

Men 😊 and Women ❤️ on Twitter: A Preliminary Account of British Emoji Usage in Terms of Preferred Topics and Gender-Related Habits

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Abstract

This study examines British emoji usage on Twitter by focusing, on the one hand, on favourite topics for emoji use, and, on the other, on the gender variable in relation to the frequency of use of emojis and the preferred meanings expressed through them. Message samples from British users of Twitter were analysed to verify the existence of trends in emoji usage as regards preferred topics, gender-dependent frequency of usage, and gender preferences to express certain meanings through particular emojis. The analysis shows an overall modest use of emojis among the British users (about three emojis per every 10 messages). Concerning topics, emojis are used more frequently to communicate about issues which are perceived as trivial or less serious, and to establish or maintain social relationships. As regards the gender variable, the study confirms previous research that found a higher use of emojis by females. Gender and the expression of certain meanings through emojis also turn out to be statistically dependent variables. Expressions of love, amusement, sadness, and encouragement are gender-dependent, as are expressions of agreement and reflection.

Introduction

In 2015, the Oxford Dictionaries chose the ‘face with tears of joy’ emoji as word of the year, as it was the most popular emoji around the world at the time and best represented “the ethos, mood and preoccupations of 2015” (“Oxford Dictionaries Word of the Year is the Tears of Joy Emoji,” 2015). Emojis have been around since the 1990s, and they remain popular as a shorthand method of conveying attitudes, emotions, and responses across languages. For example, this is the 2019 Christmas message from a female user of Twitter:



Figure 1. Christmas message on Twitter

Nowadays, emojis are “highly pervasive in our daily lives” (Prada et al., 2018, p. 1926). They are represented in consumer products (toys, games, clothes), advertising, entertainment (videos, films), and they are extensively used on different social networking services, such as Facebook or Twitter, and in messaging apps like WhatsApp. Ljubešić and Fišer’s (2016)

analysis of the global distribution of emojis on Twitter concludes that the most frequent emoji on the site since December 2015 is the ‘Face with tears of joy’ 😂, followed by the ‘Smiling face with heart-shaped eyes’ 😍. Other popular emojis are the ‘Smiling face with smiling eyes’ 😊 and the ‘Face throwing a kiss’ 😘. But are emojis used to communicate about any topic, or are there preferred topics for emoji use? Also, keeping in mind the remark by Herring and Dainas (2018, p. 1) that “these graphical icons are perceived as cute, feminine, and, in some cultures, (...) inappropriate for males to use,” do males and females use emojis to the same extent? And are the same emojis preferred by males and females, or is there a gender-based distribution? This exploratory study aims to provide answers to these questions in the particular case of British users by drawing on the analysis of several corpora of messages posted by British users of Twitter. Analyses of message samples were carried out to determine the existence of trends in emoji usage as regards preferred topics, as well as the existence of gender-dependent habits concerning frequency of use and the expression of certain meanings through particular emojis. Twitter was the chosen platform because it contains publicly available data, covers a wide range of topics, and makes it possible to gather a large amount of data.

Literature Review: Twitter, Emojis, and the Gender Variable

Twitter

Twitter is a microblogging site where people interact and connect “through the written word and other multimodal contents” (Barton & Lee, 2013, p. 9). It is an asynchronous form of computer-mediated communication (CMC) that consists of “micro-messages” and that allows “communication centred upon ordinary life” (Yus, 2011, p. 135). Through Twitter, users communicate, stay connected, and exchange views on news, interests, and experiences.

Launched in 2006, the platform is still very popular. In 2010, there were 100 million user accounts on Twitter (Barton & Lee, 2013), and in 2019, the platform had 126 million daily active users (Shaban, 2019). About 500 million tweets are sent out per day, and about 80% of users access the site via mobile devices (Smith, 2019).

Twitter users can send and read short messages (‘tweets’), which are posts of up to 280 characters “displayed on the author’s profile page and delivered to the author’s followers” (Lomicka & Lord, 2012, p. 49). Twitter accounts can be created by individuals or collectives. Tweets often contain a hashtag which facilitates searching. A hashtag is “a tagging mechanism allowing users to attach a word or phrase with the hash (#) symbol to a tweet” (Lomicka & Lord, 2012, p. 49). When a topic is searched for (for example, #GeneralElectionResults2019), related messages dealing with that topic are presented as physically adjacent in chronological order, i.e., the most recent first. Users can add a comment in response to particular messages in the sequence, thus building a thread of multiple answers, and also start secondary threads by engaging in exchanges with other users who also replied to the initial message. Twitter also allows emoji hashtags (Highfield, 2018), although these are not included in the present analysis.

Emojis vs. Emoticons

Since this study deals with the use of emojis, a distinction should first be made between emojis and their forerunners, emoticons.

Emoticons (or Western emoticons) are “combinations of ASCII signs” (Dürscheid & Siever, 2017, p. 2), that is, groups of keyboard characters (letters, numbers, punctuation marks, and symbols) used in electronic communication in order to convey emotions or attitudes, ideas, or abbreviated information. ‘Emoticon’ comes from ‘emotion’ + ‘icon,’ and its emotional function is commonly stressed in definitions of the term (Baron, 2000; Crystal, 2001; Wolf, 2000). Western emoticons are intended to be viewed sideways, for instance, :) and :(.

Amaglobeli (2012) provides a detailed account of the use of emoticons in SMS discourse.

