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“The Influence of an Emotion-Based Approach
versus a Rational Approach on People’s
Willingness to Participate in Public Participation”

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Abstract

A successful sustainable energy transition is needed to mitigate climate change depends considerably on public acceptability. Although the public generally supports a sustainable energy transition, such projects are often met with local opposition, especially if individuals feel excluded in the decision-making process. This resistance can be effectively reduced via public participation, which entails the inclusion of the public in these decision-making processes. However, to be effective, public participation depends on the participation of an ideally diverse sample. Projects concerning sustainable energy transition have been shown to elicit a range of emotions in individuals that are currently neglected in the traditional public participation approach. To increase individuals' motivation to participate, considering their emotions toward sustainable energy projects is a relevant step. This experimental study conducted in the Netherlands with 195 participants researches the influence of emotions on willingness to participate by comparing emotional deliberation to the traditional approach using rational deliberation. Using Russel's circumplex model of affect, the results reveal that positive, as well as negative, inactive emotions mediate the effect of emotional deliberation on the willingness to participate, thereby countering previous research. Results reveal the importance to consider citizens emotions in public participation processes regarding sustainable energy transition, thereby providing meaningful implications for policymakers. To benefit from including emotions into the deliberation process of public participation, citizens should be encouraged to base their arguments on either positive; or negative, inactive emotions toward the sustainable energy transition, which in turn increases citizens willingness to participate.

Keywords: Public participation, sustainable energy transition, deliberation, emotions, wind parks

The Influence of an Emotion-Based Approach versus a Rational Approach on People's Willingness to Participate in Public Participation

Individuals are increasingly experiencing the disastrous consequences of anthropogenic climate change. In line with the newest IPCC report (2022), a sustainable energy transition needs to take place, sooner rather than later (Intergovernmental Panel on Climate Change, 2022). The Netherlands, a country heavily relying on gas, might soon face serious problems as their gas reserves are running out (Government of the Netherlands, n.d.; Mulder & Perey, 2018). Additionally, human-made earthquakes caused by gas extraction in Groningen, NL, further fed into the decision of the Dutch government to phase out gas by 2030 (Vlek, 2018; Rijksoverheid, 2019). The reduction and ultimately stopping the gas production is in line with the commitment of the Netherlands to the Paris Agreement, with the goal to limit global warming to below 1.5° C (Mulder & Perey, 2018; United Nations, n.d., 2016). To meet the Paris Agreement, more renewable energy projects need to be implemented, as the current coal-fired production of energy is responsible for a large proportion of CO₂ emissions in the Netherlands (IEA, 2021). Currently, the Netherlands is not on track with the government's goal to reduce emissions by 49% by 2030, compared to 1990 (Government of the Netherlands, 2019; PBL Netherlands Environmental Assessment Agency, 2021). Therefore, increased efforts toward a sustainable energy transition, replacing fossil energy with renewable energy, are needed urgently (Mulder & Perey, 2018).

A successful transition to renewable energy depends largely on public acceptability (Castro et al., 2018; Perlaviciute, n.d.; Zawadzki et al., 2022). Although public support is generally high for renewable energy projects, such projects are often met with local opposition (Devine-Wright, 2005, 2011; Jones & Eiser, 2009). Resistance against these projects is likely to occur (e.g., windnee.nl; wind-watch.org), especially if people feel excluded from decision-making processes (Perlaviciute, n.d., 2021). A successful strategy to

reduce resistance is via public participation¹ (Perlaviciute, 2021). To be effective, however, it is important that people with different perspectives and arguments take part in public participation, as deliberation benefits from different opinions. Further, this helps to avoid polarization, the development of extreme opinions within groups (Liu, 2021; Sunstein, 2002). Unfortunately, most citizens are not willing to participate or lack the motivation to do so (Hoti et al., 2021). Research shows that opponents of renewable energy projects, such as wind parks, tend to be more willing to engage in these meetings (Perlaviciute, 2021). Therefore, to motivate a broader sample of people to participate, the public participation process needs revision. A fruitful approach to do so is to address participants emotions toward sustainable energy transition e.g., the implementation of wind parks.

Currently, emotions toward sustainable energy transition, such as wind are rarely addressed in public participation. This is in contrast to recent research suggesting that negative emotions are related to higher willingness to participate in public participation processes (Liu, 2021; Perlaviciute et al., 2018). This thesis aims to advance the current literature by examining how considering different dimensions of citizens' emotions toward wind parks during public participation influences their willingness to participate. Hereby, a multidimensional construct of emotions will be utilized. Results of this research could guide practitioners to design more effective public participation processes, thereby developing an effective tool to progress toward a sustainable energy transition.

Public Participation

Public participation refers to the inclusion of citizens in the planning, design and implementation of projects that directly or indirectly affect the public. In this thesis, the focus is specifically on public participation concerning sustainable energy transitions. Through public participation, citizens can engage in executive functions usually assigned to

¹ In this thesis, public participation refers to public participation regarding sustainable energy transition

governmental institutions or administrative agencies (Dietz & Stern, 2008). Previous research on public participation showed that including people in the decision-making process increases its perceived procedural fairness, the extent to which individuals consider the decision-making process as fair (Zhang, 2015). Perceived fairness procedural increases public acceptance, thereby making public participation an effective tool to increase acceptability and support for a sustainable energy transition (Liu et al., 2020; Perlaviciute, n.d.). Public participation can be implemented in all parts of the decision-making process (Perlaviciute, 2021). Furthermore, public participation processes vary in the degree of influence participants have over the outcome (Arnstein, 2019). Citizens having full control over decision represents effective public participation, while having little to no control can lead to fake participation. Fake participation occurs if all of the major decisions have already been made and participants do not actually influence on the outcome. This can decrease, instead of increase public acceptability (Arnstein, 2019; Perlaviciute, 2021). Thus, to avoid fake participation, individuals need to have a certain level of decision-making power and be able to submit their own ideas, discuss them, and select their preferred ideas (Simonofski et al., 2021).

Despite often being heralded as the ultimate tool to increase public acceptance, certain conditions have to be met in order for public participation to be effective in doing so, as described above (Perlaviciute, 2021). In particular, public preferences for participation need to be taken into account to avoid exclusion, polarization or fake participation, all of which can decrease public acceptance. Four major factors have emerged that should be considered in the design of effective public participation (Perlaviciute, 2021). First, initiating a dialogue between citizens and policymakers is crucial to avoid a one-sided communication. Therefore, citizens should be encouraged to provide their own thoughts and ideas, in response to policymakers' considerations. Second, to avoid fake participation and its negative effects on acceptability, participants need to have true decision-making power, thus be able to influence

the outcomes. Third, to increase the quality of the decisions, a heterogeneous group of participants is beneficial. This diversity provides access to a greater variety of opinions. Fourth, deliberation is crucial for meaningful public participation (Perlaviciute, 2021).

Deliberation entails the extended discussion of different opinions and perspectives regarding the topic of interest, such as sustainable energy transition (Halvorsen, 2001; Perlaviciute, 2021). Thereby, deliberation can reduce peoples' skepticism and increase the acceptability of sustainable energy transition, by reflecting upon different opinions (Perlaviciute, 2021). In this study, the main focus will be on different deliberation styles regarding the implementation of wind parks and how these styles influence willingness to participate.

Rational Deliberation

In the traditional process of public participations, citizens are included in the decision-making process of sustainable energy transition via deliberation of rational arguments. Through reasoned dialogues with other stakeholders, citizens are able to influence the outcomes of the participation process (Bobbio, 2019).

There are several limitations to using this traditional approach to public participation. Participation based on rational deliberation often fails to consider diverse perspectives, which fuels resistance, especially among those who feel underrepresented. Since not all citizens are equally motivated to participate, this can lead to a biased sample (Liu, 2021; Perlaviciute, n.d.). Samples of participants often consists of homogenous, privileged groups, such as white, educated males with high income and education, a phenomenon called elite capture (Kundu, 2011; Perlaviciute, n.d., 2021).

