

The effect of emotion on political participation

Master Thesis [programme Behaviour Economics]

Erasmus University of Rotterdam

Erasmus School of Economics

Name student: Hyungwoo Oh

Student ID number: 545131

Supervisor: Dr. (Jan) JTR Stoop

Second assessor: (Ahmet Cem) AC Peker

Date final version: 30th July 2021



Abstract

With numerous research and theory development, scholars have been interested in the implication of emotion on political behaviour. However, previous research has faced limitations and questions regarding the conceptualization of emotion, definition of political participation, data collection, and emotion measurement. This article seeks a new set of approaches to resolving these limitations and answering the following research question: “do certain emotions trigger more intensive political participation than others?”. Prior articles suggest a significant effect of emotion on political-related behaviour. This paper prepared an experiment to establish such findings. In the experiment, participants were randomly assigned to watch one of four videos for emotion elicitation and reported their emotions by filling up the Discrete Emotion Questionnaire. Based on the evoked emotion, they decide the amount of donation to Greenpeace, and if they are willing to participate in a petition. From a quantitative analysis, it is found that there is no significant relationship between emotions and political participation.

Table of Contents

1. Introduction	4
2. Literature review	7
I. Dimensional and discrete emotion theory.....	7
II. Measurement of emotion	10
III. Hypothesis	11
3. Methodology and data	12
I. Dataset	12
II. Experimental setup.....	12
4. Result	15
I. Manipulation check.....	15
II. Emotions and political participation	17
5. Conclusion and discussion	20
A. Reference	22
B. Appendix	27

1. Introduction

In a democratic politics, where an individual influences the political direction of the state in either a direct or indirect manner, one may easily find that psychological affection such as emotion define how the people react on a certain political issue. The effect of emotion on political and societal behaviour is nothing new. For example, in 2020, a 46-year-old African American George Floyd in Minneapolis in the United States was killed during the arrest by Derek Chauvin, a Minneapolis Police officer. People was outraged because of the inappropriate treat during the arrest. The George Floyd protest and Black Lives Matter¹ movement began after his murder and quickly spread out not only nationwide but also over 60 countries around the world². Before the George Floyd protest, death of Alan Kurdi, a three-year-old Syrian boy who drown in the Mediterranean Sea in 2015, shows how the people's emotion of sadness and sympathy might be able to change the political consensus of European countries towards the refugee issue in Syria. Indeed, in the week after Alan Kurdi's image spread, he became an icon of tragic of the Syrian civil war and enlarged political debates on refugees in Wester nations (Adler-Nissen, Andersen, & Hansen, 2020).

Although the relationship between emotion and political participation seems informal and anecdotal, several organized datasets and academic theories are available. Past political research on political behaviour largely avoided the discussion of the emotional leverage as an endogenous to their model (e.g. Downs, 1957). However, recent political scientists, on the other hand, found that the emotional status of a decision maker affects their political decision and participation. It was not only limited but also including topics of emotional perceptions on the political campaign and a voting choice (Karl, 2019; Lee & Kwak, 2014; NamKoong et al., 2012; Weber, 2013; Brader 2005; Brader 2006; Phoenix & Maneesh, 2018), policy attitude (Huddy, Feldman, and Cassese 2007), and political participation (Valentino et al. 2011; Rudolph, Gangl, and Stevens 2000). These conclusions drawn from systematic datasets evidence the statement of political theorists who claim the integration of the emotional affection in understanding the political behaviour (Neblo, 2007; Redlawsk, Pierce, Arzheimer, Evans, & Lewis-Beck, 2017; Crigler, 2017). Likewise, there has been an increasing in focus of emotion in political science.

However, despite the prevalence of political research on emotional factors, the vast majority of research leave limitations and questions for three reasons. First, the definition of political participation is largely focused on the voting behaviour (Brouard et al., 2021; Garry, 2014; Valentino et al., 2011).

¹ The Black Lives Matter movement was initially triggered in 2013, after the sentence of acquittal of George Zimmerman who is responsible for the gun killing against teenager African American, Trayvon Martin. It has been nationally and globally recognized after the George Floyd incident.

² <https://www.nytimes.com/interactive/2020/06/13/us/george-floyd-protests-cities-photos.html>

According to van Deth (2016), the political participation is defined as “citizens’ activities affecting politics”. Although participating in an election is one of the most representative rights and activities that affect the politics in democratic states, using the voting behaviour as a principal of the “political participation” is too narrow. Participating in a petition or donating money to a lobby organization are also affecting the political world other than the voting. One of examples is the “Presidential Office Blue House’s Petition” introduced by the Korean government in 2017. Since governmental officials must respond to the petition that signed by more than 200,000 people over 30 days (Cheong Wa Dae, n.d.), South Korean citizens are using this platform as an instrument for expressing their political wills. Second, the conceptualization and classification of emotions are rather dimensional, which makes research unable to capture discrete emotion. According to the dimensional emotion theory, which past research have largely adopted, classify emotions by using dimensional continuums (Fontain, Scherer, Roeschm, & Ellsworth, 2007). Although the discrete emotion theory does not necessarily better in every aspect, this paper prefer the discrete because of the limitations of dimensional approach that is described in the following section. Third, current quantitative analyses on the relationship between emotions and political participation are particularly lack of causal inferences and selection biases. Noticeable amount of study has been conducted using the naturally occurred dataset such as the American National Election Studies (Ladd & Lenz, 2008; Namkoong et al., 2012; Valentino et al., 2011). Even if those national survey might provide quality insight for their research, the naturally generated dataset may not only accompany with a lack in evidence of the causal direction but also suspicious with respect to the selection biases. Therefore, in order to find the effect of emotions on the political participation with clear causal inferences and selection biases, an experiment with randomized control trial needs to be considered. Finally, a method and standard for measuring an emotion is rather arbitrary. Despite the theoretical and empirical importance of emotions as shown by previous research, the measurement for these emotional states has not been progressed (Harmon-Jones, Bastianm & Harmon-Jones, 2016). Thus, researchers commonly rely on subjective assessing scales without any proven validity. In order to clarify these limitations on the previous research, I conducted an economic experimental method by using two scales for measuring political participation and the Discrete Emotion Questionnaire.

Within this context, the primary goal of this research is to conduct an economic experimental method to answer the research question “does certain emotion trigger more intensive political participation than the others?”. I collected 314 international participants via Amazon Mechanical Turk and conducted a survey-based framed field experiment by using an online survey platform Qualtrics. Based on the collected survey dataset, I find evidence that there is no significant correlation between emotions and willingness to participate in a political issue. The rest of this paper is constructed as follows. First, I provide the clear conception of what an emotion is and how to incorporate them in an academic research by comparing the discrete emotion theory and dimensional emotion theory. I also explain the framed field experimental setup that used for this research and a descriptive explanation on

the collected dataset. By dividing the result into twofold, I first prove that my experiment was succeeded to elicit intended emotions in the manipulation check, and then explain the statistical output about the emotion and political participation. Finally, I conclude this paper with limitations and discussion drawn from the result.

2. Literature review

Theories about the role of emotions on political behaviour have heavily relied on the neuroscientific and psychological implications. Neuroscientists have asserted that emotions are taking a role in constructing not only cognition but also decision-making about a situation that a human is facing (Damasio 1994; Gray 1990). Emotions are used to signal our brain to come up with negative or positive implications of behaviour options and narrowing the number of alternatives. In other words, they served as feedback in our brain system that determines whether to encourage reward-seeking or risk-averting behaviour (Gray 1990). Political theorists who emphasize the role of emotions on political actions also develop their arguments founded on this association between emotions and decision making (Marcus, Neuman, & MacKuen, 2000; Neblo, 2007; Redlawsk et al., 2017; Crigler, 2017). To demonstrate the theoretical approach, there has been extensive empirical research that links emotions and political behaviour. For example, the most pervasive research are emotional perceptions on the political campaign and a voting choice (Karl, 2019; Lee & Kwak, 2014; NamKoong et al., 2012; Weber, 2013; Brader 2005, Brader 2006), policy attitude (Huddy, Feldman, and Cassese 2007), and political participation (Valentino et al. 2011; Rudolph, Gangl, and Stevens 2000).

Although these theoretical and empirical developments provide fundamental understandings of the relationship between emotions and political behaviour, they leave limitations on the conceptualization of emotions, choice of a dataset, and method for measuring emotions. This paper focuses on the improvement regarding these three limitations that the previous research faced but overlooked. Drawing from these, I suggest a new set of approaches on the political implication of emotions by implementing new political participation measurements, discrete emotion theory, framed field experiment, and Discrete Emotion Questionnaire (Harmon-Jones et al., 2016) for answering the hypotheses described at the later stage.