Emojis are “character pictographs” (Cramer, de Juan, & Tetreault, 2016, p. 504), i.e., digital images, symbols, or icons added to messages in electronic communication which are able to perform the same functions as emoticons. ‘Emoji’ comes from Japanese *e* (‘picture, drawing’) + *moji* (‘letter, character’), a combination which roughly translates as ‘pictograph.’ As noted by Cramer et al. (2016), unlike emoticons, emojis can be rendered differently on different platforms, since vendors can provide different designs for the same image. Emojis convey meanings expressed by means of facial expressions (winking), body movements (shrug), or pitch and intonation in face-to-face communication, that is, nonverbal and paraverbal resources used to express meaning. By means of emojis one can reproduce gestures, facial expressions, eye behaviour, and vocal behaviour, which are components of non-verbal communication, that is, “communication effected by means other than words” (Knapp & Hall, 1997, p. 5). Some emojis are images of people, objects, animals, plants, activities, etc. (a policeman, a slice of pizza, a car, a dog, a tree, a person swimming), while others are symbols (for instance, a trophy representing a reward, a heart representing love, and the victory sign representing peace as used by protesters against the Vietnam War).

In the light of their development, it can be stated that emojis are a more varied and more sophisticated version of emoticons – Miller, Thebault-Spieker, et al. (2015, p. 2) describe emojis as “a successor to emoticons,” and Konrad, Herring, and Choi (2020, para. 2) regard them as “the new generation of emoticons.” However, neither emojis nor emoticons are exclusively used to express emotions, which makes the term *emoticon* somehow inadequate. Besides, although they share some functions (e.g., convey emotions or attitudes, ideas, and abbreviated information), when compared to emoticons, emojis are considered to be “more lively, more expressive, and more semantically rich” (Chen et al., 2017, p. 1). According to Herring (2019), emojis are a type of graphics used in CMC, together with emoticons, stickers, GIFs, and text-in-image memes. They are all “semiotic devices used to convey propositional content, in lieu of, or in conjunction, with text” (Herring, 2019, p. 43). Herring and Dainas (2017) refer to these devices collectively as “graphicons.”

Although both emoticons and emojis are used nowadays on Twitter, the latter are far more widespread. As shown by Pavalanathan and Eisenstein (2015), there has been a decrease in emoticon usage on Twitter, whereas emojis are increasing in popularity and “are replacing emoticons in fulfilling the same paralinguistic functions” (p. 4).

Emojis in Social Media

The use of emojis in social media has been studied from different perspectives. Some research focuses on exploring how emojis are interpreted by users (Dainas & Herring, 2021; Herring & Dainas, 2018, 2020). Other research focuses on their ability to convey meaning (particularly emotions) with respect to their context of use (Barbieri, Espinosa-Anke, & Saggion, 2016; Li et al., 2019; Novak, Smailović & Mozetič, 2015; Wood & Ruder, 2016). In their multilingual study of emojis on Twitter, Barbieri et al. (2016) conclude that, although there is a core of

emojis with stable meanings across languages, for some emojis there are language-specific usage patterns, so their meaning can vary from language to language.

Another line of research focuses on the communicative functions of emojis, which are used, for example, to repeat, complement, or replace verbal messages on Twitter, Facebook, Whatsapp, and in text messages (Donato & Paggio, 2017; Gawne & McCulloch, 2019; Yus, 2014). Herring and Dainas (2017) found that the main functions of emojis in their Facebook data were “reaction” (providing an emotional response to previous content), “tone modification” of the text (adding a nonverbal cue for interpretation), and “mention” (the emoji is a graphic illustration of a word: It replaces a word or provides redundant information).

Emojis are continuously being added and updated to adjust to users’ expressive needs. Anyone can submit a proposal to the Unicode Consortium for a new emoji to be included in the global Unicode standard.¹ In 2018, Twitter released its own set of emojis, called “Twemoji.” Feng et al.’s (2020) study of emoji requests to Twitter shows that people have asked for emojis such as man holding baby, woman in tuxedo, Bitcoin, the pink ribbon for breast cancer, and the transgender flag, in line with society’s new demands. In response, Twitter’s 2020 update, Twemoji 13.0, incorporates new emojis including the transgender flag, two people hugging, the smiling face with tear, the man feeding baby, and the pinched fingers (👉), all but the flag with different skin tones.

As regards preferred situations for emoji use, Derks, Bos, and von Grumbkow (2007) analyzed the contexts in which emoticons were used by secondary students and found that the use of emoticons in Internet chats is much more frequent in environments involving social and emotional relationships (friends or close groups) than in more task-oriented scenarios such as the workplace. These results are consistent with those obtained in a topic-based analysis of emoji usage in tweets about TV programmes. The blog “Emoji Usage in TV Conversation” (2015) analysed tweets about TV in the US between April 2014 and July 2015. Although the blog does not provide figures concerning the number of tweets analysed or the emojis collected, they found that of the TV programmes discussed, music, drama, and reality were the most popular topics for emoji use (around 20%), in contrast with, for instance, sports (10%), news (3%), and sports talk (3%). The present study also gathers evidence regarding preferred topics for emoji use.

Other studies have investigated the frequency of use of emojis on Twitter in relation to geography. Ljubešić and Fišer (2016) reported that South East Asia and South America have the highest density of tweets containing emojis (46.5% of tweets in Indonesia and 37.6% in Paraguay). In Europe, the highest-ranking countries are Latvia (24.4% of tweets) and Spain (24.1%), followed by the Czech Republic, Portugal, and the Russian Federation. The UK is not among the top-ranking countries. Neither does the UK appear in the top 10 countries (out of 183) whose emoji use was analyzed by Chen et al. (2017). The analyses carried out in this article focus particularly on British users, seeking confirmation of these results.

