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Can moral emotional frames polarize your attitude?

The impact of moral emotional frames on attitude polarization through mediation by felt emotions and moralization.

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Abstract

This study (N = 313) aimed to investigates the influence of (moral) emotional frames in an online discussion on moralization and attitude polarization. It is hypothesized that anger and disgust frames result in more attitude polarization than neutral frames, while anxiety frames are hypothesized to do the opposite. Felt emotions and moralization are hypothesised to mediate the effect, because experiencing moral emotions should makes people moralize an issue, which in turn can cause attitude polarization. However, the results did not support the hypotheses, as the frames did not impact attitude polarization, neither by mediation through moralization and felt emotions.. However, when conveyed emotions were used instead of the frames, anger, disgust and even fear and anxiety predicted attitude polarization through mediation by moralization and felt emotions. The results also indicate that moralization predicts attitude polarization. The study provides opportunities for future research that are elaborated on in the discussion.

Introduction

There are about 2.45 billion users on Facebook. While scrolling through the main page, one might read a post about climate change, LGBTQ+ rights or abortions. Especially these posts seem to cause conflict and increasingly extreme expressions in the comment section. While social media have the opportunity to increase deliberate debate by promoting information sharing and easy access to debates (Stromer-Galley & Muhlberger, 2009), social media are also likely to damage deliberative debate (Hwang, Kim & Huh, 2014). Even though social media provide easy access to information, research on selective exposure indicates that people only look for information congruent with their opinion, and social media allegedly make this easier (Song & Boomgaarden, 2017). Besides, social media provide anonymity and allow extreme expressions to be used, which supposedly makes way for uncivil and truculent debate rather than deliberative debate (Dahlberg, 2001; Hwang, Kim & Huh, 2014). Together with the almost exclusive use of attitude congruent information, these extreme, uncivil expressions cause the willingness to compromise or to make space for middle ground to decrease by means of polarization. Berman, Swyers, Hartnoll, Singh and Bausell (2000) stress the importance of middle ground and argue that polarized views and extreme attitudes further damage deliberative debate by overshadowing unpopular alternative views supported by empirical evidence. Hence, social media corrupts proper debate and decreases the possibility of finding middle ground by means of polarization.

The topic of (online) discussions has an important impact on polarization. Moral issues, such as abortions, eating meat or homosexuality, are supposedly more difficult to resolve and damage debate even further, than nonmoral issues. That is because they lack

common ground for a civil debate and increase the power struggle to push one's moral position forward (Mouw & Sobel, 2001). More importantly, moral issues are likely to be associated with strong, moral emotions (Cliffords, 2019; Horberg, Oveis & Keltner, 2011). These emotions hold moral qualities. They arise in situations that are perceived as having moral components. For example, when people are being mistreated because of their sexuality or skin-color. Moral emotions likely limit the possibility of proper processing of argumentation and are likely to cause attitudes to become more extreme (Nabi, 1999). This could result in polarized attitudes.

Observing attitude consistent and attitude inconsistent information, also affects affective and attitude polarization (Garrett et al., 2014; Munro & Ditto, 1997). How information or messages are framed, the use of emotions in discussions, seems to have an impact on the social polarization (Clifford, 2019). Experiencing moral emotions like anger, mediates the effect of persuasive frames on social polarization. Anger and disgust are found to make people more combative during discussions (MacKuen, Wolak, Keele & Marcus, 2010). Nonmoral emotions, such as fear or anxiety, on the other hand, make people more willing to consider opposing attitudes as they want to learn (MacKuen, Wolak, Keele & Marcus, 2010) and it makes people process information (selective exposure) in a less biased manner (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019).

Previous research has explored different types of polarization, like affective polarization, political polarization and ideological polarization. The current study focusses on attitude polarization, which is little researched in combination with moralization, even though, according to Song and Boomgaarden (2017), it is prevalent in

social media. More specifically, the current study addresses the influence of moral and nonmoral emotional frames on attitude polarization. It also explores the mediating roles of felt emotions and moralization.

Theoretical Background

The definition of attitude polarization comes from the polarization hypothesis by Lord et al. (1979). Information concerning someone's attitude is often processed in a biased manner, which causes even mixed or uncertain information to lend support for one's position or attitude, which ends up being reinforced. Therefore, attitude polarization can occur when reading discussions containing mixed arguments or information (Munro & Ditto, 1997).

Emotional Frames and Attitude Polarization

The way information is framed, has an impact on polarization. Frames that express emotions can affect others, because emotions are contagious (Kramer, Guillory & Hancock, 2014). Hatfield, Cacioppo and Rapson (1994) define emotional contagion as the transference of emotions from one person to another by means of mimicking expressions, visual and verbal cues. This established phenomenon is also found in online settings in the absence of these visual and verbal cues (Kramer, Guillory & Hancock, 2014). In debates or discussions online, emotions are likely to determine the course of the discussion. MacKuen, Wolak, Keele and Marcus (2010) found that emotions cause a debate to be deliberative or combative, depending on what emotion is evoked. Emotions that evoke aversion, such as anger, disgust and hatred, strengthen previously held views. This makes people more combative in discussions. Anxiety on the other hand, makes people more deliberative and open to opposing information. Angry people are more prone to biased assimilation as compared to anxious people (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019).

Biased assimilation is a mechanism through which people selectively take information from inconclusive or mixed evidence. This information is then used in an unduly manner, to support one's opinion. This causes people to become more extreme in their position (Dandekar, Goel & Lee, 2013). According to Munro and Ditto (1997), biased assimilation is a possible underlying mechanism for attitude polarization. They showed that positive and negative affective responses affect biased assimilation. Suhay and Erison (2018) more specifically mention anger as an antecedent of biased assimilation.

Anger is also related to social polarization through moralization and by causing social distancing (Clifford, 2019). Social distancing is seen as an indication of social polarization. Disgust is also related to behaviours like social distancing (Vartanian, Trewartha & Vanman, 2016), because disgust causes avoidance behaviour towards disgust related targets (Terrizzi, Shook & Ventis, 2010). This avoidance behaviour can also be generalized to social behaviours like outgroup avoidance and social exclusion. Terrizzi, Shook and Ventis (2010) also found that the induction of disgust in disgust-related issues causes increased prejudicial attitudes. There is also support for disgust having an impact on the polarization of judgements for purity-related issues (Horberg et al., 2009; Horberg, Oveis, & Keltner, 2011; Wagner, 2012). Since, anger and disgust are related to behaviours that indicate polarization, it is expected that these emotions also lead to attitude polarization.

Fear and anxiety make people more willing to compromise and make them consider opposing attitudes as they want to learn (MacKuen, Wolak, Keele & Marcus, 2010). Anxiety also makes people use less biased processing styles, it would make them

less susceptible to only look for support for their initial attitudes in mixed or uncertain information (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019). Wollenbæk et al. (2019) even argue that anxiety breaks former positions and makes people search out opposing information. This would interfere with processes leading to attitude polarization and likely cause less attitude polarization as compared to neutral frames. Since neutral frames could still bring about some biased processing through affective responses to mixed information. Taking all of the above into account, the following hypotheses were formulated:

Hypothesis 1a: Emotional frames conveying anger cause more attitude polarization compared to non-emotional frames.

Hypothesis 1b: Emotional frames conveying disgust evoke more attitude polarization compared to non-emotional frames.

Hypothesis 1c: Emotional frames conveying anxiety decrease attitude polarization compared to non-emotional frames.

Moralization and Polarization

In the previous section a few mediating factors between emotional frames and polarization have already been mentioned. In this section (attitude) moralization is discussed as an important predictor of polarization. Moralization is seen as the process of changeover of a mere preference into a moral value (Rozin & Singh, 1999), like the need for justice, self-respect or truth (Kinnier, Kernes & Dautheribes, 2000). These moral values are grounded in the five main foundations of our moral values: harm and care,

fairness and reciprocity, ingroup and loyalty, authority and respect, purity and sanctity (Suhler & Churchland, 2011).

When attitudes are moralized, they are converted from mere preferences into strong beliefs about issues or behaviours as morally right or wrong (Ringel & Ditto, 2019; Rozin, 1999). Strong beliefs about the morality of a behaviour, situation or issue, are also called moral convictions. Moralized attitudes are more central to the self and are often internalized (Rozin & Singh, 1999). Once a subject or attitude is moralized, moral justification acts as a motivator to make people become more strongly committed to their moral beliefs or moral convictions over time (Amato & Partridge, 1989). Moral convictions make people strive for cognitive consistency (Rozin, Markwith &, Stoess, 1997); they are more likely to process information in a biased manner to reinforce their moral position (Rozin, Markwith &, Stoess, 1997); This is similar to biased assimilation, which is supposedly the underlying mechanism to attitude polarization. Previous research already found support for the effect of moralization on affective polarization, or the increasing animosity, in terms of dislike and distrust, between different political orientations (Bankert, 2018); ideological polarization, the increasing distance in ideology between different political parties (Brady et al., 2017), and political or social polarization, the increasingly negative feelings to those who disagree (Clifford, 2019; Ladewig, 2010). Moralized issues supposedly cause opinions to be less labile and less susceptible for change (Rozin & Singh, 1999). When people moralize an issue or have moral convictions concerning that issue, they want more social and physical distance from people having opposing opinions (Skitka, Bauman & Sagris, 2005). Greater social distance is an indication of social polarization (Clifford, 2019). Clifford (2019) also mentions other

indications of political polarization that are consequences of moralization and of having moral convictions concerning an issue. For example, people holding an attitude with moral conviction makes them less willing to compromise, more hostile and less acceptive of disagreement.

Moralization and emotional frames

The experiencing of certain emotions influences our moral judgements of situations in a predictable way. For example, when we view a clip of someone hurting another person, we might experience anger, and are therefor more likely to have our judgement be clouded by anger. This makes us punish other perpetrators for different wrongdoings more severely (Goldberg et al., 1999). Horberg et al. (2011) and Avramova and Inbar (2013) stress that specific emotions influence or amplify our moral judgement. These are emotions like anger or disgust, as they have been found to be closely related to the moralization of attitudes (Skitka, 2010). That is because certain emotions, such as anger and disgust, have moral qualities. Emotions that hold such qualities are often termed as moral emotions (Haidt, 2003; Horberg, Oveis & Keltner, 2011). One quality of moral emotions is that they are other-interested. The other quality of moral emotions is that they often come with a high prosocial action tendency (Haidt, 2003). Following the article by Haidt (2003), anger is high in moral value since the emotion is strongly other-interested for moral topics. This means that anger is felt in situations where others are treated unjustly. Anger is also high on action tendency, meaning that anger makes people want to act. Anger often goes with the action tendency to oppose or retaliate. Disgust is lower on action tendency; however, it is still strongly other-interested, making it a moral

emotion as well. Fear or anxiety on the other hand are high in self-interest, making them non-moral.

When moral emotions are evoked, people are found to elicit strong moral convictions (Skitka, Bauman & Sargis, 2005). In the article by Avramova and Inbar (2013) they discuss the claim that suggests that moral emotions even moralize nonmoral issues. Wheatley and Haidt (2005) provide evidence for this claim as they found that when people were hypnotized to experience disgust when a certain word was shown, they would have stronger moral judgements about moral issues, but also about nonmoral issues. While anger causes moralization of attitudes when an issue makes an appeal to justice, disgust has an impact on moral judgement about purity-related situations or issue (Horberg, oveis, Keltner, 2011; Marzillier & Davey, 2004). Purity-related issues often concern disease or social behaviours like cannibalism or racism.