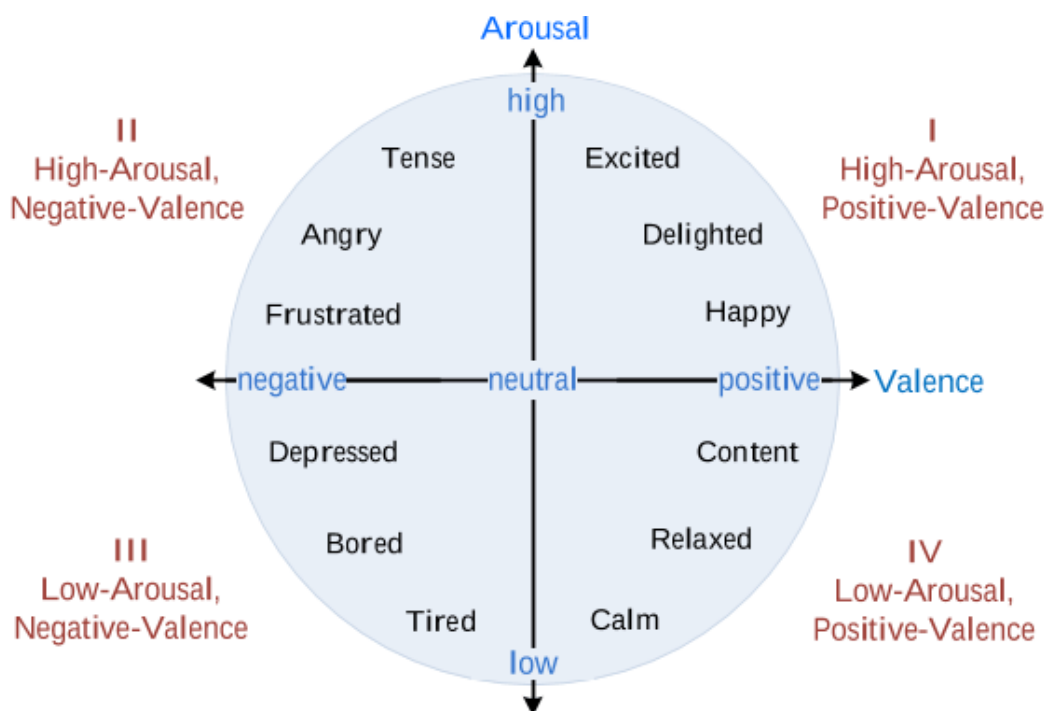
I. Dimensional and discrete emotion theory

Clarifying and defining emotions is one of the unsolved assignments in psychology and cognitive science. Conceptualizing emotions is crucial because the clarification and definition heavily change the methodological approach. Especially, incorporating a quantitative analysis into emotional research requires a clear concept and distinction between emotions. To address this issue, I review two representatives but opposing approaches on conceptualizing emotions: dimensional emotion theory and discrete emotion theory. Although there is no definitive agreement or consensus that researchers must prefer the discrete emotion theory over the dimensional emotion theory (Engelken-Jorge, Güell, & del Río, 2011), this paper will accept the discrete theory and develop a methodology.

Dimensional emotion theory

The dimensional model of emotion conceptualizes human emotions by using dimensions spaces (Fontain et al., 2007). This approach is traced back to philosophical theorists such as Hobbes and Spinoza, and Wundt (1897) proposed the first theoretical approach with valence (positive to negative), arousal (strain to relaxation), and tension (arousing to subduing) dimensions. Although Wundt (1897) proposed the theory more than a century ago, he provided a foundation for the further development of the dimensional emotional theory. The most dominant are the vector model (Bradley, Greenwald, Petry, & Lang, 1992), Positive Activation-Negative Activation (PANA) model (Watson & Tellegen, 1985), and circumplex model (Russel, 1980). These dimensional theories categorize emotions following the limited sets of continuums. For example, according to the circumplex model of emotion, as figure 2.1 describes, two continuums of arousal and valence determine human emotion (Russel, 1980). If the level of arousal and valence is higher than the neutral, one may define it as excited, delighted, or happy. The extensive research about the political implication on emotion has largely adopted these ideas (exception Valentino, Gregorowicz, & Groenendyk, 2009; Valentino et al., 2011; Weber, 2012).

Figure 2.1. Core emotions established in the circumplex model (Liu, Xu, Guo, Mahmud, Liu, Akkiraju, 2018)



However, this dimensional approach has been criticized due to several reasons (Choi, 2018). First, dealing with multiple emotions that shares the same dimensional characteristics might be problematic in predicting the distinctive cause and effect of each emotion (Lerner & Keltner, 2000; Nabi, 2010). For example, although the circumplex dimensional emotion approach (Russel, 1980) defines the anger and tense to be in the same quadrant as figure 2.1 describes, the expected behavioural

cause and consequences are different. A human experiences the tense emotion when it is facing an unfamiliar threatening situation, hence it can cause the act of avoidance. On the other hand, a familiar threat causes anger emotion, and it may promote an approaching action (Choi, 2018). Therefore, one needs an emotional approach that can clearly distinguish between emotions other than the dimensions and continuums.

Second, commonly discussed dimensional approaches such as circumplex and vector models cannot accurately distinguish each emotion solely using their dimensions (Clore & Ortony, 2008; Izard, 2007; Lerner & Keltner, 2000; Oatley & Johnson-Laird, 1987). For instance, according to the circumplex approach (Russel, 1980), the tense emotion, which lies on the dimension of arousal, turns into fear emotion if the extent of arousal is more intense. However, in reality, the anxiety of a human who is facing a threatening incident may grow to frustration, if the incident becomes realistic or coming closer. In other words, an exogenous other than the dimensional factor may explain or even dominate the classification of emotions. Likewise, the dimensional explanation is not completely seamless or continuous as much as the theory expected.

Third, according to various studies, the relationship between dimensions is proven to be non-orthogonal rather than orthogonal (Abelson Kinder, Peters, & Fiske, 1982, Marcus et al., 2000). For example, previous research often found a correlation between valence and arousal (Fredrickson & Cohn, 2008). Indeed, Marcus et al. (2006) argue that the arousal and valence dimensions on the circumplex model are rather correlated but not orthogonal to each other. Moreover, he claims that the failure to establish the orthogonal relationship is problematic for any study that focuses on dimensional emotion theory. As a result, following the persistent academic endeavour to deal with this issue, various approaches such as the discrete emotion theory substitutes or complements the dimensional emotion theory.

Discrete emotion theory

Psychologists, over decades, have dealt with distinguishing emotions with the same dimensional feature, by suggesting a “basic” emotion theory. As a result, the discrete approach to emotions has been developed by scholars such as Ekman³ (1992), Tomkins⁴ (1962), and Izard⁵ (1971). Appraisal theory, which is the foundation for the discrete emotion theory, argues that each human emotion is unique and distinct as it is derived from different causes (Roseman & Smith, 2001). The

³ Paul Ekman (1992) suggested six basic emotions: anger, surprise, disgust, enjoyment, fear, and sadness.

⁴ Silvan Tomkins (1962) suggested nine basic emotions: interest, enjoyment, surprise, distress, fear, anger, shame, dissmell, and disgust.

⁵ Carroll Izard (1971) suggested 12 basic emotions: interest, joy, surprise, sadness, anger, disgust, contempt, self-hostility, fear, shame, shyness, and guilt

discrete emotion approach also postulates that mechanism of the arousal of emotion is unique, so does the behaviour that stems from the cognitive process. Therefore, it considers that even if emotions have the same extend of dimensional features, they are functioning differently and are distinguishable (Nabi 2003; 2010). Although none of these discrete emotion theories includes the entire range of human emotion, the clearly defined set of discrete emotions is a useful approach as it is precise in classification and conceptualization.

However, the discrete emotion theory is not always perfect and faultless, because the discrete emotion does not solely play a role but generating more complex emotions under the complicated cognitive activities (Solomon, 2008; Tangney & Fischer, 1995). For example, pride emotion is identified as a conscious and complex cognitive process, which is experienced when the happy emotion is incorporated with a self-evaluation of achievement (Lewis, 2008; Tangney & Fischer, 1995). As this complex emotion needs a conscious evaluation of the environment and advanced cognitive process, it is tricky to study in empirical analyses. Nonetheless, the discrete approach may still provide a better understanding of identifying multiple cognitive determinants and considering evaluations of emotional situations (Choi, 2018).

The discrete emotions used by this paper are as follows. The first is *Anger*. Anger emotion is often considered as high arousal with approach motivational tendencies (Berkowitz & Harmon-Jones, 2004; Carver & Harmon-Jones, 2009). The second is *Fear*. Fear emotion is also regarded as a negative affection but has the withdrawal motivational inclination (Harmon-Jones et al., 2016). The Final is *Happy*. Unlike the previous two negative emotions, happy emotion is categorized as a positive emotion, and the intensity of approach motivation is varying (Harmon-Jones et al., 2016). Although there are more discrete emotions that cover human psychological affection, this set of emotions allow us to discover any different political behaviour between negative and positive dimension, and approach and withdrawal behavioural tendencies.

II. Measurement of emotion

Psychologists have used the single item to measure a manipulated discrete emotion (examples for political behaviour being Phoenix & Arora, 2018; Kim, 2015; Valentino et al., 2011). For example, if a researcher wants to measure an evoked anger emotion, it gives only one self-reporting item related to measuring anger emotion such as "to what extent did you feel anger?". A short measure of emotion seems beneficial due to reduced fatigue and tiredness of participants. However, the use of a single item in a statistical context has proven to be less effective because it is more likely to contain error variance (Gulliksen, 1950). In addition, since the interpretation of the single item may vary depending on the participant's subjective evaluation, it may not capture an accurate emotional status (Harmon-Jones et al., 2016). Indeed, it seems there is a negative correlation between the reliability and length of the self-reported questionnaire (Credé, Harms, Niehorster, & Gaye-Valentine, 2012). Although few discrete

emotion measurements account for the number of items and reliability, they did not cover multiple discrete emotions but rather focused on traits of single emotion (Tracy & Robins, 2007; Spielberger, Gorssuch, Lushene, Vagg, & Jacobs, 1983).

