoji was, perhaps unsurprisingly, ease. Participants reported that an emoji was *“a lot faster to type”* – P59. Another participant expressed that using words felt foolish with emoji available *“It seemed silly to type the word when there was a little picture of it right there”* – P27.

No Words – 13%

The code of *no words* was used to describe instances where participants used emoji because they either could not use words to express the sentiment or would at least find it hard to do so.

Multiple participants reported needing to use a repurposed, personalised emoji because the idea or sentiment they were trying to express was too complex for words *“Because it’s a complicated concept, with lots of different applications.”* – P15. Another participant simply found it difficult to be earnest with their partner, choosing to tell them that they loved them using an emoji *“To avoid sincerity”* – P47. One participant summed up the use of emoji used in this fashion: *“talking is hard”* – P3.

Intimacy – 13%

Intimate emoji use was recorded when the participant reported using an emoji purely for the reason of creating a secret code that could only be understood by themselves and the person they were conversing with. This code was used for the purpose of creating an intimate bond over having a shared secret.

The intimacy was often found between friends (“*It’s best friend code.*” – P20) to represent a special bond between two people (“*It’s funny and a thing only we share so it’s a bond between us.*” – P70). It was also found between partners.

There was a sense of pride associated with having such a secret bond, as though the participant and the recipient were in a private club “*It’s a sibling in-joke that no one gets except us, even if we explain it*” – P67.

Cute – 11%

Some participants used repurposed emoji because they were cute. Every participant using an emoji for this reason used the word “cute” to explain its use. In these instances, participants found the idea of an emoji to be cuter than using words to describe the sentiment or person “*It’s a cute way to send a reminder of him when the family is apart*” – P11.

Funny – 10%

These emoji were used because seeing a visual representation of a concept, rather than seeing the words, was considered amusing to the participant and their recipient. One participant is unable to justify why the emoji is used, but reports that its continued use is a source of amusement “*it just happened one day and we stuck to it - it makes us laugh for some reason*” – P64.

Discretion – 6%

Discreet reasons for using emoji referred to either sex or illegal activities. Using an emoji to refer to sex allowed some participants to discuss sex without advertising it to others who might be able to see the message. This social discretion was particularly useful for one participant who was communicating about sex with a partner who was not being faithful to another “*It’s probably harder to be accused of cheating when you’re just messaging [...] little illustrations*” – P72.

Other participants wanted discretion due to concern that their messages, which contained discussion of illegal activities, would be intercepted whilst being sent “*So that you don’t have to type the names of drugs in non secure messaging*” – P56.

Accident – 3%

Two emoji were used purely through accident. One because it was a typo, and the other because a meaning had been assigned post hoc to an emoji that was sent in a random string, stating that the emoji was used for “*No special reason apart from it just happened*” – P44.

Emphasis – 1%

In one case the participant used an emoji as a form of emphasis. The emoji represented something like a punctuation mark to add extra power to what they were saying when words could not enhance the sentence – “*Because it’s an important thing close to my heart and the emoji brings a better point to it*” – P41.

DISCUSSION

Our findings support the Unicode Consortium’s statement that emoji often take on alternative meanings based upon the way they have been drawn [22], however we show that emoji repurposing goes beyond this. Although some emoji are indeed repurposed due to their renderings (see e.g., the Visual Affordance of Emoji subsection), many are repurposed for entirely different reasons, for example because they relate to something in the real world, or because they have been chosen randomly or ironically.

As Kelly and Watts highlighted, emoji are often repurposed to allow senders and receivers to share a secret form of communication [9]. We also found this in our study. However, we also observed the practice occurring when people just want to have faster interactions, when they want to say things that they cannot in words, and for many other reasons. What is key, is that the present study shows that this repurposing behaviour has permanence; emoji take on consistent alternative meanings that are used more than once.

Here we discuss more specific findings from the current study.

