Emotion transfer on Youtue vlogs

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Abstract

Emotion transfer has been shown to happen on social media by previous research. The present study investigates wether the effect could also happen on Youtube. We compared the the emotion words used in a large amount of Youtube vlogs and their comments, using a linear regression. More use of positive emotion words in vlogs predicted more use of positive emotions in the comments, and more use of negative emotion words in vlogs predicted more use of negative emotions in the comments. Both regressions were highly significant. Appraisal effects are still to be ruled out by experimental research. However, our results are an indication that emotion transfer takes place on Youtube.

Introduction

When we interact with people, our emotional states automatically line up with theirs. This process is called emotion transfer. Non-verbal communication is thought to play a role in emotion transfer, but its effects are not limited to face to face communication. People don't have to see each other for the effect to occur. Studies have shown that emotion transfer also happens when people communicate digitally (Hancock et al., 2008). With the rise of social media, the question arises whether emotion transfer also occurs when people interact indirectly using these platforms. The aim of the current study is to investigate the presence of emotion transfer on the audience of YouTube vlogs.

Emotion transfer was first descibed by Hatfield, Cacioppo and Rapson (1993). They differentiate between two effects that contribute to emotion transfer: emotion contagion and social appraisal. In the case of social appraisal, emotions of others influence our own evaluation of the situation, which in turn influences our emotions. In case of emotion contagion, our own emotions are directly influenced by the emotions of others, without being mediated by their appraisal.

Altough facial expressions are thought to play a big role in the process, Hancock et al. (2008) showed that computer mediated communication (CMC) also caused transfer of emotions. In their study, negative emotions were evoked in participants through a movie clip, music and difficult

puzzles. They then virtually chatted with other participants via text, who subsequently showed more negative emotions as well. Another study by Guillory et. al (2011) found a similar effect. Participants who chatted with others who had watched a video clip that induced negative emotions scored higher on a negative emotion scale thereafter, even though their conversations were unrelated to the video. Other research has suggested that emotion transfer even happens when there is no direct interaction between two people, for instance on Facebook.

Kramer (2012) did a correlational on study emotion transfer on Facebook. People who saw more positive or negative posts from their friends on their news feed, were more likely to display the same emotions in their own messages a day later. Another study by the same authors, provided experimental evidence for the effect by conducting a huge experiment on Facebook (Kramer, Guillory & Hancock, 2014). Almost 700,000 participants were exposed to either more positive or negative messages on their timeline for the duration of one week. The messages posted by participants showed more negative or positive emotions accordingly, providing evidence that emotion transfer does happen through Facebook interaction. Their argument that it was emotion contagion rather than appraisal effects that caused the effect is not very strong, though. The study controlled for appraisal effects by comparing effect sizes of positive and negative emotions. Their argument that negative appraisal effects should be bigger relative to positive ones, although grounded in some literature, does not seem strong enough to dismiss appraisal effects completely. A study by Coviello et al. (2014) took a different approach to control for appraisal effects, by using rainfall as an independent measure. Rain is known to have a negative effect on our emotions, which the results of this study confirmed. The increased amount of negative posts caused by rainfall had an effect on the posts of friends in areas where it did not rain. This design excludes appraisal effects, because participants' emotional reactions were not directed at an event or situation (rain in this case), as they did not experience it themselves.

Another place where people spend a lot of their online time is YouTube. The video-hosting website currently has over 1 billion individual users, almost a third of all internet users (YouTube,

2018). The presence of emotions in YouTube videos seems to have an effect on people, at- least in terms of their behaviour. Guadagna et al. (2013) found that videos invoking an emotional response in viewers are more likely to be shared. Although the authors based their research on existing literature about emotion contagion, they did not measure the effect directly. Considering over a billion people are possibly affected by emotion transfer while watching YouTube videos, its relevant to find out if the effect also happens here.

