The influence of risk perception, social norm, and efficacy beliefs on people's intention to demand citizen assemblies to tackle the climate crisis

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Abstract

The purpose of this study was to find out how the psychological factors perceived severity, perceived susceptibility, self-efficacy, response efficacy and social norm influence people's intention to demand the government to implement citizen assemblies (CAs) that might contribute to slowing down negative effects due to the climate crisis. The hypotheses were that with the increase of each of the five factors, the dependent variable intention would increase. As a basis for the variables, the Elaborative Parallel Process Model (EPPM) and the Theory of Reasoned Action (TRA) were considered. To test the hypotheses, an online questionnaire with 21 items was filled by 266 respondents. The results confirmed all five hypotheses. Additionally, an interaction effect was found between risk perception (severity and susceptibility combined) and efficacy beliefs (response efficacy and self-efficacy combined). This implied that the higher people's efficacy beliefs regarding the protective behaviour are, the higher are the effects of their risk perception on the intention to demand CAs. Thus, it could be concluded that all five factor influence people to demand the government to implement CAs.

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1 Introduction

At least 97 percent of climate scientists have come to the agreement that global warming trends, which have been observed during the last century, are "very likely" caused by "human activities" (NASA, https://climate.nasa.gov/scientific-consensus/). Moreover, there is a 25 % chance that an existential warming threat could result from the 2.2 trillion tons of CO2 in the Earth's atmosphere (Xu & Ramanathan, 2017).

Like other governments, each year, the Dutch government supports the fossil fuel industry with 7.6 billion euros (Van Der Burg & Runkel, 2017). This resulted in a lawsuit where the Dutch government was opposed by the non-governmental organisation Urgenda Foundation, which endeavours to accelerate the transition of the Netherlands towards renewable energies through litigation (amongst other ways) and has obtained awareness worldwide. In 2015, the District Court of The Hague concluded that the Dutch government executed an unlawful and negligent act (Verschuuren, 2019). The accusation was that the government only tried to reduce targets which it was forced upon by the European Union and therefore broke the Dutch law of providing due care for its citizens. The outcome was a command for the state to enhance its goal for reducing greenhouse gas emissions by a minimum of 25% by 2020, compared to levels from 1990 (Van Der Burg & Runkel, 2017). Another court, the Court of Appeals, confirmed the sentence of the District Court of the Hague (Leijten, 2019). Their inference was that the Dutch government was not acting enough to cope with climate change in regard to two human rights related requirements as stated in the European Convention on Human Rights ('ECHR'): The 'Right to life' (Article 2) and the 'Right to respect for private and family life' (Article 8) (Leijten, 2019). Thus, according to Leijten (2019), the victory of the Urgenda case highlights the urgency for faster climate action.

In a British study, where 23 members of the UK parliament were interviewed, it was found that politicians are aware of the necessity to act on climate change (Willis, 2018). However, the researchers came across three major arguments why it is difficult for the MPs to "make the case for it". First, the parliament sees climate change as an 'outsider' issue, which is not prevailing in the political agenda. According to one of the interviewees, a politician who actively fights for the climate change act can be viewed as a "freak" or "obsessive". Due to these reactions treating the topic as an 'outsider' issue, many MPs said that they cautiously consider

how to approach it (Willis, 2018). Thus, there can be a low willingness of some MPs to advocate it.

Second, politicians' feelings are that there is a small demand to respond to climate change. On the one hand, their constituents seem rather disinterested, and on the other hand, they do not know yet how to get the importance of climate action into voters' everyday lives. Third, MPs stated that their political routine is based on short term requirements. Hence, from a procedural, practical and psychological perspective, it is not straightforward for them to act on climate change (Willis, 2018). This shows that it can be difficult for politicians to act fast against climate change.

The researchers make proposals for an improved political mandate for climate action (Willis, 2018). They recommend that both local areas and government departments are responsible for reaching the climate goals, requiring clear task divisions. One way to achieve this could be through using more deliberative processes, such as **Citizens' Assemblies (CAs)**. This could enable experts, politicians and the public to come together to deliberate and consider scientific facts. Based on those, they can assent with another on methods to meet targets, which are considering economic and social consequences. According to the authors, it is necessary that politicians facilitate citizens to engage and help, instead of expecting passive approval from the voters.

