

# Media Sociology and Psychology: Emoticons in online chat

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**Abstract**—Many online chat users use emoticons everyday. But why are they using emoticons and how do they convey emotion. Some users use emoticons a lot while others don't, what is the importance of emoticons in any online chat? The paper will do qualitative and quantitative research before analyzing the results and applying theory about facial expressions. It is possible to conclude that emotions and emoticons are connected. The importance of emoticons in online chat is to better convey emotions and the natural use of emoticons could be explained with Darwin's general principles of expression.

**Keywords**—Emoticons, online chat, facial expression, emotions.

## I. INTRODUCTION AND MOTIVATION

Every time a new version of Unicode is released it includes new emoticons [1]. Emoticons has become the *go-to* way of conveying emotions and facial expression online, but why are so many using them, are they generally perceived the same way and are they even helpful? This paper will try and answer some of the questions about how emoticons are perceived and if different versions of the same emoticon are perceived the same way. The problem statement asks: "What is the importance of emoticons in any online chat?". The motivation for asking this question is based on personal curiosity. When communicating with people online, either through Skype, Facebook or other chat services, it can be hard to convey emotions. A message that might sound angry or dull can be perceived differently with the addition of an emoticon. But not everyone uses emoticons. How many does actually use emoticons in online chat and how important is emoticons for the people that use them?

## II. RELATED WORK

This paper is not the first to research into emoticons in online chat. In 2012 Fullwood et al. [2] did a research study on the usage of emoticons in Internet chat rooms. Fullwood et al. studied the how men and women used emoticons differently. Their findings shows that 29.19% of female users used emoticons while only 14.81% of male users used emoticons. Even though there were a significant difference between the sexes, the range of emoticons used were the same. Their findings also suggests that younger users tend to use more "cheeky" (😘:P) emoticons while all other types of emoticons were used equally [2].

Another interesting research is *Emotional Expression Online: Gender Differences in Emoticon Use* by Wolf [3]. Wolf first states that females stereotypically uses emoticons more

often than inexpressive males, but upon further investigation Wolf's research shows that in mixed gender groups the usage of emoticons is not statistically different. When males are in a same-gender group their emoticon usage is as low as 7 emoticons per 42 posts (ratio of .17). Whereas in a mixed-gender group this increases to 28 emoticons per 71 posts (ratio of .39). Further more Wolf found out that the range of emotion, which emoticons convey is broader for females than males [3].

These are just two of the studies involving emoticons in online chat messages but they show that emoticons are still a very open research topic.

## III. METHODS

This section will describe the methods that will be used to gather data and analyze said data with reflections upon why these methods were chosen. Data will be gathered qualitatively and quantitatively.

For the qualitative data, observations done ethnographically will be used. Ethnographic data gathering involves five points as stated by Atkinson and Hammersley [7]:

- 1) Data is gathered in everyday life outside of the laboratory
- 2) Data is gathered from a range of sources
- 3) Data is gathered as unstructured data
- 4) Data is focused on a few cases and the research is small-scale
- 5) Analysis of the data includes interpretations of meanings

When gathering qualitative data about the use of emoticons observations would be preferable over interviews. There are various reasons for this, mainly that in interviews the researcher will not be able to see the usage and scope of emotions used whereas in observations the emoticons are naturally used. Since ethnography describes the need for gathering data from a range of sources there will be looked at emoticon usage three difference places. 1) The researcher will observe how people he communicates with replies in terms of emoticons through Skype. 2) The researcher will use the website Facebook.com to gather observations about emoticon usage in posts and comments. 3) The researcher will use the website Reddit.com to collect information about emoticon usage from a single sub-forum.

Using observations online can be difficult because of different reasons. If the researcher visits a website such as Facebook or Reddit the context of online chat or forum

posts might be lost and the observation will be biased. On the other hand, using oneself as one of the parties in an online chat conversation will minimize the loss of context. The observations might be biased since some chat messages could be different based on the other party's prior knowledge with the researcher. Using both methods will try and balance the biases and still collect valid data for further analysis.