The Discrete Emotion Questionnaire (DEQ) of Harmon-Jones and colleagues (2016) proposes a new method for measuring multiple discrete emotions that consider the optimal trade-off between the length and reliability. The DEQ presents its sensitivity to detect a distinctive state of eight emotions: anger, sadness, happiness, disgust, fear, relaxation, anxiety, and desire (Harmon-Jones, 2016). As appendix 2.1 presented, it consists of four items per one emotion, and participants self-evaluate to what extent they agree for each item. Researchers who want to conduct this questionnaire may exclude several that they are not interested in (Harmon-Jones et al., 2016). Moreover, one may also reduce the number of items per emotion, but the expected trade-off on the reliability needs to be considered as previous measurements were (Harmon-Jones et al., 2016).

III. Hypothesis

Discrete emotions, that this manuscript will focus on, are anger, fear, and happiness. As theories of discrete emotion review anger as an emotion with high approach tendencies, I expect the elicitation of anger mobilizes more political participation than the neutral emotional status. In contrast, since the fear emotion has avoidance behaviour tendencies, I assume that manipulating fear will cause less political participation compared to angry or neutral emotion. Finally, the happy emotion has mixed tendencies regarding the approach behaviour, hence the expected result is ambiguous. I propose a new set of approaches on the political implications by undertaking a framed field experiment, DEQ, and discrete emotion theory to address the hypothesis,

H1: People with anger, fear, or happy emotion shows different degree of political participation compared to neutral emotional status.

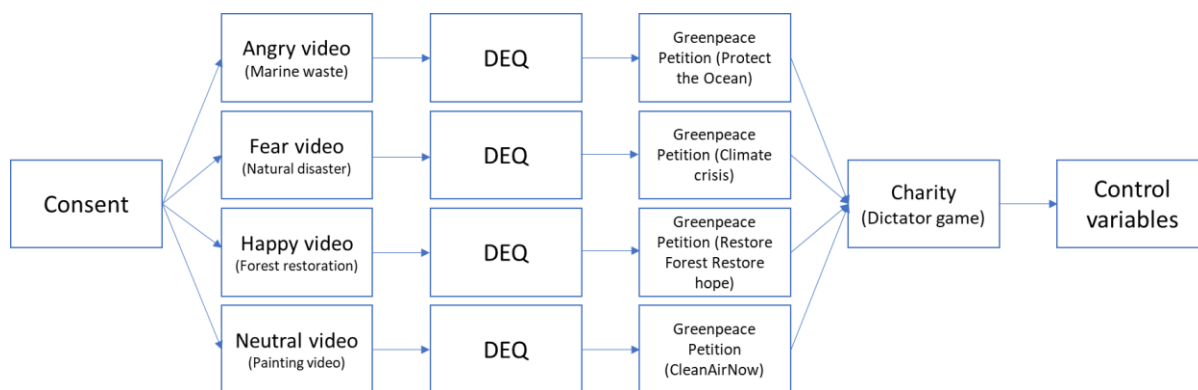
3. Methodology and data

I. Dataset

I organized a survey framed field experiment by using online platforms to test the hypothesis that evoked emotions have an effect on political participation. Participants were collected via Amazon Mechanical Turk (MTurk) and received 70 cents (U.S. dollar) for filling out the survey organized using Qualtrics. The nationality of participants is varying, but most of them (about 83%) are from the United States of America. Although the distribution on gender is reasonably balanced, there are somewhat more male participants (around 55%) than the female. The age ranged from 18 to 78 years old, and the average of participants is about 38.

II. Experimental setup

Figure 3.1: Flow of the survey experiment



Although the range of research about the emotional implications on political behaviour is varying in its topic choices, the option for the dataset used for research is very limited. That is because a naturally generated dataset that considers both psychological measurement and political actions is barely designed so far. Despite naturally generated datasets such as the American National Election Studies (Ladd & Lenz, 2008; Namkoong et al., 2012; Valentino et al., 2011) provide fundamental and preliminary insight for the study by using difference-in-difference and propensity score matching, their output is still statistically questionable because underlying assumptions are not always met (Cox, 1958; Rosebaum & Rubin, 1983). Therefore, an experiment with a randomized control trial is preferred in this case (Guala, 2005). Appendix 3.1 to 3.6 shows the survey that used for this experiment.

Consent. Figure 3.1 describes the flow of the framed field experiment used for this research. First, the participants are asked to read the brief aim of this research and instruction for data privacy, which is described in appendix 3.1. While they sign and agree to the consent, they are also informed that subjects will have a chance to win the €10 lottery. Indeed, after the termination of the experiment,

I randomly picked 5 participants and paid out less than €10⁶ as a form of the random lottery incentive. Although the between-subject random lottery incentives have limitations such as anchor effect and pseudo-wealth effects that might confound the outcome (Baltussen, Post, van Den Assem, & Wakker, 2012), it may prevent wealth effects and served as a good option for the tight experiment budget.

Emotion elicitation and Discrete Emotion Questionnaire. If participants understand and agree with the consent, they are randomly assigned to one of four videos that elicit anger, fear, happiness, or neutral emotion as appendix 3.2.1 to 3.2.4 describes. Using video or films for emotion elicitation has a long history (Gross & Levenson, 1995), and researchers who focus on political behaviour also employ the same method for evoking intended emotions (Weber, 2012; Karl, 2019; Brader, 2005; Brader, 2006). Although all videos are focused on a global environmental issue except for the neutral one, they have differences in background music, commentary, and content. First, the anger video (N=79) shows a video from the Cuddalore district in India where panchayat workers were seen dumping tons of waste into a river. It contains suspenseful background music, and the subtitle explains the detail of the situation. Second, the fear video (N=78) shows that natural disasters such as earthquakes, tsunami, floods, and wildfire all around the world. Like the anger videos, it has background music, commentary, a subtitle that elicits high arousal status. Although the two negative videos somewhat share the same characteristic, I distinguish by introducing an approaching situation (Choi, 2018) that a human (participant) cannot face. Third, the happy video (N=79) shows a couple who restore a devastated forest in India's Southern Ghats. I edited it to have bright music and to show lively green nature. Finally, the neutral video (N=78) does not have a particular topic. It shows painting a wall but does not contain music, subtitle, or commentary. Moreover, I tried to elicit the subject's emotion as neutral as possible by using white color paint. All of these videos have the same length that takes into account the time confounding. After the subjects watched the videos, I asked them to fill out the DEQ in appendix 3.3 to evaluate if the video successfully evokes the intended emotions.

Greenpeace petition. After the participants watched the videos and answered the DEQ, they are guided to a petition suggested by Greenpeace. I informed them that their decision is strictly confidential and anonymous. Each emotion group is assigned to a different petition that is related to the video contents they watched except for the neutral emotion group. For example, the anger group, that watched the video about illegally dumping waste into the river, is confronted with a petition called "Protect the Oceans". The purpose of the petition is to make a voice to governments in the United Nations for ocean environment protections. Besides, I introduced a petition about climate change for the fear video, forest restoration for the happy video, and air population petition for the neutral emotion. After subjects read the introduction and detail of the petition, I asked them to provide their name and email address for signing the petition on behalf of them.

⁶ The amount of payment differs by the choice of the participants. To be explained later.

Donation (Charity). As a second task, participants are asked about the amount of donation they want to donate to Greenpeace, as appendix 3.4 describes. I asked participants to imagine that they won the lottery of €10 explained on the Consent. They decide how much money they are going to deduct from the €10. If a participant was selected as a winner for the lottery, they received the deducted money. The donation is fully determined by their decision and no other intervention is considered, as the dictator game is (Guala & Mittone, 2010). After the termination of the experiment, I summed up the donation of lottery winners, and donate it to Greenpeace.

Control variables. For questions about the demographic variables, I asked age, gender, nationality, ethnicity, marital status, education level, and employment status of participants, as in appendix 3.5. Other than these, I added questions on appendix 3.6 that might affect petition and donation outcomes. First, participants report their monthly income. Since the donation question requires them to consider the (potential) monetary compensation, the income status may have an effect on the outcome. I divided answers into five categories: less than €1000, between €1000 and €2000, between €2000 and €3000, between €3000 and €4000, and more than €4000. Second, political scientists have argued that there is a significant correlation between the political orientation and perception on the environmental issue (Dunlap, 1975; Cheung, Ma, Lee, Lee, Lo, 2019; McCright, 2011; Gregersen, Doran, Böhm, Tvinnereim, and Poortinga, 2020). Therefore, I anticipate that the participants' political views will have an impact on the results. If participants choose 0, they report themselves as extreme left-wing oriented. And the other way round if they choose 10. Finally, I also asked if the participants have ever donated or signed a petition in the last 12 months, and how much or how often they did. I expect these questions to explore how much participants are interested and engaged in the environmental issue out the experiment.

4. Result

To study if emotion affects political participation, I divided the result twofold. First, I examine if videos successfully evoked intended emotions (manipulation check). As is explained earlier, participants self-report their emotional status by filling out DEQ. As the DEQ consists of 3 emotions (except for the neutral) that each has two items to evaluate, I have six dependent variables, where I can apply the multivariate linear regression (Hidalgo & Doodman, 2013). Multiple linear regressions output is also produced to check the robustness of the result. The second chapter contains the main analysis of the paper. I conduct two linear regressions by using donation and petition as dependent variables. To check the robustness of the main analysis, I also run analyses such as an ordered logistic regressions.

