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Does the Frequency of Using Emoticons in Computer-Mediated Communication Signal Creativity?*

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ABSTRACT

Nowadays many human interactions take place in the virtual environment. To express emotions and attitudes in computer-mediated communication (CMC) individuals use emoticons - graphic representations of emotions and ideas. Contemporary applications serving computer-mediated communication (CMC) are provided with a broad spectrum of emoticons which may be used in communication. Variety of emoticons gives users of CMC an opportunity to create unique messages and express emotions in a creative manner. This study involved 275 online respondents and aimed to verify whether the frequency of emoticons use may be predicted by the three characteristics of creativity (creative abilities, openness, independence). Bayesian regression analysis showed that creativity does not predict frequency of emoticons use in CMC. No correspondence between creativity and frequency of emoticons use may be explained by pragmatic function of emoticons as they are used to communicate efficiently with an emphasis on the sender-recipient shared understanding of the emoticons meaning. What is more, robust popularity of communication applications leads to widespread employment of emoticons by CMC users. Therefore, with growing number of emoticons users' creative individuals may seek less common means of expressing own creativity.

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INTRODUCTION

Emoticons are defined as the graphic representations of facial expressions (Dresner & Herring, 2010; Walther & D'Addario, 2001) and nowadays are well-known cues used in computer-mediated communication (CMC) whereas emojis represent a set of pictographs used to reflect ideas and concepts, are called a new generation of emoticons (Novak, Smailović, Sluban, & Mozetič, 2015; Prada et al., 2018). Interestingly, emoji seems to replace the use of emoticons in CMC - an increased number of emojis included in the social media communication leads to a simultaneous decline in the usage of emoticons (Pavalanathan & Eisenstein, 2016).

In virtual environment, emoticons are seen to have the same function as using actual nonverbal communication (Derks, Bos, & Von Grumbkow, 2008b; Lo, 2008; Preece & Ghozati, 2001). They reliably transmit attitudes and intents of a message, allow to reciprocate emotions and facilitate social connectedness (Fabri, Moore, & Hobbs, 2005; Hsieh, & Tseng, 2017; Huang, Yen, & Zhang, 2008; Lo, 2008). Emoticons are mostly used in communication with friends in informal conversations rather than in communication with strangers during the formal writing (Derks et al., 2008b; Rosen, Chang, Erwin, Carrier, & Cheever, 2010). The sentiment conveyed by emoticons dominates over the textual cues (Hogenboom et al., 2013). A message with a smiling emoticon is interpreted more positively than a message devoid any graphical content. Similarly, a frown emoticon strengthens the intensity of a negative message (Derks et al., 2008a). In contrary, some studies argue that no substitutes are available for real, face-to-face communication (Carter, 2003) and linguistic part plays a more important role in the evaluation of a message (Walther & D'Addario, 2001).

The number of emoticons' and emojis' usage is predicted mainly by gender and age of the users rather than by personality traits. Studies show that women are more likely to use emoticons (Baron, 2004; Oleszkiewicz et al., 2017b; Rosen et al., 2010; Wolf, 2000) and emojis (Prada et al., 2018) in their online activity. On the other hand, gender differences in the pattern of emoticon use seem to diminish in a mixed-gender newsgroup. Males are more likely to adopt the females' pattern of emoticon use rather than females tend to mute their emotional expression (Wolf, 2000). Research shows that the number of emoticons users decreases with age - younger participants have higher ratings of emoticons use (Oleszkiewicz et al., 2017b; Prada et al., 2018; Settanni & Marengo, 2015). Emoticons are intuitive and their emotional content is accurately recognized from an early age. Even children aged 4-8 years are able to identify emotions reflected by emoticons, especially those expressing happiness or sadness (Oleszkiewicz et al., 2017a).

Still little is known about the role of creativity in using this powerful communication supplement. Studies show that creativity is related to the positive mood, especially to high-activation positive-emotion states connected with motivational processes (i.e. excitement, enthusiasm). Individuals who reported feeling active and happy are more likely to be taking creative actions. In contrary, medium- and low-activation positive-emotion states (i.e. relaxation), as well as negative-emotion states (i.e. fear, anxiety), are not associated with creativity (Baas, De Dreu, & Nijstad, 2008; Conner & Silvia, 2015; Silvia et al., 2014). An analogous relationship for emotional states was observed in patterns of using emoticons: people use emoticons or emoji especially in order to strengthen the positive context. Strong negative emotions like guilt or anger lead to a decrease in the number of emoticons used in utterances (Kato, Kato, & Scott, 2009; Novak et al., 2015).