For the quantitative data gathering, questionnaires will be used. This is the preferred way of gathering a large amount of data from a range of participants. The data gathered from questionnaires will need to be analyzed and to do this, a couple of different statistical methods will be incorporated.

The first test will be a t-test. The t-test will test the null hypothesis stating that: "Using emoticons in a chat message does not convey emotions better than a chat message without." If the null hypothesis can be rejected then the alternative hypothesis, "Using emoticons in a chat message conveys emotions better than a chat message without.", will be accepted. The t-test compares the mean of the two data samples under certain assumptions [6].

Another dataset will be tested using a one-way ANOVA. ANOVA allows you to compare 2 or more samples under different conditions. The test will also test a null hypothesis: "There is no difference in emotions when using an ASCII emoticon compared to a Skype emoticon compared to a Facebook emoticon." If the null hypothesis can be rejected the alternative hypothesis will be accepted: "There is a difference in emotions when using an ASCII emoticon compared to a Skype emoticon compared to a Facebook emoticon."

Lastly the standard deviation will be looked at together with the mean and median of the samples.

#### IV. FINDINGS

In this section there will first be an introduction to how the data was gathered. Then there will be an analysis of the data, using statistical tests from Section III. The theory used will briefly be mentioned and then the applied to the data.

The quantitative data was gathered using an online questionnaire posted on Facebook, Reddit and Gaia Online. These three websites provided a broad representative of online chat users. From the questionnaire, which was available from the 17<sup>th</sup> to 21<sup>st</sup> of June 2014. The quantitative data can be categorized as a within group experiment. The questionnaire was created in collaboration with Andrea Keiser (akeise11@student.aau.dk) based on mutual interest in emoticons.

Out of the 140 responses gathered, 42% of respondents were female while 58% were male. Figure 1 shows a histogram fitted with a normal distribution of respondents age.

The questionnaire consists of two parts. The first part presents the participant with two sentences, one without an emoticon and one with an emoticon. The participants are then asked to rate each sentence on a Likert scale from 1 to 7. There are five of these questions and an example can be seen below:

- Do you want to hang out tonight?
- Do you want to hang out tonight? :)

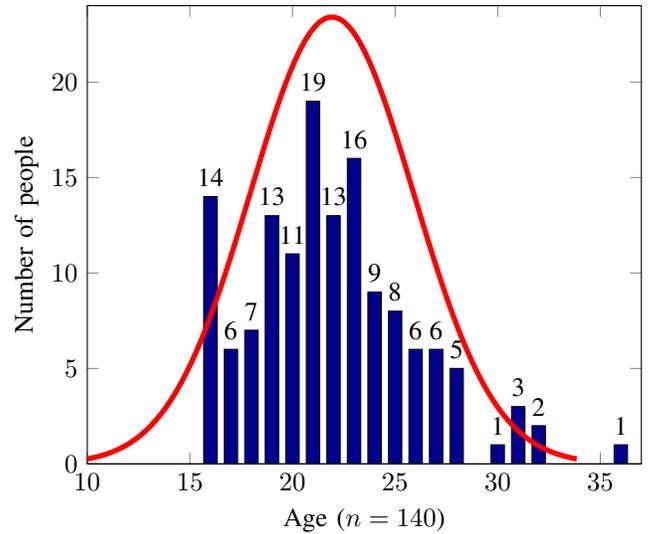


Fig. 1. Histogram fitted with normal distribution of respondents age (n = 140)

In the example above the participants are asked to rate the two sentences using a Likert scale from 1 (not delighted) to 7 (very delighted).

Table I shows the emoticon and the mean, median and standard deviation of the data. Moreover the table also shows the result of a one-sample t test.

TABLE I. TABLE OF EMOTICON, MEAN, MEDIAN, STANDARD DEVIATION AND T-TEST RESULT.

