Prada, M., Rodrigues, D. L., Garrido, M. V., Lopes, D., Cavalheiro, B., & Gaspar, R. (2018). Motives, frequency and attitudes toward emoji and emoticon use. *Telematics and Informatics, 35*, 1925-1939. https://doi.org/10.1016/j.tele.2018.06.005

Motives, Frequency and Attitudes toward Emoji and Emoticon Use

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Part of this research was supported by Fundação para a Ciência e Tecnologia (PTDC/MHC-PCN/5217/2014) and Marie Curie (FP7-PEOPLE-2013-CIG/631673), with fellowships awarded to MVG.

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Abstract

Electronic Mediated Communication (EMC) has become highly prevalent in our daily lives. Many of the communication formats used in EMC are text-based (e.g., instant messaging), and users often include visual paralinguistic cues in their messages. In the current study, we examined the usage of two of such cues - emoji and emoticons. Specifically, we compared self-reported frequency of use, as well as attitudes (6 bipolar items, e.g., "fun" vs. "boring") and motives for their usage (9 motives, e.g., "express how I feel to others"). We also examined these indicators according to age and gender. Overall, participants (N = 474, 72.6% women; M_{age} = 30.71, SD = 12.58) reported using emoji (vs. emoticons) more often, revealed more positive attitudes toward emoji usage, and identified more with motives to use them. Moreover, all the ratings were higher among younger (vs. older) participants. Results also showed that women reported to use emoji (but not emoticons) more often and expressed more positive attitudes toward their usage than men. However, these gender differences were particularly evident for younger participants. No gender differences were found for emoticons usage. These findings add to the emerging body of literature by showing the relevance of considering age and gender, and their interplay, when examining patterns of emoji and emoticons use.

Keywords: emoji; emoticon; self-report evaluation; individual differences; Electronic-mediated communication; nonverbal cues.

Motives, Frequency and Attitudes toward Emoji and Emoticon Use

The way people communicate is nowadays largely influenced by Information and Communication Technologies (ICTs). Indeed, the last few decades were marked by a steep increase in the available means of communication, including email and instant messaging (e.g., Gmail, WhatsApp), and social media applications, such as social networks (e.g., Facebook) and microblogging platforms (e.g., Twitter). Given that most of these means of communication rely on written formats, it has been suggested that social, affective and non-verbal cues may be filtered out, leading to poorer communication outcomes (Walther, 1996; Walther & D'Addario, 2001). However, users may overcome these potential limitations by adding different types of emotional cues, either verbal (e.g., emotion words) or paralinguistic (for reviews, see Harris & Paradice, 2007; Luangrath, Peck, & Barger, 2017). The latter comprise, for instance, using non-standard spelling to mimic vocal communication such as vocal spelling (e.g., "y'all") and lexical surrogates ("uh huh"), or the manipulation of grammatical markers to signal the tone of the message (e.g., "YES!!!"). Visual images are another example of paralinguistic cues, and include emoticons (i.e., symbols created with typographical marks, such as letters and numbers) and emoji (i.e., graphic symbols). Many of these images are representations of facial expressions (e.g., happy face :) or 😄) and emotions/feelings (e.g., love <3; ❤️). Accordingly, emoticon and emoji are often included in text-based Electronic-Mediated Communication (EMC) to convey or reinforce the emotional state of the sender (for reviews, see Aldunate & González-Ibáñez, 2017; Derks, Fischer, & Bos, 2008; Ganster, Eimler, & Krämer, 2012; Gülşen, 2016), or even to represent an emotion different from the one felt by the sender as in the case of irony and sarcasm (e.g., Carvalho, Sarmento, Silva, & de Oliveira, 2009; Vanin, Freitas, Vieira, & Bochernitsan, 2013).

Currently, emoji and emoticons are highly pervasive in our daily lives. For example, a recent study with more than 85,000 Facebook users concluded that 90% of them included at

least one emoji in their public feed (Oleszkiewicz et al., 2017). Emoji are also represented on a myriad of products (e.g., clothing, books, toys and games, office supplies), music videos (e.g., Katy Perry's "Roar" and Gwen Stefani's "Spark the fire") and are even main characters of a recent animation movie ("The emoji movie").

Emoji and emoticons have also been the object of scientific inquiry (for reviews, see Kaye, Malone, & Wall, 2017; Rodrigues, Prada, Gaspar, Garrido, & Lopes, 2017; Troiano & Nante, 2018). Although the investigation of the role played by both visual cues is still emerging, it already covers numerous areas, including: person perception (e.g., Glikson, Cheshin, & van Kleef, 2017; Wall, Kaye, & Malone, 2016) and interpersonal relationships (e.g., Hudson et al., 2015; Rodrigues, Lopes, Prada, Thompson, & Garrido, 2017); education (for a review, see Dunlap et al., 2016); health (Skiba, 2016); work (e.g., Skovholt, Grønning, & Kankaanranta, 2014; Wang, Zhao, Qiu, & Zhu, 2014), as well as marketing (e.g., Luangrath et al., 2017) and consumer behavior (e.g., Esposito, Hernández, Bavel, & Vila, 2017; Manganari & Dimara, 2017).