Not only do these emotions appear in certain situations, they can be evoked as well. Expressed emotions have an important impact on others, because they can be contagious (Brady et al., 2017; Kramer, Guillory & Hancock, 2014), causing people to feel similar emotions as the emotions expressed by others. By mimicking expressions, verbal and visual cues by others, emotions are transferred (Hatfield, Cacioppo & Rapson, 1994). Doherty (1998) found that when a tape was shown with a person showing sadness, people responded in a sad manner. Whereas the tape with a person showing happy emotions caused people to have a positive affective response. Research by Hancock, Gee, Ciaccio, and Lin (2008) found that emotional contagion also happens through computer-based communication. They found that in the negative affect condition participants reacted with a similar negative affective response.

Brady et al. (2017) found that using moral emotions in twitter messages about same-sex marriages or gun control, causes moral contagion. Moral contagion is a phenomenon which makes people take over the moral essence of others they are associated with (Liu, Liao, Lu, Luo & Cui, 2019). For example, those who have a similar opinion in moral debates. Clifford (2019) showed that persuasive frames evoking emotions such as anger or disgust cause people to moralize issues. They found that the felt emotions mediated the effect of persuasive frames on moralization. However, emotional frames evoking anxiety did not have an effect on moralization.

As already mentioned in the introduction, moral issues are supposedly more difficult to solve (Mouw & Sobel, 2001) as the willingness to compromise decreases and it becomes a power struggle to push forward one's moral conviction, possibly causing polarization. Experiencing moral emotions like anger and disgust have been found to relate and possibly cause moralization (Clifford, 2019; Horberg, Oveis, Keltner & Cohen, 2009). Moralization makes people become increasingly committed to their moral position and makes them become more prone to biased information processing styles to confirm and strengthen their position (Rozin, Markwith &, Stoess, 1997). This mechanism underlies polarization. Direct links between moralization and different types of polarization, like affective, ideological and political polarization, have also been found (Bankert, 2018; Brady et al., 2017; Clifford, 2019). Clifford (2019) even explores moralization as mediator between emotional frames and political polarization, social polarization or one of its aspects: social distance. The current study could possibly add new insights to the already existing literature about moralization, as the mediating effects of moralization between emotional frames and polarization have still been very little

researched, and the link with attitude polarization specifically has yet to be explored. Taking all the above-mentioned information into account, it is expected that moralization serves as a mediator between emotional frames and attitude polarization:

> *Hypothesis 2: Moralization mediates the effects of moral emotional frames on attitude polarization.*

Felt emotions are related to moralization and likely predict moralization (Horberg, Oveis, Keltner & Cohen, 2009; Clifford, 2019). Elicited emotions are likely to evoke felt emotions (Brady et al., 2017; Doherty, 1998), through moral/emotional contagion. Therefore, the following can be hypothesized:

> *Hypothesis 3: Felt moral emotions mediate the effect of moral emotional frames on moralization.*

Method

Participants

For this study, 279 participants were recruited though Prolific and 61 more through SONA. Those who did not finish the questionnaire or filled out the questionnaire within 4 minutes, were left out. Double IP-addresses were removed as well. Of the 313 participants that were left, 173 participants identified as men, 137 as women, 2 as non-binary and 1 as 'other'. The age of the participants ranged from 18 trough 70 (M = 26). participants through prolific received 2 euros, SONA participants received credits as part of their education. Fifty-three point four percent of the participants considered themselves left concerning political orientation, versus 22% considering themselves as right. The rest was neutral.

Participants were randomly assigned to one of the four conditions (anger, disgust, fear, control) of a between-subjects design, through which emotional frames were manipulated. Attitude polarization, moralization, and felt emotions were measured as dependent variables.

Stimulus Material

Subject Choice

A pre-test, with 100 participants whom were recruited through the personal network of the researchers, was conducted to select a topic for the online discussion that was manipulated in the main study. The participants answered the two items on moralization and one item on attitude polarization, for the following topics: Tax on continental flights, affirmative action, tax on junk food, tax on meat, privacy, banning anonymous responses online, organ transplants, sale of human organs, babies by design,

banning fast fashion, obligatory vaccinations, euthanasia and factory farming. These topics are chosen to cover most of the five foundations of morality: harm and care, fairness and reciprocity, ingroup and loyalty, authority and respect, purity and sanctity (Suhler & Churchland, 2011). The goal was to find a topic that can become moralized/ polarized. This means that the perfect topic is moralized and polarized by some, but not by all. A general indication of this could be provided by a mean score close to middle of the scale, with a large variance. The issue on meat tax most closely resembled this, as indicated by the scores on general attitude (M = 4.98, SD = 2.65) and the average of the two moralization items (M = 3.32, SD = 1.15), which were closest to the mean and had the largest variance of all topics (see Appendix A).

Emotional Frame

For the mains study, four statements about meat tax, resembling (parts of) a discussion on social media, were presented. Two of the statements were in favour of meat tax and two were against meat tax. The independent variable, emotional frame, was manipulated by adding emotional words to the four statements. For each condition, the emotional frames are changed to fit the frame. For example, one of the statements in the anger condition was: “Meat is an important source of multiple nutrients and it's quite expensive already. Making it even HARDER for lower class people to cook their kids healthy meals is just MADDENING. The #MeatTax is the stupidest proposal I've ever seen in a long time.” Other words that were used to manipulate anger were: “hate” and “pissed” (Kahn, Tobin, Massey & Anderson, 2007). For disgust the anger words were changed into emotion words like: “disgusting”, “gross”, and “sickened” (Dickinson, Foss, & Kroløkke, 2017; Russell & Giner-Sorolla, 2011). For anxiety words were

changed to “worrying”, “nervous” and “afraid” (Kahn, Tobin, Massey & Anderson, 2007). For the control (neutral) frame no words containing an emotional value were used. The used statements can be found in appendix B, containing the full questionnaire.

Procedure

The participants for the main study received a link for an online survey. After following the link, participants received an informed consent form that explained that the study was about attitudes. The participants were told that their responses are anonymous and confidential and that they could quit at any time. Before the participants could start with the questionnaire, they had to agree with all statements of consent by selecting them.

First, participants answered the ‘attitude polarization’ item for the decided topic ‘Meat tax’. After this, participants were randomly placed in one of the conditions, in which they got to read four statements (twitter format) about meat tax, which are manipulated to fit the (moral) emotional frame. After reading the statements, the participants answered a question about 12 emotions, in which they were asked to rate what emotions they felt and to what extent. Then the participants answered the two moralization items. To check the manipulations, the participants were asked to rate five emotions on the extent they thought those emotions were conveyed. The participants also answered five items about moral identity, 10 items about the need to belong and one item on the probability of sharing. These last three measures are not the main interest of this current study. Then the participants had to answer the item on attitude polarization again, which is similar to the procedure used by Munro and Ditto (1997). Attitude polarization can be measured by comparing the pre-statement attitude to the attitude after reading the statements. The participants also answered an item on perceived attitude polarization.

Next, some demographic information was recorded, such as age, political orientation and gender. Finally, participants were debriefed and informed about the true purpose of the study. This study was part of a bigger study about moralization and polarization in online discussions. The study was approved by the ethics committee.

Measurements

Attitude polarization. The dependent variable 'attitude polarization' is measured by having participants rate their attitudes towards a statement about meat tax - "There should be a tax on meat in order to discourage meat consumption." - on a scale ranging from -4 (*strongly disagree*) to 4 (*strongly agree*) similar to the procedure by Munro and Ditto (1997). Zero would indicate a neutral attitude/ no opinion considering the topic. Since an increases/decreases in attitude polarization is expected, attitude polarization is measured during the main study before the intervention (reading the statements) and after the statements are shown.

Attitude change. To be able to conduct regression analyses a new variable, attitude change, is added. Attitude change or attitude polarization in 1 measure, is computed by first converting all negative scores to positive scores and then making by extracting the scores from the first measure of attitude polarization from the scores of the second measure of attitude polarization.

Perceived attitude polarization. Similar to Munro and Ditto (1997) perceived attitude polarization is measured (perceived attitude change in Munro and Ditto (1997)). This measure is added, as sometimes people perceive their attitude to be changed while the attitude polarization measure doesn't show attitude change (Munro & Ditto, 1997). Therefore, this measure is added to the questionnaire. To measure perceived attitude

polarization as another indication of attitude polarization, a self-report item on attitude change is used. The item follows, “How would you compare your current attitude on the topic with the attitude you had at the very start of this experiment.” The item is rated on a scale ranging from -4 (*much more extreme*) to 4 (*much less extreme*). Zero would indicate no perceived attitude polarization (Boysen & Vogel, 2007).

Moralization. The dependent variable moralization is measured using one item by Skitka et al. (2005), “How much are your feelings about the topic connected to your core moral beliefs or convictions?’, and one by Skitka and Morgan (2014), ‘To what extent are your feelings about the topic deeply connected to your fundamental beliefs about ‘right’ and ‘wrong’?”. Both items were rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). Since it was not sure that every participant knows what is meant by moral conviction, the explanation/definition was added to the question. For the analyses a variable is computed by averaging the two items. A reliability analysis shows good reliability for the two items (Cronbach’s $\alpha = .76$).

Felt emotions. To measure the dependent mediator variable ‘felt emotions’, the question style and format from the Discrete Emotions Questionnaire (DEQ; Harmon-Jones, Bastian & Harmon-Jones, 2016) were used to measure 12 felt emotions. They used a 7-point scale to indicate 32 emotions on whether or not they experience it and in what amount. One Indicates (*not at all*) and 7 indicates (*to a large extent*). In the current study only 12 emotions are questioned similarly to the Discrete Emotions Questionnaire. To increase reliability, the felt emotions are grouped. A correlation analysis has been conducted, to measure the correlation between similar emotions. The analysis showed strong correlations between similar emotions. There was a strong positive correlation

between anger and irritation ($r = .69$, $p < .001$), between fear and anxiety ($r = .56$, $p < .001$) and between disgust and revulsion ($r = .59$, $p < .001$). Positive emotions also correlated significantly, enjoyment with happiness ($r = .66$, $p < .001$), enjoyment with optimism ($r = .45$, $p < .001$) and happiness with optimism ($r = .53$, $p < .001$). To confirm that certain emotions load on the same component, a factor analysis was performed. KMO was large enough for a proper factor analysis ($p < .001$). The factor analysis did not differ between anger and disgust emotions. However, in order to follow theory, two separate variables were made, one with the anger emotions (anger and irritation) and one with disgust emotions (disgust and revulsion). Besides anger and disgust, an anxiety variable (anxiety and fear) was created as well as a positive emotions variable (happiness, enjoyment and optimism). All new grouped emotion variables have good reliability (>.70). All other emotions in the questionnaire, such as pity, sympathy and contempt only served as fillers.