Further, projects regarding sustainable energy transition often elicits emotions. These emotions can range from negative (Huijts et al., 2014; Truelove, 2012), to positive emotions (Contzen et al., 2021). Recent research criticized public participation for neglecting emotions

of citizens during the public participation process altogether, as emotions are often seen as irrelevant or impossible to deal with by practitioners (Liu, 2021; Perlaviciute et al., 2018). Therefore, concerns such as a fair allocation of costs and benefits, as well as the symbolic value of the neighborhood are ignored by practitioners and policymakers (Perlaviciute et al., 2018). This often increases resistance, as can be seen with protests against wind parks, like N33 in Groningen, potentially leading to the project being stopped entirely (Kowalczyk, 2016; Liu, 2021; Perlaviciute et al., 2018).

In cases in which practitioners do address emotions, they often have faulty assumptions about what caused these emotions. For example, practitioners often assume that negative emotional responses stem from a lack of understanding the urgency or the benefits, or the unwillingness of citizens to deal with the personal consequences or consequences stemming from these energy projects, such as proximity to wind turbines (Devine-Wright, 2005). Therefore, practitioner's responses are inadequate. This is problematic, as emotions seem to play an important role in peoples' willingness to participate (Liu, 2021; Perlaviciute et al., 2018). Therefore, to increase citizens motivation to participate, considering the emotions energy projects evoke in people could be a promising approach. Motivating a broader sample of individuals helps to improve the quality of the outcome of public participation, due to the consideration of more information and a greater scope of perspectives (Perlaviciute, 2021).

Emotional Deliberation

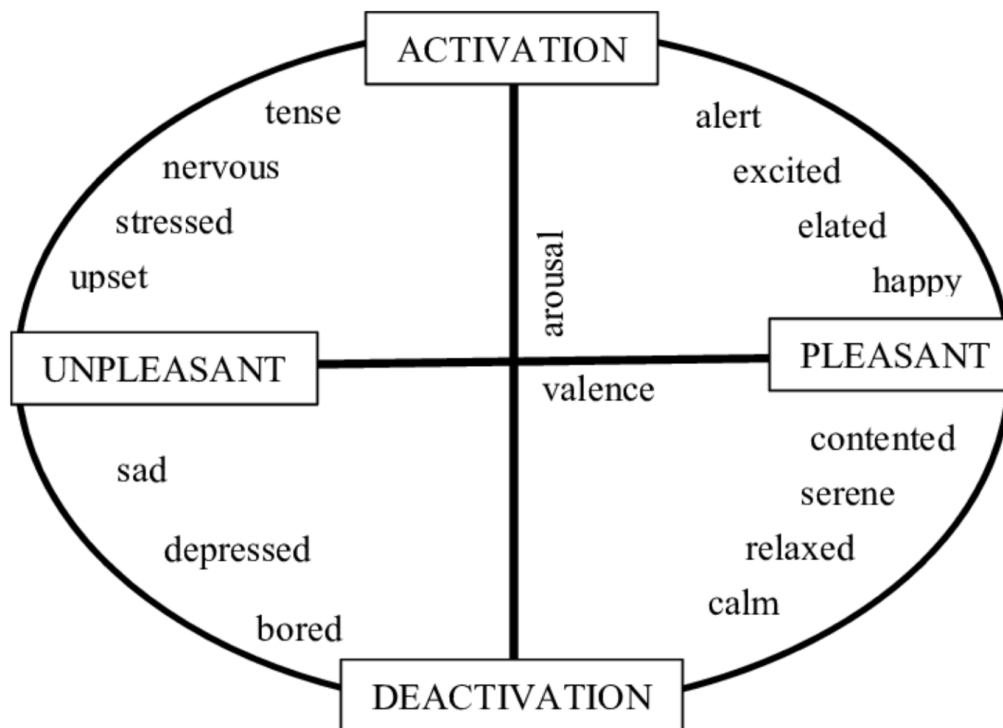
Regarding sustainable energy transitions, not everyone might have the required knowledge and factual information about for example, wind parks, or feel comfortable to share these to sufficiently take part in public participation. However, everyone experiences emotions toward sustainable energy transitions. Research suggests that citizens' emotions elicited by energy projects are a relevant factor influencing the willingness to participate (Liu,

2021). It is noteworthy that research on the different emotions elicited by sustainable energy transitions often uses a single dimension describing the valence, ranging from positive to negative, with negative emotions increasing willingness to participate and positive emotions reducing willingness to participate (Liu, 2021; Oreg et al., 2018). However, theoretical models on emotions often depict emotions as being a multidimensional construct (Gershenson, 1999; Russell & Bullock, 1985). As valence of emotions only describes the intensity of a single emotion, using a unidimensional model to examine emotions in the context of public participation might be too parsimonious.

The Circumplex Model of Affect – a Multidimensional Model of Emotions

To effectively incorporate emotions into the deliberation process of public participation, I propose that next to emotional valence, activation of emotions is a relevant factor. The circumplex model of affect (Figure 1) by Russell (1980) integrates emotional valence (positive and negative) with emotional activation (high vs. low). The emotional valence dimension describes positive emotions (e.g., joy, happiness, relaxation) and negative emotions (e.g., stress, anger, or anxiety; Russell, 1980; Oreg et al., 2018). The emotional activation dimension describes the “energy associated with affect” (Oreg et al., 2018, p. 67), which ranges from high (excited, nervous) to low (bored, calm). Combining valence and activation, four categories of emotions emerge (Oreg et al., 2018). Positive and activate, such as excited; positive and inactivate such as relaxed, negative and inactivate, such as depressed, and lastly negative and activate, such as anxious (Oreg et al., 2018). I argue that both valence and activation influence emotions toward sustainable energy transitions.

Figure 1



Note. The Circumplex Model of Affect is a multidimensional model of emotions (Korn et al., 2017).

But how are these emotions elicited? According to the value-based approach by Perlaviciute et al. (2018), emotions toward sustainable energy transitions are rooted in peoples' core values. Values are fundamental beliefs that influence what people find important, thereby influencing their attitudes, norms, and behaviors. They are relatively stable over time and different contexts (Perlaviciute et al., 2018; Steg & De Groot, 2012). There are four types of core values: hedonic, egoistic, altruistic and biospheric values. Hedonic values imply that an individual values pleasure and feeling good. Egoistic values indicate that an individual values status and resources. Altruistic values suggest that an individual cares about the well-being of others. Lastly, biospheric values signal that a person cares about the environment and protecting nature (Perlaviciute et al., 2018; Steg & De Groot, 2012). The influence these values have on the decision-making process depends on the salience of the

values at the given time (Steg & De Groot, 2012). Depending on whether the energy projects' implications are supportive or threatening to these values, positive or negative emotions are elicited. Further, the stronger these values are endorsed, the more likely the energy project elicits emotions (Perlaviciute et al., 2018). This, in turn, relates to the willingness to engage in public participation. Consequently, emotions could explain the link between the public participation process and willingness to participate in public participation.

Negative Emotions reduce Willingness to Participate

Initial (correlational) evidence supports the proposition that emotions mediate the relationship between the deliberation style in public participation and willingness to participate (Liu, 2021; Hoti et al., 2021; Turcano et al., 2014). Studies investigating the relationship between attitudes and participation intention found that positive attitudes toward sustainable energy projects decrease participation intention, while negative attitudes toward sustainable energy projects increase participation intention, indicating the relevance of emotional valence (Hoti et al., 2021; Turcano et al., 2014). Attitudes are shaped by individuals' evaluations incorporating a simple negative or positive affect. However, as attitudes comprise only a subset of emotions, it is likely that relevant factors were overlooked by this research (Allen et al., 1992). Further, a correlational study found that people who experience positive emotions (supporters) toward an energy project were less motivated to participate. On the other hand, opponents, experiencing negative emotions toward an energy project, were more willing to participate (Liu, 2021). This can be explained via the concept of loss aversion.