One line of research analyzes naturalistic data from different platforms to characterize patterns of emoji and emoticon use (e.g., Chen et al., 2017; Ljubešić & Fišer, 2016; Novak, Smailović, Sluban, & Mozetič, 2015; Park, Baek, & Cha, 2014). Examples include studies focused on how users communicate about specific contents, such as food (Vidal, Ares, & Jaeger, 2016), emotional well-being (Settanni & Marengo, 2015), sports (Yu & Wang, 2015) or elections (Burnap, Gibson, Sloan, Southern, & Williams, 2016). Another line of research takes an experimental approach, using fictional messages or scenarios to examine how presenting emoji or emoticons in messages may influence communication or its outcomes. These studies have been developed in different domains, including romantic (e.g., Hudson et al., 2015; Rodrigues, Lopes, et al., 2017) and workplace (e.g., Luor, Wu, Lu, & Tao, 2010; Wang et al., 2014) relationships, as well as consumer behavior (e.g., Manganari & Dimara,

2017). Emoji and emoticons can also be used as stimulus materials (e.g., studies on affective processing - Garcia-Marques, Mackie, Claypool, & Garcia-Marques, 2004; Kerkhof et al., 2009) or as a tool to assess different constructs, such as personality (Marengo, Giannotta, & Settanni, 2017) and emotional responses to food (e.g., Ares & Jaeger, 2017; Gallo, Swaney-Stueve, & Chambers, 2017; Jaeger, Lee, et al., 2017; Jaeger, Vidal, Kam, & Ares, 2017).

Given the widespread use of emoji and emoticons it is important to further understand how often they are used in EMC, how people perceive their use and what are the motives for including them in text-based messages. Previous studies have suggested that individual differences such as age and gender may also be highly relevant to understand these usage patterns. Hence, our study was driven by three main goals: (1) examine the use of emoji and emoticons by assessing their self-reported frequency of use, as well as attitudes and motives underlying their use in text-based EMC; (2) compare the use of emoji and emoticons across all these variables; and (3) examine how these variables differed according to the users' age and gender.

Motives for Using Emoji or Emoticon

One of the first studies examining the motives for using emoticons (i.e., big smile, smile, sad, wink, confused, and cry) showed that they are mostly used to express emotion, humor or to strengthen a message (Derks, Bos, & von Grumbkow, 2008). Recently, Kaye, Wall and Malone (2016) used a qualitative approach (i.e., open-ended responses) to examine the reasons for using emoticons in different platforms (e.g., text messages, email, social networking sites). Overall, results showed that emoticon usage in EMC is driven by a general motivation to promote positive interactions and interpersonal relations. Specifically, participants reported that the use of emoticons is helpful in conveying their personal expression by establishing an emotional tone, or by creating a positive or lighter mood in the messages. They also reported to use emoticons as a mean to reduce ambiguity in their

discourse, and to maximize the extent to which the recipient understands the emotional intent of the textual information. Using emoticons may be particularly useful to clarify the interpretation of specific intents (Thompson & Filik, 2016). For example, in an experimental study, Lo (2008) showed that the inclusion of emoticons in online messages improved receivers' understanding of the intensity and valence of the emotions (sad vs. happy) and attitudes (like vs. dislike) expressed by the sender.

Extending this research to workplace communication, Skovholt, Grønning and Kankaanranta (2014) analyzed the communicative functions of emoticons included in real email messages. Results suggested that the emoticon placement was associated with three main functions: (1) mark positive attitudes, when placed after signatures, (2) signal joke or irony, when placed after expressions intended to be humorous, or (3) strengthen messages, when placed after thanks or greetings, or soften messages, when placed after requests or corrections. Motives may also vary according to emoji type. For example, Hu, Guo, Sun, Nguyen, and Luo (2017) analyzed participants' willingness to use negative, neutral, positive and non-facial emoji to achieve multiple intentions. Results showed, for instance, that both positive and negative emoji were perceived as adequate to strengthen expression and to adjust tone, but only positive emoji were perceived as adequate to express intimacy or humor.

Including emoji or emoticons in EMC seems to have positive effects both on users (e.g., more enjoyment) and communication outcomes (e.g., richer information; Huang, Yen, & Zhang, 2008). For example, emoticon use has been shown to increase information richness and promote perceived playfulness among users, which in turn leads to a strengthened social connectedness, enhanced identity expressiveness, and increased advocacy intention among friends who use text messaging (Hsieh & Tseng, 2017). Also, Rodrigues, Lopes and colleagues (2017) showed that the inclusion of a sad emoji to reinforce feelings of being hurt by the partner led to the perception of greater interest in the relationship. The positive effect

of including a smiling emoji or emoticon in a message extends to how the sender is perceived (i.e., as more extroverted) and how the recipient feels (i.e., more positive mood, Ganster et al., 2012). Furthermore, exposure to a message with (vs. without) a tongue-face emoticon was shown to have a positive impact on emotional responses (e.g., higher arousal, reduced frowning, and enhanced smiling; Thompson, Mackenzie, Leuthold, & Filik, 2016).

Differences Between Emoji and Emoticons Usage

Emoji and emoticons often represent the same content and may compete for the same communicative function. However, this does not imply that they are used with the same frequency or that they have the same impact. A recent study using naturalistic data showed that Twitter users who adopt emoji tend to decrease emoticons usage (Pavalanathan & Eisenstein, 2016). Arguably, having a great amount of emoji readily accessible that depict a wide range of contents reduces the need of actually typing emoticons. Emoji are also considered to be more expressive, lively and semantically richer than emoticons (Chen et al., 2017). Consistently, Ganster et al. (2012) showed that including a smiling emoji has a stronger impact than its equivalent emoticon on the receiver's mood.