I. Manipulation check

Table 4.1 summarizes and displays the result of the emotional manipulation. Dependent variables are the answers that participants submit on the DEQ. The multivariate regression has the neutral video exposure group as a reference category and shows coefficients of other groups. Emotion video exposure variables were all recoded to vary from 0 to 1, and DEQ items range from 1 (not at all) to 7 (an extreme amount).

Table 4.1: Multivariate liner regression for the manipulation check

Multivariate regression (Manipulation check)	D.V. = Answers on Discrete Emotions Questionnaire (DEQ) items					
	Angry	Happy	Scared	Mad	Fear	Liking
<i>Manipulation video</i>						
<i>(ref: Neutral video exposure)</i>						
Angry video exposure	3.351*** (0.257)	-1.802*** (0.251)	1.636*** (0.265)	3.267*** (0.262)	1.814*** (0.272)	-1.977*** (0.264)
Fear video exposure	1.530*** (0.257)	-1.751*** (0.251)	2.226*** (0.265)	1.511*** (0.262)	2.339*** (0.272)	-1.912*** (0.264)
Happy video exposure	0.032 (0.260)	1.644*** (0.254)	0.389 (0.267)	0.314 (0.265)	0.373 (0.275)	1.554*** (0.267)
Constant	0.675*** (0.179)	2.289*** (0.175)	0.518*** (0.184)	0.566*** (0.182)	0.494*** (0.189)	2.566*** (0.184)
Observations	314	314	314	314	314	314
R-squared	0.418	0.441	0.229	0.377	0.245	0.432

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

First, the angry video exposure group, compared to the neutral video exposure, has a significant and positive coefficient on the angry and mad dependent variables ($\beta_{angry} = 3.35, p < 0.01$; $\beta_{mad} = 3.27, p < 0.01$), which means that participants are evoked to have an angry emotion. Moreover, it has a significant and negative coefficient on the happy and liking which are items for the happy emotion ($\beta_{happy} = -1.80, p < 0.01$; $\beta_{liking} = -1.98, p < 0.01$). Interestingly, the angry video exposure group also has a positive but slightly lower coefficient on scared and fear emotion than the two angry items ($\beta_{scared} = 1.64, p < 0.01$; $\beta_{fear} = 1.81, p < 0.01$).

Second, the fear video exposure group has the positive and highest coefficients on the scared and fear dependent variables compared to the neutral video exposure group ($\beta_{scared} = 2.23, p < 0.01$; $\beta_{fear} = 2.34, p < 0.01$). In addition, it has a significant negative coefficient on the two positive emotion items as they are opposed to each other on the positive-negative dimension ($\beta_{happy} = -1.75, p < 0.01$; $\beta_{liking} = -1.91, p < 0.01$). On the other hand, since the fear emotion shares the negative characteristics, the two coefficients on the angry and mad dependent variables are also positive and significant, even though it is slightly lower than those on the two angry emotion items ($\beta_{scared} = 1.53, p < 0.01$; $\beta_{fear} = 1.51, p < 0.01$).

Finally, the happy video exposure group has significant and positive coefficients on the happy and liking dependent variables compared to the neutral emotion ($\beta_{happy} = 1.64, p < 0.01$; $\beta_{liking} = 1.55, p < 0.01$). Contrary to two negative emotion groups that were negatively related to the positive emotion items, the coefficients of the happy video exposure group are not significant on negative emotion items.

Appendix 4.1 displays the output of multiple linear regressions for the robustness check of the result presented above. Although the p-value and the standard deviation of coefficients are slightly different from the multivariate regression, the overall coefficient is the same. Moreover, the ordered logistic regression also produces a somewhat similar output in appendix 4.2. However, the critical difference is that the coefficient of the happy video exposure group is positive on the scared item.

To sum up, the videos successfully evoked intended emotions, since the items are positively related to their representing emotion groups. Because the anger and fear emotions share the negative dimensional characteristics, negative emotion items are positively correlated to different negative video exposure groups even though the extent is slightly lower. In addition, two negative video exposure groups are negatively correlated with positive emotion items, because they have opposite dimensional features. As a remark, despite the two negative video exposure groups are negatively correlated with the positive emotion items, the positive video exposure group does not have a significant relationship with negative emotion items. Moreover, although the happy and liking dependent variables are positively correlated with the happy video exposure group, their extent is significantly weaker than the relationship on anger emotion and fear emotion. I suspect that the happy video is not as intensive as

videos for negative emotions are. Moreover, in terms of the video's topic, participants might feel somewhat less positive because they focus on the fact that the forest was devastated due to over-farming. Nonetheless, since there is a clear positive correlation between a video exposure group and its representing items, I conclude that the videos successfully elicit intended discrete emotions.

II. Emotions and political participation

Table 4.2 summarizes the result of linear regressions on how emotions affect political participation. There are two kinds of dependent variables: Amount of donation and participating in a petition. Like regressions on the manipulation check, the neutral emotion group is the reference category, and coefficients of other groups are compared values. Besides the variables on emotion video exposure columns (a) and (c), I also include the regressions on columns (b) and (d) that use DEQ items as explanatory variables in order to observe detailed interaction between discrete emotions and political participation. The donation dependent variable is an ordered categorical that ranges from €0 to €10, and the petition dependent variable is a binary that is either 0 or 1. Since dependent variables are (ordered) categorical, the (ordered) logistic regressions will be followed for the robustness check. The value of explanatory variables is a binary for the video exposure.

According to table 4.2, there is not any significant correlation between emotional video exposure and the amount of money they intended to donate. Furthermore, I could not find any significance in the willingness to participate in a petition either. However, when it comes to DEQ items, coefficients of two negative emotion item are significant and positive on the amount of donation ($\beta_{scared} = .44, p < 0.1$; $\beta_{mad} = .35, p < 0.1$). In addition, appendix 4.3, which reports (ordered) logistic regression for the robustness check, also presents that the coefficient of the mad item is significant and positive, even though the emotion video exposure group does not show any significance. When I run linear regressions with control variables as is shown in appendix 4.4, the same result is presented.

Table 4.2: Linear regressions for the interaction between emotions and political participations

Linear regression	€ of donation (€0 – €10)		Petition (Yes = 1 or No = 0)	
	(a)	(b)	(c)	(d)
<i>Manipulation video</i>				
<i>(ref: Neutral video exposure)</i>				
Angry video exposure	0.1800 (0.4955)		0.0247 (0.0777)	
Fear video exposure	-0.2559 (0.4833)		0.0375 (0.0779)	
Happy video exposure	0.0328 (0.4869)		0.0278 (0.0785)	
<i>Answers on DEQ</i>				
Angry		0.0026 (0.1973)		0.0095 (0.0304)
Happy		0.2145 (0.2358)		0.0196 (0.0329)
Scared		0.4403* (0.2609)		0.0365 (0.0377)
Mad		0.3460* (0.1821)		0.0189 (0.0294)
Fear		-0.2241 (0.2218)		0.0214 (0.0360)
Liking		0.2232 (0.2186)		0.0335 (0.0309)
Constant	2.8072*** (0.3354)	1.0034*** (0.2553)	0.3855*** (0.0538)	0.1619*** (0.0434)
Observations	314	314	314	314
R-squared	0.0026	0.1634	0.0008	0.1234

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The overall result suggests no significant relationship between evoking discrete emotions and willingness to participate in the political issue. However, since the scared and mad items are positively correlated with the amount of money willing to donate to Greenpeace, we cannot say the relationship between emotion and political participation is not established. There are two explanations for this discrepancy between emotion video exposure and DEQ items. First, the short DEQ might fail to

accurately measure participants' emotions. During the experiment, I used the shortened version of DEQ to reduce the cognitive effort of participants and any confounding effect from the long passage time. However, as Harmon-Jones and colleagues (2016) clarify, there is a possible trade-off between the length and reliability. Although two DEQ items might correctly measure the evoked emotions, we do not know exactly how the two excluded items would be presented. Second, even if multiple items represent one discrete emotion, each item in DEQ might be served as a separate emotional status. For example, on the angry emotion, the item anger and madness may have different emotional features. The word anger may be lower in arousal than madness (Shaver, Schwartz, Kirson, & O'Connor, 1987). However, they are subsumed under an "angry" category according to the discrete emotion theory and DEQ (Harmon-Jones et al., 2016; Harmon-Jones, Harmon-Jones, & Summerell, 2017). It could be a potential limitation for a researcher who wants to implement a DEQ on emotional research.

5. Conclusion and discussion

Previous research papers on the effect of emotions on political behaviour has four limitations. First, the measurement of political participation is primarily based on voting behaviour, while options for political participation are various in real life. Second, the definition and classification of emotions are dimensional, preventing them from applying the discrete emotion theory. Third, previous quantitative research does not provide enough persuasion on causality direction and selection bias. Finally, the technique and criteria for assessing emotion are ambiguous.

The foundation of this paper lies in improving these limitations and answering the research question “do certain emotions trigger more intensive political participation than others?”. I conducted a survey framed field experiment with 314 participants by using an online survey platform Qualtrics. Despite previous research that has been developed based on the dimensional emotion theory, the conceptualization of emotions in this paper is based on the discrete emotion theory. Based on this theory, I randomly assigned participants to one of four videos that evoke anger, fear, or happy discrete emotion. Then, I conducted the DEQ (Harmon-Jones et al., 2016) that uses multiple items for assessing emotion, while the previous research relies on the one item per one discrete emotion. After participants answered the DEQ, they decided the amount of donation to Greenpeace and whether they will participate in a petition.