According to loss aversion, the fear of losses is evaluated as 'more painful' than gains of the same size are perceived as pleasurable (Kahneman & Tversky, 1979; Liu, 2021). In the case of public participation, those supporting the sustainable energy transition are likely to experience positive emotions, as the energy project is in line with their most salient values.

On the other hand, those who oppose an energy project tend to experience negative emotions, as it is not in line with their values. Therefore, the energy project is evaluated as a threat, which the individual wants to avoid (Liu, 2021). Accordingly, the anticipation of a loss motivates individuals more than expected gains (Kahneman & Tversky, 1979). By applying loss aversion to public participation, it becomes apparent why positive emotions would decrease willingness to participate, while negative emotions increase willingness to participate. Although initial evidence points toward this direction, a large body of empirical evidence supporting this proposition is lacking. To order these findings, an established model of emotions is used in this study.

In addition to valence, the activation of emotions is a relevant aspect for the mediating role of emotions on the relationship between deliberation style and willingness to participate. Empirical evidence shows that activate emotions are stronger related to active behavioral intentions than inactive emotions (Oreg et al., 2018). Therefore, I hypothesize that people with activate emotions have a higher willingness to engage in public participation, a behavior that requires effort (Edwards et al., 2009; Oreg et al., 2018). Following this line of reasoning, I argue that not only the valence, but also the activation of emotions is relevant in linking the public participation process to willingness to participate. Thus, utilizing Russell's multidimensional model of affect (1980) is an encompassing approach to public participation.

Present study

The current study is the first to experimentally test the influence of emotions in the context of public participation. To do so, the effects of emotion-based deliberation and rational deliberation on willingness to participate will be compared. Using the circumplex model of affect (Russell, 1980), this study will examine the mediating influence emotional valence and activation (positive; negative, active; and negative, inactive emotions) have on

the relationship between emotional deliberation and willingness to participate. This model can be found below (Figure 2).

H1: Emotion-based deliberation, compared to rational deliberation, increases peoples' willingness to participate in decision making.

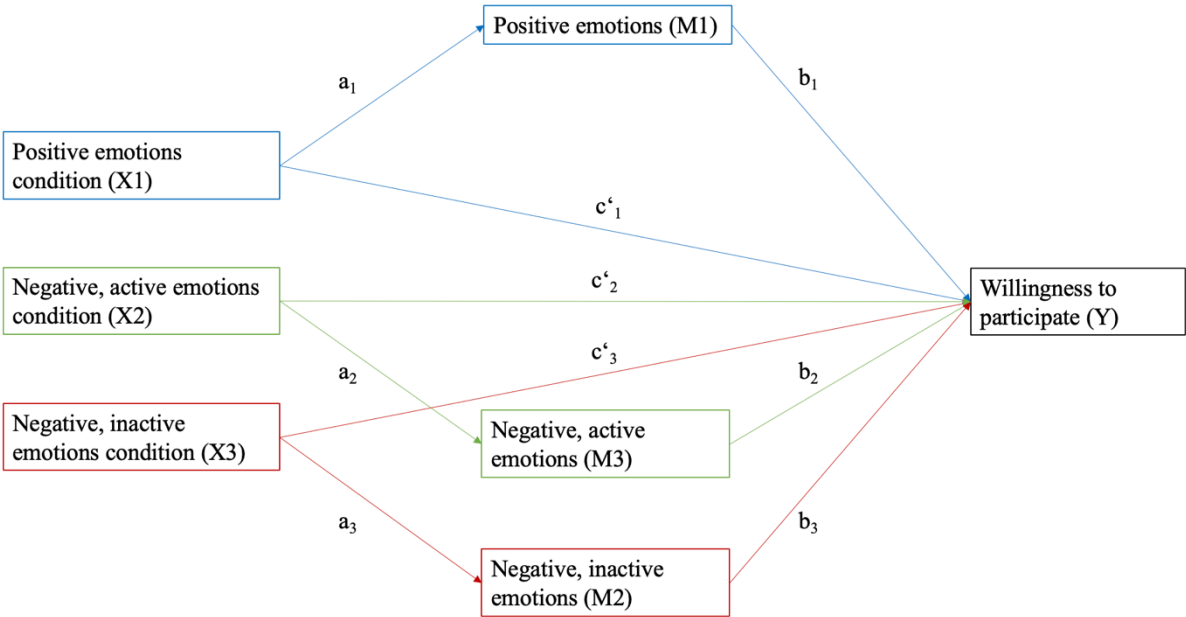
H2a: The effect of emotional deliberation on willingness to participate is negatively mediated by positive emotions.

H2b: The effect of emotional deliberation on willingness to participate is positively mediated by negative, active emotions.

H2c: The effect of emotional deliberation on willingness to participate is positively mediated by negative, inactive emotions.

H3: Negative, active emotions are a stronger mediator of the relationship between emotional deliberation and willingness to participate than negative, inactive and positive emotions.

Figure 2



Note. Multicategorical mediation model.

Method

Ethics approval

The experimental study was approved by the Ethics Committee of the Faculty for Behavioral and Social Sciences, University of Groningen. For the current study, the Data Management Plan and Ethics Protocol (PSY-2122-S-0277) as required by the University of Groningen were followed.

Participants

Participants were recruited via the online platform Prolific. Participation was entirely voluntary, and participants received a compensation of 1.33€. Inclusion criteria were living in the Netherlands, being older than 18 and being able to answer the survey in Dutch or English. An a priori power analysis conducted in G*power indicated that 94 participants are needed to attain power of .75 and a medium effect size (*Cohen's f* = .15) for the mediation analysis (Faul et al., 2007), and 1930 participants for the independent samples t-test. Overall, 199 participants were recruited. Four participants had to be removed from the final sample, as two of them failed the attention check, while one did not provide consent and one had technical difficulties during the study, which led to results not being recorded correctly. Hence, the final sample consisted of 195 participants (94 females, 98 males, 3 other). Participants were on average 35.6 ($SD_{age} = 10.5$) years old. Further descriptive statistics for the final sample can be found in Table 1.

Table 1
Demographics

	<i>n</i>	%	<i>M</i>	<i>SD</i>
Nationality				

Table 1 (continued)

Dutch	135	69.2
USA	7	3.6
Portuguese	6	3.1
Turkish	5	2.6
Other	42	21.5
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Education level		
Primary school	1	0.5
High school	40	2.5
Vocational training	14	7.2
Bachelor's degree	70	35.9
Master's degree	68	34.9
Prefer not to say	2	1.0
<hr/>		
Municipality size		
Village (Population below 5,000)	4	2.1
Community (Population between 5,000 and 10,000=)	7	3.6
Small Town (Population between 10,000 and 30,000)	23	11.8
Medium Town (Population between 30,000 and 75,000)	31	15.9
Large town (Population between 75,000 and 175,000)	31	15.9
City (Population above 175,000)	99	50.8

Procedure & Design

Through Prolific, participants were guided to the survey in Qualtrics. Before participating, all subjects received an informed consent form. Participants could withdraw from the study at any point without negative consequences. Information on emotions being manipulated and measured were withheld, to ensure a successful manipulation and to avoid demand bias.