Original opinion variable. To correctly measure the change in attitude polarization, an original opinion variable is computed that converts the attitude polarization scores of the first measure into 1 (*in favor of the statement*), 2 (*neutral*) and 3 (*against the statement*), where -4 to -1 are against, 0 is neutral and 1 to 4 are in favor. This variable makes it possible to do a repeated measures/mixed ANCOVA.

Conveyed emotions. To be able to check our manipulation, an item was added to learn more about the emotions that were conveyed according to the participants. The item "Statements like the ones you have read often CONVEY certain emotions on social media. Please choose to what extent the following emotions were COMMUNICATED/ CONVEYED in the four statements you read." is asked for five emotions. Namely,

anger, disgust, fear, anxiety and happiness. Participant then rated to what extent they thought emotions were conveyed, on a 5-point scale, ranging from 1 (*not at all*) to 5 (*very strongly*).

Demographics. Lastly, some questions were added to record demographic information of the variables age and gender. Finally, the variable 'political orientation' was recorded with an item that reads as "What is your political orientation?", on 7-point scale ranging from 1 (*extremely left*) to 7 (*extremely right*).

Results

Manipulation Check

In order to measure whether participants correctly perceived the conveyed emotions, a series of ANOVAs was conducted with the different perceived emotions as dependent variable and the treatment condition as independent variable.

People in the anger condition scored on average highest on perceived anger (M = 4.02, SD = 1.19), followed by people in the disgust condition (M = 4.02, SD = 1.02). People in the Neutral (M = 3.78, SD = .8914) and Anxiety (M = 3.78, SD = 1.15) condition score on average lower on perceived anger. However, the ANOVA with perceived anger as dependent variable and the four frames as independent variable showed no significant effect, F (3, 309) = 1.42, p = .24. For disgust, a significant effect of the treatment conditions was found, F (3, 309) = 6.52, p < .001, η^2 = .059. Those in the disgust condition scored significantly higher (M = 4.00, SD = 1.03) than those in the neutral (M = 3.29, SD = 1.08, p <.001) and anxiety condition (M = 3.41, SD = 1.10, p =.006). However, the disgust condition did not significantly differ from participants in the anger condition (M = 3.66, SD = 1.22, p =.534). No significant differences between the conditions were found for conveyed anxiety (F (3,309) = 1.33, p =.27). For fear however, a significant effect was found between the conditions (F (3, 309) = 4.53, p = .004, η^2 = .042). The anxiety (M = 3.37, SD = 1.15, p = .008) and neutral condition (M = 3.27, SD = 0.97, p = .029) significantly differed from anger (M = 2.77, SD = 1. 29). Since the treatment conditions did not significantly differ for ratings of conveyed anger and anxiety, the manipulation did not properly work. This might have as a consequence that some effects in the following section, are weaker than expected.

Preliminary findings and assumptions

Before conducting the analyses to test the hypotheses, the data is explored and the assumptions are tested.

Correlations and covariance

First, a correlation analysis is performed to look for possible covariates. The results in Table 1 shows that both political orientation and gender correlate with the second measure of attitude polarization. For both possible covariates randomisation checks were performed to see whether these variables differed per condition. As expected, the conditions did not differ in political orientation (F (3, 309) = .63, p = .598) and gender (χ^2 (9, N = 313) = 9.62, p = .382). However, both variables are still taken into account for testing the hypotheses.

Table 1. *Pearson correlation main variables*

Correlations

		1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Average moralizaition	1	-.144*	.021	.153**	.163**	.147**	.134*	.388**	.018
2.	Political Orientation		1	.000	-.237**	-.083	.026	-.048	-.322**	-.075
3.	Age			1	-.036	.044	.087	-.024	-.083	-.103
4.	Gender				1	.057	.028	-.043	.171**	.029
5.	Perceived Attitude polarization					1	.077	.043	.185**	-.021
6.	Difference in attitude polarization						1	.059	-.164**	-.104
7.	Attitude polarization 1							1	.153**	.025
8.	Attitude polarization 2								1	.072
9.	Treatment									1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Assumptions

All assumptions have been met. There were no signs of non-linearity. The interaction effects of treatment with the covariates are non-significant; which implies that the regression slopes are homogeneous. The histograms did not show signs of non-normality. However, when looking at the statistics, both the first and second measure of attitude polarization are significantly skewed and have kurtosis. All variables are also significantly different from normal, according to the Kolmogorov-Smirnov test. However, the conditions have more than 15 participants, therefore F is robust. Levene's test is significant for difference in attitude polarization. Nonetheless the F test is robust since the number of participants in all conditions is almost equal. Since there are repeated measures, the assumption of independent errors is violated. However, by performing a repeated measures ANOVA, for the repeated measure, the test is robust for this violation.

Outliers

A few outliers were detected. Scores were termed seen as outliers when they exceeded |3| standard deviations from average. Cook's distance and leverage were examined to determine whether or not an outlier was influential. Since non of the outliers were influential, they were kept in the dataset.

Hypothesis 1

In the first hypothesis a distinction between the four (moral) emotional frames is expected. Frames conveying anger (a) evoke more attitude polarization as compared to non-emotional frames; disgust frames (b) also evoke more attitude polarization as compared to non-emotional frames. It is expected that anxiety frames (c) evoke less attitude polarization compared to non-emotional frames. Attitude polarization would be

evident from a shift in attitude to more extreme, after reading the statements. Because participants could be for or against the statements, their original attitude was also entered as a between variable. The new variable, the original opinion variable, was created to convert the attitude polarization scores of the first measure into 1 (in favor of the statement), 2 (neutral) and 3 (against the statement). The hypothesis was tested with a mixed 4 (emotional frame) x 3 (original attitude) x 2 (time: pre-post measure) ANCOVA, in which time was a within variable, and emotional frame and original attitude were between-subjects variables. Political orientation and gender were added as covariates.

Sphericity

For the mixed ANCOVA the assumption of sphericity should be met. Since sphericity is >.75, Huynh-Feldt will be used for the F test.

Attitude polarization would become evident from a significant interaction between initial attitude and time. However, this interaction was not significant, (F (1,299) = 2.68, p =.103).

The outcome of the mixed ANCOVA indicated no effect for treatment on attitude polarization (F (3,299) = .31, p =.821), and no interaction between original opinion and time (F (6,299) = 1.42, p =.206). The mixed ANCOVA did not show a significant difference between the four emotional frames for their effect on attitude polarization (F (3,299) = .33, p =.804).

In addition, an ANCOVA with perceived attitude polarization as dependent variable was conducted. Results showed that the ANCOVA for the effect of treatment condition on perceived attitude polarization was not significant (F (3, 307) = 1.54, p = .205).

The results from the analyses do not support the first hypothesis.

Conveyed emotions

Since the results of the manipulation check showed some fallibilities, it could be interesting to look at the effects of the measure conveyed emotions. Conveyed anger, disgust, anxiety and fear were separately added to a regression analyses with the attitude change variable as dependent variable. The results show that non of the conveyed emotions, anger (b = .06, p = .498), disgust (b = .03, p = .718), anxiety (b = .02, p = .769) and fear (b = .09, p = .253) predicted attitude polarization. The regressions were then repeated with Perceived attitude polarization as dependent variable. Anger was found to significantly predict perceived attitude polarization, b = .08, t (311) =1.99, p = .047. The model explained 1.3% of the variance, F (1, 311) = 3.97, p = .047. No other significant effects were found.

Hypothesis 2

Even though no significant effect was found for the direct effect of the (moral) emotional frames on attitude polarization, the effect could still be fully mediated by moralization. The second hypothesis assumes that moralization mediates the effect of moral emotional frames on attitude polarization. An ANCOVA is performed first, to test the effect of the (moral) emotional frames on moralization. The emotional frames are added as independent variable and moralization is added as independent variable. For the direct relation between moralization and attitude polarization, a regression with moralization as independent variable and the difference in attitude change as dependent variable is performed. This regression is repeated with perceived attitude polarization as dependent variable.

The results of the ANCOVA show that there is no significant effect for the treatment conditions on moralization (F (3, 307) = 0.08, p = .971). This means that the means of the different (moral) emotional frames do not significantly differ from each other in their influence on moralization. Therefore, no mediation analysis for the mediation by moralization should be performed.

Interestingly, by performing a regression analysis with moralization as independent variable and attitude change as dependent variable, moralization has been found to be a significant predictor of attitude change (= attitude polarization), b = .25, t (311) =2.62, p =.009. A significant proportion of attitude change is explained by moralization, R^2 = .022, F (1,311) = 6.84, p = .009. Moralization also significantly predicted perceived attitude polarization, b = .14, t (311) =2.91, p =.004. The model significantly explains 2.6% of the variance, F (1,311) = 8.44, p = .004.

The results from the analyses do not support the second hypothesis, as the (moral) emotional frames do not impact moralization.

Conveyed emotions

Again, the effects of conveyed emotions were explored. First, regression analyses were performed to measure the effects of conveyed anger, disgust, anxiety and fear on moralization. The conveyed emotions were separately added as independent variables, and moralization was added as dependent variable. The results showed that both conveyed anger (b = .20, t (311) =4.11, p <.001) and conveyed disgust (b = .16, t (311) =3.41, p =.001) predicted moralization. The model with anger significantly explained 5.2% of the variance, F (1,311) =16.90, p < .001. The model with disgust as predictor explained 3.6% of the variance, F (1,311) = 11.62, p = .001. Significant results were also

found for conveyed anxiety (b = .15, t (311) =3.42, p =.001) and conveyed fear (b = .14, t (311) =3.18, p =.002). The model with anxiety explained 3.6% of the variance, F (1,311) = 11.70, p = .001. The model with fear explained 3.1% of the variance, F (1,311) = 10.10, p = .002.

Since all the conveyed emotions significantly predict moralization, mediation analyses can be performed. Hayes' process macro is used for the mediation. The conveyed emotions were added as independent variable, moralization as mediator and attitude change as dependent variable. Political orientation and gender were added as covariates. The mediation analyses were repeated with perceived attitude polarization as dependent variable.