A recent normative study – the Lisbon Emoji and Emoticon Database (LEED, (Rodrigues, Prada, et al., 2017) – systematically examined differences in the evaluation of an extensive set of 238 emoji and emoticons. Overall, results showed that emoji were evaluated as more aesthetically appealing, familiar, concrete, positive, arousing and meaningful, when compared to emoticons. Both types of stimuli only obtained similar rating in visual complexity.

Individual Differences in The Use of Emoji and Emoticon: Age and Gender

Several studies have examined the role played by age and gender in attitudes toward (and use of) technology. For example, age has been negatively correlated with self-reported media and technology usage (e.g., text messaging, internet searching and media sharing) and

attitudes toward technology (Rosen, Whaling, Carrier, Cheever, & Rokkum, 2013). Likewise, a recent meta-analysis showed that age was negatively associated to the perceived usefulness, ease of use and intention to use technology (Hauk, Hüffmeier, & Krumm, 2018). Age was also inversely associated with the self-reported number of text messages sent and received (Forgays, Hyman, & Schreiber, 2014; Ling, Bertel, & Sundsøy, 2012). Importantly, these age differences have also been observed regarding the actual use of emoji and emoticons. For instance, the number of emoji posted in public Facebook status updates decreases with users' age (Oleszkiewicz et al., 2017; Settanni & Marengo, 2015).

Research has also reported numerous gender differences regarding technology usage (for reviews, see Baron & Campbell, 2012; Herring, 2003). A recent meta-analysis concluded that men (vs. women) have more positive attitudes toward using technology (Cai, Fan, & Du, 2017). Technology may also be used for different purposes according to gender. For example, it has been suggested that women use smartphones predominantly for interpersonal motives (e.g., remain in close contact with others), whereas men use them for more functional purposes (e.g., convey concrete information; for reviews, see Cheever, Rosen, Carrier, & Chavez, 2014; Rosen, Chang, Erwin, Carrier, & Cheever, 2010). Notably, women also tend to use more paralinguistic visual cues such as emoticons or emoji (e.g., Baron, 2004; Rosen et al., 2010). These observations were recently supported by the analyses of an extensive naturalistic dataset (over 400 million messages, corresponding to 134,419 users from 183 countries; Chen et al., 2017). This gender difference was consistently found across several contexts, such as chat rooms (Fullwood, Orchard, & Floyd, 2013), social media posts (Oleszkiewicz et al., 2017), and text messaging (Tossell et al., 2012). However, a few studies found the opposite effect (e.g., male teenage bloggers use more emoticons; Huffaker & Calvert, 2005), whereas others did not observe gender differences in the amount of emoticons used (Luor et al., 2010; Ogletree, Fancher, & Gill, 2014; Wolf, 2000). Nonetheless, gender

differences may emerge regarding the goals underlying the use of emoji and emoticons. For instance, Wolf (2000) found that women use emoticons to communicate humor, whereas men use them to tease or express sarcasm. In the LEED normative study (Rodrigues, Prada, et al., 2017), gender differences were only detected in the evaluation of emoji (but not emoticons), such that women (vs. men) evaluated them as more familiar, clear and meaningful. Age differences were not examined by the authors.

In the current study, we used data collected during that normative study to further explore differences between emoji and emoticons usage. Specifically, we will present original data to: (1) analyze the self-reported frequency as well as attitudes and motives for their use; (2) compare emoji and emoticons regarding the three variables; and (3) examine the role of age and gender in such indicators for both types of visual cues.

Method

Participants

The sample included 474 individuals (72.6% women), from 17 to 67 years old (M_{age} = 30.71, SD = 12.58), who volunteered to participate in a web survey. All participants were native Portuguese speakers or lived in Portugal for the last five years. The sample included a majority of both university students (47.9%) and active workers (42.9%), with at least a bachelor's degree (49.2%). Participants indicated Android/Google (71.9%) and iOS (28.1%) as their usual operating system.

Procedure and Measures

This study was conducted according to the ethical guidelines issued by [insert host institution], using the Qualtrics web platform. Participants were invited through social media and mailing services to collaborate on a web survey about the perception and evaluation of emoticons and emoji. Instructions stated that all the data collected would be treated anonymously and that they could abandon the study at any point by closing the browser,

without their responses being considered for analysis.

After providing their informed consent to collaborate in the study, participants were asked to provide socio-demographic information (i.e., age, gender, educational level, current occupation), and their usual operating system. This was followed by an evaluative task of emoji and emoticons that comprised 20 trials (for details and results of the normative study, see Rodrigues, Prada et al., 2017). In an independent section, the survey contained information specifically related to the present study. Participants were asked to answer a set of questions about frequency, attitudes and motives for using emoji and emoticon. First, participants reported how often they use emoji (and emoticon, separately) in their text-based EMC (e.g., computer, smart phone, tablet, etc.) using a 7-point rating scale (from 1 = *Never* to 7 = *Always*). Second, participants indicated their general attitude toward the use of emoji (and emoticon, separately) in a set of six bipolar items (1 = *Useful* to 7 = *Useless*; 1 = *Uninteresting* to 7 = *Interesting;* 1 = *Fun* to 7 = *Boring;* 1 = *Hard* to 7 = *Easy;* 1 = *Informal* to 7 = *Formal;* 1 = *Good* to 7 = *Bad*). The items regarding how useful, fun, informal and good is emoji/emoticon use were reversed-coded, so that higher ratings are indicative of more positive attitudes. Attitude indexes for emoji and emoticon use were computed (α = .82 and α = .86, respectively). Third, to assess motives for emoji (and emoticon, separately) use, participants were asked to report their agreement (from 1 = *Completely disagree* to 7 = *Completely agree*) with the following nine statements: "When I use [emoji/emoticon], I intend to…" (1) express how I feel to others; (2) strengthen the content of the message; (3) soften the content of the message; (4) make the content of the message more ironic/ sarcastic; (5) make the content of the message more fun/comic; (6) make the content of the message more serious; (7) make the content of the message more positive; (8) make the content of the message more negative; and (9) express through images what I can't express using words. Higher ratings are indicative of using emoji and emoticon to promote the expressiveness of