Theories suggest that non-verbal communication plays a big part in emotion transfer. The effect might therefore be even stronger on YouTube than in the text-based studies on Facebook. Another difference between Facebook and YouTube is the extent to which people feel anonymous when using these media. On Facebook, people mostly interact with real-life friends, while a YouTube-account isn't directly traceable to a users' identity. When people interact online, having a feeling of anonymity, they often show behaviour that they wouldn't otherwise. This is known as the online disinhibition effect (Suler, 2005). Possibly, this will also increase the emotion transfer effect, seeing as disinhibition generally leads to stronger expressions of emotion.

For this study, we have limited ourselves to Youtube vlogs. This type of video is most suitable for our study for a number of reasons. The typical format of a vlog consists of a vlogger talking to a camera, with relatively little other action going on. This minimizes effects of other events in the videos on viewers' emotions. An audience watching a vlogger talking directly to the camera closely resembles a genuine face to face interaction, more perhaps than any other video format. This, we believe, makes it likely that emotion transfer will take place.

In this study, we will investigate the effects of emotions displayed in YouTube vlogs, on the emotions of the viewers. In other words: Do emotions transfer from the vlogger to their audience? Emotion transfer through this medium has not yet been studied, so the current study will contribute to the understanding of emotion transfer through CMC and social media.

Based on the existing literature regarding emotion transfer, we propose the following hypotheses:

H1: Vlogs that express more positive emotions, will also have more positive comments.

H2: Vlogs that express more negative emotions, will also have more negative comments

Method

Data was gathered by scraping YouTube vlogs through an automatic python script, which downloaded the videos' subtitles as well as the first 120 comments under the video. We found the channels of the vloggers through different ways, such as online lists, reports, recommendations, prior knowledge, and searching the terms ‘vlog’ and ‘vlogger’ on YouTube and Google. We selected video's from a total of 91 different Youtube channels. We downloaded transcriptions of the spoken words from diycaptions.com, which we will refer to as subtitles. We generated positive and negative emotion scores for the audiences and vloggers by cross-referencing the comments and subtitles with the NRC word-emotion lexicon (Mohammad & Turney, 2013). From the 2083 videos that were downloaded, 14 were excluded because they were Christmas or birthday themed. These resulted in extremly high positive audience scores, likely due to the frequent use of 'Happy' and 'Merry'. Three more videos were excluded because of an extremely high, negative audience score. These scores were likely the result of very short comments, resulting in a high ratio between total words and emotion words. It should be noted that the exlusion of these scores did not have any effect on the statistical significance of the results. Both regressions still had a p-value lower then 0.01 when these outliers were included. We excluded these data because they are – in our eyess – not reflecting the effects of emotion transfer.

From the 2066 videos that were selected, 1174 featured a male vlogger and 892 a female vlogger. Two linear regressions were performed, predicting audience emotion from vlogger emotion. We performed a post hoc power analysis using the G*Power program (Faul, Erdfelder, Lang & Buchner, 2007). Inputs were: $N = 2066$, $\alpha = 0.05$ and small effect size (as past studies for similar questions found small effects), d = 0,20. Power was calculated to be 1.00 for both regressions.

Results

Assumptions for the linear regressions were checked. The data appears to be linear and homoscedastic, as can be seen in the plots. A normal P-P plot was performed to check for normal distribution of residuals, as can be seen in figure 1. Descriptive Statistics for this analysis are shown in table 1.

Figure 1.