Hypotheses were tested using a between-subjects factorial design with 4 conditions. Participants were randomly assigned to either the rational deliberation (control) condition or one of the three different manipulation conditions, namely: positive emotions; negative, active emotions; and negative inactive emotions. First, all participants were asked to imagine that an energy company is planning to build a wind park very close to their neighborhood. Participants were informed that they would receive an information letter and have the chance to take part in a neighborhood discussion, during which a member of the energy company would be present. To make the scenario more realistic, participants in all conditions had to provide two arguments like they would do in the neighborhood discussion. The manipulations were followed by a questionnaire containing scales on emotions and willingness to participate. To induce a positive mood and restore possible lingering of negative emotions at the end of the study, a funny video was shown to the participants of the negative conditions. Participants were fully debriefed after the study.

Measures

Manipulations

Control Condition: Rational Deliberation. In the rational deliberation condition, participants were told that they could discuss their concerns and thoughts based on their knowledge on wind parks. For the two arguments, participants were asked to provide these based on their knowledge about wind parks.

Experimental Conditions: Emotional Deliberation. This study aimed to test the mediating role of positive; negative, active; and negative, inactive emotions on willingness to participate. Therefore, emotions were manipulated to be positive or negative. Further, negative emotions were manipulated to be high versus low activated. The manipulation was based on a meta-analysis (Joseph et al., 2020).

Participants in the emotional conditions were informed that they could take part in these discussions and talk about how they feel about the implementation of the wind park. Participants were informed how their ‘neighbors’ feel about the wind park (e.g., happy = positive emotions condition, e.g., alarmed = negative, active emotions condition, e.g., hopeless = negative, inactive emotions condition). Validated sets of pictures were shown to participants (Moreno, 2012). Depending on the condition, the facial expressions showed differing emotions positive emotions (e.g., happy), or negative emotions. Specifically, in the active, negative condition, participants were shown facial expressions of such emotions, e.g., upset or stressed, while participants in the negative, inactive condition were shown facial expressions of emotions such as sad or depressed (Moreno, 2012; Russell, 1980).

Participants then had to rank emotions based on how they felt when thinking about the wind park. These emotions differed in valence and activation, depending on the condition. In the positive emotions condition, participants had to rank emotions such as happy, excited, and enthusiastic. In the negative, active condition, participants had to rank emotions such as stressed or upset, while participants in the negative, inactive condition had to rank emotions such as depressed or sad (see Appendix B for a detailed description of the manipulations). Lastly, participants in the emotional conditions were asked to provide two arguments based on how they feel about the wind park, as they would in the discussion round.

Emotions toward the Wind Park

Following this, participants emotions toward the wind park were assessed. All participants indicated the extent to which they felt positive and negative emotions on a 5-point Likert scale toward the wind park (1 = not at all, 5 = extremely). The scale was adapted from Liu (2021) and the Positive and Negative Affect Schedule (PANAS, Crawford & Henry, 2004), in accordance with the circumplex model of affect (Russell, 1980). A confirmatory factor analysis using a Promax Rotation (see Table A2 for factor analysis, Table A3 for the factor correlations) was conducted, which revealed 4 factors (Darton, 1980). Based on the factor analysis, some items were rearranged (see Appendix C for the final scale). From the 8 items assessing positive emotions, 7 items loaded on factor 1, labelled positive emotions, while the 8th item (alert) loaded onto factor 3, labelled negative, active emotions. This seems plausible, as alert could be interpreted as a negative, active emotion by lay-persons, such as participants. Therefore, alert was subsequently used to assess negative, active emotions. Out of the 7 positive items, two items (aroused and calm) were below the cut-off score of 0.6 and were removed from the analysis (Matsunaga, 2010). A potential explanation is that positive, active; and positive, inactive emotions were not distinguished in the questionnaire, but load onto different factors. The final scale for positive emotions consisted of 5 items (content, enthusiastic, happy, excited, relaxed), with a Cronbach's alpha of $\alpha = 0.88$. For negative, active emotions, the items 'annoyed' and 'afraid' did not meet the cut-off score 0.60 and were removed from further analyses. Further, the item assessing 'upset' loaded strongly onto the factor 2, labelled negative, inactive emotions and was therefore used to assess this factor. A potential explanation is that the scale did not distinguish enough between negative, active; and negative, inactive emotions. The final scale for negative, active emotions consisted of 3 items (alert, stressed, nervous), with Cronbach's $\alpha = 0.67$. Lastly, for negative, inactive emotions, 'sluggish' and 'bored' were removed, as they loaded strongly on a fourth factor, therefore

potentially measuring another construct. The final scale consisted of 3 items: upset, sad, depressed (Cronbach's $\alpha = 0.85$).

Willingness to Participate

Willingness to participate was assessed using three items (e.g., "If you were asked if you would like to actively and regularly participate in such a neighborhood group, how likely would you be to do so?") adapted from Rees (personal communication, March 22, 2022). Participants answered on a 5-point Likert scale (e.g., ranging from 1 very unlikely to 5 very likely). Cronbach's α for this scale was 0.94.

Manipulation checks

Emotions toward the Wind Park

To check whether the manipulation was successful, participants' arguments, based on how they feel about the wind park, were compared with those arguments provided by participants in the rational deliberation condition. A pilot study was conducted and used to check for successful manipulation, indicated by different emotions among the different conditions. Compared to the rational deliberation condition, participants in the positive emotions condition provided more arguments that displayed positive emotions toward the wind park, as indicated by a visual inspection. Participants in the active, negative condition provided more arguments that illustrated emotions such as upset, while participants in the inactive, negative condition mentioned arguments that demonstrated emotions such as sadness.

Attention Check

To ensure participants paid attention to the manipulation text, at the end of the study they were asked about what the described campaign was concerned with. Further, the emotions scale contained one question asked participants to choose answer c), to test whether

they read the questions thoroughly. Participants that answered these questions falsely ($N = 2$) were removed from the analysis.

Believability

To assess how realistic participants perceived the hypothetical scenario to be, the believability was assessed with two items. Overall, more than 80% agreed or strongly agreed that they found the scenario realistic.

Preliminary Analyses

Before conducting the analyses, a one-way MANOVA was conducted to test whether the manipulation was successful. Differences in the 4 conditions on emotions: positive emotions; negative active emotions; and negative, inactive emotions (3 DVs) were examined. The assumptions of normality, homogeneity of variance-covariance matrices, multicollinearity, linearity and outliers were tested. The Shapiro-Wilk test indicated the dependent variables negative, active emotions and negative, inactive emotions were not normally distributed. For the condition negative, active emotions, only the DV positive emotions was significant. This indicates that univariate normality was violated. Boxplots indicated 16 severe outliers, which were removed for this analysis. Thus, there were no univariate outliers. Two participants had Mahalanobis distance values above 16.27 and were removed for this analysis (Pearson & Hartley, 1958). There were no other multivariate outliers, and the assumption of multivariate normality was not violated. Linearity may have been slightly violated, as indicated by the scatterplots for positive emotions on negative, active emotions in the rational deliberation condition, in the negative, inactive condition, and in the negative, active condition. However, as all other scatterplots indicated linearity, and MANOVA is somewhat robust (Finch, 2005), the analysis was still conducted. Because of these violations, the results should still be interpreted with caution.

To test whether emotional deliberation has a stronger effect on willingness to participate than rational deliberation (H1), an independent samples t-test was conducted in SPSS. The independent variable used for H1 is categorical, while the dependent variable is continuous (Bhandari, 2020). Regarding the assumptions, normality seems to be violated, as indicated by the significant Shapiro-Wilk test ($W = .936, p = < .001$). Non-parametric alternatives to an independent samples t-test have less power (Zimmerman, 1985). Therefore, to test H1, an independent samples t-test with a bootstrapping interval of 1000 was used, to reduce the violation of normality and to avoid a reduction in power (Dwivedi et al., 2017; Yue & Pilon, 2004). For slight violations of normality, the effect on the probability of Type I errors is not severe (Dwivedi et al., 2017).

To compare emotional deliberation to rational deliberation, all conditions were divided into two groups: with one group containing all manipulation conditions ‘emotional conditions’, and the other group the rational deliberation condition. A composite score of all item scores of the willingness to participate was used.