Emojis, Emoticons, and Gender

As noted by Markman and Oshima (2007) and Dresner and Herring (2010), among others, the association between emoticons and the expression of emotion, together with the belief that women are more emotional in their communicative exchanges, led researchers to study the relationship between gender and emoticon usage early on. Although some studies of the relationship between emoticon or emoji usage and user gender have been inconclusive,

researchers have generally reported that these graphical icons are used more frequently by females, and that females and males often use different icons.

As regards frequency of use, Walther and D'Addario (2001) found no gender differences in sending emoticons in email messages. Wolf's (2000) analysis of online newsgroups found that women used emoticons more frequently than men in male-predominant and female-predominant newsgroups. However, men's emoticon usage increased in mixed-gender groups, and in these groups the gender difference was not statistically significant. No significant differences were reported by Huffaker and Calvert (2005) in their analysis of emoticon and emoji usage in teen blogs, and they even noted a slight trend for males to post more emojis and emoticons.

By contrast, Lee's (2003) study of instant messages sent by college students at Stanford University found that females used more emoticons than males, although male use increased in conversations with females. Baron (2004) also analysed, among other issues, the use of emoticons in Instant Messaging by college students considering gender as a variable, and found that more females than males used them in their exchanges. Similarly, in her study of the use of emoticons on Twitter, Spina (2017, p. 27) notes that "females use emoticons significantly more than males." Concerning emojis, in the analysis carried out by Chen et al. (2017), the difference between male and female usage slightly favoured females (53% versus 47%), although in countries such as Brazil and the US the difference was greater. Pohl, Domin, and Rohs (2017) investigated the gender distribution of emoji users in a corpus of 1000 random Twitter users and drew on the genderize.io service to assign gender to their user names. Using this method, 27% of the names were labelled as male and 34% as female, which "hints at a larger share of females using emoji," although "more research is necessary to confirm" this (2017, p. 9). Herring and Dainas (2017) analysed the use of "graphicons" in Facebook comment threads (the term graphicon covers emojis, emoticons, stickers, GIFs, and image memes), and found that, out of the 975 graphicons gathered, 527 were contributed by females and 377 by males. Lastly, a survey by Prada et al. (2018) on the use of emojis and emoticons by Portuguese speakers shows differences in both age and gender concerning emojis. Young people, and especially women, reported using emojis more often in text-based CMC, and they also expressed a more positive attitude towards emoji.

Do males and females prefer different types of emojis? Pohl et al. (2017) quantified emoji usage on Twitter based on a corpus of 20.6 million English-language tweets containing emojis. They found that the most popular emoji at the time was 😂 (2.6 million instances), followed by 😊, 😍, 😭, 😞, 😟, ❤️, ❤️, and 😬. However, although they studied the gender of Twitter users, their study did not delve into gender differences as regards preferences for specific emojis. According to the analysis carried out by Chen et al. (2017), the most popular emojis for both males and females at the time were 😂, ❤️, 😍, 😘, and 😭. The 'face with tears of joy' emoji was the most popular for both females (22.1%) and males (18.9%). No specific percentages for the other emojis are provided; instead, the results are displayed in a bar chart from which it can be inferred that the second-most popular emoji is ❤️ for females (around 9%) and 😊 for males (around 10%). Also, in a pilot survey of gender differences in emoji usage by Hernandez et al. (2016), subjects were asked to rate a set of emojis as masculine or feminine. According to the respondents, the most feminine emojis, and the most likely to be sent by women, turned out to be 😘 and 😊, whereas for males they were 👍 and 🙌.

Finally, the gender represented in emojis that depict humans has been addressed by Barbieri and Camacho-Collados (2018). Their analysis of tweets in the US shows that emojis representing males are associated with business and technology, whereas the female modifier (emojis that represent females) is associated with love and makeup.

Analysis of Emoji Usage by Topic and Gender (Frequency of Use and Emoji Preferences)

The sections that follow analyse three phenomena related to emoji usage by British users: usage by topic, frequency of use related to gender, and emoji preferences for males and females.

Twitter threads are sets of tweets by the same user, linked one after the other. However, in this study the term *thread* is used to refer to a collection of comments sent by different users in response to a prompt tweet. In order to carry out the first analysis, a large initial corpus of threads on different topics was gathered. Two subcorpora were created from this corpus for the second analysis, in which males and females were randomly selected from both threads where emojis were not often used and threads where emojis were frequently used. Another subcorpus was created for the third analysis, also consisting of male and female tweets. In this case, part of the tweets comes from selected threads gathered in the first analysis, and the rest come from personal accounts of males and females selected from the frequent and infrequent emoji users described in the second analysis. The features of each corpus are detailed at the beginning of each section, together with the analysis and discussion of results. Threads were selected and gathered by hand, and the emojis in each thread were also calculated manually. Similarly, the male and female accounts used to gather messages were selected manually, and the number and types of emojis used in these accounts were tallied and categorized by hand.

Emoji Usage by Topics

In order to carry out the first analysis, the use of emojis to talk about different topics, threads of tweets related to hashtags which signalled trending topics in the UK were gathered for a period of five months between September 2019 and January 2020. The messages were drawn from public group interactions. However, responses by public figures (politicians, journalists, TV and radio presenters, etc.), who commonly start threads, to tweets were excluded from the analysis, the focus being on ordinary Twitter users. User names are omitted to respect the privacy of those whose messages are cited as examples.

Each thread consists of an initial tweet (the prompt), and a set of multiple responses to that prompt, most often posted by different users and chronologically arranged by the software, with more recent tweets appearing first. Occasionally, a user replied to a tweet which was posted in response to the initial prompt, and an exchange of messages followed. Such subthreads were not taken into account in this study, however.