Figure 1. *Main effect of mediation with attitude change as dependent variable.*

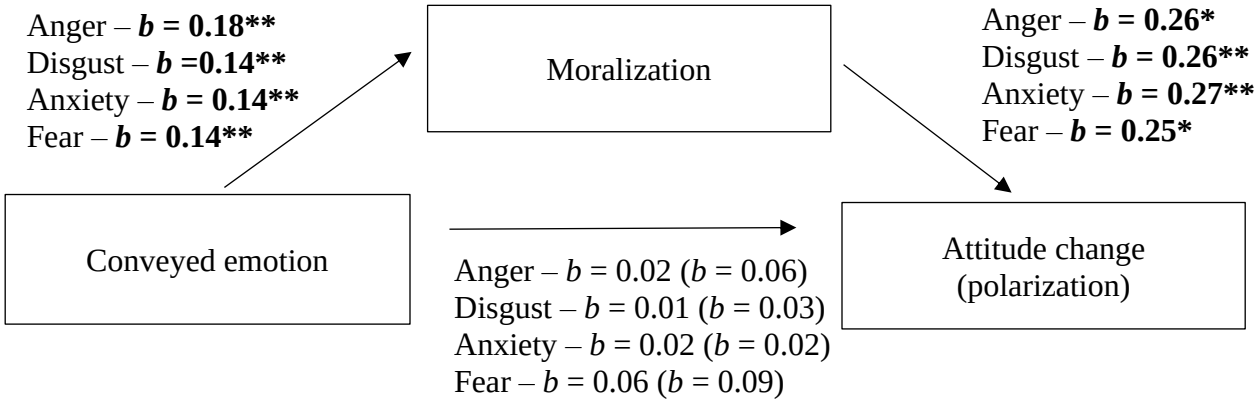
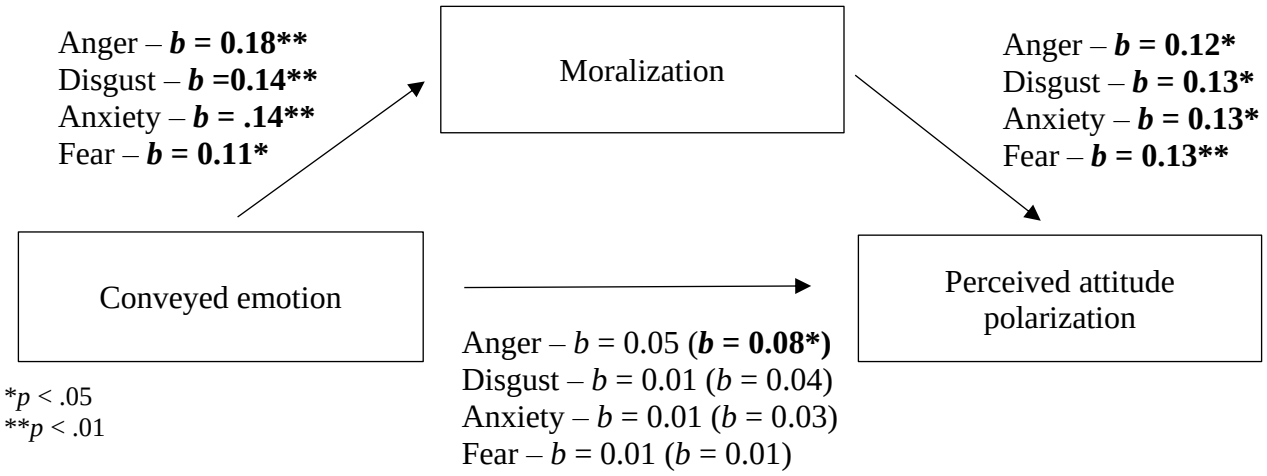


Figure 2. *Main effect of mediation with perceived attitude polarization as dependent variable*.



*p < .05
**p < .01

Figure 1 and figure 2 show the results of the mediation analyses. The results show that the effects of the conveyed emotions are mostly fully mediated by moralization. Only conveyed anger was a significant direct predictor of perceived attitude polarization. However, after adding the mediator, this direct effect disappeared, which is evidence for moralization being a mediator. The impact of these results will be discussed in the discussion (see Appendix C for main results of mediation analyses).

Hypothesis 3

The third hypothesis assumes that felt moral emotions mediate the effect of moral emotional frames on moralization. While there was no direct effect of the (moral) emotional frames on moralization, it could still be fully mediated by felt emotions. To measure the effect of moral emotional frames on felt emotions an ANCOVA will be performed per grouped emotions variable as mentioned in the methods. The felt emotions will be added as dependent variable, whereas the treatment variable is added as independent variable. A regression is performed with the grouped felt emotions as independent variable and moralization as dependent variable.

None of the ANCOVA's with the grouped felt emotions as dependent variable and the moral emotional frames as independent variable had significant results ($F < 1.0$). Therefore, it is not necessary to conduct the mediation analyses.

However, a regression with moralization as dependent variable and the grouped felt emotions separately added as independent variables, showed that felt anger ($b = .17$, t (311) =5.41, $p < .001$), felt disgust ($b = .21$, t (311) =6.29, $p < .001$), felt anxiety ($b = .16$, t (311) =4.79, $p < .001$) and felt happiness ($b = .10$, t (311) =2.17, $p = .031$) all significantly predicted moralization. The model with all felt emotion clusters put together explained

14.6 % of the variance, F (1, 311) = 13.14, p < .001. When all clusters were added to one model, felt anger did not significantly predict moralization (b = .050, p = .303).

Since there was no significant difference between the frames for felt emotions, therefore, felt emotions can not serve as mediator and the third hypothesis can not be supported by the data.

Conveyed emotions

For the last hypothesis, conveyed emotions were explored as well. Regression analyses with the conveyed emotions separately added as independent predictor and felt emotion clusters separately added as dependent variable were performed. Assuming emotional contagion, conveyed anger was added as predictor of felt anger, conveyed anxiety was added as predictor of felt anxiety, and so on. The results showed that conveyed anger significantly predicts felt anger, b = .16, t (311) =4.79, p <.001. The model explained 6.9% of the variance, F (1, 311) = 22.91, p < .001. Conveyed disgust significantly predicted felt disgust, b = .21, t (311) =6.29, p <.001. The model significantly explained 11.3% of the variance, F (1, 311) = 39.56, p < .001. Both conveyed anxiety (b = .22, t (311) =2.72, p =.007) and conveyed fear (b = .35, t (311) =4.41, p <.001) were significant predictors of felt anxiety. The model with both predictors explained 15.1% of the variance, F (2, 310) = 27.62, p < .001.

Since, the results are significant, mediation analyses were performed. For the mediations Hayes' process macro is used. A mediation per conveyed emotion was performed, with the conveyed emotion as independent variable, moralization as dependent variable and felt emotion as mediator. Gender and political orientation were

added as covariates. For the mediation with conveyed fear and conveyed anxiety, felt anxiety is explored as mediator, in which felt fear and felt anxiety are clustered.

Figure 3. *Mediation, with conveyed emotions as independent variable, moralization as dependent variable and felt emotions as mediator.*

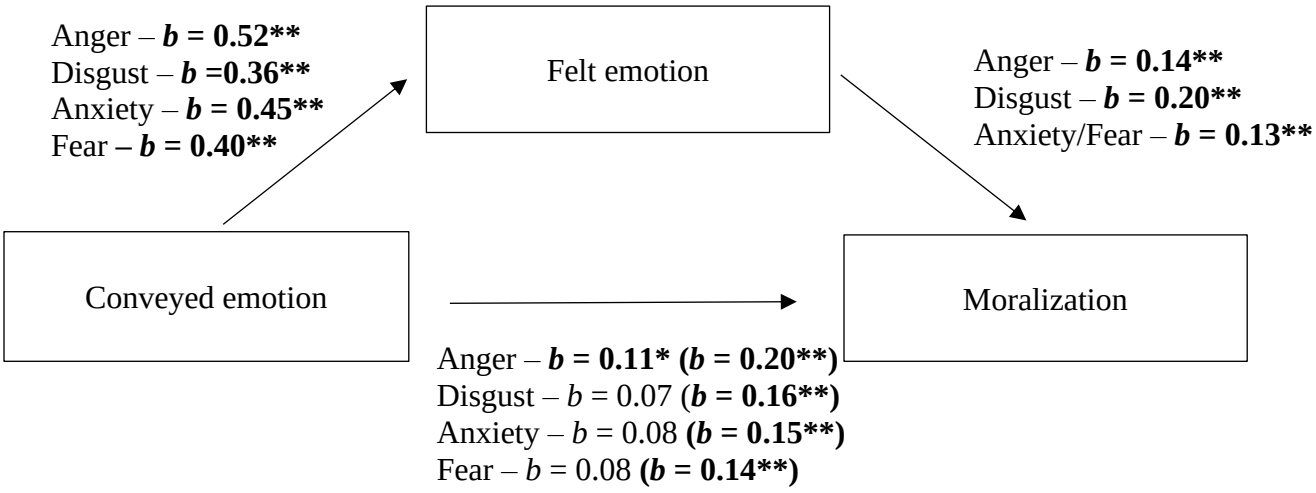


Figure 3 shows that all the mediations are significant. The direct effects of disgust, anxiety and fear on moralization became non-significant, after the mediator was added, the direct effect of anger became less significant. This provides evidence for felt emotions as mediator between conveyed emotions and moralization. The effects of the mediation shall be more thoroughly discussed in the discussion (see Appendix C for the main results of the mediation analyses).

Discussion

With the increasing use of social media, more people have easier access to information and debates. However, social media supposedly damages deliberative debate as it decreases the willingness to compromise through polarization (Hwang, Kim & Huh, 2014; Berman, Swyers, Hartnoll, Singh & Bausell, 2000). The strong emotions that are associated with moral issues likely inhibit proper processing of argumentation (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019) and allegedly increase attitude polarization (Munro & Ditto, 1997). The goal of this study was to explore moralization and polarization in online discussions. This study explores the impact of (moral) emotional frames on attitude polarization, with felt emotions and moralization as possible mediators.

The first hypothesis in this paper assumed a direct effect of (moral) emotional frames on attitude polarization. However, the data failed to support this, as no main effect of attitude change was found and none of the frames seemed to significantly differ from each other for attitude polarization and perceived attitude polarization. For the second hypothesis, in which moralization was proposed as mediator, again no support was found. Even though moralization significantly and positively related to attitude polarization and perceived attitude polarization, no differences were found between the emotional frames in how much they caused issues to be moralized. Similar to the first two hypotheses, no support was found for the last hypothesis, which added felt emotions as mediator between the (moral) emotional frames and moralization. The extent to which certain emotions were felt did not significantly differ among the emotional frames. However, felt emotions did have an impact on moralization. All regressions with the felt emotion clusters added

separately were significant. However, when all clusters were added to one regression, felt anger failed to predict moralization, while disgust, happiness and anxiety did.

Since the manipulation check showed some fallibilities, analyses with conveyed emotions instead of (moral) emotional frames, were conducted as well. Conveyed anger directly predicted perceived attitude polarization, whereas conveyed disgust, anxiety and fear did not. None of the conveyed emotions did directly predict attitude change. However, since all the conveyed emotions significantly predicted moralization, mediation analyses were conducted. These analyses showed that moralization did (fully) mediate the effect of the conveyed emotions on attitude change and perceived attitude polarization. Regression analyses with felt emotion as dependent variable showed that the conveyed emotions predicted felt emotions. Since these analyses were significant, mediation analyses have also been performed with felt emotions as mediator. All analyses provided support for felt emotions as mediator between conveyed emotions and moralization.

Even though no support was found for the hypotheses, some findings are similar to findings by previous research. For example, felt disgust was found to predict moralization. This is similar to the findings by Wheatley and Haidt (2005), where people were hypnotised to experience disgust after seeing a trigger word, which caused them to have stronger moral convictions about moral and even non-moral issues. Findings by Horberg et al. (2011) also suggested that disgust has an impact on moral judgements. Felt anger also predicted moralization in a separate regression. This finding is in line with findings by Clifford (2019), who found that anger was related to moralization.

This study also found that moralization predicts attitude polarization. This finding confirms theories that underly findings on the impact of moralization on other types of polarization. Even though moralization had yet to be linked to attitude polarization in particular, previous research already addressed the link between moralization and other types of polarization, like affective polarization (Bankert, 2018); ideological polarization (Brady et al., 2017), and political and social polarization (Clifford, 2019; Ladewig, 2010). Therefore, this new result is in line with previous findings.