One of the most effective ways to get the government to implement CAs is by demanding them (e.g. through demonstrating). Before people would demand these, they need to perceive the risk (in this case of the climate crisis) as high enough (Martell, Meyer, Witte, 2002, p.). Moreover, they need to feel that it is worth it to enact in a suggested behaviour (e.g. in demanding CAs). This depends on the extent of their Efficacy Beliefs (Martell, Meyer, Witte, 2002). Another factor for the uptake of a behaviour can be people's Social norm. Finally, whether people enact in a certain behaviour depends on their intention or willingness to do so (Ajzen, 1991, p. 181) derived from (Armitage & Conner, 2001).

Therefore, the **Research Question** of this paper is the following: To what extent do risk perception, efficacy beliefs and social norm influence people's intention to demand citizen assemblies (to tackle the climate crisis)? The variables will be explained in depth in the next chapter.

2 Theoretical Framework

2.1. Citizens' Assemblies

As recommended by Willis (2018), a potential solution to slowing down the climate crisis might be Citizen's assemblies (CAs). These are institutions in which citizens deliberate on public policy or law (Pal, 2012). The members of a CA are selected via sortition, a procedure relying on demographic quotas where citizens get randomly selected from the population. This form of stratified sampling is used to guarantee that participants of the CA are representing the whole population in terms of gender, age, location of habitat, etc. CAs have also been called 'minipublics' as they are supposed to mirror the deliberate process of a country's entire population (Pal, 2012). During a CA, the participants first receive information about the issue from experts (while allowing them to cross-examine experts) and deliberate face to face, enabling them to make considered and informed judgements. CAs had success in solving problematic longenduring discussions e.g. in Ireland, the UK, Poland, Iceland, Canada and Australia. Especially in issues of "democratic fatigue and societal polarisation" (Pal, 2012). |

2.1.1. Example of a Citizens' Assembly

In 2012, a Constitutional Convention was authorized by the Irish parliament (Breckon, Hopkins, & Rickey, 2019). Citizens were randomly selected to take part in this assembly. Moreover, politicians, an independent chair, and the Northern Ireland Assembly were present. The tasks were given by the Irish legislature and entailed, amongst others, the topics same-sex marriage, the role of women in politics, and electoral reform. A considerable outcome was that the assembly members decided to suggest the modification of the Irish Constitution, which led to the legalisation of same-sex marriage. This was voted for in a referendum by the citizens of Ireland in May 2015. Thus, this CA's recommendation was entirely approved (Breckon et al., 2019).

2.1.2. Reasons for Citizens' Assemblies

According to Harris, Carney, and Farrell (2013), people have become increasingly disappointed with conventional ways of representational democracy. Supporting this claim, a Eurobarometer poll disclosed that from all citizens of the EU, 32 per cent have trust in their government. Moreover, only 33 per cent have reported to have confidence in the parliament of their country (Harris et al., 2013). Another poll in the UK revealed that only 26 percent of the citizens had trust that the government gives honest statistical presentations. In contrast, solely 10 per cent distrusted the Office for National Statistics to deliver accurate information (Breckon, Hopkins, & Rickey, 2019).

According to Berry (2019), a reason why increasing public participation can be beneficial is that it can enhance the quality of decisions, since politicians receive a supply of further, exclusive information about local circumstances (López Cerezo and García 1996; Newig 2007; Yearley et al. 2003). These regional insights are essential when it comes to realising global obligations. For instance, the Sustainable Development Goals are on an international agenda, however, the policies and its applications need to be handled on national, regional and local levels. The globally decided goals need to be implementable in the real world (Berry, 2019; derived from Fenton and Gustafsson, 2017). Thus, to prevent top-down translation, recommendations from citizens about local preferences and backgrounds can be essential (Berry, 2019; derived from Fox and Stoett, 2016).

2.2. Behaviour theory 1 - EPPM Model

The *EPPM model* will be used in this report to describe what makes people enact in the suggested self-protective behaviour of demanding the government to implement citizen assemblies. In general, it explains several behaviour pathways that people take when confronted with a risk/threat message (e.g. the message of the threat of suffering from negative effects due to the climate crisis, as used in this paper's study) (Martell, Meyer, Witte, 2002, p. 23). According to the EPPM model, the pathways depend on two main evaluations: Threat appraisal and efficacy appraisal. These occur after each other and are influenced by four different psychological factors: Severity, susceptibility, self-efficacy, and response efficacy. Therefore, a person can act in several ways based on the following two evaluations (Martell, Meyer, Witte, 2002, p. 20):

First comes the *Threat appraisal*, during which people evaluate two different factors: The severity of and their susceptibility towards the threat. **Severity** is defined as the extent to which someone believes that the threat is magnificent or significant (e.g., "The climate crisis is extremely harmful") (Martell, Meyer, Witte, 2002, p. 20). **Susceptibility** refers to a person's perceived vulnerability to negative consequences due to the risk (e.g., I'm at risk of negative consequences due to the climate crisis")". If the threat is perceived as low, no further processing of the risk message takes place. A high threat perception leads the person to assess the efficacy of the suggested behaviour (Martell, Meyer, Witte, 2002, p. 20).