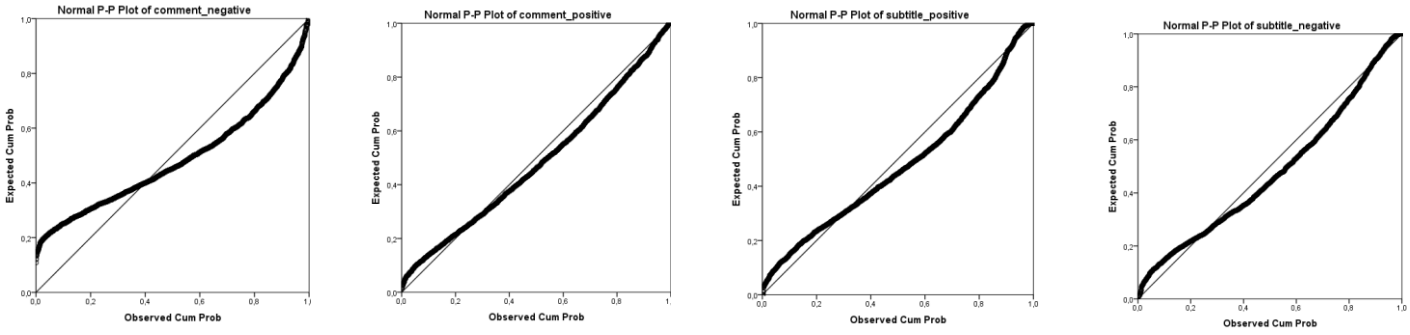


Figure 1. The normal P-P plots for the 4 emotion scores.

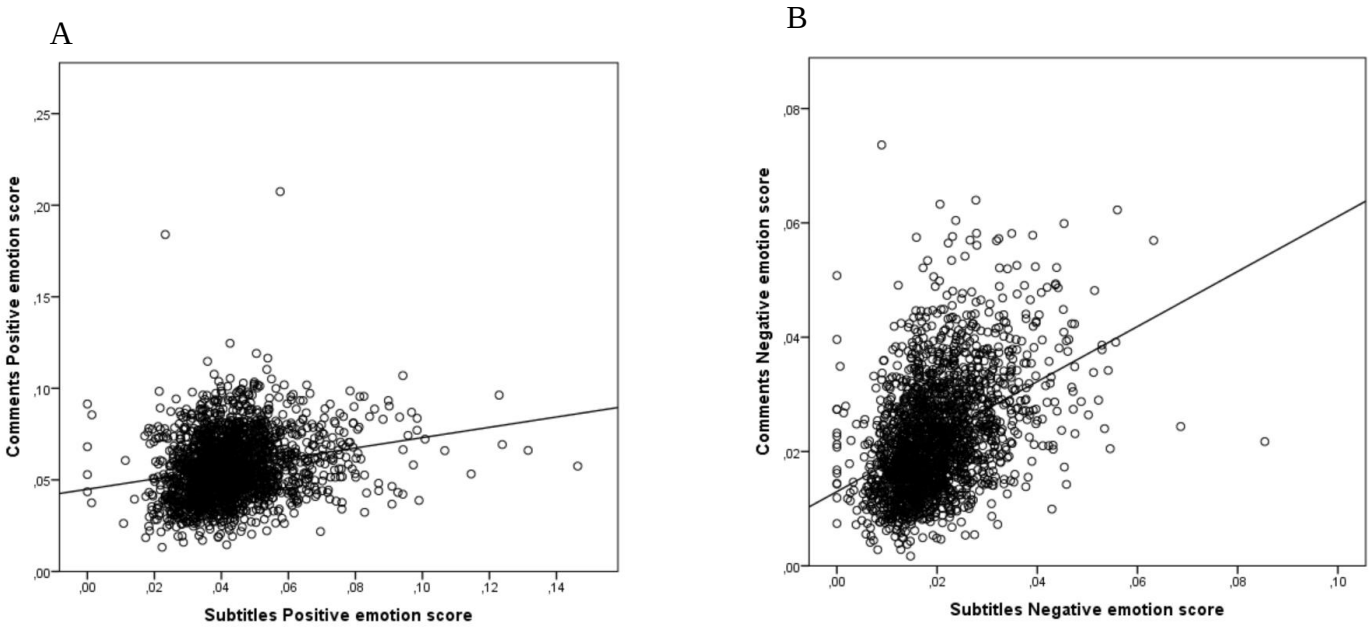
Table 1.