Most of the findings of this research, do however contradict the theory they are based upon. No difference between the four emotional frames was found, while it was expected. According to previous research, anger and disgust frames should affect polarization, through biased information processing (Suhay & Erison, 2018) and social distancing (Clifford, 2019; Vartanian, Trewartha & Vanman, 2016). The manipulation check showed a couple of fallibilities that indicated that the moral emotional frames were less distinguished than expected. Hence, why additional analyses with the conveyed emotions were performed. The results showed that anger did have an impact on perceived attitude polarization. This is in line with previous findings. Anger is found to affect our processing style, causing biased assimilation (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019), which is the underlying effect of attitude polarization according to Munro and Ditto (1997). The analyses did not find conveyed anxiety or fear to be predictors of attitude polarization, which is also in line with theory explaining that anxiety makes people less susceptible to biased information processing (Wollenbæk, Karlsen, Steen-Johnsen & Enjolras, 2019). The results for disgust, however, are quite puzzling, as the analyses did not support disgust as a direct predictor of attitude

polarization. However, anger is seen as the stronger moral emotion, as it is both highly other-interested and high on action tendency (Haidt ,2003). This could explain why anger yielded significant results for perceived attitude polarization. When disgust is triggered, it often causes passive avoidance behaviour instead of active avoidance behaviour (Olatunji & Sawchuk, 2005). This could mean that conveyed disgust is not strong enough to directly impact attitude polarization.

Another unexpected finding is that neither moralization nor felt emotions seemed to mediate the effects of (moral) emotional frames on attitude polarization, while previous findings indicate that moralization mediates the effects of anger frames on social polarization (Clifford, 2019). Previous findings also include the impact of disgust on moralization (Horberg, Oveis & Keltner, 2011), Moralization, in turn, is found to predict polarization (Bankert, 2018; Brady et al., 2017; Clifford, 2019). Disgust is also supposedly evoked by moral emotional frames conveying disgust through moral contagion (Brady et al.,2017). Even though separate analyses showed that felt anger, disgust and anxiety all predicted moralization, this study did not find significant effects of (moral) emotional frames on felt emotions. Again, this lack of effect could be caused by the fallibilities of the frames. The analyses with conveyed emotions yielded significant effects. Those who thought anger was conveyed, were found to polarize their attitudes through moralization. The effect of conveyed anger on moralization was mediated by felt anger. This is perfectly in line with previously mentioned findings on anger by Clifford (2019). The same was found for disgust, but then conveyed disgust was mediated by felt disgust. This finding is again in line with theory on the effects of disgust on moralization (Horberg, Oveis & Keltner, 2011) and the effect of moralization on polarization (Brady et

al., 2017). It is however puzzling that for conveyed anxiety and fear an effect was found as well. There are some studies that show that anxiety does not necessarily lead to less bias and therefore less polarization. If information is perceived as not useful, anxiety still causes people to seek out attitude consistent views and information (Suhay & Erisen, 2018; Valentino, Banks, Hutchings & Davis, 2009). This biased form of information processing, is similar to biased assimilation, the underlying mechanism to attitude polarization (Munro & Ditto, 1997).

Theoretical Implications

The main contributions of this paper concern the impact of moralization on attitude polarization, the exploration of the impact of (moral) emotional frames and the exploration of the mediators felt emotion and moralization. This study also contributed by trying to replicate earlier findings on the effects of emotional frames and polarization.

Until now, little research has been done to explore the effect of moralization as mediator and its effect on attitude polarization. A rather strong relation between moralization and attitude polarization was found in the current study. This relation is consistent with the notion that moralization makes people less willing to compromise and want to push forward their moral convictions, causing polarization (Bankert, 2018; Brady et al., 2017; Clifford, 2019). The results support findings of previous research on the impact of moralization on other types of polarization, like affective polarization (Bankert, 2018) and ideological polarization (Brady et al., 2017). However, this study also brings a new contribution to science, by finding support for the relation between moralization and attitude polarization specifically. However, moralization does not seem to prevail as a mediator between emotional frames and attitude polarization. Since the manipulation

check showed some fallibilities, which will be discussed more thoroughly in the limitations, it is difficult to subtract strong theoretical implications concerning the influences of the (moral) emotional frames. The results of the analyses with conveyed emotions did find support for moralization as mediator. For example, those who indicated that disgust was conveyed to a large extent, were more likely to moralize the topic and in turn had more polarized attitudes and perceived their attitude as more polarized. This result replicates the findings on the impact of disgust on moralization, as been studied by Clifford (2019) and Horberg, Oveis and Keltner (2011).

Another possible mediator was felt emotions. Felt happiness, felt anxiety, felt disgust and felt anger seemed to relate to moralization. In other words, the more an emotion is experienced, the more an issue is moralized. What was quite puzzling about the findings, was that all separate regressions showed significant results for all felt emotions, including anger. However, when all felt emotions were added to one regression analysis, anger did not prevail as predictor, while anxiety did. Anger is supposedly a moral emotion. It should evoke a stronger affective response and it should cause moralization, leading to polarization. It could be that the variance explained by anger is overlapped by, for example, the variance explained by anxiety and disgust, causing the unique variance explained to be too little to be significant. The results also found that felt anxiety predicted moralization, which is also quite unexpected. According to Armfield (2006), disgust plays an important role in the development of fear. It could be that those who rated high on felt disgust also rated high on felt anxiety, because of felt disgust. The effect of anxiety on moralization could then be impacted by felt disgust. Future research could investigate the unique impact of anger and the coherence and interplay of negative

emotions. Together, the findings on the mediators contribute to science by supporting the exploration of alternative theories and findings.

Going back to the more general notion of this study, it is also important to take the online aspect into account. This study provides insights on constructs underlying attitude polarization in online discussions. Since social media are increasingly used, it becomes more interesting to study the impact of frames. If anything, this study found that (moral) emotional frames are more complicated than they seem to be, since this study failed to yield significant results with the (moral) emotional frames as independent variable. This study did however, find significant results for conveyed emotions. Hence, this study motivates future research to address the complicatedness of (moral) emotional frames, to understand their true impact on felt emotions, moralization and attitude polarization in online settings.

Practical Implications

The results of this study make it difficult to establish concrete practical implications, as the manipulated frames did not yield any significant effects. However, the results that were achieved with the conveyed emotions, do imply a need for subsequent research to further explore the interplay of moral emotional frames and conveyed emotions. Findings of subsequent research could then be used to create understanding and awareness among those who partake in online discussions. It is important to create this awareness as emotions have been found to impact moralization and polarization. Attitude polarization has a dynamic interaction with social media. It causes people to become less willing to compromise, to be more susceptible to processing biases and it decreases the opportunity for alternative views to be properly discussed

(Berman, Swyers, Hartnoll, Singh & Bausell 2000; Hwang, Kim & Huh, 2014; Song & Boomgaarden, 2017). Social media could also play a role in creating awareness, by using the findings by subsequent research to educate. However, it is difficult to take more drastic measures, such as filtering out emotional messages, as this is a form of censorship that might go against our freedom of speech.

Limitations

This study has a few limitations. First of all, the manipulation showed some fallibilities. The manipulation check showed that not all conditions conveyed the emotions as expected. This could have caused the conditions not to be properly distinguished. Anger and disgust, for example, were rated as most conveyed in all conditions. Only ratings of conveyed disgust and fear differed significantly among some of conditions. Considering the fallibilities, it should be questioned how much the conditions were distinguishable from each other. It is therefore difficult to say whether or not the effects could have been properly tested with the (moral) emotional frames.

The emotions conveyed in a frame could be topic dependent. A topic that concerns a violation of justice, elicits anger (Horberg et al.,2009), which could undermine the emotions conveyed in the anxiety, disgust or neutral condition. If multiple emotions are conveyed through topic and words yielding emotional value, it could be more difficult for the conditions to be distinguished. Hence, if the topic itself causes certain emotions to be felt, it could undermine the effect of the emotions conveyed in the four frames.

The format that was used supposedly mimics a twitter format. The statements were short arguments with hashtags and exclamation marks. However, the statements were text only and still mentioned in a survey format. Considering this, it could be

difficult to generalize the main significant effects to the population that partakes in online discussions on social media.

Future directions

A few future directions have already been mentioned. These directions mostly concern the (moral) emotional frames. The emotional frames did not impact felt emotions, moralization and attitude polarization as expected. Since, the manipulation did not yield the wanted results and because of the effects found with conveyed emotions, some future direction can be given for those attempting subsequent research.

First of all, subsequent research should address the complicatedness of moral emotional frames in real online discussions. It is important to understand the interplay of frames and conveyed emotions, to be able to conduct proper experimental research with manipulated frames. If this is attempted, it should be made sure that the frames are properly manipulated, for example, by using multiple manipulations. If possible, a pilot should be conducted to check the manipulations, before conducting the main study.

Secondly, when an attempt is made to manipulate frames, one should take the impact of the topic on conveyed emotions into account. If the emotions for the topics are not interchangeable, multiple topics should be added to be able to explore the interplay between the frames and conveyed emotions, as well as the impact of multiple moral and nonmoral emotions and moralization/ attitude polarization.

Besides the frames, some results of this study have also pointed at less established alternative theories. For example, the effects of conveyed anxiety. While most theories and findings indicate that anxiety should result in less polarization by means of less biased information processing, this study provides contradicting findings. Future research

could address the impact of frames, the message or the type of information that is given, on the influence of anxiety on attitude polarization, as some studies indicate that anxiety does not always lead to less biased information processing (Suhay & Erisen, 2018; Valentino, Banks, Hutchings & Davis, 2009).

Furthermore, the interplay of negative emotions should be more thoroughly explored. The regression analyses with felt emotions predicting moralization did show some puzzling results. The results point to some sort of interplay of negative emotions, for example, the effect of anxiety on moralization could be impacted by disgust. Also, anxiety and disgust possibly explain part of the impact of anger on moralization. This should be further explored to understand the unique effects of the emotions.

Lastly, the online setting should be better replicated. In this study statements were used that should have replicated a twitter format. However, the survey was still in survey format, which could have diminished the authenticity of a real online environment.

Final Conclusion

The aim of this study is to explore how moralization and attitude polarization in online discussions come about. This study explores in particular the effect of (moral) emotional frames on attitude polarization through mediation by moralization and felt emotions. The results showed that the manipulated frames did not yield the expected effects, while the analyses with conveyed emotions, did yield results in line with previous findings. Therefore, this study indicates that there is still more to learn about the interplay of frames and emotions. Undoubtedly, this study motivates researchers to conduct essential subsequent research to address the puzzling findings by using the recommendations that have been made throughout the discussion.

References

Amato, P. R., & Partridge, S. A. (2013). *The new vegetarians: Promoting health and protecting life*. Springer.

Armfield, J. M. (2006). Cognitive vulnerability: a model of the etiology of fear. *Clinical psychology review*, *26*(6), 746-768.

Avramova, Y. R., & Inbar, Y. (2013). Emotion and moral judgment. *Wiley Interdisciplinary Reviews: Cognitive Science*, *4*(2), 169-178.

Berman, B. M., Swyers, J. P., Hartnoll, S. M., Singh, B. B., & Bausell, B. (2000). The public debate over alternative medicine: The importance of finding a middle ground. *Alternative Therapies in Health and Medicine*, *6*(1), 98.