Second, *Efficacy appraisal* is influenced by two beliefs: Self-efficacy, and response efficacy. **Self-efficacy** is someone's beliefs about being able to execute the suggested behaviour (e.g., "I am able to demand the government to implement CAs") (Martell, Meyer, Witte, 2002, p. 20). **Response efficacy** is someone's perception about the usefulness of the recommended responses in dealing with the threat (e.g., "Demanding citizen assemblies can decrease my chances of suffering from negative effects due to the climate crisis."). In case of low efficacy beliefs, one is likely to respond with fear control and tries to remove fear through reactance, or by denying or avoiding it (p. 594). If both efficacy beliefs are high, people are inclined to use danger control. Danger control means that people seek for methods to get rid of the threat, e.g. by changing their behaviour (to the one suggested) (Martell, Meyer, Witte, 2002, p. 29).

2.3. The Theory of Reasoned Action (TRA)

In this study, two more psychological factors will be referred to, which are both based on the *Theory of Reasoned Action (TRA)*. The first variable is **Social norm**, which is defined as a person's beliefs regarding the opinions of others about the recommended behaviour, as well as the incentive to complying with these people. The second factor, **Intention**, gives indications for the influencing factors that motivate a behaviour and the extent of people's willingness to try this behaviour. Moreover, it entails the amount of effort someone is willing to put into the behavioural performance (Ajzen, 1991, p. 181) derived from (Armitage & Conner, 2001).

2.4. Goal, research question and hypotheses

The two theories described above form the basis for the measurement scale of this research. The **Dependent Variable (DV)** is the intention to join or support a movement that demands the government to implement citizen assemblies. The **Independent Variables (IVs)** are risk perception, susceptibility, response efficacy, self-efficacy and social norm. The **Goal** of the current study is to empirically test which influence the psychological variables perceived severity, perceived susceptibility, response efficacy, self-efficacy and social norm have on the intention to join or support a movement that demands the government to implement citizen assemblies which might slow down the negative effects of the climate crisis. In order to test this, the following **Hypotheses** have been defined:

H1 High levels of perceived severity regarding the climate crisis lead to higher levels of the intention to demand the government to implement citizen assemblies.

H2 High levels of perceived susceptibility regarding the climate crisis lead to higher levels of the intention to demand the government to implement citizen assemblies.

H3 High levels of response efficacy regarding the demanding of citizen assemblies lead to higher levels of the intention to demand the government to implement citizen assemblies.

H4 High levels of self-efficacy regarding the demanding of citizen assemblies lead to higher levels of the intention to demand the government to implement citizen assemblies.

H5 High levels of social norm regarding the demanding of citizen assemblies lead to higher levels of the intention to demand the government to implement citizen assemblies.



Figure 1. Model of expected influences on the behaviour intention

3 Methods

3.1. Participants and Design

A questionnaire survey design was employed, including five independent variables (perceived severity, perceived susceptibility, response efficacy, self-efficacy, social norm) and one dependent variable (intention). In total, 266 people participated in the survey. They have been recruited through both, the SONA system of the University of Twente and through convenience sampling. On average, the participants were between 18 and 24 years old, with a range from 'under 18' to '75 – 84'. The average respondent was a bachelor student.

3.2. Procedure

For this research, an online survey was conducted via Qualtrics (Appendix 1). To get to the online survey, participants had to open a link on their computer or mobile phone. First, they had to read an informed consent, telling them about their anonymity and right to withdraw throughout the whole survey process. Through accepting the form, they gave consent for the use of their data and confirmed to be above 18 years old. All results of respondents aged below 18 were excluded. In the end of the questionnaire, participants got informed about the opportunity to send an e-mail to the principal investigator to ask questions or give comments.

First, respondents were presented with some information about the climate crisis and about citizen assemblies. Before the full questionnaire started, they had to answer three questions to test whether they read the information in the beginning. Then, participants were asked to fill in a survey. At the end of the survey, respondents were asked to indicate some demographics (age, gender, educational background).