The number of threads for analysis and their type depended on the trending topics in the UK at the time when the data were collected. Threads were selected if they formed part of the first 10 trending topics of the day and comprised a minimum of 100 messages. The number of messages analysed in each thread ranged from 100 to 300 (a set limit), depending on the amount of messages available. The prompts were provided by official accounts belonging to British newspapers, magazines, organisations, or public figures. In order to limit the number of participants outside the UK, the focus was, whenever possible, on news and events of local interest; for instance, #VibePayFriday is a weekly cash draw for UK customers. The

participation of British users was further ensured by checking the information in their profiles and analysing the content and the geographical variety of English used in their messages. Only one tweet per individual user was included in the thread (the first tweet registered), and ambiguous threads as regards topic were excluded (i.e., threads dealing with multiple topics at the same time, such as gossip news about a famous football player).

Considering that Twitter is a tool which, among other functions, allows users to comment on news, a list of topics inspired by newspaper sections was developed. A health-related topic was added in view of the trending topics spotted, some of which dealt specifically with health issues. The topic of a thread was determined by analysing the contents of the prompt message. Once the thread was identified as related to a certain topic, the percentage of emojis used in the thread was calculated, and after all the threads related to the same topic were gathered, the mean frequency of use of emojis in all the threads dealing with the same topic was obtained.

Table 1 displays the number of threads in each topic, the number of tweets in each topic, the percentage of tweets that contain an emoji (only one emoji – the first – was counted per tweet), and some examples of emojis that occurred in the threads for each topic.








Topic	Number of threads	Number of tweets	Percentage of tweets containing an emoji	Examples of emojis
Politics	25	6,000	13.8% (n=828)	
Current affairs	14	3,300	21.07% (n=695)	
Health issues (cancer, AIDS, mental health)	14	2,600	24.28% (n=631)	
Celebrities	13	2,300	26.15% (n=601)	
Sports (soccer, rugby, boxing, F1, cricket, etc.)	21	4,400	27.38% ^a (n=1204)	
Entertainment (radio, TV, music, cinema)	18	3,200	30.55% (n=977)	
Socializing (competitions, people sharing memes, greetings, jokes, etc.)	21	5,700	55.23% (n=3148)	
TOTALS	126	27,500	Mean use: 29.39% (N=8084)	

Table 1. Topic-based distribution of emoji usage

^a A distinction must be noted between threads about major rugby or soccer matches (international competitions, Premier League, FA Cup) and threads about other sports (F1, boxing, horse racing, etc.) and sports news (teams sold, changes in coaches, etc.). In the former, the incidence of emojis was 66.25%, whereas in the latter it was only 12.85%.

Table 1 shows that emojis are more frequently used to talk about less serious or trivial topics (for example, related to entertainment such as TV reality shows, radio programmes, new songs released, and sports competitions) and to establish or maintain social relationships (for instance, when Twitter users share jokes, memes, pictures, greetings, or when they enter online draws). Thus, people use emojis for topics which are light-hearted or related to socializing. In contrast, emojis are used more sparingly to comment on political issues (such as Brexit and the 2019 General Election), news related to current affairs (for instance, the Manchester terrorist attack in October 2019, the fire at a university student accommodation block in Bolton in November 2019, Extinction Rebellion actions, and news affecting British companies such as Pizza Express, Thomas Cook, and Three UK), and sports news (which is almost exclusively commented on by males).

These findings agree with Derks, Bos and von Grumbkow's (2007) findings for Internet chats, where the preferred environments for emoticon use involved social and emotional relationships. The findings are also consistent with those obtained in the topic-based analysis of emoji usage in tweets about TV programmes reported in the blog "Emoji Usage in TV Conversation" (2015), in which the most popular topics for emoji use were music, drama, and reality TV, in contrast with sports and news.

In addition, Table 1 shows that, on average, about 29 tweets in every 100 contain an emoji. This seems to indicate that British members of Twitter make only modest use of emojis in their messages. This finding is in line with Ljubešić and Fišer's (2016) and Chen et al.'s (2017) studies of the frequency of emoji use by countries, since in neither study does the UK appear among the top-ranking countries.

Emoji Frequency: Frequent and Infrequent Emoji Users Analysed by Gender

The two subsections that follow analyse tweets in the British Twitter users' personal accounts. For the first analysis, 320 users were randomly selected from the tweets posted in the threads collected and analysed in the previous section. Once again, the focus was on individual, ordinary Twitter users, avoiding public figures and organisations. A minimum of 100 and a maximum of 300 messages were gathered per user, depending on the number of tweets available for each, and the percentage of emoji use per tweet per user (i.e., how many tweets per user contain emojis) was calculated. Repeated emojis in the same message were counted as one emoji. Retweets were excluded from the samples, as were tweets posted by the same user which reappear a number of times with the same or slightly modified text and emojis. The gender of the speakers was verified by checking the information and pictures in their profiles, as well as the content of their messages and the pictures they posted of themselves in their tweets.

Analysis of High-Frequency Emoji Users Extracted from Low-Usage Threads

Eighty male and 80 female emoji users were randomly selected from threads where emojis were not often used (threads with fewer than 20% of messages containing emojis). Low-usage threads were analysed because, if a subject decides to use emojis in this situation (when most users do not), this could indicate that he/she is a frequent user and has incorporated emojis as part of his/her communicative habits. Figure 2 displays the percentages of emoji use extracted from low-usage threads broken down by gender.