Boysen, G. A., & Vogel, D. L. (2007). Biased assimilation and attitude polarization in response to learning about biological explanations of homosexuality. *Sex Roles*, *57*(9-10), 755-762.

Clifford, S. (2019). How emotional frames moralize and polarize political attitudes. *Political Psychology*, *40*(1), 75-91.

Dahlberg, L. (2001). The Internet and democratic discourse: Exploring the prospects of online deliberative forums extending the public sphere. *Information, Communication & Society*, 4, 615–633.

Dandekar, P., Goel, A., & Lee, D. T. (2013). Biased assimilation, homophily, and the dynamics of polarization. *Proceedings of the National Academy of Sciences*, *110*(15), 5791-5796.

Marzillier, S., & Davey, G. (2004). The emotional profiling of disgust-eliciting stimuli: Evidence for primary and complex disgusts. *Cognition and Emotion, 18*(3), 313-336.

Davis, R. (2009). *Typing politics: The role of blogs in American politics*. New York, NY: Oxford University Press.

Dickinson, E., Foss, K., & Kroløkke, C. (2017). Empowering Disgust: Redefining Alternative Postpartum Placenta Practices. *Women's Studies in Communication, 40*(1), 111-128.

Doherty, R. W. (1998). Emotional contagion and social judgment. *Motivation and Emotion*, *22*(3), 187-209.

Garrett, K. N., & Bankert, A. (2018). The moral roots of partisan division: How moral conviction heightens affective polarization. *British Journal of Political Science*, 1-20.

Garrett, R. K., Gvirsman, S. D., Johnson, B. K., Tsfati, Y., Neo, R., & Dal, A. (2014). Implications of pro-and counterattitudinal information exposure for affective polarization. *Human Communication Research*, *40*(3), 309-332.

Goldberg, J. H., Lerner, J. S., & Tetlock, P. E. (1999). Rage and reason: The psychology of the intuitive prosecutor. *European Journal of Social Psychology*, *29*(5-6), 781-795.

Haidt, J. (2003). The moral emotions. *Handbook of affective sciences, 11*(2003), 852-870.

Hancock, J. T., Gee, K., Ciaccio, K., & Lin, J. M. H. (2008). I'm sad you're sad: emotional contagion in CMC. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work* (pp. 295-298).

Harmon-Jones, C., Bastian, B., & Harmon-Jones, E. (2016). The discrete emotions questionnaire: A new tool for measuring state self-reported emotions. *PloS one*, *11*(8).

Horberg, E. J., Oveis, C., & Keltner, D. (2011). Emotions as moral amplifiers: An appraisal tendency approach to the influences of distinct emotions upon moral judgment. *Emotion Review*, *3*(3), 237-244.

Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of personality and social psychology*, *97*(6), 963.

Hutcherson, C. A., & Gross, J. J. (2011). The moral emotions: A social–functionalist account of anger, disgust, and contempt. *Journal of personality and social psychology*, *100*(4), 719.

Hwang, H., Kim, Y., & Huh, C. U. (2014). Seeing is believing: Effects of uncivil online debate on political polarization and expectations of deliberation. *Journal of Broadcasting & Electronic Media*, *58*(4), 621-633.

Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American journal of psychology*, 263-286.

Kinnier, R. T., Kernes, J. L., & Dautheribes, T. M. (2000). A short list of universal moral values. *Counseling and values*, *45*(1), 4-16.

Kramer, A. D., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, *111*(24), 8788-8790.

Ladewig, J. W. (2010). Ideological polarization and the vanishing of marginals: Retrospective roll-call voting in the US Congress. *The Journal of Politics*, *72*(2), 499-512.

Lamm, H., & Myers, D. G. (1978). Group-induced polarization of attitudes and behavior. In *Advances in experimental social psychology* (Vol. 11, pp. 145-195). Academic Press.

Liu, J., Liao, C., Lu, J., Luo, Y. J., & Cui, F. (2019). Moral contagion: Devaluation effect of immorality on hypothetical judgments of economic value. *Human brain mapping*, *40*(7), 2076-2088.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of personality and social psychology*, *37*(11), 2098.

Mouw, T., & Sobel, M. E. (2001). Culture wars and opinion polarization: the case of abortion. *American Journal of Sociology*, *106*(4), 913-943.

Nabi, R. L. (1999). A cognitive-functional model for the effects of discrete negative emotions on information processing, attitude change, and recall. *Communication theory*, *9*(3), 292-320.

Olatunji, B. O., & Sawchuk, C. N. (2005). Disgust: Characteristic features, social manifestations, and clinical implications. *Journal of Social and Clinical Psychology*, *24*(7), 932-962.

Prior, M. (2013). Media and political polarization. *Annual Review of Political Science*, *16*, 101-127.

Ringel, M. M., & Ditto, P. H. (2019). The moralization of obesity. *Social Science & Medicine, 237*, 112399.

Rozin, P., & Singh, L. (1999). The moralization of cigarette smoking in the United States. *Journal of Consumer Psychology*, *8*(3), 321-337.

Rozin, P. (1999). The process of moralization. *Psychological Science, 10*(3), 218-221.

Rozin, P., Markwith, M., & Stoess, C. (1997). Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological Science*, *8*(2), 67-73.

Russell, P. S., & Giner-Sorolla, R. (2011). Social justifications for moral emotions: When reasons for disgust are less elaborated than for anger. *Emotion*, *11*(3), 637.

Stromer-Galley, J., & Muhlberger, P. (2009). Agreement and disagreement in group deliberation: Effects on deliberation satisfaction, future engagement, and decision legitimacy. *Political communication*, *26*(2), 173-192.

Skitka, L. J., Bauman, C. W., & Sargis, E. G. (2005). Moral conviction: Another contributor to attitude strength or something more? *Journal of personality and social psychology*, *88*(6), 895.

Skitka, L. J., & Morgan, G. S. (2014). The social and political implications of moral conviction. *Political psychology, 35*, 95-110.

Suhay, E., & Erisen, C. (2018). The role of anger in the biased assimilation of political information. *Political Psychology*, *39*(4), 793-810.

Suhler, C. L., & Churchland, P. (2011). Can innate, modular “foundations” explain morality? Challenges for Haidt's moral foundations theory. *Journal of cognitive neuroscience*, *23*(9), 2103-2116.

Terrizzi Jr, J. A., Shook, N. J., & Ventis, W. L. (2010). Disgust: A predictor of social conservatism and prejudicial attitudes toward homosexuals. *Personality and individual differences*, *49*(6), 587-592.),

Vartanian, L. R., Trewartha, T., & Vanman, E. J. (2016). Disgust predicts prejudice and discrimination toward individuals with obesity. *Journal of Applied Social Psychology*, *46*(6), 369-375.

Wagner, B. C. (2012). *The effects of disgust on social judgment: A thought-validation perspective* (Doctoral dissertation, The Ohio State University).

Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. Psychological Science, 16, 780-784. doi:10.1111/j.1467-9280.2005.01614.x

Appendix A – Questionnaire

Main Study_Complete

Start of Block: Information

Q1 Thank you for participating in this study.Before the study begins, it is important that you are aware of the procedure that is followed in this particular study. Therefore, it is important that you read the text below carefully. Do not hesitate to ask for clarification, should it not be clear. The research leader, available via the e-mail address at the bottom of this information, will be happy to answer any questions.
GOAL OF THE INVESTIGATIONThe purpose of this research is to explore different opinions people might have on the issue of entering an increase in tax on meat consumption, the so-called "meat tax". You will be reading a set of statements about this issue, and you will be asked a couple of questions regarding your own ideas and feelings about this subject. There are no right or wrong answers, it's your own opinion. The study takes approximately 10 minutes.
COMPENSATIONAfter completing this study, you will be rewarded with 1 credit.
CONFIDENTIALITY OF DATAAll research data remains completely confidential and is processed anonymously. The research data will not be made available to third parties without your explicit permission and only in anonymous form.
VOLUNTARYIf you now decide not to participate in this experiment, this will not affect you. If you decide to cease your cooperation during the research, this will in no way affect you either. You can also withdraw your permission to use your data within 24 hours after finishing the questionnaire. You can cease your cooperation at any time during the research without giving reasons. If you terminate your cooperation during the research, or afterwards, within 24 hours, or if you withdraw your consent, your data will be removed from our files and be destroyed.
FURTHER INFORMATIONIf you have questions about this research, in advance or afterwards, you can contact the responsible researcher, Coen Wirtz, email: c.wirtz@fsw.leidenuniv.nl
For questions about privacy, you can contact the University Data Protection department: privacy@bb.leidenuniv.nl.

Q2 Statement of consent

Please read the statements below carefully, and tap on them if you agree to the statements.

- ☐ I have read and understood all the information above and know that I can contact the researcher if some things are unclear
- ☐ I understand that my data will be collected and processed in a coded way
- ☐ I know that I can withdraw from participation at all times, within 24 hours after this study, without needing to provide reason(s). I understand that when I withdraw, I lose my right for any compensation
- ☐ I offer permission to participate in this research and to use my data, in the form and for the purpose described above

Start of Block: attitude polarization

Q3 Please rate your opinion on the following statement by ticking the box that describes your opinion best (more to the left indicates that you tend to disagree, more to the right that you tend to agree):

There should be a tax on meat in order to discourage meat consumption

- Strongly disagree
- (2)
- (3)
- (4)
- Neutral
- (6)
- (7)
- (8)
- Strongly agree

Start of Block: statements intro

Q5 In the following section, four statements concerning meat consumption are given. The statements are copied from several online discussions, such as discussions on Facebook or Twitter. It is very important that you read the statements carefully, because a couple of questions about these statements will follow.

Start of Block: Statements Anger

Q8 Meat is an important source of multiple nutrients and it's quite expensive already. Making it even HARDER for lower class people to cook their kids healthy meals is just MADDENING. The #MeatTax is the stupidest proposal I've ever seen in a long time.

Q157 Although meat is now easy to access (price-wise), it's lead to its overconsumption, increasing the risk of cardiovascular diseases, and cancer. It leaves quite a dent in taxpayer healthcare money; it's upsetting. I think #meatTax helps control for this HORRENDOUS tendency to overconsume. We already put "sin tax" for cigarettes and alcohol anyways. #Healthcare

Q10 Many families rely on the global meat industry as their source of income, offering jobs that certain groups otherwise wouldn't have. #meatTax will only increase production costs that motivates producers to hire LESS PEOPLE, and HURTS local farmers. It puts forward ANIMAL welfare before HUMAN welfare. It PISSES me OFF so much that there are people supporting it!!!

Q11 Commercial farming #deforests vital ecosystems to make room for methane-producing ranches & slaughterhouses, with no repercussion. And I find it ENRAGING!! It's about time the gov is stepping up with #meatTax. Money from #meatTax would ensure farms to transition to more sustainable methods.

Start of Block: Statements Disgust

Q120 Meat is an important source of multiple nutrients and it's quite expensive already. Making it even HARDER for lower class people to cook their kids healthy meals is just DISGUSTING. The #MeatTax is the most repulsive proposal I've ever seen in a long time.