I divided the result of this paper into two parts. First, I checked if the videos used during the experiment are successful in evoking the intended emotions. From the multivariate regressions, I found that the manipulation was successful, even though the video for happy emotion was not as intensive as the anger and fear videos are. Second, I ran linear regressions for the relationship between emotions and political participation. Unfortunately, there was no significant statistical evidence on the exposure to emotion videos and willingness to participate in a political issue. However, when I used DEQ items as explanatory variables, scared and mad items were positive and significant.

From the statistical result above, I concluded that anger, fear, and happy emotion do not trigger any political participation in my study. This conclusion is contrary to previous research that found a solid relationship between emotion and political behaviour (Karl, 2019; Lee & Kwak, 2014; NamKoong et al., 2012; Weber, 2013). Moreover, although I expected approaching tendency on anger (Berkowitz & Harmon-Jones, 2004; Carver & Harmon-Jones, 2009) and withdrawal tendency fear emotions (Harmon-Jones et al., 2016), my statistical output does not support such arguments.

However, several limitations might affect the statistical outcome. First, the amount and structure of incentive to participants could be inappropriate to mobilize the participants' behaviour. In this experiment, there are two kinds of incentive systems: participation fees and random lottery incentives. Since the participation fee is not large enough, participants might be less motivated to spend

their cognitive effort on given tasks. In addition, despite the random lottery system could be a good option for a tight experimental budget, the limitation such as anchor effect and pseudo-wealth effects could confound the outcome (Baltussen, Post, van Den Assem, & Wakker, 2012). Second, content for manipulation of happy emotion was not intensive enough or inappropriate. On the manipulation check, coefficients of happy and liking items are relatively less than items for predicting anger and fear emotion. I suspect the weak evocation of happy emotion video is because participants focused on the devastation of the forest rather than the restoration when they watch the video content. Indeed, from the robustness check in appendix 4.2 that conducted (ordered) logistic regressions, there is a weak but positive correlation between the scared item and the happy video exposure group that might confound the result. Third, the prediction in political participation was different when I used DEQ items as an explanatory variable. This discrepancy could be due to the limitation of the shorten version of DEQ. Although I used the simpler DEQ to avoid high cognitive effort and long passage time, the reduced reliability on measuring evoked emotion was also expected. Finally, the structural limitation of the DEQ might confound the result. The DEQ uses multiple items per emotion to increase the reliability of the measurement. Although those items are subsumed to one discrete emotion, they differ in several dimensional characteristics (Harmon-Jones et al., 2016; Harmon-Jones et al., 2017). If participants distinguish items according to items' dimensional characteristics, they will also rate their emotions accordingly. For example, if several participants feel an extreme angry emotion, they might rate the mad higher than the anger item as mad is more intensive in arousal dimension (Shaver, Schwartz, Kirson, & O'Connor, 1987).

Although this research tried to provide a new set of approaches on the relationship between emotional implication and political participation, it confronts the aforementioned limitations. Further research, therefore, needs to focus on examining and improving these aspects. For example, it may improve the video that is used for the happy emotion exposure group. Since it is assumed that the participants focused on the cause of the forest devastation rather than the restoration, future research needs to use a video that excludes any unexpected negative affection. Moreover, one may also seek an improvement on the DEQ. Since I used the short DEQ to eliminate any confounding from the long survey time and cognitive effort, the reliability could be not at the level that I expected. Therefore, further research can contribute by seeking an optimal trade-off between the length and credibility of the DEQ. Finally, one may also study the structural limitation of conducting the DEQ on measuring discrete emotions. A potential focus of further research is to seek an improvement on the DEQ. For instance, proposing a new set of items with the same or at least close dimensional features will contribute to preventing participants from perceiving items as a different emotion and confounding the result.

A. Reference

- Adler-Nissen, R., Andersen, K. E., & Hansen, L. (2020). Images, emotions, and international politics: the death of Alan Kurdi. *Review of International Studies*, 46(1), 75-95.
- Baltussen, G., Post, G. T., Van Den Assem, M. J., & Wakker, P. P. (2012). Random incentive systems in a dynamic choice experiment. *Experimental Economics*, 15(3), 418-443.
- Barrett, L. F. (1998). Discrete emotions or dimensions? The role of valence focus and arousal focus. *Cognition & Emotion*, 12(4), 579-599.
- Berkowitz, L., & Harmon-Jones, E. (2004). Toward an understanding of the determinants of anger. *Emotion*, 4(2), 107-130.
- Brader, T. (2005). Striking a responsive chord: How political ads motivate and persuade voters by appealing to emotions. *American Journal of Political Science*, 49(2), 388-405.
- Brader, T. (2006). *Campaigning for Hearts and Minds: How Emotional Appeals in Political Ads Work*. University of Chicago Press.
- Bradley, M. M., Greenwald, M. K., Petry, M. C., & Lang, P. J. (1992). Remembering pictures: pleasure and arousal in memory. *Journal of experimental psychology: Learning, Memory, and Cognition*, 18(2), 379-390.
- Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: evidence and implications. *Psychological bulletin*, 135(2), 183-204.
- Cheong Wa Dae. (n.d.). *Petitions*. Retrieved July 29, 2021, from <https://www1.president.go.kr/petitions>
- Cheung, L. T., Ma, A. T., Lee, K. M., Lee, J. C., & Lo, Y. L. (2019). How does political orientation influence one's environmental attitude and behaviour? Debate over country park conservation in Hong Kong. *Environmental Science & Policy*, 99, 115-122.
- Choi, S. (2018). *Anatomy of emotions in politics: the role of discrete emotions in political information search and participation* (Doctoral thesis, University of Texas at Austin, Austin, Texas). Retrieved from <https://repositories.lib.utexas.edu/bitstream/handle/2152/67627/CHOI-DISSERTATION-2018.pdf?sequence=1>
- Clore, G. L., & Ortony, A. (2008). Appraisal theories: How cognition shapes affect into emotion. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (3rd ed., pp. 628-642). Guilford Press.
- Cox, D. R. (1958). *The Planning of Experiments*. John Wiley & Sons.

- Credé, M., Harms, P., Niehorster, S., & Gaye-Valentine, A. (2012). An evaluation of the consequences of using short measures of the Big Five personality traits. *Journal of personality and social psychology, 102*(4), 874-888.
- Damasio, A. R. (1999). *Descartes' Error: Emotion, Reason, and the Human Brain*. Harcourt Brace.
- Downs, A. (1957). *An economic theory of democracy*. New York, NY: Harper and Row
- Dunlap, R. E. (1975). The impact of political orientation on environmental attitudes and actions. *Environment and behavior, 7*(4), 428-454.
- Ekman, P. (1992). An argument for basic emotions. *Cognition & emotion, 6*(3-4), 169-200.
- Engelken-Jorge, M., Güell, P., & del Río, C. M. (2011). *Politics and emotions: The Obama phenomenon*. (1st ed.). Wiesbaden: VS Verlag für Sozialwissenschaften.
- Fredrickson, B. L. & Cohn, M. A. (2008). Positive emotion. In M. Lewis & J. M. HavilandJones (Eds.), *Handbook of emotions* (3rd ed., pp. 777-796). Guilford Press.
- Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. (2016). *Impact evaluation in practice*. (2nd ed.). World Bank Publications.
- Gray, J. A. (1990). Brain systems that mediate both emotion and cognition. *Cognition & emotion, 4*(3), 269-288.
- Gregersen, T., Doran, R., Böhm, G., Tvinnereim, E., & Poortinga, W. (2020). Political orientation moderates the relationship between climate change beliefs and worry about climate change. *Frontiers in Psychology, 11*, 1573.
- Gross, J. J., & Levenson, R. W. (1995). Emotion elicitation using films. *Cognition & emotion, 9*(1), 87-108.
- Guala, F. (2005). *The methodology of experimental economics*. Cambridge University Press.
- Guala, F., & Mittone, L. (2010). Paradigmatic experiments: the dictator game. *The Journal of Socio-Economics, 39*(5), 578-584.
- Gulliksen, H. (1950). *Theory of mental tests*. John Wiley & Sons
- 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), e0159915.
- Harmon-Jones, E., Harmon-Jones, C., & Summerell, E. (2017). On the importance of both dimensional and discrete models of emotion. *Behavioral sciences, 7*(4), 66.

- Hernán, M. A., Hernández-Díaz, S., & Robins, J. M. (2004). A structural approach to selection bias. *Epidemiology*, *15*(5), 615-625.
- Huddy, L., Feldman, S., & Cassese, E. (2008). On the Distinct Political Effects of Anxiety and Anger. In W. R. Neuman, G. E. Marcus, A. N. Crigler & M. MacKuen (Eds.), *The affect effect: Dynamics of emotion in political thinking and behavior* (pp. 202-230). University of Chicago Press.
- Izard C. E. (1971) *The face of emotion* (1st ed.). Appleton-Century-Crofts.
- Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on psychological science*, *2*(3), 260-280.
- Karl, K. L. (2019). Motivating Participation Through Political Ads: Comparing the Effects of Physiology and Self-reported Emotion. *Political Behavior*, *43*, 1-24.
- Kessler, J. B., & Vesterlund, L. (2015). The external validity of laboratory experiments: Qualitative rather than quantitative effects. In Fréchette, G. R., & Schotter, A. (Eds.). *Handbook of experimental economic methodology*. Oxford University Press.
- Ladd, J. M., & Lenz, G. S. (2008). Reassessing the role of anxiety in vote choice. *Political Psychology*, *29*(2), 275-296.
- Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & emotion*, *14*(4), 473-493.
- Lewis, M. (2008). Self-conscious emotions. In M. Lewis & J. M. HavilandJones (Eds.), *Handbook of emotions* (3rd ed., pp. 742-756). Guilford Press.
- Liu, Z., Xu, A., Guo, Y., Mahmud, J. U., Liu, H., & Akkiraju, R. (2018). Seemo: A computational approach to see emotions. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1-12).
- Namkoong, K., Fung, T. K., & Scheufele, D. A. (2012). The politics of emotion: News media attention, emotional responses, and participation during the 2004 US presidential election. *Mass Communication and Society*, *15*(1), 25-45.
- Neblo, M. A. (2007). Philosophical psychology with political intent. In W. R. Neuman, G. E. Marcus, A. N. Crigler & M. MacKuen (Eds.), *The affect effect: Dynamics of emotion in political thinking and behavior* (pp. 25-47). University of Chicago Press.
- Marcus, G. E., Neuman, W. R., & MacKuen, M. (2000). *Affective intelligence and political judgment*. University of Chicago Press.