3.3. Materials

For this study, the only material used was an online questionnaire, based on two other surveys (Witte, Mckeon, Cameron, Berkowitz, & Witte, 1995 and Muskavage, 2016). For 202 respondents, the questionnaire was in English and for 64 participants, it was translated to German. The survey consisted of 24 questions (including three test questions after introduction text), which were all phrased in form of statements. Each question was measured on a seven-point Likert scale, with options from *strongly disagree* (1) to *strongly agree* (7). The survey measured seven different subscales:

3.4. Data Analysis

In order to analyse the data, the statistical program SPSS has been used. First, the dataset was examined, whereupon responses of 55 people had to be removed as they did not complete the whole questionnaire. Thus, for the data analysis, 211 respondents could be considered (Female: N = 125, Male: N = 85, Genderqueer: N = 2, No gender given: N = 1). Before statistical analyses could be conducted, four negatively formulated items had to be recoded.

(1) Topic Understanding Questions. In the beginning of the questionnaire, three questions were asked to test people's understanding of the information text in the beginning, which was about the climate crisis and citizen assemblies. These questions asked people whether they understood what citizen assemblies are about, whether they knew enough about the climate crisis to have an opinion about it and whether they understood why it could be difficult for politicians to act fast when it comes to the climate crisis.

(2) Perceived Severity. Perceived severity was measured using a 3-item scale.Respondents were asked to indicate how severe they believe the climate crisis is, to which extent

thoughts about the climate crisis scare them, and how much they feel a moral duty to do something about it. This scale yielded rather poor results (*Cronbach's alpha* = .67).

(3) Perceived Susceptibility. Susceptibility was measured using a three-item scale (*Cronbach's alpha* = .60). Participants were asked to indicate how likely they see the climate crisis having negative consequences for them/ their country, and how worried they are about it.

(4) Response Efficacy. The level of response efficacy was measured using a four-item scale (*Cronbach's alpha* = .70), measuring the extent to which respondents thought that citizen assemblies can be effective in slowing down/stopping the climate crisis and the likelihood that the public can demand the government to implement citizen assemblies.

(5) Self-Efficacy. In order to measure Self-Efficacy, respondents were asked to indicate to what extent they thought they could, alone or in a group, demand the government to implement citizen assemblies, and whether they think that as a result, they would be less likely to suffer from negative effects due to the climate crisis. Self-Efficacy was measured using a very unreliable three-item scale (*Cronbach's alpha* = .02). When looking at the items again, it was found that one of the items ("I, on my own, am not able to demand the government to implement citizen assemblies.") had a slightly different meaning in the English version compared to the German version. This made all participants in the German version answer the item completely the other way around than the participants in the English version. When all the German version participants' data were deleted for that one specific item, the *Cronbach's Alpha* of Self-Efficacy rose towards .28, which is still very low. Since now for the contradictory item only 47 less participants were considered, compared to all other items, it was decided to delete this item. This resulted in a *Cronbach's Alpha* of .46 for the remaining two Self-Efficacy items.

(6) Social norm. The level of social norm was measured by four items (*Cronbach's alpha* = .53). Participants were asked to which extent they want to do what their close friends (/ people like them/ people whose opinion they value/ people they respect and admire) would do when it comes to demanding citizen assemblies.

(7) *Intention.* The motivation of respondents to demand or support the demanding of citizen assemblies was measured using a 4-item scale. Respondents were asked how likely they

were to inform themselves about, support, or share their knowledge about organizations that demand the government to implement citizen assemblies. This scale was very reliable (*Cronbach's alpha* = .87).

4 Results

The results section has been divided into three parts: First, the original analysis, using the original dataset. The second part contains construct improvements with analyses resulting in minor modifications related to the reliability issues of some items. Finally, in part three, exploratory analysis has been conducted.

4.1. Results Part 1: Analysis of Original Data

4.1.1. Descriptive statistics

As illustrated in Table 1, on average, participants had a somewhat high perceived severity and high response efficacy beliefs. In general, the respondents were rather neutral regarding their self-efficacy and social norm beliefs, as well as in their intention to demand or support organisations that demand citizen assemblies.

4.1.2. Correlation Analysis

A Pearson's correlation was run to determine the relationships amongst all variables, (the IVs and the DV) as well as the demographic factors (Gender, Education, Age) (see Table 1). All independent variables correlated positively and statistically significantly with the DV intention. The first IV, perceived severity, had strong correlations with the DV intention (r = .55; N = 211; p < .001). Second, the IV susceptibility significantly correlated with the DV (r = .45; N = 211; p < .001). Next, response efficacy had a strong correlation with intention (r = .55; N = 211; p < .001). Fourth, the IV self-efficacy correlated significantly and strongly with the DV intention (r = .56; N = 211; p < .001). Finally, social norm had a strong correlation with the DV (r = .57; N = 211; p < .001).