All mediators were tested in one multicategorical mediation using the PROCESS Macro 3.5 model 4, with a bootstrapping interval of 5000, as suggested by Hayes (2013), with $\alpha = 0.05$. The four conditions were used as levels of the independent variable, with rational deliberation as the control condition. Positive emotions; negative, active; and negative, inactive emotions were entered as mediators. The dependent variable for all paths in this model was willingness to participate.

Assumptions were checked and scatterplots suggest that linearity may have been violated between the 3 mediators and willingness to participate, respectively. Homoscedasticity may be slightly violated, as suggested by the plot of the standardized residuals and standardized predicted values. Thus, the heteroscedasticity-consistent interference HC3 was used for the analysis (Hayes, 2012). Normality of the residuals seems to

be slightly violated, as indicated by the P-P plot. By using bootstrapping, the results should not be significantly affected by this (Yue & Pilon, 2004). To keep the model as parsimonious and since violations were only minor, a mediation analysis was conducted.

Results

In this study, the influence of emotional versus rational deliberation on willingness to participate were tested, as well as the mediating role of positive; negative, active; and negative, inactive emotions. Participants' mean willingness to participate was $M = 2.5$ ($SD = 1.1$), on a 5-point Likert scale. For descriptive statistics of the entire sample, see Table 4.

Table 4

Descriptive Statistics Total Sample

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>
Positive Emotions	195	1.00	5.00	2.7	1.0
Negative, Active Emotions	195	1.00	5.00	2.4	0.9
Negative, Inactive Emotions	195	1.00	5.00	1.5	0.8

Note. $N = 195$.

Manipulation check

The MANOVA shows a significant main effect of each manipulation condition on perceived emotions, $F(9,519) = 4.29, p < .001, Pillai's Trace = 0.21, \eta_p^2 = .07$. Pillai's Trace was used, because of its robustness against assumption violations (Finch, 2005). A Bonferroni-corrected $\alpha = 0.016$ was used and showed a significant effect of the positive emotions' manipulation condition on positive emotions, $F(3,173) = 8.09, p < .001, \eta_p^2 = .12$. The effect of the negative, active emotions' manipulation condition on negative, active emotions was significant, $F(3,173) = 3.77, p = .012, \eta_p^2 = .06$, as well as the effect of the

negative, inactive emotions' manipulation condition on negative, inactive emotions $F(3,173) = 4.99, p = .002, \eta_p^2 = .08$ (see Table A5 for descriptive statistics).

Hypothesis Testing

H1 - Emotion-based Deliberation versus Rational Deliberation

The influence of emotion-based deliberation on willingness to participate, compared to rational deliberation was tested using an independent-samples t-test. All 3 emotional deliberation conditions were combined and compared to the rational deliberation condition. Results showed no significant difference between the two deliberation types $t(193) = 1.36, p = 0.19$, despite participants in the rational deliberation condition having a higher intention to participate ($M = 2.7, SD = 1.1$) than those in the emotional deliberation conditions ($M = 2.4, SD = 1.1$). Consequently, no support was found for H1.

H2a - Positive Emotions as a Mediator

H2a stated that positive emotions negatively mediate the relationship between emotional deliberation and willingness to participate (Figure 2). Indeed, participants in the positive emotions condition reported on average significantly more positive emotions compared to the control condition $t(191) = 2.17, p = .031$, as indicated by path a_1 (Table 6; see Table A7 for the descriptive statistics per condition). Path b_1 was significant $t(188) = 6.48, p = < .001$, but indicated that positive emotions increase willingness to participate, conversely to the hypothesized negative relationship. While the direct effect (c_1') and the total effect (c_1) were not significant, the 95% CI of the indirect effect (a_1b_1) did not include 0 (see Table 6). This indicated a positive mediation of positive emotions for the positive emotions condition, contrary to the expected negative mediation. Thus, H2a was only partially supported.

Table 6*Multicategorical Mediation Analysis for Emotions*

	Total	Direct	Unstandardized		Indirect Effect (Path AB)		
	Effect	Effect	Paths		<i>B</i>	95%	95%
	(Path C)	(Path C')	Path A	Path B			
	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	Lower	Upper
	(<i>SE</i>)	(<i>SE</i>)	(<i>SE</i>)	(<i>SE</i>)	(<i>SE</i>)		
Positive Emotions	-.10	-.39	.40*	.58**	.23	0.02	0.48
Condition	(.23)	(.21)	(.19)	(.09)	(.12)		
Negative, Active	-.39	-.34	.55**	.16	.09	-0.02	0.23
Emotions Condition	(.23)	(.19)	(.18)	(.10)	(.06)		
Negative, Inactive	-.26	-.22	.38*	.28*	.11	0.01	0.23
Emotions Condition	(.24)	(.21)	(.16)	(.13)	(.06)		

Note. $N = 195$. * $p < .05$, ** $p < 0.01$. $R^2 = .23$

H2b - Negative, Active Emotions as a Mediator

H2b stated that negative, active emotions positively mediate the relationship between emotional deliberation and willingness to participate (Figure 2). Path a_2 was significant $t(191) = 3.06$, $p = .003$, indicating that on average, people in the negative, active condition reported more negative, active emotions than those in the rational deliberation condition (see Table A7 for M and SD). Path b_2 was not significant. The direct effect (c_2') and the total effect (c_2) were not significant, and the 95% CI of the indirect effect (a_2b_2) included 0 (see Table 6).

Therefore, no mediating effect for negative, active emotions was found and H2b was not supported.

H2c – Negative, Inactive Emotions as a Mediator

H2c stated that negative, inactive emotions positively mediate the relationship between emotional deliberation and willingness to participate (Figure 2). The negative, inactive emotions condition was found to significantly increase negative, active emotions (path $a_3 = t(191) = 2.47, p = .014$), and in turn significantly increased willingness to participate (path $b_3, t(188) = 2.24, p = .033$, Table 6, see Table A7 for M and SD). While the direct effect (c_3') and the total effect (c_3) were not significant, the 95% CI of the indirect effect (a_3b_3) did not contain 0, indicating a mediation in line with H2c (see Table 6).

H3 - Comparing Mediators

H3 stated that the mediating effect on the relationship between emotional deliberation and willingness to participate is stronger for negative, active emotions than for negative, inactive emotions and for positive emotions. The mediating effect positive emotions had on the relationship between emotional deliberation and willingness to participate was stronger than the effect of negative, inactive emotions (see Table 6). No support for H3 was found, as negative, active emotions did not mediate the relationship between emotional deliberation and willingness to participate.

Discussion

This study investigated the importance of emotions in public participation processes, by comparing the influence of rational deliberation to emotional deliberation on willingness to participate. Further, the mediating role of different emotions varying in valence and activation on people's willingness to participate was examined. Although largely ignored by practitioners and policymakers, emotions are hypothesized to play an important role in influencing willingness to participate in public participation regarding the implementation of wind parks (Liu, 2021; Perlaviciute et al., 2018). I argued that emotional deliberation is more effective than the traditional approach of public participation using rational deliberation. To

further analyze emotional deliberation, the role of positive and negative, active; and negative inactive emotions was analyzed. As previous research highlighted the role of especially negative emotions in influencing willingness to participate this was the focus of this thesis. The effect positive, active; and positive, inactive emotions on willingness to participate was not distinguished.