- McCright, A. M. (2011). Political orientation moderates Americans' beliefs and concern about climate change. *Climatic Change*, *104*(2), 243-253.
- Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of emotions. *Cognition and emotion*, *1*(1), 29-50.
- Phoenix, D. L., & Arora, M. (2018). From emotion to action among Asian Americans: Assessing the roles of threat and identity in the age of Trump. *Politics, groups, and Identities*, *6*(3), 357-372.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, *70*(1), 41-55.
- Roseman, I. J., & Smith, C. A. (2001). Appraisal theory. In Scherer, K. R., Schorr, A., & Johnstone, T. (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 3-19). Oxford University Press.
- Rudolph, T. J., Gangl, A., & Stevens, D. (2000). The effects of efficacy and emotions on campaign involvement. *The Journal of Politics*, *62*(4), 1189-1197.
- Russell, J. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, *39*(6), 1161-1178.
- Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: further exploration of a prototype approach. *Journal of personality and social psychology*, *52*(6), 1061-1086.
- Solomon, R. C. (2008). The philosophy of emotions. In M. Lewis & J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 3-16). Guilford Press.
- Spielberger C.D., Gorsuch R.L., Lushene P.R., Vagg P.R., Jacobs G.A. (1983) *Manual for the state-trait anxiety inventory*. Consulting Psychologists Press.
- Tangney, J. P., & Fischer, K. W. (1995). *Self-conscious emotions. The psychology of shame, guilt, embarrassment, and pride*. Guilford Press.
- Tomkins, S. (1962). *Affect imagery consciousness: Volume I: The positive affects*. Springer publishing company.
- Tracy, J. L., & Robins, R. W. (2007). The psychological structure of pride: a tale of two facets. *Journal of personality and social psychology*, *92*(3), 506-525.
- Valentino, N. A., Brader, T., Groenendyk, E. W., Gregorowicz, K., & Hutchings, V. L. (2011). Election night's alright for fighting: The role of emotions in political participation. *The Journal of Politics*, *73*(1), 156-170.
- Valentino, N. A., Gregorowicz, K., & Groenendyk, E. W. (2009). Efficacy, emotions and the habit of participation. *Political Behavior*, *31*(3), 307-330.

Van Deth, J. W. (2016). What is political participation?. *Oxford Research Encyclopedia of Politics*.
<https://doi.org/10.1093/acrefore/9780190228637.013.68>

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological bulletin*, 98(2), 219-235.

Weber, C. (2013). Emotions, campaigns, and political participation. *Political Research Quarterly*, 66(2), 414-428.

Wundt W.M. (1897). Outlines of Psychology. In *Classics in the history of psychology*.

B. Appendix

Appendix 2.1: Discrete Emotions Questionnaire with instructions (Harmon-Jones et al., 2016)

The Discrete Emotions Questionnaire

Please indicate your response using the scale provided.

While (*undergoing the emotional experience, e. g., viewing the photographs, reading the story, etc.*) to what extent did you experience these emotions?

1	2	3	4	5	6	7
Not at all	Slightly	Somewhat	Moderately	Quite a bit	Very much	An extreme amount
Anger (Ag)						Scared (F)
Wanting (Dr)						Mad (Ag)
Dread (Ax)						Satisfaction (H)
Sad (S)						Sickened (Dg)
Easygoing (R)						Empty (S)
Grossed out (Dg)						Craving (Dr)
Happy (H)						Panic (F)
Terror (F)						Longing (Dr)
Rage (Ag)						Calm (R)
Grief (S)						Fear (F)
Nausea (Dg)						Relaxation (R)
Anxiety (Ax)						Revulsion (Dg)
Chilled out (R)						Worry (Ax)
Desire (Dr)						Enjoyment (H)
Nervous (Ax)						Pissed off (Ag)
Lonely (S)						Liking (H)

Ag = Anger items, Dg = Disgust items, F = Fear items, Ax = Anxiety items, S = Sadness items, Dr = Desire items, R = Relaxation items, H = Happiness items.

Appendix 3.1: Consent of participating the experiment

Dear participants,

Welcome to my survey.

This survey is part of my Master's thesis at the Erasmus School of Economics. Your participation is **voluntary** and completely **anonymous**. Your answers will remain **confidential** and only be used for **scientific research purposes**.

The purpose of this survey is to examine the relationships between emotions and societal/political participation. It will take approximately 10 minutes to finish this survey. You are always able to terminate and exit during this survey. At the end of the survey, you have a chance to win €10. Five participants will be randomly chosen after the termination of this survey and each will be paid €10 (US participants will receive in dollar applying Euro exchange rate on the day of transfer). Please leave your email below, so that we can contact you if you win the prize.

If you have any questions, please contact 545131ho@eur.nl.

I appreciate your participation.
Hyungwoo Oh

Statement by the person agreeing to participate in this survey

I have read this instruction and understand the contained information. I freely and voluntarily participate in this survey.

- Yes, I consent
- No, I do not consent

Appendix 3.2.1: Video for evoking angry emotion and corresponding Greenpeace petition

Please read the text and watch the video.

A video surfaced from the Cuddalore district where panchayat workers were seen dumping tonnes of waste into a river. Cuddalore is a city located on the eastern coastline in India, and dumping waste in the river causes serious environmental issues on the Indian Ocean.

*The next button will be showed after watching the video.

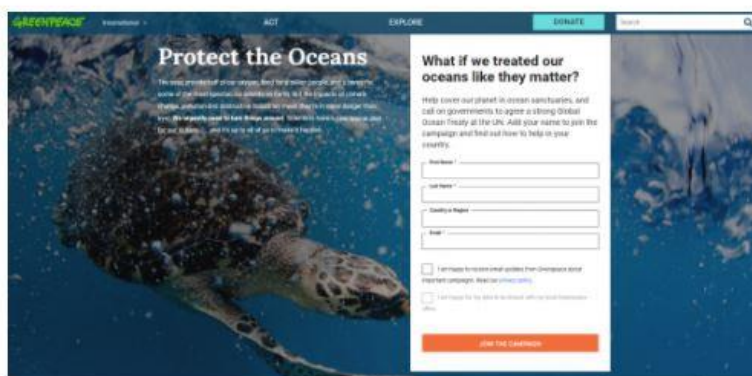


On this task, you decide if you are going to sign the petition or not. The decision is strictly **confidential** and **anonymous**. If you want to sign the petition, you need to provide your **name** and **email** address. The personal information will only be provided to **Greenpeace**. The experimenter will sign the petition with your name on your behalf within 14 days.

Protect the Oceans (Greenpeace)

Currently, non-governmental organization **Greenpeace** is addressing a petition called **Protect The Oceans**.

You can find more detailed information on <https://www.greenpeace.org/international/act/protect-the-oceans/>.



Do you want to join and sign the petition **Protect the Oceans**?

- Yes, I want to sign up the petition (on the next page you will provide your name)
- No, I do not want to sign up the petition

Appendix 3.2.2: Video for evoking fear emotion and corresponding Greenpeace petition

Please read the text and watch the video.

It is argued that natural disasters are consequences of climate change and various environmental issues caused by human. A tragedy such as earthquakes, tsunamis, floods, and wildfires all around the world are sending a warning signal to us.

*The next button will be showed after watching the video.



On this task, you decide if you are going to sign the petition or not. The decision is strictly **confidential** and **anonymous**. If you want to sign the petition, you need to provide your **name** and **email** address. The personal information will only be provided to **Greenpeace**. The experimenter will sign the petition with your name on your behalf within 14 days.

The movement holding governments and companies accountable for the climate crisis. (Greenpeace)

Currently, non-governmental organization **Greenpeace** is addressing a petition called **The movement holding governments and companies accountable for the climate crisis**. Climate change is putting our current and future generations at risk. The purpose of the petition is to make a voice to governments and companies to be responsible for natural disasters caused by climate change. It demands those to urgently move towards renewable energy production and fair distribution of the burden.

You can find more detailed information on https://act.greenpeace.org/page/50528/petition/1?_ga=2.234447257.662663431.1592224013-1821855310.1592224013.

GREENPEACE ACT LEARN DONATE

Join the movement holding governments and companies accountable for the climate crisis

Companies like ExxonMobil and Shell have decades ago that burning of fossil fuels would lead us to this climate crisis. Instead, some chose to hide it. Governments aren't doing enough about the emergency either, putting people's lives and livelihoods at risk.