Emoji for maintaining relationships

One common theme throughout the analysis is that of emoji representing love and affection, and being used to maintain personal relationships. Similar usage was reported in Kelly and Watts [9]. They report three differing uses for emoji to maintain such relationships, two of which are directly relevant and observed within the current study: *Maintaining a Conversational Connection* and *Creating Shared and Secret Uniqueness*. Participants within the current study also engaged in emoji use solely with the purpose of maintaining a conversational connection. However, unlike Kelly and Watts’ participants [9], our participants chose a specific emoji to use repeatedly to let another person know they were thinking of them. Kelly and Watts’ participants reported sending randomly chosen emoji to make a connection, whereas participants in the current study had chosen a particular emoji to mean “I am thinking about you”. In this study, it was the emoji and not the act of sending it that helped maintain the conversational connection.

Similar behaviour was reported in this study with regard to creating a shared and secret uniqueness. In Kelly and Watts [9], one participant reported typing random emoji and then assigning meaning to them after their use. A participant in the current study had engaged in a similar post hoc rationalization by attempting to make sense of an emoji after it had been randomly chosen. However, again there was a subtle difference in the current study in that the randomly chosen emoji continued to have meaning after the amusing activity of trying to invent meaning. That emoji went on to have a place in the partners’ conversations afterwards.

The idea of shared secrecy more generally has been expanded in the current study – the category of *Intimacy* that emerged when participants were asked why they used an

emoji and not text related directly to the idea of creating a secret uniqueness. Participants reported using emoji because it represented a unique bond they had with their partner or friend – the emoji represented something only they understood.

Emoji as non-verbal communication

Emoji are often reported as being used to impart emotion to text, or to provide information about non-verbal cues such as intonation or intention [23] (for example using an emoji to express sarcasm [9]) However, this study highlighted that emoji are not only used to replace non-verbal actions that would happen in face to face communication. Instead, the repurposed emoji were sometimes used to express sentiments that *could not* be made verbal. For many users, creating a shared emoji with special meaning was a way of conveying very complex feelings and thoughts that would have not been difficult to reference and describe quickly in text. In this way, emoji need not be seen as something that can add additional non-verbal information, but as a way of communicating important ideas in entirely non-verbal ways. As P49 explains “*It's been a complicated friendship. Sending [emoji] says a lot without having to find the words.*”

Real life and the digital world

This study revealed how emoji repurposing can be split into two categories – digital-based and real world-based origin. For example, the *Avatar* and *Random* categories that emerged when discussing the reasoning behind the emoji were both used exclusively in the computer mediated communication. The avatar was not used in the real world to refer to a person or pet, but was exclusive to the emoji context. In comparison, the *Image of word* and *Historical* categories both refer to emoji generated as a result of an existing real-world event or reference, both are used to translate an occurrence in the real world into a digital equivalent.

This shows that repurposed emoji can be both the cause of a new understanding within a microculture (e.g., accidentally making a typo and attributing it meaning post hoc) or the symbolic representation of an existing understanding (e.g., choosing a symbol to represent an in joke that has already been established in face to face communication).

Visual affordance of emoji

Some users reported using the visual representation of an emoji and repurposing it to mean something visually similar. Wijeratne, Balasuriya, Sheth, and Doran [25] explain that similarity of emoji should be based upon their semantic meaning, not their visual similarities. However, here we have observed that people do indeed make use of that visual feature of emoji when ascribing meaning to it.

Using emoji in this way is a phenomena that has been noted on a larger scale in the study conducted by the Emojipedia website, who discovered that the Peach emoji (🍑) is most commonly used to refer to buttocks, rather than the fruit [1]. This is due to its visual similarity. The wide spread

repurposing of the Peach emoji in this way caused complaints when Apple changed the rendering of the emoji which resulted in an image which did not have the same visual affordances.