Emoticons can be generated by choosing a desired emoticon from a palette menu or through the act of creatively repurposing and combining letters and characters. This typographical, simple sign, further changes into a more complex cartoon icon. The main goal of emoticon transformation to indicate something new, unavailable in written language or to say something in a more efficient way through symbols (Garrison et al., 2011; Taiwo, 2010; Thompson & Filik, 2016). Luor, Lu, Wu, and Tao (2010) characterize emoticons as "a creative and visually salient way to add expression to an otherwise strictly text-based form". Synchronous chats (such as Whats'App, Snapchat, Facebook, etc.) seem to foster creativity because of its informal and familiar context as well as ephemerality and the liberating effect of masking identity in the online environment (Carter, 2002; Daisley 1994; Danet et al.,1997; del-Teso-Craviotto 2006). Nowadays, modern instant communicators and their functions such as multimedia messages or the possibility of using the emotional icons at a pinch, allow users to feel the presence of each other and customize their communication. This, in turn, leads to greater enjoyment from communication and a high level of engagement in online interactions (Li et al., 2005; Zaman et al., 2010). To verify the hypothesis of emoticons being a mean of creative expression, we performed a study to investigate the possible role of creativity as a predictor of the frequency of emoticons and emoji use in CMC.

MATERIALS AND METHODS

Participants

We recruited 275 online respondents (180 women and 95 men) aged from 15 to 37 (M = 20.9 years; SD = 3.5 years). Mean age for women was 20.4 years (SD = 3.2 years) and for men 21.9 years (SD = 3.84 years). Participants were contacted via social media in order to improve the ecological validity of the research and were not compensated for their

participation. They were instructed that they can withdraw from participation at any moment without giving reason and that their data will be treated confidentially. After participants provided informed consent to the inclusion in the study, they were asked to complete an online questionnaire.

Procedure

Respondents were asked if they use following applications for computer-mediated communication: Whats'App, Google Hangouts, Snapchat, Twitter, SMS/MMS, Facebook. For those application the participants confirmed to use, they were further asked to estimate the total amount of messages sent over the last 7 days and the total number of emoticons and emoji's used within these messages. On this basis a frequency of emoticons use for the last 7 days was calculated by dividing the number of emoticons and emojis by the total amount of messages sent over this period.

Creativity was measured by Types of Creativity Questionnaire (TCQ; Jankowska, Omelańczuk, Czerwonka, & Karwowski, 2019). TCQ is based on typological model of creativity (Karwowski & Jankowska, 2016) which treats creativity as an interaction between three characteristics: creative abilities (cognitive aspect of creativity which includes divergent thinking, creative imagination and originality of generated solutions), openness, and independence (personal trait connected with nonconformity). Relations between these three characteristics determine to which type of creativity an individual may be classified. This method is based on self-reports and consist of 28 questions. The answers are given on 5-point Likert-type scale (1 - strongly disagree, 5 - strongly agree). Recent study showed that reliability of TCQ scales is acceptable (Cronbach's alphas: creative abilities = .86, openness = .64, independence = .77; Jankowska et al., 2019).

RESULTS

Data was analyzed with Jamovi software (version 1.0.2 for Mac). The frequency of emoticons use was significantly skewed ($M = .89$, $SD = 1.59$, $min = 0$, $max = 26.67$, skewness = 11), therefore it was log-transformed for further analysis. The transformation yielded a more normal distribution of this variable ($M = -.25$, $SD = .44$, skewness = $-.84$). The raw and log-transformed variables were robustly correlated ($r = .59$; $p < .001$). Descriptive statistics for the three characteristics of creativity can be found in Table 1.

Table 1

Descriptive Statistics for the Three Characteristics of Creativity

	Creative abilities	Openness	Independence
M	3.72	3.85	3.73
Mdn	3.70	3.89	3.78
Minimum	1.80	1.44	1.50
Maximum	5.00	5.00	5.00
Skewness	-.345	-.603	-.441
Std. error skewness	.147	.147	.147
Cronbach's α	.90	.68	.71

We performed Bayesian regression analysis to estimate the predictive value of the three characteristics of creativity: creative abilities, openness and independence on the frequency of emoticons and emoji use over the last 7 days. Data provides no evidence for the predictive role of creativity in the frequency of emoticons use in CMC (all BFs_{10}<.21) Regression coefficients can be found in Table 2.