Luckily, a growing number of people around the world are calling governments and corporations to court for inaction over climate change. Young people are suing the US government. Senior women in Switzerland are suing their government. In the Philippines, a landmark inquiry is underway to determine whether fossil fuel companies are violating human rights. Students in Vietnam are calling countries to seek an advisory opinion from the highest court in the world the International Court of Justice.

Cases like these are paving the way to hold fossil fuel companies accountable and making governments comply with their duty to protect people from the climate crisis.

8,041 people have joined the global climate justice movement.

People impacted by devastating climate change must be given access to the resources they need to rebuild their lives, and governments and companies must urgently move towards a future powered by 100% renewable energy and ensure a just and fair transition for communities and workers affected by the necessity of keeping fossil fuels in the ground.

Are you in?

First name:

Last name:

Email:

Country/region:

What are you interested in hearing from:

Do you want to join and sign the petition **The movement holding governments and companies accountable for the climate crisis**?

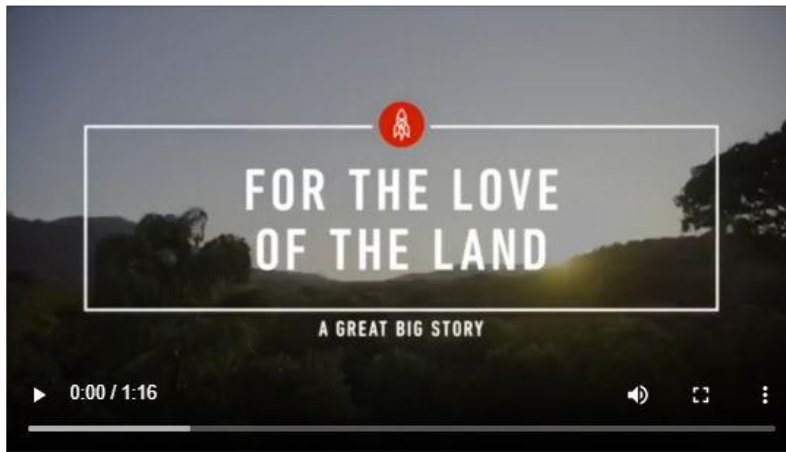
- Yes, I want to sign up the petition (on the next page you will provide your name)
- No, I do not want to sign up the petition

Appendix 3.2.3: Video for evoking happy emotion and corresponding Greenpeace petition

Please read the text and watch the video.

Devastated fields due to over-farm of coffee in India's Southern Ghats are now lush native forest, all thanks to the dedication of Pamela Gale Malhotra and her husband Anil. The couple started India's first private wildlife sanctuary and they have been nursing the land back to life.

*The next button will be showed after watching the video.



On this task, you decide if you are going to sign the petition or not. The decision is strictly **confidential** and **anonymous**. If you want to sign the petition, you need to provide your **name** and **email** address. The personal information will only be provided to **Greenpeace**. The experimenter will sign the petition with your name on your behalf within 14 days.

Restore Forest. Restore Hope. (Greenpeace)

Currently, non-governmental organization **Greenpeace** is addressing a petition called **Restore Forest. Restore Hope**. Ten years ago, hundreds of the world's biggest companies promised to end forest destruction by 2020. The purpose of the petition is to make a voice to those companies such as Nestle, Unilever, and Mondelez to keep their promise and demands those companies to stop profit from deforestation.

You can find more detailed information on https://act.greenpeace.org/page/43811/petition/1?_ga=2.158353597.662663431.1592224013-1821855310.1592224013.

Do you want to join and sign the petition **Restore Forest. Restore Hope.**?

- Yes, I want to sign up the petition (on the next page you will provide your name)
- No, I do not want to sign up the petition

Appendix 3.2.4: Video for evoking neutral emotion and corresponding Greenpeace petition

Please read the text and watch the video.

You've probably tried painting a wall. Dip the roller lightly into the paint, the paint should cover less than half of the roller, then roll it backwards and forwards. A person in this video is painting a wall with a roller in proper way.

*The next button will be showed after watching the video.

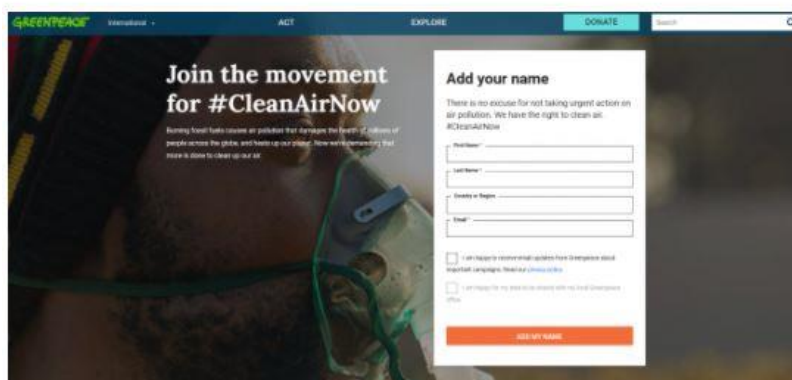


On this task, you decide if you are going to sign the petition or not. The decision is strictly **confidential** and **anonymous**. If you want to sign the petition, you need to provide your **name** and **email** address. The personal information will only be provided to **Greenpeace**. The experimenter will sign the petition with your name on your behalf within 14 days.

The movement for #CleanAirNow (Greenpeace)

Currently, non-governmental organization **Greenpeace** is addressing a petition called **The movement for #CleanAirNow**. The purpose of the petition is to make a voice to those who are responsible for air pollution. It demands to stop using fossil fuels and find a cleaner way to produce energy to clean up our air not only for our health but also for our planet.

You can find more detailed information on <https://www.greenpeace.org/international/act/join-the-movement-for-clean-air/>.

A screenshot of the Greenpeace website. The page is titled "Join the movement for #CleanAirNow". It features a form to "Add your name" with fields for "Full Name", "Email", "Country or Region", and "Title". Below the form are two checkboxes: "I am happy to consent that my name will be used for Greenpeace's important campaigns, Facebook updates etc." and "I am happy to my name to be shared with my local Greenpeace office." There is an orange "SIGN MY NAME" button at the bottom of the form. The background of the page shows a person wearing a green safety harness and a blue helmet.

Do you want to join and sign the petition **The movement for #CleanAirNow**?

- Yes, I want to sign up the petition (on the next page you will provide your name)
- No, I do not want to sign up the petition

Appendix 3.3: Discrete emotion questionnaire (DEQ) for measuring discrete emotions

While viewing the video to what extend did you experience these emotions?

	Not at all	Slightly	Somewhat	Moderately	Quite a bit	Very much	An extreme amount
Anger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 3.4: Amount of willing to donate to Greenpeace

Thank you for your participation!

As it is mentioned earlier, you are going to have a chance to win €10 (US participants will receive in dollar applying Euro exchange rate on the day of transfer).

Before exiting this survey, we would like to offer you an opportunity to donate part of your prize to Greenpeace. You can choose how much to donate between €0 to €10, and again the decision is **confidential**. Due to the donation policy of Greenpeace, the amount of donation needs to be €1 unit. If you are picked up as a winner, the donation will be actually paid to Greenpeace, and **the deducted amount of money will be paid to you**.

You can find the information about the donation to Greenpeace on <https://www.greenpeace.org/nl/acties/doneren/> (Dutch) and <https://act.greenpeace.org/page/33188/donate/1> (English)

How much do you want to donate?



Appendix 3.5: Demographic questions for participants

Age iQ *

What is your age?

Gender *

What is your gender?

Male

Female

Prefer not to say

Nation | List of Countries * x→

What is your nationality?

Afghanistan ▼

Q111 *

What is your racial or ethnic identification?

Hispanic or Latino

Asian

Black/African

White

Other

Marital

★

What is your marital status?

- Single, never married
- Married
- Divorced
- Widowed

Q44

Are you a student?

- Yes, I am
- No, I am not

Education

★

What is the highest degree or level of school you have completed? (If currently enrolled, highest degree received.)

- No schooling completed
- High school graduate
- Bachelor's degree
- Master's degree
- Doctorate degree

Employment

★

What is your current employment status?

- Full-time work
- Part-time work/Temporary
- Self-employed
- Unemployed or seeking
- Other

Q42

★

What is your monthly income?

- Less than €1000
- Between €1000 and €2000
- Between €2000 and €3000
- Between €3000 and €4000
- More than €4000

Q116

★

How do you define your political orientation?

- | | | | | | | | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------|
| Far left | | | | | Neutral | | | | | | Far right |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | |

Appendix 3.6: Questions for other control variables

Q104



Have you ever donated to an environmental organization in the last 12 months other than this survey?

- Yes, I have
- No, I haven't

Page Break

Q105

▼ Display this question

If Have you ever donated to an environmental organization in the last 12 months other than this survey? Yes, I have Is Selected

How often did you donate?

- Weekly
- Monthly
- Quarterly
- Yearly
- Other

Q106

▼ Display this question

If Have you ever donated to an environmental organization in the last 12 months other than this survey? Yes, I have Is Selected

How much did you donate (Weekly/Monthly/Quarterly/Yearly/Other)?

- Less than €10
- Between €10 to €50
- Between €50 to €100
- More than €100

Q107



Have you ever signed a petition related to an environmental issue in the last 12 months other than this survey?

- Yes, I have
- No, I haven't

Page Break

Q108

▼ Display this question

If Have you ever signed a petition related to an environmental issue in the last 12 months other tha... Yes, I have Is Selected

How many petitions did you sign?