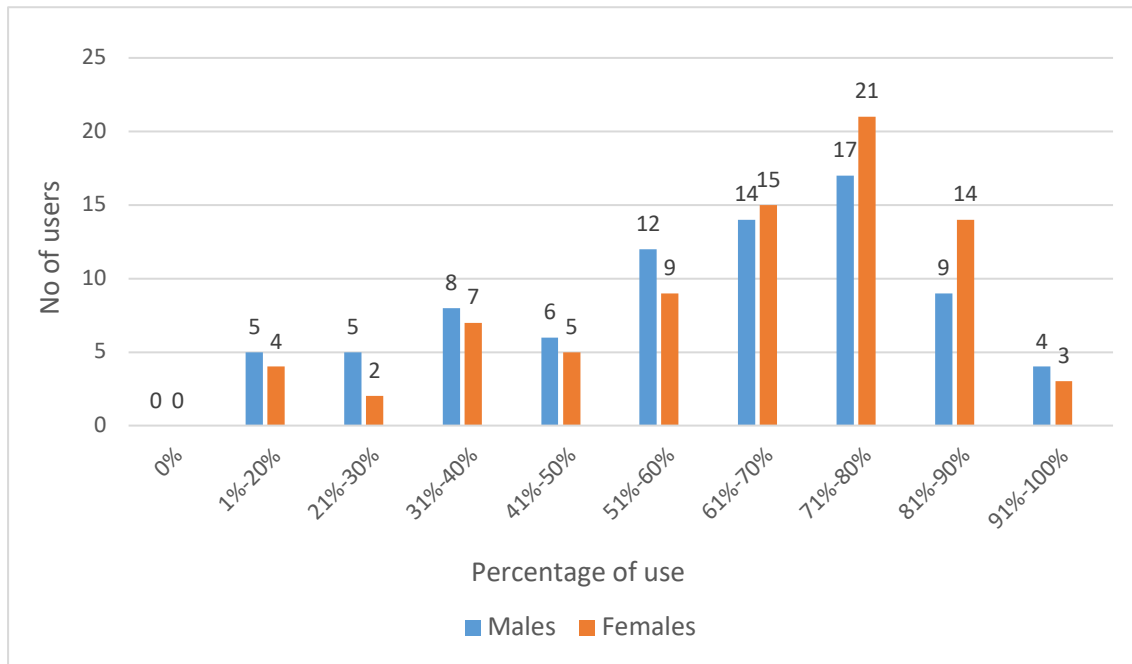


Figure 2. Emoji users in low-usage threads analysed by gender

As shown in Figure 2, 42 users (26.25%) employ emojis in fewer than half of their messages (usage: between 1% and 50%). Fifty users (31.25%) use emojis more often (usage: between 51% and 70%), and 68 users (42.5%) can be described as frequent users, since they use emojis in more than 7 out of 10 tweets (usage: between 71% and 100%).

Overall, 118 out of 160 users (73.75%) extracted from low-usage threads use emojis in more than half their messages. This finding points to the importance of emojis in the British Twitter users' communicative repertoires. However, the high percentage of occasional users (around 26%) and the existence of around 30% of moderate users (in contrast with 42% of frequent users) is consistent with a general tendency for moderate use among British users, as already noted in the previous section.

Regarding gender, the mean percentage of emojis used by females is somewhat higher (60.25%) than by males (54.8%). Conversely, the number of males using emojis in under half their messages is higher (24 males versus 18 females), whereas more female users employ emojis in more than 70% of their messages (38 females versus 30 males). A Chi-square test was performed to examine the relation between gender and emoji usage, and the relation was not significant at $p < .05$; $X^2(2, N=160) = 1.8, p = .3906$. Thus, although these data suggest an overall higher use of emojis by females, further research with a larger corpus would be needed to verify the difference.

Analysis of Low-Frequency Emoji Users Extracted from High-Usage Threads

For the next analysis, the same numbers of subjects – 80 males and 80 females – were selected from high-usage threads collected for the topic analysis. In this case, a random selection was made among users who did not post emojis in these threads. High-usage threads were defined as threads with at least a 60% use of emojis. These threads were chosen in order to isolate and select low-frequency users more efficiently, under the hypothesis that subjects who do not use emojis in high-frequency emoji threads are likely to be low-frequency users overall. Figure 3 below displays the analysis of emoji use by these subjects broken down by gender.