text-based EMC. We have also computed an index regarding the motives for using emoji and emoticon ($\alpha = .72$ and $\alpha = .83$, respectively). At the end, participants were thanked and debriefed.

Results

Only complete questionnaires were retained for analysis. Therefore, there are no missing cases. In the following sections, we (a) characterize the use of emoji and emoticons namely by presenting the descriptive statistics for the three main variables – self-reported frequency of use, attitudes and motives for emoji and emoticon use, (b) compare emoji and emoticons regarding these three variables using mean difference tests; (c) analyze the correlations between frequency of use, attitudes and motives for emoji and emoticon use; and (d) examine individual differences in frequency of use, attitudes and motivation for using emoji and emoticons. This was examined with a series of 10,000 bootstrapped moderation models using PROCESS (Hayes, 2013, 2015), in which gender (coded 0: male, 1: female) and age were the predictor variables.

Characterization and Comparisons between Emoji and Emoticons

We present descriptive results for emoji and emoticons across variables and comparisons of each variable against the scale midpoint (i.e., one sample *t* test, test value = 4), as well as comparisons between both type of visual cues (see Table 1).

Table 1

Frequency, Attitudes and Motives for Emoji and Emoticon Use

	Emoji		Emoticon		*Difference Test*
	M	(*SD*)	*M*	(*SD*)	*p*
Frequency of Use	4.60*	(1.81)	4.09	(1.94)	< .001
Attitudes					
1. Useful	5.31*	(1.60)	4.80*	(1.75)	< .001
2. Interesting	5.45*	(1.44)	4.44*	(1.81)	< .001
3. Fun	5.98*	(1.33)	4.72*	(1.84)	< .001
4. Easy	5.76*	(1.39)	4.86*	(1.90)	< .001

5. Informal	6.09*	(1.34)	5.79*	(1.46)	< .001
6. Good	5.58*	(1.37)	4.88*	(1.60)	< .001
Attitudes Index	*5.63***	*(0.97)*	*4.87**	*(1.27)*	*< .001*
Motives					
1. Express how I feel to others	5.66*	(1.52)	4.96*	(1.84)	< .001
2. Strengthen the content of the message	5.88*	(1.44)	5.14*	(1.77)	< .001
3. Soften the content of the message;	5.11*	(1.76)	4.63*	(1.90)	< .001
4. Make the content of the message more ironic/ sarcastic	4.38*	(1.92)	3.88	(1.95)	< .001
5. Make the content of the message more fun/comic	5.86*	(1.37)	5.01*	(1.78)	< .001
6. Make the content of the message more serious	2.35*	(1.59)	2.62*	(1.68)	< .001
7. Make the content of the message more positive	5.42*	(1.59)	4.90*	(1.80)	< .001
8. Make the content of the message more negative	2.59*	(1.73)	2.69*	(1.69)	.178
9. Express through images what I can't express using words	5.35*	(1.87)	4.72*	(2.02)	< .001
Motives Index	*4.73**	*(0.91)*	*4.28**	*(1.19)*	*< .001*

Note. *Different from response scale midpoint (i.e., 4). Difference tests indicate 5,000-bootstrap-sample paired-sample *t* tests comparing ratings for emoji and emoticons.

As shown in Table 1, most of the observed means significantly differed from the scale midpoint. Participants reported a frequent use of emoji and a moderate use of emoticon in text-based EMC. Overall, participants reported positive attitudes toward emoji and emoticon use (all items rated above scale midpoint). Also, participants identified with most of the motives for emoji use. The exceptions were the motives regarding making the message "more serious" or "more negative" (motives 6 and 8, respectively), which were rated below the scale midpoint. The same pattern was observed for emoticon use, except that the mean rating regarding motive 4 (i.e., using emoticon to make the content of the message more ironic/sarcastic) was not different from the scale midpoint. Results further showed that emoji obtained higher mean ratings than emoticons in all variables (except for motive 8, where no differences were observed).

However, the use of emoji and emoticons does not seem to be equivalent. Participants reported using emoji more often, more positive attitudes toward emoji and, in general, identified more with the motives for using emoji.

Correlational Analyses

As expected, we observed strong and positive correlations between the frequency of use and both attitudes toward, $r = .63$, $p < .001$, and motives for emoji use, $r = .37$, $p < .001$. Attitudes and motives for emoji use were also positively correlated, $r = .46$, $p < .001$. The same pattern was found for emoticons, that is, strong and positive correlations between the frequency of use and both attitudes, $r = .63$, $p < .001$, and motives, $r = .44$, $p < .001$, and a positive correlation between these latter two, $r = .55$, $p < .001$. Moreover, attitudes toward both types of cues were positively associated, $r = .33$, $p < .001$, as well as motives, $r = .59$, $p < .001$ and frequency of use, $r = .27$, $p < .001$.