Emoticon	Mean	Median	STD	T Test
:)	$\mu = 5.532$	$\eta = 6$	$\sigma = 1.416$	$H = 1$
Without :)	$\mu = 5.079$	$\eta = 5$	$\sigma = 1.268$	$p = 0.0003451$
:)	$\mu = 5.388$	$\eta = 5.5$	$\sigma = 1.290$	$H = 1$
Without :)	$\mu = 4.489$	$\eta = 5$	$\sigma = 1.208$	$p = 1.7665 \times 10^{-13}$
:(	$\mu = 4.482$	$\eta = 5$	$\sigma = 1.584$	$H = 1$
Without :(	$\mu = 3.705$	$\eta = 4$	$\sigma = 1.522$	$p = 1.9567 \times 10^{-7}$
:s	$\mu = 4.309$	$\eta = 5$	$\sigma = 1.577$	$H = 1$
Without :s	$\mu = 3.402$	$\eta = 3$	$\sigma = 1.476$	$p = 3.3015 \times 10^{-7}$
:	$\mu = 3.949$	$\eta = 4$	$\sigma = 1.519$	$H = 0$
Without :	$\mu = 3.942$	$\eta = 4$	$\sigma = 1.432$	$p = 0.4029$

Looking at the values from Table I it is possible to reject the null hypothesis for the first four t-tests and accept the alternative hypothesis: "Using emoticons in a chat message conveys emotions better than a chat message without.". The median of the results also shows that most answers have one degree in difference. The fifth and last question about the emoticon :|, have almost the same mean, the median is the same and the null hypothesis cannot be rejected.

The second part of the questionnaire presents the participants with five different emoticons each represented three different ways. Figure 2 shows an example of a happy emoticon.

Participants were asked to rate each emoticon from Figure 2 on a scale from 1 (happy) to 5 (very happy). The other emoticons used were sad :(, surprised :o, straight face :| and wink ;).

These five different emoticons were rated and the result can be seen in Table II.



Fig. 2. Example of a happy emoticon.

TABLE II. TABLE OF EMOTICON AND ANOVA RESULT.

Emoticon	ANOVA
:)	$p = 0.0023$
:(	$p = 1.6913 \times 10^{-6}$
:o	$p = 0.0013$
:	$p = 1.7482 \times 10^{-14}$
:)	$p = 2.7814 \times 10^{-8}$

Looking at the p-value in Table II it is possible to reject the null hypothesis for all the emoticons and accept the alternative hypothesis “There is a difference in emotions when using an ASCII emoticon compared to a Skype emoticon compared to a Facebook emoticon.”

The next part will look at the theory of *Facial Expressions* and how it can be applied to the results. Different research articles and books will be used as a basic for the theory.

Emoticons are basically bidimensional representations of human facial expressions. Ekman’s research in *Facial Expressions* [9] proposes that there are several universal facial expressions of specific emotions. If emotions have specific facial expressions then there must be a way to correlate emoticons, which is a representation of a facial expression, to a specific emotion. Fernández-Dols’ theory states that there are seven specific facial expression attributes [8]. These attributes should be transferable to emoticons before a connection between emoticons and emotions can be made. Below is a list of facial expression attributes, which also correlates to emoticons.

- 1) Facial expressions are bidimensional
- 2) Facial expressions are brief and static
- 3) Facial expressions are extremely precise
- 4) Facial expressions distinctive
- 5) Facial expressions of emotions can be elicited by stimuli
- 6) Facial expressions must be described as true or false
- 7) Facial expressions are universal

It is possible to apply six of these attributes to emoticons. Looking over the list “2)” one could argue that an emoticon is not brief but instead long lasting (until deleted) and “5)” since the emoticon itself is not elicited by a stimuli this does not apply. All the other items are true for emoticons, which means that emoticons should be able to represent facial expressions.