Regarding the participants' age, there is only one significant positive correlation between age and education (r = .33; N = 208; p < .001). The education of respondents is negatively correlated with response efficacy and social norm. Finally, there are negative correlations between gender and all independent variables, as well as with the dependent variable.

Variables	М	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Perceived Severity	5.69	1.07	1								
2. Perceived Susceptibility		1.07	.75***	1							
3. Response Efficacy	4.43	.95	.42***	.38***	1						
4. Self- Efficacy	4.28	1.11	.30***	.31***	.68***	1					
5. Social norm	4.01	.87	.37***	.28***	.58***	.51***	1				
6. Intention	4.66	1.35	.55***	.45***	.58***	.56***	.57**	**1			
7. Gender	1.41	.51	31**	22**	23**	17*	19*	*28*	*1		
8. Education	19.31	2.79	13	09	17*	.04	16*	13	.11	1	
9. Age	21.52	1.18	05	07	01	.09	08	.01	01	.33**	* 1

Table 1. Means (M), Standard Deviations (SD), and Pearson Correlations between all Variables ^a

*** p < .001, ** p < .01; * p < .05; Scale categories: (1-7)

^aN = 211 (except: Gender: N = 210, Education: N = 208)

4.1.3. Multiple Regression Analysis

A multiple regression was run to predict the DV intention from the IVs Perceived Severity, Susceptibility, Response Efficacy, Self-Efficacy and Social norm (see Table 2). These variables statistically significantly predicted Intention, F(5, 205) = 46.956, p < .001, $R^2 = .534$. The first IV Perceived Severity had a significant relation with the DV Intention ($\beta = .31$; t = 4.14; p < .001). This finding showed that the higher Perceived Severity was, the higher was Intention, which supported hypothesis 1.

The second hypothesis supposed that the higher peoples' perceived Susceptibility, the higher would be their Intention. However, there was no significant relation between Susceptibility and Intention ($\beta = .03$; t = 0.40; p > .05). This was to be expected since Susceptibility had a strong correlation of .75 with Severity. When the regression analysis was run again with all variables except Severity (see Model 2 in Table 2), it turned out that the variable was a significant predictor of the DV ($\beta = .24$; t = 4.44; p > .001). Therefore, the second hypotheses could be accepted as well.

Third, the analysis showed no significant relation between Response Efficacy and Intention ($\beta = .19$; t = 2.81; p < .05). Again, this could be expected as Response Efficacy correlated strongly with Self-Efficacy (r = .68). After the regression analysis was run again with all variables except Self-Efficacy (see Model 3 in Table 2), it turned out that Response Efficacy was a significant predictor of the DV ($\beta = .27$; t = 4.28; p > .001). This led to the approval of hypothesis 3.

The fourth hypothesis suggested that, the higher peoples' self-efficacy, the higher would be their intention. There was a significant relation found between self-efficacy and intention ($\beta = .18$; t = 3.06; p < .001), thus the hypothesis 4 could be accepted. Finally, social norm significantly related with intention ($\beta = .26$; t = 4.39; p < .001), thus the IV added statistically significantly to the prediction and hypothesis 5 was supported.