Individual Differences: Gender and Age

Self-Reports of Emoji and Emoticon Use. For emoji use, results showed a significant effect of gender, $b = 0.82$, $SE = .17$, $p < .001$, age, $b = -0.05$, $SE = .01$, $p < .001$, and an interaction between both variables, $b = -0.03$, $SE = .01$, $p = .025$. Specifically, younger participants reported using emoji more often than older ones and that women reported using emoji more often than men. Simple slope analyses of the interaction effect showed that the gender differences in the frequency of emoji use, although observed in older females, $b = 0.46$, $SE = .22$, $p = .034$, were particularly high in younger ones, $b = 1.18$, $SE = .25$, $p < .001$ (see Figure 1, panel 1a).

For emoticon use, results only showed a significant effect of age, $b = -0.04$, $SE = .01$, $p < .001$, such that younger participants reported using emoticons more often than older ones. No main effects of gender, $b = 0.05$, $SE = .20$, $p = .812$, or significant interaction between both variables were observed, $b = -0.00$, $SE = .01$, $p = .940$ (see Figure 1, panel 1b).

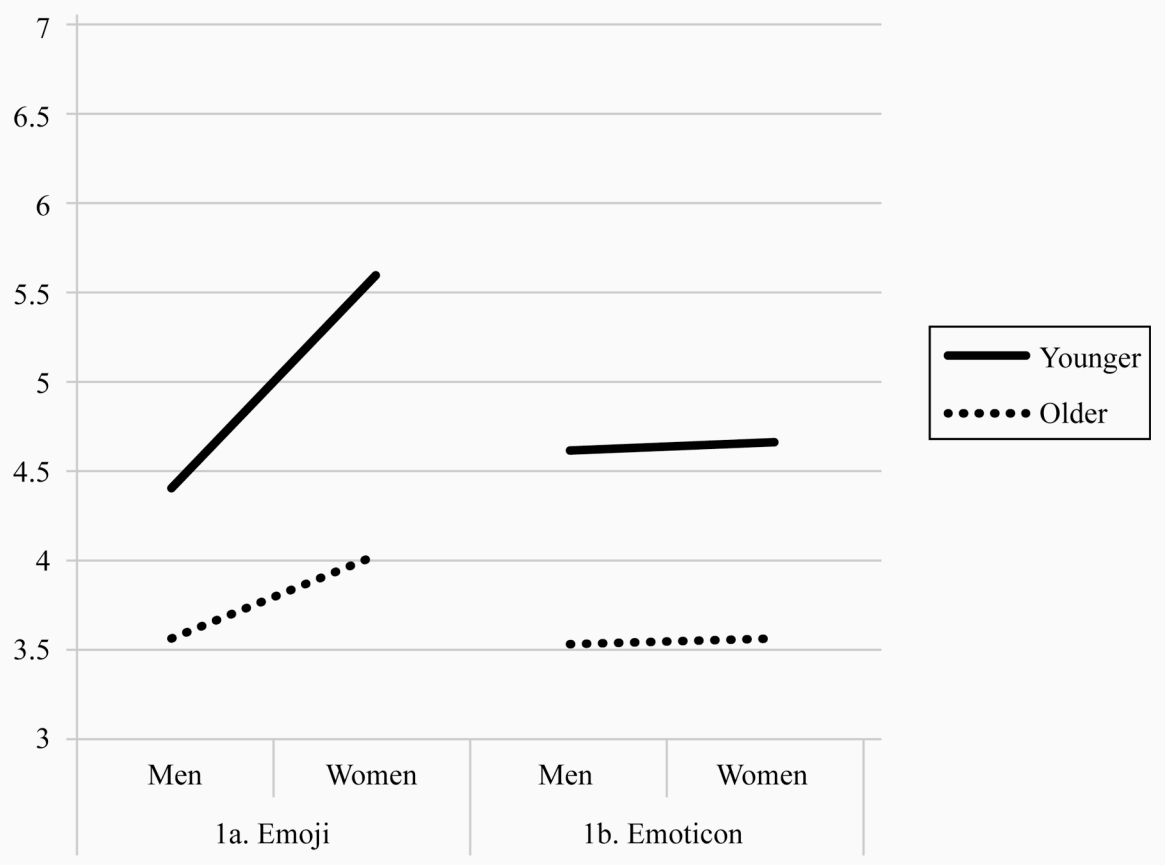

Figure 1. Gender and age differences in self-reported use of emoji (1a) and emoticon (1b) in text-based EMC.

Attitudes Toward Emoji and Emoticon Use. For attitudes toward emoji use, results showed a significant effect of gender, $b = 0.38$, $SE = .10$, $p < .001$, age, $b = -0.03$, $SE = .00$, $p < .001$, and an interaction between both variables, $b = -0.01$, $SE = .01$, $p = .039$.

Specifically, younger participants reported using emoticons more often than older ones and that women reported using emoticons more often than men. Simple slope analyses of the interaction effect showed that although women reported more positive attitudes toward emoji use than men, this was only observed for younger women, $b = 0.56$, $SE = .14$, $p = .001$, and not for older ones, $b = 0.20$, $SE = .12$, $p = .099$ (see Figure 2, panel 2a).