	Emotion Scores			
	M	SD	Min	Max
Subtitle negative	0.0197	0.0086	0.0000	0.0854
Subtitle positive	0.0431	0.0136	0.0000	0.1463
Comment negative	0.0225	0.0099	0.0017	0.0736
Comment positive	0.0571	0.0176	0.0132	0.2075

Measures are emotion scores from used words, scores from 0.00 – 1.00

Positive emotion score of video subtitles significantly predicted positive emotion score of audiences, $\beta = .217$, $t(2064) = 10.105$, $p < .001$. The positive emotion score of video subtitles also explained a significant proportion of variance in the positive emotion score of audiences, $R^2 = .047$, $F(1, 2064) = 102{,}114$, $p < .001$. Negative emotion score of video subtitles significantly predicted negative emotion score of audiences, $\beta = .421$, $t(2064) = 21.056$, $p < .001$. Negative emotion score of subtitles also explained a significant proportion of variance in the negative emotion score of audiences, $R^2 = .177$, $F(1, 2064) = 443.370$, $p < .001$. Visual representations of the regressions can be found in figure 2.

Figure 2.



Depicted is a visual representation of subtitle emotions scores (X-axis) plotted against comment emotion scores (Y-axis) with the regression lines, for both positive (A) and negative emotions (B).

Discussion

The aim of this study was to investigate wether emotions transfer from vloggers to audiences. The results strongly suggest that they do. More positive emotion scores of vloggers predicted more positive emotion scores of audiences, and more negative emotion scores of vloggers predicted more negative emotion scores of audiences, with both regressions being highly significant. This is in line with earlier findings of emotion transfer on social media, previously discussed in the introduction.

Earlier research on emotion transfer on social media already indicated that the effect also happens online. Previous studies, however., have only considered the more prototypical social media like Facebook and Twitter. With this study we have shown that the effects of emotion tranfer can also be measured on Youtube.

The question remains, however, what the driving process behind the emotion transfer is in this case. Emotion contagion works by mimicing facial expressions, which were very prominent in these videos. Social appraisal on the other hand, works by viewing an emotional response to an event or subject, something which most of these videos contain. It's likely that both of these processes have contributed to emotion transfer. Future research could be performed differentiating between these effects. One way this could be done is by looking at facial expressions shown by vloggers. As previously stated, emotion contagion happens by mimicking these expressions, so a correlation between these and the emotions expressed by the audience would indicate that it is contagion rather than appraisal causing the emotion tranfer. Another suggestion for future research investigating the long-term effects of emotion transfer. This could be done by looking at comments affected users left on other videos they subsequently watched.

The fact that the effect size of negative emotions is much bigger than that of positive ones can be explained by a negativity bias, this means that people tend to have a stronger emotional reaction to negative events compared to positive ones (Cacioppo & Berntson, 1994). Therefore, it can be expected that this effect is also displayed in the emotional response to social media video’s.

Our results imply that emotion transfer can occur when there is no real two-sided interaction. It could be argued that the comments left by the audience are their part of the interaction, but change in the emotional state of the audience must have already happened before writing the comment. Research that uses a different measure for the emotional state of the audience could give more insight into this.

An alternative explanation for the results we found is the effect of homophily. People have a tendency to seek out others that have a similar mental or emotional state (Christakis & Fowler,

2013). Those who are already in negative emotional state could be more likely to watch and/or comment on videos that also contain more negative emotions. The audiences‘ negative emotion score would in that case be caused by their emotional state prior to watching the video, not by emotion transfer. Future research could be done exlcuding for homophily effects, by asking users to fill in a short questionaire before watching a video. Youtube already uses this function for other purposes, so using it for scientific research doesn't seem unrealistic, however the amount of items should probably be quite low for users to be willing to fill in such a questionare. The results of this questionaire could be used to exclude the confounding effects of homophily.

With this study we have provided evidence that emotions transfer from vloggers to their audiences. Additional research could be done to differentiate between contagion and appraissal effects, and to eliminate the possibility of measuring homophily effects. We believe these findings have a highly important value, considering the amount people that visit Youtube and are thus emotionally affected by watching these videos.

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