Contrary to H1, emotional deliberation did not increase willingness to participate stronger than rational deliberation did. This contradicts prior research suggesting that emotions are an important factor for willingness to participate in public participation (Liu, 2021; Perlaviciute et al., 2018). However, this study further investigated how different emotions, as illustrated in the circumplex model of affect (Russell, 1980), influence willingness to participate. Results showed that if citizens who feel positively toward wind parks are encouraged to provide arguments for deliberation based on their emotions, they are more willing to engage in public participation. Interestingly, the mediating effect of positive emotions increased, rather than decreased willingness to participate. This is contrary to the hypothesised effect. As Perlaviciute et al. (2018) propose, policies tend to elicit positive emotions if the policies are in line with an individual's values. Policies that are in line with an individual's values are more likely to be supported by that person (Rauwald & Moore, 2002). This could explain why individuals who experienced positive emotions towards the wind park were more willing to participate, as they wanted to demonstrate their support for the wind park.

No support for H2b was found (Liu, 2021). This indicates that when citizens who feel negative, active emotions toward wind parks are encouraged to base their arguments for public participation on these emotions, their willingness to participate does not increase. This contradicts previous research stating that negative emotions are related to higher willingness to participate (Liu, 2021). An underlying explanation is that instead of increasing willingness

to participate, negative, active emotions could increase other intentions or behaviors that require effort, such as protesting (Oreg et al., 2018). If negative, active emotions, such as anger are elicited by sustainable energy transitions, because they are not in line with peoples' values, people might want to express their anger, instead of engaging in public participation. Participation might falsely signal their support, even if their arguments are based on negative emotions.

H2c was supported, showing that citizens who feel negative, inactive emotions toward wind parks are more willing to participate in public participation if they are encouraged to base their arguments on these emotions. Lastly, H3 was not supported, indicating that negative, active emotions do not influence willingness to participate stronger than the other two mediators. In fact, the mediating effect of positive emotions was the strongest, followed by the effect of negative, inactive emotions.

The findings of H2a and H2c emphasize that emotions play an important mediating role, thereby countering the lack of support for H1. In fact, entering emotions as mediators between emotional deliberation and willingness to participate explains 23% of the variance in willingness to participate (Table 6). However, it should be noted that with an increasing number of predictors, R^2 could be inflated and should thus be interpreted with caution (Agresti, 2015).

The differing findings could be explained by the fact that to remain within the scope of a thesis, all emotional deliberation conditions were combined for H1, while each of the emotional deliberation conditions was examined separately for the other hypotheses. Thereby, some information might have been lost for H1. Further, the t-test (for H1) had very low power, potentially indicating an inflation of Type II error, while the mediation analysis had a power of .99, according to a post-hoc power analysis in G*power (Faul et al., 2007; Sun et al., 2011). Additionally, the large R^2 of the mediation model is a strength of the study and

emphasizes the importance of including emotions in the deliberation process of public participation.

Distinguishing these findings is relevant for policymakers, as the results indicate that merely encouraging participants to base their arguments for deliberation on their emotions toward the intervention does not seem to be effective in increasing willingness to participate. Instead, the way in which participants are encouraged to consider their emotions during deliberation is a relevant factor for their willingness to participate. Sustainable energy transitions that elicit negative, active emotions in citizens reduce willingness to participate. This can backfire, as not including a diverse set of participants in the decision-making process can promote resistance, potentially stopping the project altogether (Perlaviciute et al., 2018). Especially concerns such as a fair allocation of costs and benefits, and landscape changes trigger local resistance (Jones & Eiser, 2009; Perlaviciute et al., 2018; Sütterlin & Siegrist, 2017). Therefore, to promote willingness to participate, policymakers should aim to elicit positive emotions in citizens, by emphasizing aspects of the sustainable energy transition that are in line with the values of the citizens. Positive emotions, in turn, increase willingness to participate and thereby an effective participation process. In cases in which participants experience negative emotions, practitioners should guide these to become negative, inactive emotions, rather than negative, active emotions, to increase participants' willingness to participate.

Overall, results unexpectedly showed that positive emotions; as well as negative, inactive emotions increase willingness to participate. The proposition that willingness to participate is stronger motivated by activate than inactive emotions was not supported (Oreg et al., 2018). Previous research showed that positive emotions toward sustainable energy transitions reduce willingness to participate (Liu, 2021). However, previous research did not examine the influence of the deliberation process on willingness to participate. The results of

this study suggest that informing participants upfront that their emotions will be considered during the deliberation process of public participation increases their willingness to participate. Further, as positive emotions increase willingness to participate, policymakers should pay attention to how participants are informed about sustainable energy projects that affect them. By phrasing these projects in ways that are in line with participants values, positive emotions can be enhanced, which in turn increase willingness to participate (Sütterlin & Siegrist, 2017). Future research should examine the influence the level of activation of positive emotions has on willingness to participate (Oreg et al., 2018).

This study also benefits from further strengths next to the ones discussed above. Most importantly, the experimental design is contributing to the literature, as this is the first study to examine the causal role of emotions in public participation. Secondly, by conducting a pilot study, the quality and efficiency of this study were improved (In, 2017). The manipulation in this experiment was very strong, as indicated by the MANOVA, as well as the high believability scores. Thus, the entire theoretical reasoning using a widely applicable, multidimensional model of emotions was tested in the context of public participation. Despite the strong manipulation, it is possible that the manipulation conditions influenced the other emotions as well. For example, the negative, active emotions condition might have influenced negative, inactive emotions of participants (see Table A5). Additional exploratory analyses are needed to examine the influence of each condition on all 3 emotions (e.g., as available in the multicategorical mediation output). This was beyond the scope of this thesis and thus not considered.

Limitations and Future Research

This study has two major limitations. Next to mentioning the limitations, it is highlighted what this research did to counter these limitations. The first limitation is the artificial design of this study. The emotions toward the hypothetical wind park were elicited

via a manipulation and are therefore not real. This study only measured intention (willingness to participate), instead of actual participation behavior. Thus, a field study should examine the influence of citizens' real emotions toward a sustainable energy project on actual participation, thereby investigating the influence of participants' real emotions. Further, the intention-behavior gap should be examined more closely, to identify potential barriers and how to overcome these (Sheeran & Webb, 2016). As this thesis aims to be very applicable, this is considered to be the main limitation. Nevertheless, the manipulation check indicated that the emotion manipulations were very effective. This approach of eliciting emotions based on a meta-analysis by Joseph et al. (2020) is certainly a strength of this study, countering the previously discussed limitation.

A second limitation lies with the conceptualization and measurement of the circumplex model of affect (Russel, 1980). The factor analysis indicated that the scale used to assess emotions did not reflect the three types of emotions that this study aimed to examine. Some emotions of Russell's model (1980) might be understood and interpreted differently by different samples (Loizou & Karageorghis, 2015). This limitation is noteworthy, as the model forms the theoretical basis for this research. To counter this issue, the items that did not load onto the expected factor were subsequently used to assess the factor they loaded on, as it is the standard practice (Matsunaga, 2010). Items that did not meet the cut-off score were removed (Table A2). As the scale assessing emotions was not validated, and the Cronbach's α for the sub-scale assessing negative, active emotions was lower than for the other two mediators, the reliability and validity for the construct negative, active emotions might be lower. It should be noted, however, that considering that the scale for negative, active emotions only consisted of 3 items, this Cronbach's α is still acceptable, as Cronbach's α increases with test length (Cortina, 1993; Schmitt, 1996). As the emotions scale was adapted from the PANAS, future research should validate and adapt the items measuring

multidimensional emotions based on the circumplex model of affect (Crawford & Henry, 2004; Liu, 2021; Russel, 1980; University of Virginia Library, 2015). Moreover, a potential issue with using an adapted version of the PANAS could be that it has been criticized to not cover the entire range of the emotions in the circumplex model. Russell and Carroll (1999) note that the PANAS does not cover all of the low activation emotions (Crawford & Henry, 2004; Huelsman et al., 2003). Therefore, negative, inactive emotions might have not been assessed correctly, despite a strong manipulation.