Model	Variables	β	t	р
$1 (R^2 = .53)$	(Constant)		-3.81	.00
	Perceived Severity	.32	4.25	.00
	Social norm	.24	4.02	.00
	Response Efficacy	.13	1.80	.07
	Self-Efficacy	.24	3.61	.00
	Perceived Susceptibility	.02	0.31	.75
$2 (R^2 = .49)$	Perceived Susceptibility	.24	4.44	.00
	Response Efficacy	.17	2.27	.02
	Social norm	.29	4.68	.00
	Self-Efficacy	.22	3.16	.00
$3 (R^2 = .50)$	Perceived Severity	.30	3.87	.00
````	Perceived Susceptibility	.05	.65	.52
	Response Efficacy	.27	4.28	.00
	Social norm	.29	4.70	.00

Table 2. Standardised Coefficients after Regression Analysis^a

a. Dependent Variable: Intention

#### 4.2. Results Part 2: Minor Modifications related to Reliability Issues

#### Combining Perceived Susceptibility and Perceived Severity to Risk Perception

Due to the just acceptable internal consistency of the variable Perceived Susceptibility (*Cronbach's Alpha* = .60), the internal consistency test has been conducted again, this time combining the items of Perceived Susceptibility and Perceived Severity, since both constructs are part of Risk Perception. The internal consistency of the new combined variable increased considerably to a *Cronbach's Alpha* of .81.

## **Combining Self-Efficacy and Response Efficacy to Efficacy Beliefs**

Due to the internal consistency of the variable Self-Efficacy still being very low (*Cronbach's* Alpha = .46), the internal consistency test has been conducted again, this time combining the items of Self-Efficacy and Response Efficacy (*Cronbach's Alpha* = .70), since both constructs are part of Efficacy Beliefs. The internal consistency of the new combined variable increased to a *Cronbach's Alpha* of .79.

## 4.3. Results Part 3: Additional Analyses

#### 4.3.1. Regression Analysis with Interaction between Risk Perception and Efficacy Beliefs

According to Witte and Allen (2000), Risk Perception and Efficacy Beliefs interact with each other (see Theoretical Framework). Therefore, it was tested whether an interaction effect could be found between the new variable Risk Perception and Efficacy beliefs. The assumption for this analysis was the following: The interaction between Risk Perception and Efficacy beliefs leads to a higher 'Intention to demand CAs' than both IVs separately.

Model	Variables	ß	t	р
1	(Constant)		7.97	.00
	Social norm	.26	4.30	.00
	Centred Risk Perception	.31	5.71	.00
	Centred Efficacy Beliefs	.33	5.27	.00
2	(Constant)		7.99	.00
	Social norm	.26	4.34	.00
	Centred Risk Perception	.36	6.48	.00
	Centred Efficacy Beliefs	.35	5.62	.00
	Interaction RP EB centred	.16	2.98	.00

Table 3. Standardised Coefficients after Regression Analysis with Interaction^a

a. Dependent Variable: Intention

## 4.3.2. Moderator Analysis

A moderator analysis was used to determine whether the relationship between risk perception and intention depended on (was moderated by) the value of a efficacy beliefs. The model was significant and explained 50 per cent of what intention was comprised of (F = 67.80;  $R^2 = .50$ ; p < .001). The assumption was that if a person's perceived Efficacy Beliefs were high, that would make the effect of Risk Perception on intention higher. This analysis resulted in a significant interaction effect of Efficacy Beliefs on Risk Perception ( $\beta = .17$ ; t = 2.93; p < .01). Thus, as Risk Perception increased, for people with high Efficacy Beliefs, the Intention increased. With increased Efficacy Beliefs, the effects of Risk Perception on Intention increased more in the 50th percentile and even more in the 84th percentile (see graph).



#### 4.4. Results Part 4: Exploratory Analyses for Construct Improvement

This analysis has been conducted to find out why the internal reliability values of some items of the original data set have been so low. The assumption was that the allocation of items to the variables could be adjusted. To investigate this, a factor analysis has been conducted. Second, a multiple regression analysis has been conducted for the new factors.

#### 4.4.1. Factor Analysis

Since the internal consistency values of Self-Efficacy, but also of other variables (especially Social norm) were still low (see section 3.2.2. Measures), a factor analysis has been conducted in order to find out whether some items fitted together better with items measuring a different factor than the one the item was initially supposed to measure. First, the correlations between items

were scanned. Two items ("When it comes to demanding citizen assemblies, I want to do what my close friends think I should do.", and "The majority of people who are similar to me, are not willing to demand the government to implement citizen assemblies (recoded).") only had correlations below .3 with other items and were therefore excluded from the factor analysis.

For the remaining 18 items, the next step was the conduction of a *principal component analysis* (*PCA*), using oblique rotation (direct oblimin). The sample adequacy was verified by the Kaiser-Meyer-Olkin measure, KMO = .88, which Field (2009) refers to as 'great'. Moreover, for each item, the KMO value was > .83, which is higher than the level of acceptability (Field, 2009). Additionally, the items correlated sufficiently high with each other. This was indicated by the test of sphericity  $x^2$  (153) = 1720.52, p < .001 by Bartlett. Finally, for each component, eigenvalues were obtained. 62% of the variance was explained by the four components with eigenvalues above 1 (Kaiser's criterion). The factor loadings, eigenvalues and percentags of variances can be seen in the tables in the appendix.

#### New factors

The items clustering on the same factors implied that component 1 represented the Chance of Demand and Implementation (Cronbach's Alpha = .78), component 2 Risk Perception of the climate crisis (Cronbach's Alpha = .77), component 3 Group Efficacy (Cronbach's Alpha = .77), and component 4 the intention to act (Cronbach's Alpha = .87).