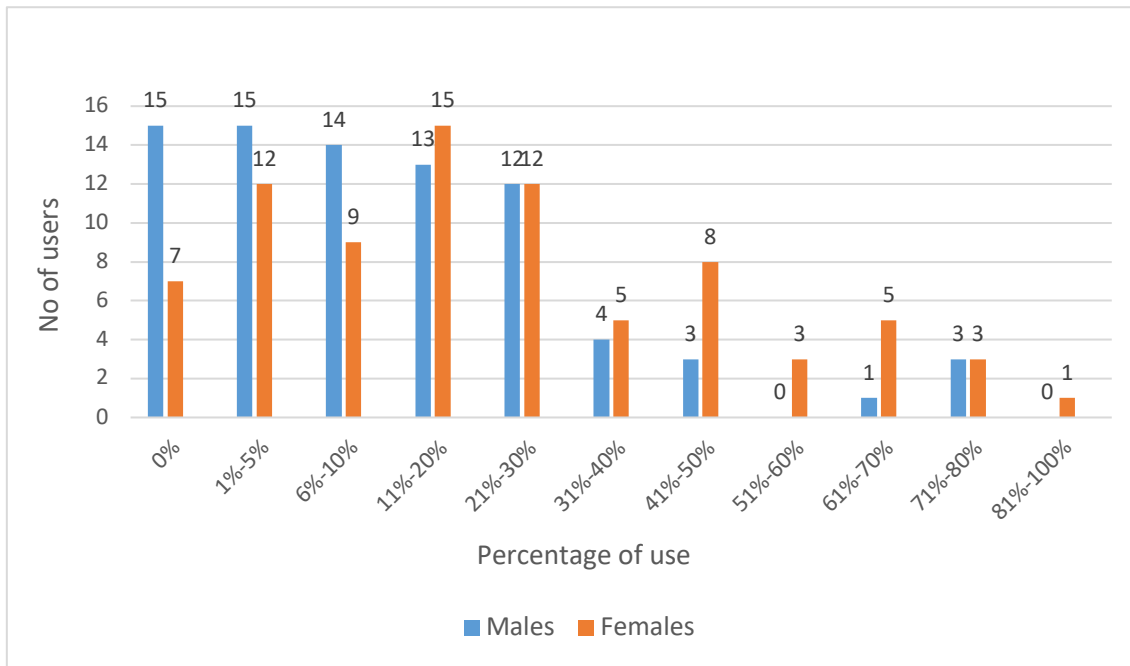


Figure 3. Low-frequency emoji users in high-usage threads analysed by gender

In the sample from high-usage threads, 22 subjects (13.75%) do not use emojis at all, and 102 subjects (63.75%) use them in one to three messages out of 10. Both groups together amount to 124 users (77.50%). This means that, out of 160 individuals participating in high emoji usage-threads but using no emojis in the messages they posted on those threads, 124 do not use emojis at all, or use them sparingly, as evinced by the analysis of their accounts. This distribution supports the hypothesis that Twitter users who do not post emojis in high-usage threads tend to use emoji infrequently overall.

As in the analysis of emoji users in Figure 2, the results in Figure 3 point to a higher use of emojis by females. Fifty-five out of 80 females (68.75%) do not use emojis at all or use them sparingly (in fewer than 30% of their messages). For males, however, the number is greater (69 or 86.25%), and the number of male users employing no emojis (15) is double the number of female users (7). Moreover, of the 36 users employing emojis in more than 30% of their messages, 25 are women. These findings again indicate that females use more emojis than males. The relationship between the gender variable and the use of emojis is statistically significant at $p < .05$; the Chi-square test result is: $X^2(3, N=160) = 9.6, p = .022$.

To summarize the findings for this section, for high-frequency emoji users, there is no statistical difference between males and females. However, when we focus on low-frequency emoji users, there are significantly more low-frequency emoji male users than female users. On the whole, the study points to a higher use of emojis by females. Thus the trends observed, although preliminary due to the size of the sample, confirm the results obtained in earlier studies of emoticon and emoji usage by gender (see the section “Emojis, Emoticons and Gender” above). These results are consistent with the common belief that women are more prone to displaying and expressing emotion: As Chen et al. (2017, pp. 3-4) state, “conventional wisdom leads us to believe that females are more emotionally expressive than males.”

Popular Emojis for Males and Females

For the last set of analyses, in order to identify emoji preferences for males and females, a subcorpus of 400 emojis used by males and 400 emojis used by females was gathered. For each group, 200 emojis, or half, come from the analysis of 10 selected threads on varied topics obtained from the first analysis. The first 20 emojis used by different males and females were selected from each thread. Some threads were used to search for both male and female emojis, whereas others were selected only for males or only for females on account of the topic discussed (for example, sports competitions for males, and TV programmes or prize draws for females). The other 200 emojis for each gender come from the analysis of the personal accounts of 20 random males and 20 females selected from the frequent and infrequent emoji users analysed in the previous section, from which the first 10 different emojis occurring in their messages were extracted, with a view to accessing comments related to more personal issues. Frequent users with more than 70% of emoji use, and infrequent users with less than 30% of emoji use, were chosen.

The interpretation of the emojis (their ‘meaning,’ or the non-verbal and paralinguistic cues that aid in decoding the verbal message in the tweets) was determined by analysing the co-text and context of each message. These meanings emerged from the data and were grouped into categories, as illustrated in Tables 2 and 3 and the examples below each table. The total number of categories of meaning identified in the male sample was 57, and the total number of categories of meaning identified in the female sample was 50. Thirty-six categories were common for both the male and female samples. In the whole dataset, there were 19 cases where ambiguity could not be resolved by using the co-textual and contextual clues available: 13 emojis which might express either encouragement or agreement (9 for males and 4 for females) and 6 expressing either amusement or happiness (for females). Since those were a minority of cases, the occurrences were discarded from the analysis and replaced by 19 other unambiguous emojis in order to make up the total number of 800.

The analysis shows some noteworthy tendencies in emoji usage by males and females, although a larger sample would be required in order to obtain more statistically robust results. Table 2 below displays the 10 most popular emoji categories for males in the sample analysed. In Tables 2 and 3, “No. of items” refers to the number of occurrences of the main emoji in the left-most column, “Total number” refers to the number of occurrences of the main emoji plus the occurrences of alternatives with similar meaning, and “%” is the percentage of those combined emojis out of the total of 400.

Other results obtained from the analysis for males are, for example, use of emoji that express anxiety, nervousness, panic, or alarm (8 out of the total number of emojis); shrugging shoulders for doubt, ignorance, or helplessness (7 emojis); face palm for frustration or despair (7 emojis); the winking emoji to indicate a joke (6 emojis); the crazy emoji for wackiness (6 emojis), and the emoji with rolling eyes for sarcasm or irony (5 emojis). If we add these emojis to those listed on Table 2, the total number of emojis is 307. The remaining 93 (23.25%) belong to other minor categories (🙈, 🤡, 😨) or are isolated occurrences (⚽, 😞, 🤮) in this particular sample.