Future research should examine which categories (negative, active; negative inactive, etc.) of emotions of Russel's model are most prevalent in public participation and which role mixed emotions might play. Citizens might be happy about the wind park, but afraid of the consequences when they are built too close to their houses (Devine-Wright, 2005, 2011; Jones & Eiser, 2009). Future research should examine the discrepancy between these emotions and how they influence willingness to participate, as well as how policymakers should respond to this. These findings could help to resolve the false assumptions that many practitioners hold about the roles of emotions in public participation (Devine-Wright, 2005).

A minor limitation is the use of an online participant pool, which decreases the amount of control during the experiment. To counter this, two questions were used to control that the participants paid attention and read the question thoroughly. Further, research indicates that there are no differences in the level of control between online and laboratory experimental conditions (Prissé & Jorrat, 2022). On the other hand, this design allows to carefully select a sample that is representative, thereby reflecting the demographic characteristics of the population (Prolific, 2022). This increases the generalizability of the findings to the Netherlands. Future research should investigate how generalizable these findings are to public participation regarding other sustainability issues.

Theoretical and Practical Implications

This research showed the considerable effect different categories of emotions have on willingness to participate. While previous research proposed the relevance of emotions for willingness to participate, this study is the first to recommend using a multidimensional approach of emotions. The circumplex model of affect is a validated model that has been shown to be widely used in the Social Sciences (Huelsman et al., 2003; Loizou & Karageorghis, 2015; Russell, 1980). This research adds to the body of knowledge by demonstrating that the circumplex model of affect (Russell, 1980) is applicable in the context of public participation regarding sustainable energy transition. Using this model, this research illustrates that not only the valence of emotions, but also the activation plays an important role in determining willingness to participate.

Based on these findings, this research primarily highlights an alternative path to increase citizens willingness to participate in sustainable energy projects: via positive; and negative, inactive emotions. This could inspire new means to motivate citizen to participate, for example by using emotional deliberation (Perlaviciute, 2018). Increasing willingness to participate should result in a more diverse participant pool, ultimately meeting the requirements for effective public participation. A more diverse pool of participants has two second order effects relevant for the wider society. Firstly, a more diverse sample is shown to result in a more effective public participation session and therefore in a higher acceptance for sustainability projects (Liu, 2021). This, in turn, could help to collectively mitigate climate change. Secondly, a more diverse pool enables less privileged and educated citizens to participate as well, thereby preventing elite capture (Perlaviciute, 2021). This enables the resources available to mitigate climate change to not be taken by elites, who can afford to develop rational arguments in their favor, but instead aims to develop solutions for those especially vulnerable to the consequences of climate change (IPCC, 2022).

Conclusion

Anthropogenic climate change already has devastating consequences for entire planet and humankind. To mitigate climate change, a sustainable energy transition is urgently needed. Public participation is an effective tool to reduce the local opposition that sustainable energy transition, like wind parks, are often met with. Unfortunately, people are often not motivated to participate. This study showed that by considering emotions during the public participation process, willingness to participate can be increased. Using the circumplex model of affect (Russell, 1980), the role of emotions as a multidimensional construct was investigated. Results add to the body of literature by demonstrating that both the valence and activation of emotions influence willingness to participate. Although previously neglected by policymakers, this study shows how more effective public participation processes can be designed. To conclude, we recommend that by encouraging participants to base their arguments during deliberation on positive; and negative, inactive emotions, policymakers benefit from citizens' higher willingness to participate. Thereby, the diversity of participants is increased, a crucial element for effective public participation.

Appendices
Appendix A
Tables

Table A2

Factor Loadings for Promax Rotated 4 Factor Solution for 17 Emotions Items (N = 195)

	Factor loading			
	1	2	3	4
Content (Positive Emotion)	0.64	-0.27	0.11	0.03
Calm (Positive Emotion)	0.49	-0.25	0.25	0.16
Enthusiastic (Positive Emotion)	0.89	-0.02	0.05	- 0.02
Happy (Positive Emotion)	0.91	0.06	0.01	- 0.04
Aroused (Positive Emotion)	0.55	0.33	0.14	-0.10
Alert (Positive Emotion)	-0.11	-0.21	0.77	-0.43
Excited (Positive Emotion)	0.88	0.05	0.16	-0.07
Relaxed (Positive Emotion)	0.63	-0.01	-0.33	0.10
Afraid (Negative, Active Emotion)	0.19	0.32	0.44	0.09
Annoyed (Negative, Active Emotion)	-0.22	0.47	0.21	0.26
Stressed (Negative, Active Emotion)	0.02	0.20	0.66	0.24
Upset (Negative, Active Emotion)	-0.02	0.83	0.11	-0.12
Nervous (Negative, Active Emotion)	0.08	-0.07	0.86	0.17
Sluggish (Negative, Inactive Emotion)	-0.02	-0.23	0.20	0.80
Sad (Negative, Inactive Emotion)	0.06	0.92	-0.05	-0.05
Bored (Negative, Inactive Emotion)	-0.05	-0.08	-0.13	0.78
Depressed (Negative, Inactive Emotion)	0.02	0.94	-0.16	-0.04

Note. Extraction Method: Principal Component Analysis. a. Rotation converged in 7 iterations.

Table A3*Correlations among Extracted Factors after Promax Rotation*

Factor	1	2	3	4
Factor 1	1.00			
Factor 2	-0.45	1.00		
Factor 3	-0.28	0.56	1.00	
Factor 4	-0.31	0.24	0.19	1.00

Table A5*Descriptive Statistics MANOVA*

	Conditions	<i>M</i>	<i>SD</i>	<i>N</i>
Positive Emotions	Rational Deliberation Condition	2.6	0.8	42
	Positive Emotions	3.2	0.9	45
	Negative, Active Emotions	2.3	1.0	45
	Negative, Inactive Emotions	2.5	1.0	45
	Total	2.7	1.0	177
Negative, Active Emotions	Rational Deliberation Condition	2.1	0.8	42
	Positive Emotions	2.3	0.8	45
	Negative, Active Emotions	2.7	0.9	45
	Negative, Inactive Emotions	2.2	0.8	45
	Total	2.3	0.9	177
Negative, Inactive Emotions	Rational Deliberation Condition	1.2	0.6	42
	Positive Emotions	1.4	0.7	45
	Negative, Active Emotions	1.8	0.8	45
	Negative, Inactive Emotions	1.6	0.8	45
	Total	1.5	0.7	177

Table A7*Descriptive Statistics Descriptives per Condition*

		<i>N</i>	<i>M</i>	<i>SD</i>
Control Condition	Positive Emotions	47	2.8	0.8
	Negative, Active Emotions	47	2.2	0.8
	Negative, Inactive Emotions	47	1.3	0.6
	Willingness to Participate	47	2.7	1.1
Positive Emotions Condition	Positive Emotions	49	3.2	1.0
	Negative, Active Emotions	49	2.3	0.8
	Negative, Inactive Emotions	49	1.4	0.7
	Willingness to Participate	49	2.6	1.2
Negative, Active Emotions Condition	Positive Emotions	50	2.2	1.0
	Negative, Active Emotions	50	2.7	1.0
	Negative, Inactive Emotions	50	1.8	0.8
	Willingness to Participate	50	2.3	1.1
Negative, Inactive Emotions Condition	Positive Emotions	49	2.5	1.0
	Negative, Active Emotions	49	2.3	0.8
	Negative, Inactive Emotions	49	1.6	0.9
	Willingness to Participate	49	2.4	1.2

Appendix B

Manipulation Rational Deliberation

Rational condition:

Please read the information below carefully. You will be asked questions about this later. Imagine the following scenario. To comply with the Paris Climate Agreement, your municipality wants to be carbon neutral by 2050. Thus, your municipality aims for a sustainable energy transition from fossil fuels and natural gas to renewable energy sources.

Your municipality is currently investigating different options for implementing several wind parks in the area. Various funding options and structures are explored.