#### 4.4.2. Additional Multiple Regression Analysis

Again, a multiple regression was run to predict the DV Intention to Act from the new factors Risk Perception, Group Efficacy and Chance of Demand and Implementation (see Table 6). These variables statistically significantly predicted Intention to Act, F(4, 206) = 70.316, p < .001,  $R^2 = .505$ . The three variables Risk Perception, Group Efficacy and Chance of Demand and Implementation added statistically significantly to the prediction, p < .01.

The first IV Risk Perception had a significant relation with the DV Intention to Act ( $\beta$  = .30; *t* = 5.59; *p* < .001). This finding shows that the higher Risk Perception was, the higher was the Intention to Act. Second, the analysis showed a significant relation between Group Efficacy and Intention to Act ( $\beta$  = .21; *t* = 3.57; *p* < .001), which indicated that the higher Group Efficacy was, the higher was Intention to Act. Finally, Chance of Demand and Implementation significantly related with intention to Act ( $\beta$  = .38; *t* = 6.33; *p* < .001), thus the IV added statistically significantly to the prediction.

Model	Variables	ß	t	р
1	(Constant)		-1.12	.27
	Chance of demand and implementation	.38	6.33	.00
	Risk Perception	.30	5.59	.00
	Group Efficacy	.21	3.57	.00

Table 4. Regression Analysis^a of New Factors

a. Dependent Variable: Intention to

## **5** Conclusion

The purpose of this study was to test which influences the psychological variables perceived severity, perceived susceptibility, response efficacy, self-efficacy and social norm have on the intention to join or support a movement that demands the government to implement citizen assemblies which might slow down the negative effects of the climate crisis.

It was found that four out of the five variables statistically significantly predicted people's Intention to demand CAs. These variables were perceived severity, response efficacy, selfefficacy and social norm. Only the independent variable Susceptibility was not a significant predictor of intention. Therefore, the data provided enough evidence to accept the hypotheses 1, 3, 4 and 5, stating that the higher perceived severity, response efficacy, self-efficacy and social norm, the higher the intention to demand citizen assemblies. The second hypothesis, referring to high levels of susceptibility leading to higher levels in the intention to demand CAs, had to be rejected.

Additionally, four new variables have been determined: the chance of people demanding CAs and the likelihood of their implementation, people's risk perception of the climate crisis, people's group efficacy beliefs in regard to the suggested behaviour and the intention to act by demanding CAs.

#### **6** Discussion

#### **6.1.** Implications of the original results

#### Perceived Severity

In this study, the highest predictor of intention was perceived severity. This implies that the more people perceive the risk of negative consequences due to the climate crisis as being severe, the more inclined they are to demand citizen assemblies.

## Social Norm

The second highest predictor was respondents' belief about what their friends, family and people they admire would think of them demanding CAs. According to this, people are more likely to

demand citizen assemblies if they feel like it is supported or appreciated by friends and/or done by people they like/admire.

Roser-Renouf, Maibach, Leiserowitz, and Zhao, (2014) also investigated the effect of people's social environment on their intention to engage in climate activism behaviour. They found that discussions with others and one's own perception about personal social influence was the most effective direct predictor of climate activism as it is a mediator for the effect of involvement on activism. They(?) called this predictor 'Global warming opinion leadership'. Moreover, this research team stated, compared to almost any other determinants social contacts have most influence on people. The only other source they mentioned to persuade people more are climate scientists (Roser-Renouf et al., 2014), derived by Leiserowitz et al. (2009). Therefore, they concluded that one of the most influential ways to enhance climate activism and citizen engagement would be to build "opinion leadership" e.g. by motivating people with involvement in the topic to have discussions with the family and friends about it (Roser-Renouf et al., 2014).

## Response Efficacy

The belief people had about the impact of the proposed solution was the third highest predictor of people's intention to demand citizen assemblies. Thus, the stronger people perceive the suggested behaviour of demanding citizen assemblies as useful for slowing down the climate crisis, the more likely they are to actually enact this behaviour.

## **Self-Efficacy**

The fourth likeliest predictor of the suggested behaviour was the extent to which people believe they can enact in the proposed behaviour themselves, implying that people first need to feel that they are able to demand citizen assemblies before they do it. This was supported by the findings of Bostrom, Hayes and Crosman (2019) who concluded that people's involvement with climate action (in their case decreasing CO2 emissions) increased when their evaluations about the personal ease, as well as their perceived effectiveness of collective actions and of the government also increased.

#### **Perceived Susceptibility**

Finally, this study confirmed the respondents' perceived susceptibility towards the threat as being a predictor of their intention to demand citizen assemblies.