Table 2

Bayesian Regression Coefficients for the Model Testing Predictive Value of Creativity Characteristics: creative abilities, openness and independence on the frequency of emoticons use (values in comparison to the best model)

Models	P(M)	P(M|data)	BF_M	BF_{10}	R^2
Null model	.125	.5992	10.4655	1.0000	.00000
Creative abilities	.125	.1256	1.0058	.2097	.00354
Openness	.125	.0913	.7034	.1524	.00105
Independence	.125	.0798	.6072	.1332	1.34e-7
Creative abilities + Independence	.125	.0459	.3368	.0766	.00825
Creative abilities + Openness	.125	.0273	.1964	.0455	.00412
Openness + Independence	.125	.0187	.1332	.0312	.00110
Creative abilities + Openness + Independence	.125	.0122	.0862	.0203	.00879

DISCUSSION

The aim of this study was to examine the relationship between self-reported creativity and the frequency of emoticons and emoji use in a wide spectrum of applications designed for computer-mediated communication. We found that the three characteristics of creativity are not associated with the frequency of emoticons used in on-line communicators.

The common use of emoticons indicates that their understanding is shared by the Internet users (Boldea & Norley, 2008; Rezabeck & Cochenour, 1995). Therefore, emoticons may lack innovative, transgressive expression. Thus, the null result of this study might be attributed to the onset of the study. Perhaps if the study was conducted two dec-

ades ago when emoticons were only developed, we would have a chance to observe relationship between emoticons use and creativity. Back in time, when emoticons were designed and implemented, their use could have been a more creative process (Boldea & Norley, 2008), while now the use of emoticons became conventional leaving less space for creativity. The relationship between creativity and language play has often been noted (Murdock & Ganim, 1993; Vygotsky 2004; Weisfeld, 2006), hence using of graphical symbols of emotions could have contributed to the development of a language play between chat users (North, 2007).

Interpretation of emoticons depends on the context (Spinuzzi, 1992). The basic role of emoticons is to communicate pragmatic meaning and facilitate the understanding of the utterance with the intention of the sender (Dresner & Herring, 2010; Thompson & Filik, 2016; Walther & D'Addario, 2001), hence the most commonly used emoticons are those that are generally best understood. Symbols that have intrinsically no meaning are rarely used. Ambiguous emoticons are usually provided with verbal explanations because they are difficult to interpret (Rezabeck & Cochenour, 1995). Therefore, the patterns of emoticons use can be driven by the superior goal of ensuring clear intention of the sender, leaving less space for creative expression. According to the results of the study conducted on a sample of 86 702 Facebook users (Oleszkiewicz et al., 2017b), 99.6% of all emoticons posted on Facebook were determined by only 15 from the total number of 136. Thus, it seems that certain emoticons have a high level of agreement on how they should be used (Walther & D'Addario, 2001) and, in fact, they indicate conventional rather than creative approach. Further studies could focus on tracking the use of rare, ambiguous emoticons and determine whether they are used by creative individuals.

A comprehensive description of a creative person demands consideration of cognitive as well as personality characteristics. In other words, individuals' creative potential not only is defined through certain abilities or intelligence (Dziedziewicz & Karwowski, 2015; Voss & Means, 1989) but also through personality traits, especially openness and independence (Feist, 1998; Karwowski, 2017; Karwowski & Lebuda, 2016). Previous studies suggest that emoticons and emoji use is predicted mainly by age, sex or social factors, whereas personality traits have little or no impact on CMC process, including emoticon use (Oleszkiewicz et al., 2017b; Oum & Han, 2011; Prada et al., 2018; Tossell et al., 2012; Wolf, 2000). Patterns of use also depend on the context – more emoticons and emoji are used in public posts than in private messages (Tossell et al., 2012) and in communication with friends, compared with strangers (Derks et al., 2008b). Therefore, future studies should take into consideration the situational context as a moderating factor between personality traits (such as creativity) and emoticon use.

The present study has some limitations that should be discussed. First, all the variables were assessed with the declarative self-report methods. Creativity measured by TCQ is a subjective, personality-related trait. It would be valuable to employ objective measures of creativity connected with cognitive functioning, like The Test for Creative Thinking – Drawing Production (TCT-DP; Urban, 2005) or Test of Creative Imagery Abilities (TCIA; Jankowska & Karwowski, 2015). Furthermore, in this study participants estimated their emoticons use within last 7 days. Collected data could be less burdened with recall bias if subjects were asked daily (or even hourly) about their CMC behaviors. Moreover, brief daily reports might include current emotional state and creative performance what would broaden understanding of correspondence between emoticons use and subject characteristics.

We did not control for the communication context (formal vs. informal) that can influence the frequency of emoticons use. Synchronous chats foster playful types of interactions (Daisley, 1994), but these types may vary depending on the relation between the sender and the recipient of the message. Moreover, we did not control in what way respondents generated their emoticons - by choosing them from a palette menu or through the act of combining letters and characters. It is possible that the act of creatively repurposing letters and characters may be related to the creativity more, contrary to the picking out ready-made graphic symbols.

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