Emoji	No. of items	Alternatives with similar meaning	Meaning	Total No	%
	60		Highly amusing comment /video /picture	69	17.25%
	22		Encouragement, support, power, strength ^a	48	12%
	13		Agreement	32	8%
	25		Reflection ^b	25	6.25%
	6		Celebration	20	5%
	12		Love	18	4.5%
	8		Happiness	15	3.75%
	6		Sadness	14	3.5%
	12		Anger	14	3.5%
	13		Resignation, boredom, scepticism	13	3.25%
TOTALS	177			268	67%

Table 2. Most popular emojis for males

^a This category includes symbols of teams (for example, the crossed hammer and pick representing the West Ham United football club, whose symbol is the crossed hammers), political parties (the rose standing for the Labour Party), and flags (for instance, the UK flag representing Brexit support, and the EU flag standing for anti-Brexit positions).

^b Reflective emojis ponder on comments and point out other sides of an issue, ambiguities, and contradictions, or express scepticism.

The following are examples of the male tweets:

- (1) There's circa 50k people out of a job ... is this Corbynomics? 🤔🤔 [Scepticism + reflection]
- (2) That's one of the worst attempts at scoring a goal I've ever seen 😂 [Amusement]
- (3) Brexit IS happening 👍 [Encouragement, support]
Independence isn't 👎 [Contempt, strong disapproval]
Get over it 🇬🇧 [Support]

Below are examples of female tweets:

- (4) Wow got a sugar daddy following me!! How very tempting 😂😂😂😂
[Amusement]
- (5) Came across this photo of my lovely mum and dad ❤️❤️ Just had to put it in a frame
❤️ [Love]
- (6) £100 please #VibePayFriday I'm so skint 😞 [Sadness]

According to the results displayed in Tables 2 and 3, the most common emojis used by the male Twitter users indicate amusement, encouragement and strength, agreement, reflection, and celebration, whereas the females mainly use emojis to express love, sadness, amusement, happiness, and celebration. There is a substantial difference between females and males, favouring females, in the use of emojis to express love (90 vs. 18), sadness (42 vs. 14), happiness (27 vs. 15), and pleading (17 vs. 4). Also, more females than males express panic, anxiety, nervousness, and alarm through emojis (12 vs. 8). By contrast, males use far more emojis than females to express amusement (69 vs. 31), encouragement (48 vs. 20), agreement (32 vs. 14), and reflection (25 vs. 7). The expression of anger through emojis is also more frequent for males (14 vs. 8).

The variables of gender and the expression of love, amusement, encouragement, and sadness through emojis are statistically dependent. The same is true for the variables of gender and the expression of agreement and reflection. Table 4 below displays the results of Chi-square tests. For $df=1$ the Chi-square value reported is the Yates Chi-square, corrected for continuity.

Category	Chi-square test result	Result significant at $p < .05$
Love	$X^2(1, N=800) = 53.9, p < .0001$	Yes
Amusement	$X^2(1, N=800) = 15.6, p < .0001$	Yes
Encouragement	$X^2(1, N=800) = 11.7, p = .0006$	Yes
Sadness	$X^2(1, N=800) = 14, p = .0002$	Yes
Agreement	$X^2(1, N=800) = 6.6, p = .0098$	Yes
Happiness	$X^2(1, N=800) = 3.04, p = .08$	No
Reflection	$X^2(1, N=800) = 9.4, p = .0022$	Yes
Anger	$X^2(1, N=800) = 1.1, p = .2794$	No
Anxiety	$X^2(1, N=800) = 0.46, p = .49$	No

Table 4. Chi-square test results for the gender variable and emoji categories

A larger sample would be necessary in order to determine whether there are significant differences in the expression of happiness, anxiety, and pleading (which in these samples favour women), and the expression of anger, complicity or joking 😏, sarcasm 😞, and wackiness 🤪, which in these samples favour men.

Interpretation of Results: Emojis and the Gender Variable

As noted by Herring and Paolillo (2006), gender differences in computer-mediated discourse often parallel those observed in spoken discourse. For example, there is a tendency “for women to be more polite, supportive, emotionally expressive, and less verbose than men in online public forums.” In contrast, “men are more likely to insult, challenge, express sarcasm, use profanity, and send long messages” (p. 4).

The results of the analyses of frequency of use of emojis by gender and popularity of certain emojis among males and females show that the females used more emojis than males and preferred certain emojis. It can be posited that this is because females take more advantage of emoji functions. Research shows that females are more skilled at expressing nonverbal behaviour, and they are more prone to the expression of certain attitudes and emotions which are commonly conveyed through emojis (such as love, happiness, sadness, or empathy). In addition, they are more likely to use ornament and visual aesthetics as a complement to text in their communicative exchanges. All these functions are effectively performed by emojis.

Concerning women’s superiority at nonverbal communication, Briton and Hall (1995) suggest that women are better at sending, receiving, and decoding nonverbal cues, and that their nonverbal behaviour tends to be more expressive. However, while stereotypes suggest that women are more expressive overall than men, research shows that men and women differ as regards the type of emotions they tend to express and how they perceive and react to emotion-inducing experiences.

In Allen and Markiewicz’s (1971) emotionality survey, females exceeded males in reported emotionality, but sex differences were evident as regards the type of emotion, particularly concerning fear and sadness. Wallbott (1988) tested the ability of professional actors and actresses to communicate meaning by means of facial expression. He found that actresses were generally better at communicating emotion via facial expression, although the results were not statistically significant. Moreover, he verified that actresses seemed to be better at communicating fear and sadness, whereas actors were more successful in communicating anger.