Results regarding attitudes toward emoticon use, only showed a significant effect of age, $b = -0.02$, $SE = .00$, $p < .001$, such that younger participants reported more positive attitudes toward emoticons use than older ones, but not of gender, $b = 0.12$, $SE = .13$, $p =$

.361, nor a significant interaction between both variables, b = -0.01, SE = .01, p = .392 (see Figure 2, panel 2b).

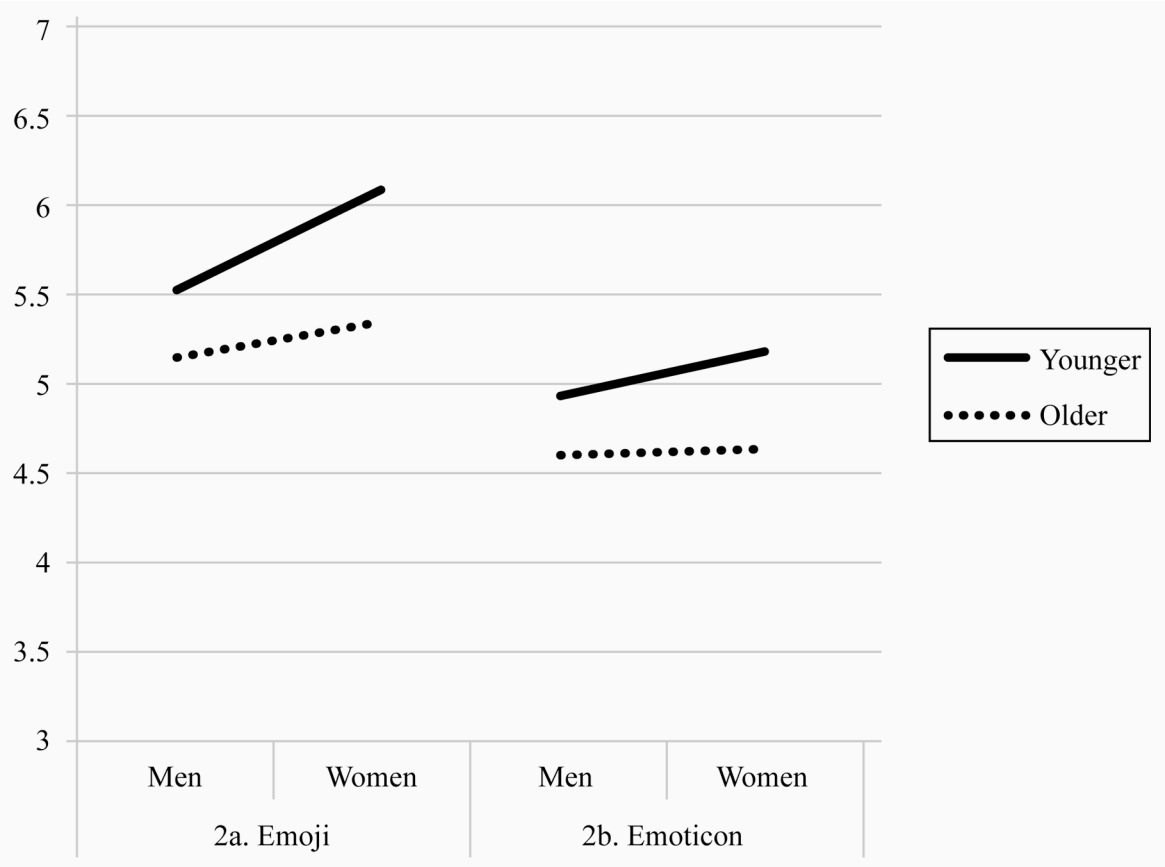

Figure 2. Gender and age differences in attitudes toward emoji (2a) and emoticon (2b) use in text-based EMC.

Motives for Emoji and Emoticon Use. The analyses of the motives for emoji use showed only a significant effect of age, b = -0.02, SE = .00, p < .001, with younger participants identifying with more motives to use emoji than older ones. No significant gender, b = 0.12, SE = .09, p = .180, or interaction effects were observed, b = -0.00, SE = .01, p = .748 (see Figure 3a).

Likewise, for emoticons, results showed only a significant effect of age, b = -0.02, SE = .00, p < .001, on motives for emoticon use. Gender, b = 0.05, SE = .12, p = .687, and interaction effects were not observed, b = -0.00, SE = .01, p = .763 (see Figure 3b).