- Less than 5
- Between 5 to 10
- More than 10

Appendix 4.1: Robustness check for the manipulation check, multiple regression

Multiple regression (Manipulation check)	D.V. = Answers on Discrete Emotions Questionnaire (DEQ) items					
	Angry	Happy	Scared	Mad	Fear	Liking
<i>Manipulation video</i> (ref: Neutral video exposure)						
Angry video exposure	3.351*** (0.251)	-1.802*** (0.271)	1.636*** (0.262)	3.267*** (0.247)	1.814*** (0.273)	-1.977*** (0.285)
Fear video exposure	1.530*** (0.263)	-1.751*** (0.264)	2.226*** (0.252)	1.511*** (0.248)	2.339*** (0.241)	-1.912*** (0.276)
Happy video exposure	0.032 (0.227)	1.644*** (0.293)	0.389 (0.236)	0.314 (0.238)	0.373 (0.230)	1.554*** (0.302)
Constant	0.675*** (0.154)	2.289*** (0.226)	0.518*** (0.147)	0.566*** (0.135)	0.494*** (0.125)	2.566*** (0.232)
Observations	314	314	314	314	314	314
R-squared	0.418	0.441	0.229	0.377	0.245	0.432

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 4.2: Robustness check for the manipulation check, (ordered) logistic regression

Ordered logistic regression (Manipulation check)	D.V. = Answers on Discrete Emotions Questionnaire (DEQ) items					
	Angry	Happy	Scared	Mad	Fear	Liking
<i>Manipulation video</i> (ref: Neutral video exposure)						
Angry video exposure	3.601*** (0.372)	-2.513*** (0.407)	2.180*** (0.364)	3.539*** (0.362)	2.246*** (0.369)	-2.538*** (0.402)
Fear video exposure	1.959*** (0.335)	-2.128*** (0.350)	2.713*** (0.339)	2.024*** (0.339)	2.724*** (0.333)	-2.008*** (0.317)
Happy video exposure	0.070 (0.374)	1.427*** (0.290)	0.650* (0.391)	0.382 (0.393)	0.534 (0.393)	1.307*** (0.288)
/cut1	1.040*** (0.260)	-0.860*** (0.221)	1.425*** (0.281)	1.232*** (0.275)	1.403*** (0.282)	-1.084*** (0.231)
/cut2	1.664*** (0.281)	-0.282 (0.212)	1.916*** (0.286)	1.762*** (0.302)	1.932*** (0.304)	-0.416** (0.209)
/cut3	2.285*** (0.304)	0.133 (0.215)	2.478*** (0.306)	2.522*** (0.311)	2.534*** (0.311)	-0.068 (0.212)
/cut4	2.812*** (0.322)	0.745*** (0.231)	3.068*** (0.323)	3.056*** (0.316)	3.007*** (0.319)	0.358 (0.221)
/cut5	3.598*** (0.339)	1.581*** (0.271)	3.981*** (0.378)	3.688*** (0.334)	3.641*** (0.328)	1.265*** (0.249)
/cut6	4.854*** (0.395)	2.994*** (0.345)	5.289*** (0.449)	4.779*** (0.383)	5.037*** (0.403)	2.528*** (0.308)
Observations	314	314	314	314	314	314

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 4.3: Robustness check for emotions and political participation, (ordered) logistic regression

(Ordered) logistic regression	€ of donation (€0 – €10)		Petition (Yes = 1 or No = 0)	
	(a)	(b)	(c)	(d)
<i>Manipulation video</i>				
<i>(ref: Neutral video exposure)</i>				
Angry video exposure	0.0496 (0.2804)		0.3522 (0.3777)	
Fear video exposure	-0.2019 (0.2823)		0.0129 (0.3623)	
Happy video exposure	0.0088 (0.2735)		0.0063 (0.3747)	
<i>Answers on DEQ</i>				
Angry		-0.0064 (0.1116)		-0.0154 (0.1535)
Happy		0.1850 (0.1365)		0.1015 (0.1682)
Scared		0.2072 (0.1701)		0.0665 (0.1832)
Mad		0.1854* (0.0975)		0.1259 (0.1558)
Fear		-0.0318 (0.1357)		0.1946 (0.1774)
Liking		0.1086 (0.1299)		0.0743 (0.1610)
/cut1	-0.6828*** (0.1996)	0.3927** (0.1910)		
/cut2	-0.0603 (0.1943)	1.1017*** (0.2009)		
/cut3	0.3671* (0.1947)	1.6048*** (0.2153)		
/cut4	0.5295*** (0.1958)	1.7944*** (0.2238)		
/cut5	0.6992*** (0.1983)	1.9878*** (0.2291)		
/cut6	1.6801*** (0.2245)	3.1031*** (0.2669)		
/cut7	1.8089*** (0.2305)	3.2535*** (0.2758)		
/cut8	2.0766*** (0.2411)	3.5581*** (0.3070)		
/cut9	2.3322*** (0.2549)	3.8385*** (0.3316)		
/cut10	2.7115*** (0.2785)	4.2384*** (0.3770)		
Constant			-0.4661** (0.2259)	-1.5377*** (0.2476)
Observations	314	314	314	314

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 4.4: Linear regressions for emotions and political participations with control variables

Linear regression	€ of donation (€0 – €10)		Petition (Yes = 1 or No = 0)	
	(a)	(b)	(c)	(a)
<i>Manipulation video</i> (ref: Neutral video exposure)				
Angry video exposure	0.3565 (0.4698)		0.0685 (0.0746)	
Fear video exposure	-0.3879 (0.4558)		0.0041 (0.0713)	
Happy video exposure	0.2315 (0.4787)		0.0032 (0.0733)	
<i>Answers on DEQ</i>				
Angry		-0.0758 (0.2028)		-0.0031 (0.0297)
Happy		0.1878 (0.2213)		0.0180 (0.0345)
Scared		0.3779 (0.2311)		0.0167 (0.0364)
Mad		0.3388* (0.1881)		0.0229 (0.0293)
Fear		-0.2532 (0.2081)		0.0332 (0.0341)
Liking		0.1692 (0.2087)		0.0134 (0.0332)
Donation (petition) last 12 months	1.9877*** (0.3870)	1.4452*** (0.4089)	0.4216*** (0.0582)	0.3680*** (0.0623)
Right wing orientation	0.1424** (0.0707)	0.0748 (0.0657)	0.0111 (0.0108)	-0.0024 (0.0104)
Age	-0.0138 (0.0141)	-0.0021 (0.0141)	-0.0022 (0.0023)	0.0004 (0.0023)
Male	-0.5089 (0.3499)	-0.4205 (0.3424)	0.0745 (0.0545)	0.0731 (0.0526)
Student	1.3797** (0.5738)	1.1419** (0.5452)	0.0310 (0.0782)	0.0051 (0.0754)
<i>Monthly income</i> (ref: Less than €1000)				
Between €1000 and €2000	0.0574 (0.5156)	-0.0294 (0.5000)		
Between €2000 and €3000	0.3543 (0.5825)	0.5693 (0.5727)		
Between €3000 and €4000	0.4045 (0.6001)	0.7034 (0.5870)		
More than €4000	-0.9403 (0.6623)	-0.5755 (0.6792)		

Employment status
(ref: Unemployed or seeking)

Part-time work/Temporary	-0.6516 (0.6785)	-0.7062 (0.6425)
Self-employed	0.3050 (0.7800)	0.3264 (0.7538)
Full-time work	-0.4471 (0.6758)	-0.7715 (0.6804)
Other	0.2912 (0.9311)	0.3371 (0.9920)

Education
(ref: No schooling completed)

High school graduate	-0.6109 (1.2776)	-0.2501 (1.2960)	0.1502 (0.2109)	0.1676 (0.2220)
Bachelor's degree	0.1026 (1.2443)	0.1974 (1.2653)	0.2092 (0.2077)	0.1945 (0.2197)
Master's degree	0.0354 (1.2934)	0.2462 (1.3265)	0.0706 (0.2103)	0.0544 (0.2221)
Doctorate degree	0.0544 (1.4692)	0.2566 (1.4371)	0.0566 (0.2340)	0.0608 (0.2450)

Marital Status
(ref: Never married)

Married	0.7504* (0.4384)	0.5396 (0.4310)	0.0358 (0.0688)	-0.0006 (0.0671)
Divorced	0.1460 (0.6172)	0.1463 (0.6198)	-0.0207 (0.1123)	-0.0555 (0.1046)
Widowed	1.0788 (1.0395)	0.7781 (0.8976)	0.1530 (0.1835)	0.1247 (0.1552)

Ethnicity
(ref: White)

Asian	0.9853 (0.7311)	1.1898* (0.7163)	0.0183 (0.0967)	0.0287 (0.0940)
Black/African	0.8866 (0.5801)	0.4111 (0.5743)	0.1794* (0.0997)	0.1071 (0.1014)
Hispanic or Latino	-0.0945 (0.7429)	-0.1840 (0.7740)	0.1175 (0.1496)	0.1158 (0.1556)
Other	-0.5190 (0.8261)	-0.4721 (0.8706)	-0.0744 (0.2088)	-0.0309 (0.2219)
Constant	1.7797 (1.4792)	0.5532 (1.4733)	0.0471 (0.2296)	-0.0896 (0.2347)
Observations	311	311	311	311
R-squared	0.2110	0.2760	0.2110	0.2760

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1