Along similar lines, in their study of sex differences in facial expressions, McDuff et al. (2017) found that women express more happiness and sadness, and they smile more (this finding was also reported by LaFrance, Hecht, & Paluck, 2003), while men express more anger. Gomez, Gunten, and Danuser (2013) studied sex differences in reactions to pleasant and unpleasant slides; they verified that women reacted more negatively to unpleasant slides (images of physical violence, dead animals, etc.). Similarly, Kring and Gordon (1998), Gard and Kring (2007), and Gong, Wong, and Wang (2018) reported that women react more to negative emotion-inducing experiences, and are more sensitive to negative facial emotion, which makes them view negative emojis as more negative than men do (Jones et al., 2020). In addition, women may be more sensitive to the emotions of others for evolutionary reasons (e.g., infant caretaking), as suggested by Babchuk, Hames, and Thomson (1985) and Hampson, van Anders, and Mullin (2006). Thus in general terms, research on the types of emotions most commonly expressed by males and females agrees with the results of the present study.

As regards emojis expressing male laughter or amusement, particularly 😂, male and female styles of humour have been extensively studied in different environments (in single-gender and mixed-gender groups, among friends, in the workplace, etc.), and differences have been found

with respect to how humour is neurally apprehended, interpreted, and expressed; what males and females find funny; and how humour is used by men and women (see, for instance, Azim et al., 2005; Hay, 2000; Kotthoff, 2006; Robinson & Smith-Lovin, 2001).

Robin Lakoff's (1975) study of women's language includes the controversial statement that "women don't 'get' jokes" and have "no sense of humor" (1975, p. 56). This statement can in turn be related to the stereotype that men are funnier than women. This stereotype was put to the test in a recent study (Greengross, Silvia, & Musbaum, 2020). The researchers concluded that, on average, men have higher humour production ability, and that this may have an evolutionary basis, with women searching for humour as a correlation of intelligence when choosing a mate and men preferring women who laugh at their humour and competing with other men to impress women with their humour. As a result, men use humour far more often than women do. At the same time, it must also be noted that some patriarchal societies encourage women to suppress the expression of amusement through laughter, since it undermines men's power and can be taken as a sign of immodesty: Eastern cultures, such as Islamic, Indian, Japanese, and Korean, advise or directly instruct women to refrain from open or loud laughter, and in Western societies, women's blogs and websites still write (seriously or jokingly) about a woman's loud laugh being unladylike, as in the following examples: "How to Act, Dress and Speak like a Lady" (2020), "I Don't Laugh like a Lady; Got a Problem?" (2020), and "Don't Do these 20 Things if you Want to Be a Real Lady" (n.d.).

The expression of amusement also seems to be linked to topic. Aillaud and Piolat (2012) found that males and females differ in their appreciation of humour, males preferring sexual and aggressive topics. Men also tend to appreciate slapstick humour more than women do (Howard, 2014). Since this type of humour is particularly popular on social media (it occurs in many posted pictures, videos, memes, and jokes), this may be a determining factor in the frequent use of emojis by males to express laughter or amusement.

With respect to the expression of strength, encouragement, and agreement by males, it must be kept in mind that human males are generally physically stronger than human females (Janssen et al., 2000; Miller et al., 1993). This fact likely influences the gender stereotype that men are more physical, whereas women are more emotional. It is also related to the pressure in male-dominated societies exerted on males and females with respect to expectations and valued traits. According to the stereotype, males tend to use their physical strength to solve problems and show their feelings, and they work out their emotions by doing things. In terms of emojis, males project their focus on the physical world by expressing strength and agreement more than females, and they do so using body parts (for instance, the thumbs up sign, the fist hand, the flexed biceps, the OK hand, and the sign of the horns).

Lastly, concerning aesthetic expression, the tendency for females to turn more to emojis in order to embellish their messages (see, for example, the Christmas message in the introduction) could be taken as an extension of self-adornment understood as a tool for self-expression and to seek acceptance. Self-adornment relates to the stereotype that, due in part to social pressure, women try to improve their physical appearance more than men. They "adorn their bodies in ways that emphasize the beauty and youthfulness of those bodies" and "attempt to improve on nature (...) by adopting appropriate adornments and decorations" (Davies, 2020, p. 91). The following are two examples where female users employ emojis to build patterns which embellish their messages, apart from using these emojis with particular meanings. One of the users is a cat owner greeting her fellow pet-owners, and the other is sending Christmas greetings. There are no such examples for males in the corpus:

(7) Have a lovely day my friends 🐱❤️😺❤️😺❤️😺❤️😺❤️😺❤️😺❤️

(8) Merry Christmas, dear friend 🎅🎄🎁🎅🎄🎁🎅🎄🎁🎅🎄🎁🎅🎄🎁

Conclusion

This study examined British emoji usage as regards preferred topics, and explored the relationship between gender, frequency of emoji use, and preference for emojis which convey particular meanings. The analysis of Twitter threads by British users shows a preference for the use of emojis in tweets about certain topics (trivial matters and issues related to socializing), and indicates a modest use – around 29% of tweets, or three messages in every 10, contain emojis – as compared with other nationalities’ usage reported in previous research.

Concerning the gender variable, in the sample of emoji users taken from threads with limited emoji use, women use more emojis than men, but the difference is not statistically significant. However, in the analysis of the sample of users gathered from threads with frequent emoji use (who tend to be infrequent emoji users overall), men use significantly fewer emojis than women, and gender and use are statistically dependent variables. The study thus confirms previous research concerning the greater use of emojis by females. Gender and the expression of certain meanings through emojis also turn out to be statistically dependent variables. Expressions of love, amusement, encouragement, and sadness are gender dependent, as are expressions of agreement and reflection.

Emojis are a useful device in a digital world, where they provide visual, emotional, and immediate information. Given the continuing popularity of these picture characters in electronic text-based communication, the tendencies observed in this study are worth verifying using larger samples, comparing British users with other nationalities, and carrying out more exhaustive analyses of emojis preferred by male and female users for the expression of meaning.

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Note

1. <https://home.unicode.org/emoji/about-emoji>

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