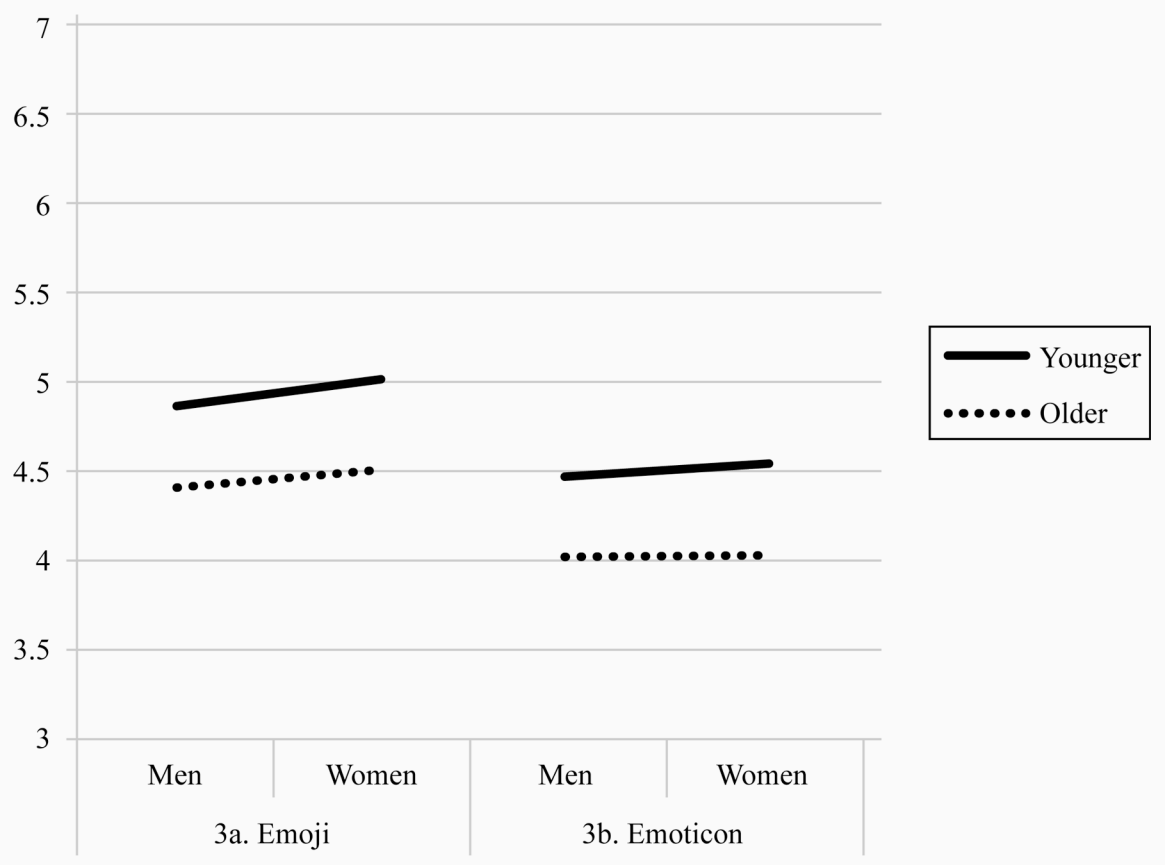

Figure 3. Gender and age differences in motives for emoji (3a) and emoticon (3b) use in text-based EMC.

Overall, results showed consistent differences between emoji and emoticons usage: participants reported using emoji more frequently, revealed more positive attitudes toward their use and identified more with the motives for using them. Importantly, our results also showed that age and gender are relevant variables in shaping the use of these visual cues. Younger (vs. older) participants reported using more emoji and emoticons expressed more positive attitudes and identified more with the motives for their use. Female (vs. male) reported using emoji more frequently and revealed more positive attitudes toward their use. However, these differences were particularly noticeable in younger women. No gender differences, nor interactions between gender and age, were not found for emoticon usage.

Discussion

EMC is now highly pervasive in our everyday life. Despite of its numerous advantages, a potential drawback of this type of communication is the loss of information that is available in face-to-face communication. In text-based EMC, users may overcome this potential limitation by including for instance visual paralinguistic cues, namely emoji and emoticons. In light of their increasing popularity (in particular, emoji) it is important to further understand the patterns of usage of both cues, and how these patterns vary according to users' characteristics such as age and gender.

In this study we assessed self-report measures of frequency of use, attitudes and motives for using emoji and emoticons. Overall, participants reported a frequent use of emoji and a moderate use of emoticons, positive attitudes toward their usage, and that the use of both visual cues is driven by several motives. As expected, all measures were positively associated for each type of cue. For example, participants who reported using more emoji also reported more positive attitudes and identified more with the motives for using them. Moreover, we also observed positive associations between the use of emoji and emoticons (i.e., participants who use more emoji also tend to use more emoticons). This positive association was also found for attitudes and motives regarding emoji and emoticons use.

We also observed relevant differences between both types of cues. For example, participants indicated using emoji more frequently than emoticons. This finding is in line with Pavalanathan and Eisenstein's (2016) proposal that these cues compete for the same communicative functions. Indeed, emoji are sometimes designated as the new generation of emoticons (Novak et al., 2015) as they represent a wider range of concepts (e.g., "smileys and people", "animals and nature", "food and drink", "travel and places", "activities", "objects"; Unicode, 2017). Additionally, emoji entry is now supported by most mobile platforms and desktop systems (for a review, see Pohl, Domin, & Rohs, 2017). Therefore, emoji have become so accessible that users may not need (or want) to type a specific

configuration of characters to express a given content (as required by emoticons). Moreover, the predictive text box available in many smartphones even suggest emoji based on the message typed. In line with the higher usage frequency, attitudes toward emoji use were also more positive than those toward emoticons. Participants identified with most of the motives for emoji and emoticons usage (except strengthening the seriousness or negativity of the message). For example, both cues seem to be used with the intents of expressing one's feelings and strengthening the message (e.g., making it more fun or positive). However, participants identified more with the motives for using emoji (vs. emoticons), which might be associated to a greater frequency of emoji usage.

