

Emoji, Emoji on the Wall, Show Me One I Show You All

An Exploratory Study on the Connection Between Traits and Emoji Usage

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Theoretical Background & Relevance

While emoticons and smilies have found attention in research (e.g. Ganster et al., 2012; Wallet et al., 2016), emojis have been widely neglected despite their omnipresence in daily online conversations. Studies looked into the relation between personality traits and identification with emojis (Marengo et al., 2017) or emojis as emotion work (Riordan, 2017).

Relations between demographic variables, personality traits and other characteristics (e.g. life satisfaction) and preferred sets of emojis have, however, not yet been investigated.

Existing methods of measuring emoji usage required to reproduce real-world behaviour (Marengo et al., 2017). In this study, actual behavioural data from past emoji usage was used.

Research Questions

RQ1	Can the usage of rare emojis be predicted by 'openness for experience'?
RQ2	Do women tend to be more conform and use more popular (vs. rare) emojis? (Manago, Graham, Greenfield, & Salimkhan, 2008)
RQ3	Does the high usage of positive emojis predict a low level of neuroticism? (Seidman, 2013)
RQ4	Does the feeling of being in love correlates to the usage of kiss emoji ?

Do the 'recently used emojis' on your smartphone predict personality traits, or vice versa?

Methods & Data

An online questionnaire (using SoSci Survey) assessed participants' daily smartphone usage (minutes of surfing, phoning, texting), as well as emoji usage and WhatsApp usage for private and professional purposes (slider, high vs. low usage frequency). Additionally, gender, age and educational background were assessed. Personality was measured using the German short-version of BFI-10 (Rammstedt & John, 2005) (RQ1, RQ2, RQ3) along the Happiness and Life Satisfaction (Diener et al., 1985) with a 7-item Likert scale. Demographic questions were asked together with the feeling of being in love (RQ4).



The "recently used emojis"-tab in WhatsApp used to extract data from

After filling in the mentioned scales, participants ($n=112$) were instructed to upload a screenshot of their "recently used emojis" (WhatsApp only), which was image processed and manually reviewed to identify the set of emojis shown.

First of all predictive analysis (RapidMiner) and correlation analysis (SPSS) were used to find indicational behaviour.

Using a bottom-up process trying to find patterns with machine learning algorithms like **naive bayes classification** and **decision trees** combines common statistical techniques with innovative parts of computer science.

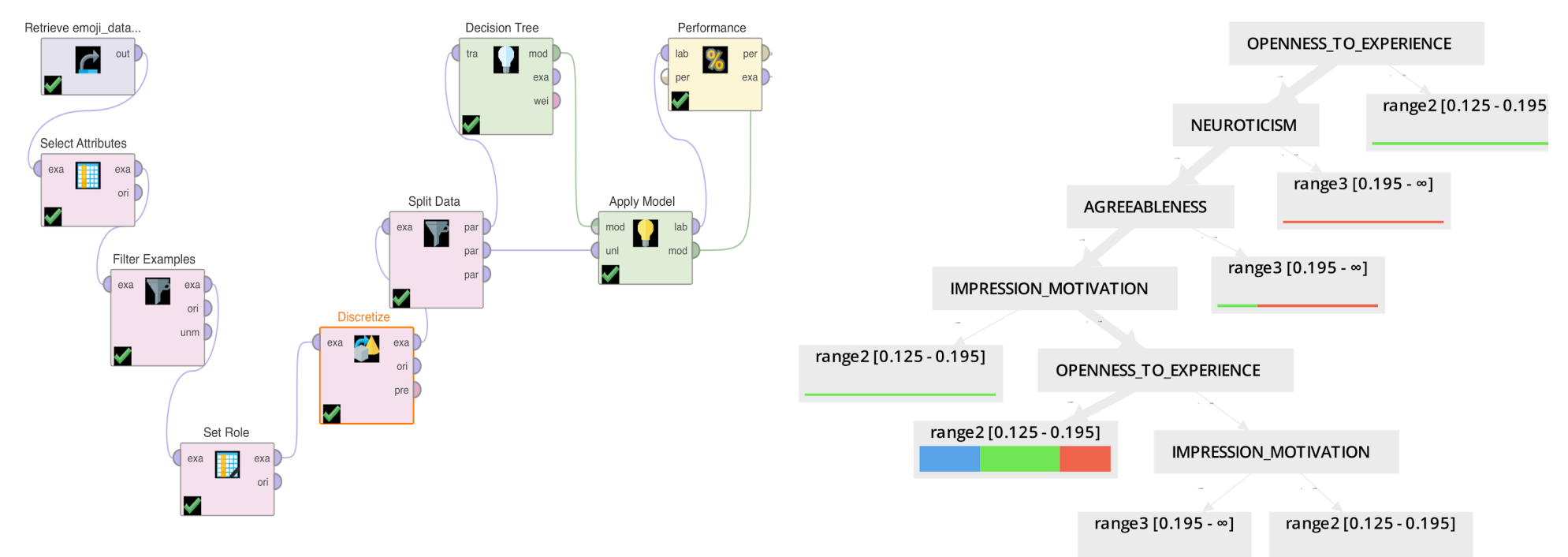
Results

RQ1 First results indicate that the **usage of common** (vs. rare) emojis can be predicted by **openness for experience** (i.e. low values for openness predict a higher conformity in emoji usage) and conscientiousness (i.e. low values for conscientiousness predict a lower conformity in emoji usage).

RQ2 Also, **women tend to be more conform**, i.e. they use emojis that are popular with others, while men tend to use sets of **less popular emojis** (i.e. usage of popular emojis being a good predictor for the participants' gender).

RQ3 Moreover, **low levels of neuroticism** predict the usage of **high number of positive** emojis (along with openness to experience and agreeableness in a calculated decision tree).

The right image below shows a decision tree, which has been generated by RapidMiner on the basis of the calculation process, which is shown to the left. This tree depicts the influence of a set of given predictor variables (e.g. openness to experience, neuroticism, etc.) to the usage of popular emojis. The variable for popularity has been transformed into a nominal variable by creating three distinct value ranges (range1 - range3, from low popular emojis to high popularity).



A RapidMiner process to calculate the performance of a decision tree, including data preparation, building the model, and evaluating its accuracy.

A decision tree generated by RapidMiner to show the relation between openness to experience and the usage of positive emojis.

RQ4 A significant correlation between the kiss emoji usage and the feeling of being in love ($r=.304$, $p=.001$) was found in with the Spearman's rank correlation method using SPSS (SPSS for Windows, Version 16).

Discussion

- Social desirability biases were not specifically regarded, but probably need to, because the participant may have concerns about the usage of sensitive real life data.
- The number of participants ($n=112$) is sufficient to find indicational behaviour, but more participants are needed to provide better advice in further research.
- The basic approach of using machine learning algorithms to find usage patterns and relations between personality traits and actual behaviour is easily applicable to other research questions.
- There is no known source about the algorithms of the WhatsApp labeled 'recently used emojis'-tab or iPhone labeled 'often used'-tab and how the emojis are ranked.

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