Q122 Although meat is now easy to access (price-wise), it's lead to its overconsumption, increasing the risk of cardiovascular diseases, and cancer. It leaves quite a dent in taxpayer healthcare money; it's disgusting. I think #meatTax helps control for this SICKENING tendency to overconsume. We already put "sin tax" for cigarettes and alcohol anyways. #Healthcare

Q124 Many families rely on the global meat industry as their source of income, offering jobs that certain groups otherwise wouldn't have. #meatTax will only increase production costs that motivates producers to hire LESS PEOPLE, and HURTS local farmers. It puts forward ANIMAL welfare before HUMAN welfare. IT'S SICKENING that there are people supporting it!

Q126 Commercial farming #deforests vital ecosystems to make room for methane-producing ranches & slaughterhouses, with no repercussion. And I find it GROSS and REPULSIVE !! It's about time the gov is stepping up with #meatTax. Money from #meatTax would ensure farms to transition to more sustainable methods.

Start of Block: Statements Neutral

Q144 Meat is an important source of multiple nutrients. We shouldn't make nutritious food more expensive and make it harder for low income families to cook their kids healthy, nutritional meals from scratch. A #meatTax is the most backwards and classist proposal I've ever seen in a long time.
Q146 Although meat is now easy to access (price-wise), it's lead to its overconsumption, increasing the risk of cardiovascular diseases, and cancer. It leaves quite a dent in taxpayer healthcare money; it's burdensome. I think #meatTax helps control for this unfortunate tendency to overconsume. We already put "sin tax" for cigarettes and alcohol anyways. #Healthcare
Q148 Many families rely on the global meat industry as their source of income, offering jobs that certain groups otherwise wouldn't have. #meatTax will only increase production costs that motivates producers to hire LESS PEOPLE, and HURTS local farmers. It puts forward ANIMAL welfare before HUMAN welfare. It's unfortunate that there are people supporting it
Q150 Commercial farming #deforests vital ecosystems to make room for methane-producing ranches & slaughterhouses, with no repercussion. And I find it to be irresponsible. It's about time the gov is stepping up with #meatTax. Money from #meatTax would ensure farms to transition to more sustainable methods.

Start of Block: Statements Anxiety

Q132 Meat is an important source of multiple nutrients and it's quite expensive already. Making it even HARDER for lower class people to cook their kids healthy meals is just WORRYING. The #MeatTax is the most frightening proposal I've ever seen in a long time.
Q134 Although meat is now easy to access (price-wise), it's lead to its overconsumption, increasing the risk of cardiovascular diseases, and cancer. It leaves quite a dent in taxpayer healthcare money; it's concerning. I think #meatTax helps control for this ALARMING tendency to overconsume. We already put "sin tax" for cigarettes and alcohol anyways. #Healthcare
Q136 Many families rely on the global meat industry as their source of income, offering jobs that certain groups otherwise wouldn't have. #meatTax will only increase production costs that motivates producers to hire LESS PEOPLE, and HURTS local farmers. It puts forward ANIMAL welfare before HUMAN welfare. It's very UNSETTLING that there are people supporting it!
Q138 Commercial farming #deforests vital ecosystems to make room for methane-producing ranches & slaughterhouses, with no repercussion. And I find it TERRIFYING !! It's about time the gov is stepping up with #meatTax. Money from #meatTax would ensure farms to transition to more sustainable methods.

Start of Block: felt emotions

Q47 PLEASE READ CAREFULLY!
People often **EXPERIENCE** different feelings and emotions when they read statements about certain topics. Referring to the statements you have read earlier, to what extent did you **EXPERIENCE** these emotions?

	Not at all	(2)	(3)	(4)	(5)	(6)	To a large extent
Anger	○	○	○	○	○	○	○
Irritation	○	○	○	○	○	○	○
Contempt	○	○	○	○	○	○	○
Revulsion	○	○	○	○	○	○	○
Disgust	○	○	○	○	○	○	○
Disdain	○	○	○	○	○	○	○
Fear	○	○	○	○	○	○	○
Anxiety	○	○	○	○	○	○	○
Happiness	○	○	○	○	○	○	○
Optimism	○	○	○	○	○	○	○
Enjoyment	○	○	○	○	○	○	○
Pity	○	○	○	○	○	○	○
Sympathy	○	○	○	○	○	○	○
Relaxation	○	○	○	○	○	○	○
Hope	○	○	○	○	○	○	○
Relief	○	○	○	○	○	○	○

Start of Block: moralization

Q36 As with several statements that are made online, some are reflective of the author's moral conviction. Moral conviction refers to a strong and absolute subjective belief that something is right or wrong, moral or immoral. It is thus closely related to core moral values.

The following questions will ask you about how the issue of tax on meat relates to your moral values.

Q163 How much are your feelings about this issue connected to your core moral values or convictions?

- ○ Not at all
- ○ (2)
- ○ (3)
- ○ (4)
- ○ Very much

Q164 To what extent are your feelings about the topic deeply connected to your fundamental beliefs about 'right' and 'wrong'?

- ○ Not at all
- ○ (2)
- ○ (3)
- ○ (4)
- ○ Very much

Start of Block: conveyed emotions manipulation

Q38 Statements like the ones you have read often CONVEY certain emotions on social media. Please choose to what extent the following emotions were COMMUNICATED/CONVEYED in the four statements you read.

	Not at all	(2)	(3)	(4)	Very strongly
Anxiety	○	○	○	○	○
Anger	○	○	○	○	○
Disgust	○	○	○	○	○
Happiness	○	○	○	○	○
Fear	○	○	○	○	○

Start of Block: Moral identity (moderator Shanna)

Q33 Next, we would like to ask you some question about how you generally see yourself and others.
Listed below are some characteristics that may describe a person:
- Caring
- Compassionate
- Fair
- Friendly
- Generous
- Helpful
- Hardworking
- Honest
- Kind

The person with these characteristics could be you or it could be someone else. For a moment, visualize in your mind the kind of person who has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this person would be like, please answer the following questions.

Q41 It would make me feel good to be a person who has these characteristics.

- Strongly disagree
- (2)
- (3)
- (4)
- (5)
- (6)
- Strongly agree

Q42 Being someone who has these characteristics is an important part of who I am.

- Strongly disagree
- (9)
- (10)
- (11)
- (12)
- (13)
- Strongly agree

Q43 I would be ashamed to be a person who had these characteristics.

- Strongly disagree
- (2)
- (3)
- (4)
- (5)
- (6)
- Strongly agree

Q44 Having these characteristics is not really important to me.

- Strongly disagree
- (2)
- (3)
- (4)
- (5)
- (6)
- Strongly agree

Q45 I strongly desire to have these characteristics.

- Strongly disagree
- (2)
- (3)
- (4)
- (5)
- (6)
- Strongly agree

Start of Block: need to belong

Q144 Social media (i.e. Facebook, Twitter, etc.) has mainly allowed us to interact, as well as identify with other people and groups. It has also served as a platform for online discussions, where ideas are supported as often as they are rejected. Debates and other forms of interaction thus also arise among those who hold opposing views.

The following questions will ask you about how you perceive interactions with others.

Q146 If other people don't seem to accept me, I don't let it bother me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q148 I try hard not to do things that will make other people avoid or reject me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q150 I seldom worry about whether other people care about me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q152 I need to feel that there are people I can turn to in times of need

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q154 I want other people to accept me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q156 I do not like being alone

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q158 Being apart from my friends for long periods of time does not bother me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q160 I have a strong “need to belong"

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q162 It bothers me a great deal when I am not included in other people’s plans

- Not at all
- (2)
- (3)
- (4)
- Extremely

Q164 My feelings are easily hurt when I feel that others do not accept me

- Not at all
- (2)
- (3)
- (4)
- Extremely

Start of Block: Exploratory

Q115 Having read the four statements about meat tax, how likely are you to share/retweet/repost information with views similar to yours regarding the meat tax on social media?

- Very Unlikely
- (2)
- Neutral
- (4)
- Very Likely

Start of Block: attitude polarization

Q34 After reading the four statements, please rate your opinion on the following statement:
There should be a tax on meat in order to discourage meat consumption

- Strongly disagree
- (2)
- (3)
- (4)
- Neutral
- (6)
- (7)
- (8)
- Strongly agree

Start of Block: perceived attitude polarization

Q35 How would you compare your current opinion about the topic with the opinion you had at the very start of this study?

- Much less extreme
- (2)
- (3)
- Neutral
- (5)
- (6)
- Much more extreme

Start of Block: Demographics

Q115 Finally, we would like to ask some general questions about you.

Q1 What is your gender?

- Male
- Female
- Other
- Do not wish to say

Q2 What is your age?

_____

Q3 What is your political orientation?

- Extremely left
- (2)
- (3)
- Neutral
- (5)
- (6)
- Extremely right

Start of Block: Debrief

Q40 Thank you again for participating in this research. As mentioned, the goal of the research is to investigate people's opinions about societal issues. We are also interested in whether your opinion changed after reading a set of statements about this issue. We therefore presented you one of four versions of the discussion, in which we changed some of the words that were used. So, you either read a discussion with some words related to anger, disgust, anxiety, or with no reference to any emotion.

We want to investigate whether certain emotion words would make you change your opinion a bit. We expect that when reading discussions containing arguments with anger or disgust, people become more convinced of their initial opinion and become a bit more extreme in that original direction. By comparing those two with anxiety and no emotion, we will be able to determine if this is indeed the case. If your opinions are shifted, this will not last; people's opinions and feelings about societal issues tend to shift constantly after reading or hearing new information.

The fact that you have not been fully informed of the content of the research in advance was necessary to properly investigate the research question. If you had been fully informed, there was a good change that this would have influenced your answers, making it difficult to answer our research question with certainty.

Please be aware that these statements are not real, but fabricated by us for the purpose of this research. Please disregard this false information when thinking about this issue or forming your opinion about this topic. By participating, you have really helped us studying this topic. Thanks again.

If you have any questions or comments, feel free to contact the principal investigator:Dr. Coen Wirtz: c.wirts@fsw.leidenuniv.nl

In order to receive sona credits, please enter your last name and your student number below. These will immediately removed from the data, after crediting.