This is a potential issue for other users making use of emoji affordance within micro cultures. For example, one user used the Triangular Flag (🚩 [coloured red]) to represent the colour red in an online campaign. The use of this emoji by this participant is based solely on the rendering of its colour. This colour information is not stored in the emoji's description at all, leaving it susceptible to a change of colour in the future, thus removing its visual affordance and leaving the emoji useless to this participant.

Repurposing behaviour in other languages

Reusing “words” in a language for personal purposes is not a novel phenomena, and is found within other languages. This occurs, for instance, in home signing, a type of sign language that is only understood by a small group of people in the home, and which would not necessarily be understood by outsiders [17]. Within the current study we see participants creating similar personalised understandings of emoji within family units. Private languages have also been noted between twins in the early stages of language development [20], highlighting that the process of creating a shared secret languages within family groups is a phenomena in other media.

One reported use of repurposed emoji in the current study was to allow users to talk about illegal activity safely and in a hidden manner. Secret languages have similarly been used by criminals in order to disguise illegal activity from authorities [7] and historically by people within the gay community who also needed to remain hidden in order to protect themselves in a society which considered their actions criminal [2].

The use of repurposed emoji in this study also reflects the way that “nicknames” are generated and used in spoken languages: names are shortened for efficiency (*Ease* in this study), nicknames can also arise because they are ironically opposite to the person they describe (*Irony*) or can use, for example, an animal or other word entirely to refer to someone (*Image of Word, Historical*).

In these ways, the findings in the current study do not detail novel or new human behaviour, but instead highlight how such common behaviours can manifest in new forms of technology mediated communication. In particular, we show how the affordances and constraints of the specific context of emoji influence the expression of this common human behaviour.

Limitations

There are a number of limitations in the current study, which we believe represents an initial exploration of the repurposing of emoji.

We would firstly like to address the demographic data collected. A future extension of this work could explore how repurposing varies across culture. Just as the interpretation and use of emoji changes depending on country of use, the act of repurposing may also vary. Understanding the device upon which the emoji is most commonly used, and the medium would also help in understanding whether repurposing is limited to certain aspects of personal digital communication.

This survey allowed users to enter free text to describe their responses. In doing so, we were able to generate a set of codes to explain and explore the use of repurposed emoji. Future work could expand upon these codes by additionally collecting interview data to further explore the origins and usage of repurposed emoji.

Future Work

The current study represents an initial exploration of the phenomenon of personalised emoji repurposing. Building upon this work, we can see that future work might consider how repurposing varies across geographic location [3] or by age or other demographic characteristics [5].

Further work can be conducted to investigate the wider applicability of the codes generated in this paper. Is the list of codes generated comprehensive, for instance?

CONCLUSION

In this paper we have highlighted how people using computer and mobile mediated communication have come to repurpose certain emoji. By using the ambiguity in meaning that emoji naturally have, users can create a shared personal meaning between themselves and another person, or small group, creating a new cultural understanding of particular emoji. This in turn can help people feel closer to one another. Previous work has tended to explore emoji understanding on a large cultural level, whereas this work looks at emoji understanding at a micro scale.

Results of this paper will contribute to future work into emoji sentiment analysis, as the work highlights that emoji do not always correspond to their intended, nor culturally accepted meanings. At times emoji are chosen at random to mean a specific concept, and equally some emoji are chosen purposefully because they convey the complete opposite of the intended sentiment. This implies caution is required when using machine learning techniques to understand the meaning and use of emoji.

As with other papers in this area [13,21], we also conclude that a universal rendering of emoji may be required to standardise how they appear across platforms. It is well understood that emoji facial expressions can be misconstrued, for example, but this paper also highlights that discrepancies in rendering can also affect a whole range of emoji that people choose to use due to the way they are drawn. The current method of rendering emoji in a range of different ways may be preventing users from using the implicit affordance of emoji.

Additionally, the redrawing of emoji must be carefully considered. Just as users reacted badly to Apple redrawing the Peach emoji, smaller communities of other users may be affected by redrawing of any number of emoji currently in use because of how they look, and not what they represent.

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