An option would be to organize a local campaign to motivate people in your neighborhood to take part in the decision-making process, as they are directly affected by the wind park. This campaign would consist of an information letter send to all households in your neighborhood, as well as neighborhood meetings. In the letter and during the meetings, you and your neighbors would receive information about wind parks, their costs and benefits, as well as their implementation process. Further, you and your neighbors will have the chance to ask questions and discuss their perspective on wind parks, based on your knowledge and factual information. During the meetings, a representative of the wind energy company (Green Energy Holding) will be present, for further discussions.

Next, please provide two arguments, **based on what you know about wind parks** (factual information), that you would like to discuss during a neighborhood meeting

Manipulation Emotional Deliberation

Positive emotions condition

Please read the information below carefully. You will be asked questions about this later. Imagine the following scenario. To comply with the Paris Climate Agreement, your municipality wants to be carbon neutral by 2050. Thus, your municipality aims for a sustainable energy transition from fossil fuels and natural gas to renewable energy sources.

Luckily, the Netherlands have been rapidly implementing renewable energy in the past years, increasing around 40% in 2020 compared to the year before. As you can see on the pictures below, many of your neighbors are quite enthusiastic, satisfied and happy about this development. This is because renewable energy sources like wind parks produce a lot of energy, save emissions, and secures many jobs. Therefore, your municipality is planning to implement a wind park approximately 2000 meters from your neighborhood.

Your municipality is currently investigating different options for implementing several wind parks in the area. Various funding options and structures are explored.

One option would be to organize a local campaign to motivate people in your neighborhood to take part in the decision-making process, as they are directly affected by the wind park. This campaign would consist of an information letter send to all households in your neighborhood, as well as neighborhood meetings. In the letter and during the meetings, you and your neighbors would receive information about wind parks, the costs and benefits, as well as the implementation process. Further, you and your neighbors will have the chance to ask questions and discuss their perspective on wind parks, based on how you feel about this. During the meetings, a representative of the wind energy company (Green Energy Holding) will be present, for further discussions.

Next, please look at the following pictures of showing how your neighbors feel about the implementation of a wind park in your neighborhood. We will ask you questions about it.



Please rank the following emotions to the extent in which **you feel them** if you think about a wind park being implemented in your neighborhood:

Rank order

Aroused

Calm

Happy

Enthusiastic

Content

Alert

Relaxed

Excited

Next, please provide two arguments, **based on how you feel about the wind park**, that you would like to discuss during a neighborhood meeting:

Negative, active emotions condition

Please read the information below carefully. You will be asked questions about this later. Imagine the following scenario. To comply with the Paris Climate Agreement, your municipality wants to be carbon neutral by 2050. Thus, your municipality aims for a sustainable energy transition from fossil fuels and natural gas to renewable energy sources.

Unfortunately, as you can see in the pictures below, many of your neighbors are alarmed or worried by, or feel distressed or frustrated regarding the implementation of wind parks in the Netherlands. They fear that wind parks are not efficient and reliable. They feel that wind parks change the landscape within the neighborhood. Regardless, your municipality is planning to implement a wind park approximately 2000 meters from your Neighborhood.

Your municipality is currently investigating different options for implementing several wind parks in the area. Various funding options and structures are explored.

One option would be to organize a local campaign to motivate people in your neighborhood to take part in the decision-making process, as they are directly affected by the wind park. This campaign would consist of an information letter send to all households in your neighborhood, as well as neighborhood meetings. In the letter and during the meetings, you and your neighbors would receive information about wind parks, the costs and benefits, as well as the implementation process. Further, you and your neighbors will have the chance to ask questions and discuss their perspective on wind parks, based on how you feel about this. During the meetings, a representative of the wind energy company (Green Energy Holding) will be present, for further discussions.

Next, please look at the following pictures of showing how your neighbors feel about the implementation of a wind park in your neighborhood. We will ask you questions about it. Next, please look at the following pictures of showing how your neighbors feel about the implementation of a wind park in your neighborhood. We will ask you questions about it.





Please rank the following emotions to the extent in which **you feel them** if you think about a wind park being implemented in your neighborhood:

Rank order

Annoyed

Afraid

Stressed

Nervous

Upset

Next, please provide two arguments, **based on how you feel about the wind park**, that you would like to discuss during a neighborhood meeting:

Negative, inactive emotions condition

Please read the information below carefully. You will be asked questions about this later. Imagine the following scenario. To comply with the Paris Climate Agreement, your municipality wants to be carbon neutral by 2050. Thus, your municipality aims for a sustainable energy transition from fossil fuels and natural gas to renewable energy sources.

Unfortunately, as you can see on the pictures below, many of your neighbors feel unhappy, hopeless regarding the implementation of wind parks in the Netherlands. They feel that their concerns are not considered, regardless of public participation. Further, they fear that wind parks are neither efficient nor reliable and change the landscape within the neighborhood. Regardless, your municipality is planning to implement a wind park approximately 2000 meters from your Neighborhood.

Your municipality is currently investigating different options for implementing several wind parks in the area. Various funding options and structures are explored.

One option would be to organize a local campaign to motivate people in your neighborhood to take part in the decision-making process, as they are directly affected by the wind park. This campaign would consist of an information letter send to all households in your neighborhood, as well as neighborhood meetings. In the letter and during the meetings, you and your neighbors would receive information about wind parks, the costs and benefits, as well as the implementation process. Further, you and your neighbors will have the chance to ask questions and discuss their perspective on wind parks, based on how you feel about this. During the meetings, a representative of the wind energy company (Green Energy Holding) will be present, for further discussions.

Next, please look at the following pictures of showing how your neighbors feel about the implementation of a wind park in your neighborhood. We will ask you questions about it.





Please rank the following emotions to the extent in which **you feel them** if you think about a wind park being implemented in your neighborhood:

Rank order

Sad

Depressed

Sluggish

Bored

Please provide two arguments, **based on how you feel about the wind park**, that you would like to discuss during a neighborhood meeting:

Appendix C

Measurement Emotions

Emotions

Read each item of the following scale. When answering the questions, consider how you feel right now, that is in this current moment.

If I think about ...

Participating in neighborhood meetings based on my knowledge and factual information,
OR

Participating in neighborhood meetings based on how I feel about the wind park,
I feel:

	N	Mean	SD	Not at all	Slightly	Somewhat	Moderately	Extremely
... sluggish	195	2.1	1.1	37.4	30.3	21.5	9.2	1.5
... content	195	2.9	1.1	16.9	15.9	31.3	33.8	2.1
... afraid	195	1.7	0.9	58.5	24.1	12.8	3.6	1.0
... calm	195	3.4	1.2	8.2	13.3	26.7	39.0	12.8
... annoyed	195	2.4	1.3	33.3	25.1	18.5	15.9	7.2
... enthusiastic	195	2.7	1.3	22.6	18.5	22.6	23.1	9.7
... sad	195	1.5	0.9	68.7	16.9	8.2	4.6	1.5
... happy	195	2.5	1.2	27.2	22.6	25.1	19.5	5.6
... stressed	195	2.2	1.2	34.4	31.3	17.4	13.3	3.6
... aroused	195	1.8	1.0	53.8	22.6	16.4	6.2	1.0
... bored	195	2.1	1.1	36.9	34.4	14.9	10.8	3.1
... alert	195	2.8	1.2	16.4	24.6	27.7	26.7	4.6
... nervous	195	2.1	1.0	34.4	36.4	17.9	9.2	2.1
... excited	195	2.4	1.3	34.4	19.5	24.1	17.4	4.6
... upset	195	1.6	1.0	63.6	21.0	7.2	6.7	1.5
... relaxed	195	2.7	1.2	19.0	24.6	27.2	22.6	6.7
... depressed	195	1.4	0.8	74.9	14.4	8.2	1.5	1.0

Note. N, Means and SDs of emotions. Ratings of emotions %

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