Last name:

_____

Q165 Student number:

_____

Q166 Click on the arrow to finish the survey

Appendix B – Pre-test results

Descriptive Statistics

		Mean	Std. Deviation	Variance
There should be a higher tax on continental flights. In this way, pollution can be reduced. However, other ways of transportation are often very expensive and take a lot of time	Polarization	5.78	2.039	4.157
	Average moralization	3.4626	.88141	.777
Affirmative action should be used to promote diversity in companies.	Polarization	6.14	2.165	4.688
	Average moralization	3.9533	.84544	.715
There should be a tax on junkfood.	Polarization	5.69	2.485	6.178
	Average moralization	3.2430	1.11034	1.233
There should be a tax on meat.	**Polarization**	**4.98**	**2.646**	**7.000**
	Average moralization	**3.3224**	**1.15385**	**1.331**
The government should be able to read our text messages in order to monitor dissenting political opinions that can threaten social stability	Polarization	2.61	2.118	4.486
	Average moralization	3.8832	.90746	.823
In times of crisis, the government should be able to withhold information that can create social turmoil	Polarization	4.56	2.610	6.815
	Average moralization	3.9065	1.12881	1.274
It should be prohibited to write anonymous posts on the internet.	Polarization	4.51	2.485	6.177
	Average moralization	3.5327	1.02624	1.053
Those who lead unhealthy lifestyles should be deprioritized from receiving organ transplants.	Polarization	4.43	2.450	6.002
	Average moralization	3.6636	1.01353	1.027
The sale of human organs should be legalized.	Polarization	2.81	2.266	5.135
	Average moralization	3.7290	1.14982	1.322
Parents should be allowed to choose the genetic makeup of their children. For instance, to prevent children from having certain diseases; or to make children have certain looks.	Polarization	4.04	2.306	5.319
	Average moralization	3.5654	1.02811	1.057
The production of fast fashion should be banned.	Polarization	5.59	2.097	4.395
	Average moralization	3.3551	1.15540	1.335
The most common vaccinations for children should be obligatory (except if medically not possible).	Polarization	7.56	1.948	3.796
	Average moralization	4.1682	.93905	.882
Euthanasia should be allowed for children under the age of 16 with mental illnesses.	Polarization	4.06	2.491	6.204
	Average moralization	3.8364	1.13432	1.287
Factory farming should be banned.	Polarization	5.90	2.465	6.074
	Average moralization	3.7617	1.07358	1.153

Appendix C – Main results mediation analyses

```
Comm_fea = Conveyed fear
Comm_anx = conveyed anxiety
Comm_ang = conveyed anger
Comm_fax = conveyed fear/anxiety
Comm_dis = conveyed disgust

OUTCOME VARIABLE: Moralization
Model Summary
R       R-sq        MSE          F        df1        df2          p
,2569   ,0660      ,8177     7,2777   3,0000        309,0000    ,0001
             coeff         se          t          p       LLCI       ULCI
constant     2,9365      ,2648    11,0879      ,0000     2,4154     3,4576
Comm_Anx      ,1389      ,0437     3,1740      ,0017      ,0528      ,2249
Model Summary
R       R-sq        MSE          F        df1        df2          p
,2543   ,0647      ,8188     7,1199     3,0000   309,0000      ,0001
             coeff         se          t          p       LLCI       ULCI
constant     2,8675      ,2772    10,3437      ,0000     2,3220     3,4130
Comm_Fea      ,1382      ,0446     3,1013      ,0021      ,0505      ,2259
Model Summary
R       R-sq        MSE          F        df1        df2          p
,2766   ,0765      ,8085     8,5315     3,0000   309,0000      ,0000
             coeff         se          t          p       LLCI       ULCI
constant     2,5582      ,3117     8,2070      ,0000     1,9449     3,1715
Comm_Ang      ,1798      ,0486     3,7016      ,0003      ,0842      ,2753
Model Summary
R       R-sq        MSE          F        df1        df2          p
,2566   ,0658      ,8178     7,2588     3,0000   309,0000      ,0001
             coeff         se          t          p       LLCI       ULCI
constant     2,8084      ,2856     9,8322      ,0000     2,2464     3,3705
Comm_Dis      ,1434      ,0453     3,1654      ,0017      ,0543      ,2325
**************************************************************************
OUTCOME VARIABLE: Attitude change
Model Summary
R       R-sq        MSE          F        df1        df2          p
,1557   ,0242     2,5720      1,9119   4,0000       308,0000     ,1083
             coeff         se          t          p       LLCI       ULCI
constant    -1,0432      ,5553    -1,8785      ,0613    -2,1360      ,0496
Comm_Anx     -,0161      ,0788     -,2041      ,8384     -,1712      ,1391
Moralization  ,2663      ,1009     2,6393      ,0087      ,0678      ,4648
Model Summary
R       R-sq        MSE          F        df1        df2          p
,1605   ,0258     2,5680     2,0369     4,0000   308,0000      ,0891
             coeff         se          t          p       LLCI       ULCI
constant    -1,2225      ,5696    -2,1462      ,0326    -2,3434     -,1017
Comm_Fea      ,0583      ,0802      ,7278      ,4673     -,0994      ,2160
Moralization  ,2499      ,1007     2,4806      ,0137      ,0517      ,4481
Model Summary
R       R-sq        MSE          F        df1        df2          p
,1556      ,0242     2,5721     1,9116     4,0000   308,0000      ,1083
             coeff         se          t          p       LLCI       ULCI
constant    -1,1364      ,6136    -1,8520      ,0650    -2,3437      ,0710
Comm_Ang      ,0178      ,0885      ,2012      ,8407     -,1564      ,1920
Moralization  ,2584      ,1015     2,5469      ,0114      ,0588      ,4581
Model Summary
R       R-sq        MSE          F        df1        df2          p
,1554   ,0241     2,5723     1,9045     4,0000   308,0000      ,1095
             coeff         se          t          p       LLCI       ULCI
constant    -1,0491      ,5804    -1,8074      ,0717    -2,1912      ,0931
Comm_Dis     -,0093      ,0816     -,1134      ,9098     -,1699      ,1514
Moralization  ,2647      ,1009     2,6233      ,0091      ,0661      ,4632
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OUTCOME VARIABLE: Felt Anger

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3424   ,1173     2,3231    13,6817     3,0000   309,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     1,5471      ,5284     2,9280      ,0037      ,5074     2,5867
Comm_Ang      ,5207      ,0823     6,3253      ,0000      ,3587      ,6827

OUTCOME VARIABLE: Felt Disgust

Model Summary
R       R-sq        MSE          F        df1        df2          p
,2718   ,0739     2,1113     8,2133     3,0000   309,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     2,1263      ,4590     4,6330      ,0000     1,2233     3,0294
Comm_Dis      ,3604      ,0728     4,9517      ,0000      ,2172      ,5036

OUTCOME VARIABLE: Felt Anxiety

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3688   ,1360     1,9288    16,2144     3,0000   309,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     1,2111      ,4068     2,9775      ,0031      ,4108     2,0115
comm_anx      ,4497      ,0672     6,6927      ,0000      ,3175      ,5819

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3286   ,1079     1,9914    12,4640     3,0000   309,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     1,1319      ,4323     2,6183      ,0093      ,2813     1,9826
Comm_Fea      ,4033      ,0695     5,8019      ,0000      ,2665      ,5401

************************************************************************
OUTCOME VARIABLE: Moralization

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3591   ,1290      ,7650    11,4026     4,0000   308,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     2,3406      ,3074     7,6145      ,0000     1,7358     2,9455
Comm_Ang      ,1065      ,0502     2,1219      ,0346      ,0077      ,2053
Felt anger    ,1406      ,0326     4,3083      ,0000      ,0764      ,2049

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3975   ,1580      ,7395    14,4460     4,0000   308,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     2,3928      ,2809     8,5184      ,0000     1,8401     2,9456
Comm_Dis      ,0729      ,0447     1,6299      ,1041     -,0151      ,1610
Felt disgust  ,1955      ,0337     5,8054      ,0000      ,1292      ,2617

Model Summary
R       R-sq        MSE          F        df1        df2          p
,3239   ,1049      ,7862     9,0235     4,0000   308,0000      ,0000

              coeff         se          t          p       LLCI       ULCI
constant     2,7756      ,2634    10,5381      ,0000     2,2573     3,2938
comm_anx      ,0791      ,0459     1,7233      ,0858     -,0112      ,1694
felt anxiety  ,1329      ,0363     3,6587      ,0003      ,0614      ,2043

Model Summary
R       R-sq        MSE          F        df1        df2          p
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,3255   ,1059      ,7852     9,1237     4,0000   308,0000      ,0000

             coeff         se          t          p       LLCI       ULCI
constant     2,7150      ,2745     9,8918      ,0000     2,1750     3,2551
Comm_Fea      ,0839      ,0460     1,8254      ,0689     -,0065      ,1743
angst         ,1347      ,0357     3,7711      ,0002      ,0644      ,2050
OUTCOME VARIABLE:
Moralization

Model Summary
R       R-sq        MSE          F        df1        df2          p
,2543   ,0647      ,8188     7,1199     3,0000   309,0000      ,0001

             coeff         se          t          p       LLCI       ULCI
constant     2,8675      ,2772    10,3437      ,0000     2,3220     3,4130
Comm_Fea      ,1382      ,0446     3,1013      ,0021      ,0505      ,2259

Model Summary
R       R-sq        MSE          F        df1        df2          p
,2566   ,0658      ,8178     7,2588     3,0000   309,0000      ,0001

             coeff         se          t          p       LLCI       ULCI
constant     2,8084      ,2856     9,8322      ,0000     2,2464     3,3705
Comm_Dis      ,1434      ,0453     3,1654      ,0017      ,0543      ,2325

Model Summary
R       R-sq        MSE          F        df1        df2          p
,2766   ,0765      ,8085     8,5315     3,0000   309,0000      ,0000

             coeff         se          t          p       LLCI       ULCI
constant     2,5582      ,3117     8,2070      ,0000     1,9449     3,1715
Comm_Ang      ,1798      ,0486     3,7016      ,0003      ,0842      ,2753

Model Summary
R       R-sq        MSE          F        df1        df2          p
,2569   ,0660      ,8177     7,2777     3,0000   309,0000      ,0001

             coeff         se          t          p       LLCI       ULCI
constant     2,9365      ,2648    11,0879      ,0000     2,4154     3,4576
Comm_Anx      ,1389      ,0437     3,1740      ,0017      ,0528      ,2249

**************************************************************************
OUTCOME VARIABLE:
Perceived attitude polarization

Model Summary
R       R-sq        MSE          F        df1        df2          p
,1751   ,0307      ,6084     2,4359     4,0000   308,0000      ,0473

             coeff         se          t          p       LLCI       ULCI
constant     3,7507      ,2773    13,5280      ,0000     3,2052     4,2963
Comm_Fea     -,0091      ,0390     -,2325      ,8163     -,0858      ,0677
Moralization  ,1299      ,0490     2,6483      ,0085      ,0334      ,2263

Model Summary
R       R-sq        MSE          F        df1        df2          p
,1756   ,0308      ,6083     2,4494     4,0000   308,0000      ,0462

             coeff         se          t          p       LLCI       ULCI
constant     3,6913      ,2823    13,0776      ,0000     3,1359     4,2467
Comm_Dis      ,0129      ,0397      ,3262      ,7445     -,0652      ,0911
Moralization  ,1250      ,0491     2,5487      ,0113      ,0285      ,2216

Model Summary
R       R-sq        MSE          F        df1        df2          p
,1881   ,0354      ,6054     2,8239     4,0000   308,0000      ,0251

             coeff         se          t          p       LLCI       ULCI
constant     3,5435      ,2977    11,9034      ,0000     2,9578     4,1293
Comm_Ang      ,0536      ,0429     1,2485      ,2128     -,0309      ,1381
Moralization  ,1152      ,0492     2,3404      ,0199      ,0183      ,2121
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Model Summary

R	R-sq	MSE	F	df1	df2	p
,1748	,0306	,6085	2,4271	4,0000	308,0000	,0479

	coeff	se	t	p	LLCI	ULCI
constant	3,7171	,2701	13,7616	,0000	3,1856	4,2486
Comm_Anx	,0054	,0383	,1402	,8886	-,0701	,0808
Moralization	,1267	,0491	2,5810	,0103	,0301	,2232