But is there any difference in the facial expression based on the representation of the emoticon? Ekman and Friesen’s research shows that different facial expressions will be understandable across cultures [10]. This, however, could be argued that not all variance of the facial expression will be understood the same way. The ANOVA from Table II shows that there is a statistically significant difference in the use of different emoticons to convey different shades of emotions. Ekman and Friesen’s theory cannot be completely rejected since their research uses different emotions whereas the research in this

paper uses different shades of the same emotion. But further research into different variance of emoticons could be made.

Darwin describes three main principles of facial expressions [11]. These principles can be applied to the qualitative findings. When observing live online chat on Skype or Facebook emoticons seem to follow Darwin’s *general principles of expression*. The first principle states that the emotion (in this case in form of an emoticon) is used out of habit and these emoticons comes naturally in the sentences without the user thinking about it. The second and third principles are further developments of the first principle but describe why the mind is lead to convey these emotions. When Darwin’s theory is applied to the qualitative findings it explains why emoticons are used so much by some people. It does not, however, explain why some people do not use emoticons.

## V. CONCLUSION

The problem statement asks “What is the importance of emoticons in any online chat?”. By looking at facial expression theory and applying its principles to emoticons, a correlation between facial expression and emoticons can be made. The emoticon is a bidimensional representation of a facial expression, which means that the connection between emotions and emoticons can be made. This connection is not always certain and not everyone perceives emoticons the same way. The research and related theories have lead to the conclusion that emoticons can change the degree of emotion in an online chat. Although observations were made in different places, it was only in chat messages on Skype and Facebook where emoticons were regularly used. On the forum Reddit.com emotions were rarely used. The questionnaires shows that 69% uses emotions in chat messages but the results does not show why the participants use emoticons or why 31% chooses not to use emoticons. The importance of the emoticon is to better understand the emotion behind the message.

### A. Future research

While the research presented in this paper shows the work on different emoticons and the emotion behind them, it does not explain why some people don’t use them. Future research could go in-depth with Darwin’s theory and see if people that don’t use emoticons also show less emotions, which could be indicated by the data from Wolf [3] showing that more women than men use emoticons.

## ACKNOWLEDGMENT

The author would like to thank Andrea Keiser (akeise11@student.aau.dk) for collaboration on the data gathering of quantitative questionnaires.

## REFERENCES

- [1] The Unicode Consortium, *Unicode Consortium*. <http://www.unicode.org>, 1991-2014. [Accessed 06 22, 2014].
- [2] C. Fullwood, L. J. Orchard and S. A. Floyd, *Emoticon convergence in Internet chat rooms*. *Social Semiotics*, 23:5, 648-662, 2012.
- [3] A. Wolf, *Emotional Expression Online: Gender Differences in Emoticon Use*. *CyberPsychology & Behavior*, 3:5, 2000.
- [4] J. Lin, *Automatic Author Profiling of Online Chat Logs*. Naval Postgraduate School, Monterey, CA 93943-5000, 2007.

- [5] E. N. Forsyth, *Lexical and Discourse Analysis of Online Chat Dialog*. Naval Postgraduate School, Monterey, CA 93943-5000, 2007.
- [6] J. Lazer and J. H. Feng and H. Hochheiser, *Research Methods - In Human-Computer Interaction*. Wiley, 2010. ISBN: 978-0-470-72337-1.
- [7] P. Atkinson and M. Hammersley, *Ethnography*, 3rd ed. 2007. ISBN: 0-203-94476-3.
- [8] J. M. Fernández-Dols, *Advances in the Study of Facial Expression: An Introduction to the Special Section*. *Emotion Review*, 5:1, 648-662, 2013.
- [9] P. Ekman, *Facial Expressions*. *Handbook of Cognition and Emotion*, Chapter 16, 1991.
- [10] P. Ekman and W. V. Friesen, *Constants across cultures in the face and emotion*. *Journal of Personality and Social Psychology*, 17:2, 124-129, 1971.
- [11] C. Darwin, *The expression of the emotions in man and animals*. 1872.