Another goal of this study was to examine differences in emoji and emoticon use between women and men as well as between younger and older participants. As expected, we found gender differences, namely that women reported using emoji more often as well as more positive attitudes toward emoji usage than men. In contrast, for emoticons no gender differences were detected. This converges with previous work (Rodrigues, Prada, et al., 2017) showing that women rated a set of emoji as more familiar, clearer and more meaningful than men, whereas no differences were observed for emoticons. The absence of gender differences in dimensions such as familiarity was also observed in ratings of other visual stimuli (Garrido et al., 2017; Prada, Rodrigues, Silva, & Garrido, 2016), suggesting that such differences may be emoji-specific. Regarding age differences, we observed that younger (vs. older) participants reported using both emoji and emoticons more frequently, having more positive attitudes and identified more with motives for their usage. This is consistent with previous findings, namely that age is negatively associated to the general frequency of use and attitudes toward technology (Forgays et al., 2014; Hauk et al., 2018; Rosen et al., 2013) and to the frequency of emoji usage in particular (Oleszkiewicz et al., 2017). Noteworthy, the role played by gender and age is usually assessed independently. We extended past findings by

examining if gender differences are consistent regardless of age. Our results showed that gender differences for emoji frequency of use and attitudes were particularly evident for younger women. No interaction effects between age and gender were observed for variables related to emoticons usage.

In the current study, all the variables were assessed without specifying the characteristics of both visual cues (e.g., valence) or the context in which they are used. This may be relevant because there are studies suggesting that usage may depend on the valence of the emoji being considered (Hu et al., 2017). Also, people tend to include emoji or emoticons that are congruent with the valence of the message (Derks, Bos, & Grumbkow, 2007), or that represent their emotional state at the time the message was composed (Kato, Kato, & Scott, 2009). It has also been suggested that the use of emoji and emoticon is more frequent in positive (vs. negative; Derks, Bos, et al., 2008), informal (vs. formal; Rosen et al., 2010) or in socio-emotional (vs. task-oriented; Derks et al., 2007) contexts. Moreover, patterns of usage also seem to depend on the nature of the relation between sender and receiver, such that more emoji or emoticons are used to communicate with friends, when compared to strangers (Derks, Bos, et al., 2008). Therefore, future studies could investigate variables such as attitudes and motives for using emoji and emoticons in different contexts. Examining the influence of other individual differences on emoji and emoticons usage could also be of interest. Examples include the constructs of media and technology involvement (Rosen et al., 2013), or attitudes toward computers and the internet (DeYoung & Spence, 2004; Spence, DeYoung, & Feng, 2009).

Our findings build upon research suggesting differences between the frequency of emoji and emoticons use, which is arguably associated with the attitudes and motives associated with each of these visual cues. We observed gender and age differences that converge with past findings, but also significant interactions between these individual

characteristics. This is an important piece of evidence, because the typical gender differences reported in the literature (Chen et al., 2017) may actually be more salient among younger samples (e.g., university students). Hence, generalizations based on gender differences must be made with caution and should take into account the age of the participants. Future studies should also seek to include a more balanced sample in terms of participants' gender.

Research has shown that using visual cues in EMC helps to convey social and affective information and to clarify the message. Users hold positive attitudes toward using such cues, particularly emoji and emoticons, which is likely to be associated with their pervasive usage across multiple text-based communication formats. However, research has also shown that to fully comprehend the usage patterns we need to take into account the distinction between emoji and emoticons, but also the users' characteristics. Whereas the use of emoticons seems to be decreasing, the use of emoji has become quite popular in several domains (e.g., entertainment, advertising, fashion) that go beyond text-based communication. Moreover, the role of cultural settings should also be addressed (e.g., Garrido & Prada, 2018; Godinho & Garrido, 2016). Indeed, the current study was conducted in Portugal which has one of the highest emoji usage on Twitter across Europe (Ljubešić & Fišer, 2016). Therefore, our findings may not completely generalize to other countries where emoji usage is less frequent. Indeed, previous research has shown cross-cultural differences on the usage of non-verbal paralinguistic cues on EMC (Lu et al., 2016; Park et al., 2014; Park, Barash, Fink, & Cha, 2013) and lower sensitivity to emotion recognition of emoticons for countries with lower frequency of emoticon usage (Cameroon and Tanzania) compared with countries with higher usage (Japan - Takahashi, Oishi, & Shimada, 2017). In contrast, some research has shown consistency in emoji usage and their associated semantics across languages (Barbieri, Kruszewski, Ronzano, & Saggion, 2016), although some emojis can be interpreted in different ways from language to language, which could be related to socio-geographical

differences (Barbieri, Espinosa-Anke, & Saggion, 2016). Therefore, future studies should take the cultural setting into account, aiming to understand which cultural specificities (e.g., emoticon/emoji usage frequency; attitudes toward emoticons/emojis; socio-demographic characteristics) are more likely to influence emoji and emoticon usage.

Because emoticons may become obsolete in the future, researchers should direct their efforts to understand how emoji influence, or are associated with, different communicative outcomes. Equally important, researchers should focus on the characteristics of the users. For example, our results suggest that there may be generational differences in the patterns of emoji usage. Therefore, future studies could examine if the use of emoji actually facilitates or makes the emotional expression in EMC more efficient between younger individuals, and how their use can improve or disrupt communication across generations. Moreover, the examination of individual differences may also have implications for the development of new emoji sets that are representative of a more heterogeneous range of users (e.g., different ethnic backgrounds). The examination of frequency, attitudes and motives toward emoji usage is informative about how to adequately use them in different research endeavors, as well as in applied communication contexts (e.g., media, institutional or marketing).

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