#### **Intention to demand CAs**

Similar to this study, in which one of the intention items was measuring people's intention to donate money to an organisation that demands CAs, Roser-Renouf et al. (2014) investigated how effective people perceived donating money to an organization working to reduce global warming to be. They found out that 22 per cent of the participants thought this form was effective. The researchers conclude from this relatively low outcome that changing the view of people about, amongst others, this type of activism should be an essential goal for communication about climate.

#### 6.2. Comparison with other research

#### Comparison with EPPM Model

As mentioned in the theoretical framework, the EPPM model demonstrates that people assess a fear message in different ways, resulting in a variety of outcomes. First, people evaluate the risk of an appeal. The higher people's risk perception, the stronger is their motivation to start the second evaluation, which is a judgement of the response efficacy. This is reflected in the findings of this research, since people who perceived the efficacy regarding the demanding of CAs as high, and at the same time viewed the risk of the climate crisis as high, had a higher intention to demand CAs.

On the other hand, if people perceived a risk as high and serious, they tend to get afraid. This fear can result in a motivation to act in any possible way that leads to fear reduction. The findings of this paper's research strongly support the theory by Witte and Allen (2000). The more people perceived the risk as being severe, the higher was their intention to act in order to decrease the threat.

Whether people execute danger control or fear control depends on their efficacy beliefs, consisting of perceived response efficacy and self-efficacy. If both efficacy beliefs are high,

people are inclined to use danger control where they seek for methods to get rid of the threat. This theory is reflected in the results of this study. The higher the respondents' self- and response efficacy was, the higher was their intention to demand citizen assemblies, which, compared to the EPPM model, would be the method to get rid of the threat.

Since all psychological factors, which increased the intention of people to demand citizen assemblies, were based on the EPPM model, it can be concluded that the EPPM model was applicable for this study. Thus, regarding the negative effects due to the climate crisis, the suggested behaviour of demanding CAs can indeed be a protective behaviour as discussed in the EPPM model.

## 6.1.2. Implications of the additional results

#### **Risk Perception**

Regarding the new variable Risk Perception, the items fit well together, since they are a combination of items from the two original variables Perceived Susceptibility and Perceived Severity. According to Witte and Allen (2000), these variables are both subcategories of Risk Perception anyway, which might explain why the factor analysis included them into one factor.

## Group Efficacy

The additional analyses have shown that another new factor would be Group Efficacy, which might indicate that people feel more confident that larger groups are able to influence the government to implement citizen assemblies. Moreover, the new factor fits very well as items were phrased in a way that fit better to Group Efficacy than to Self-Efficacy. Two of the three items contain the term 'group' and the third item uses 'public', which can also be viewed as a group.

## Intention to Act

Finally, the new DV Intention to Act is very close to the original item. The only difference is that one former Risk Perception item was added. This item asked people about the perception of their moral duty to act, which is basically like asking them about their intention to act. Thus, it makes sense to add this item to the other intention items.

#### Chance of demand and implementation

Amongst the new variables found through the factor analysis, the strongest predictor for people's Intention to demand CAs was the chance or likelihood with which people perceived CAs to be demanded effectively so that they get implemented. This might imply that the higher people see the chances of other people demanding and the government implementing CAs, the more likely people are to join in demanding them.

#### 6.3. Non-significant results

There was one non-significant result: In the original data analysis, the IV Perceived Susceptibility did not significantly predict the DV Intention. The reason for this could be inadequate wording of two items: First, the item "The climate crisis is something that worries me" was supposed to measure 'Perceived Susceptibility', whereas intuitively it would fit better to measuring the IV 'Perceived Severity'. This would also explain why as the only variable, 'Perceived Susceptibility' correlated more with 'Perceived Severity', than with the DV. Additionally, the factor analysis showed that it would be better to combine 'Perceived Susceptibility' and 'Perceived Severity' into the item 'Risk Perception'.

The second mis-fitting item that might have contributed to the non-significant result could be "I believe that the climate crisis is going to be extremely harmful for the country I live in", since this item is ambiguous in that it could measure both, Susceptibility due to the person's country, but it could also measure 'Perceived Severity', due to asking about the perceived harm.

#### **6.4.** Limitations

Another reason for the non-significant result might have been the high complexity of the topic, at least from the perspective of the researcher, and perhaps also of the survey respondents. Since Citizen Assemblies only exist since 2004, there have not been that many examples about them. Moreover, they do not seem to be known or talked about in the circle of this researcher. Thus, it was a completely new topic and only based on personal interest, but not on prior knowledge about it. This was also the impression when talking to some of the survey respondents; most of them never seemed to have heard of or thought about the concept of Citizen Assemblies before. This might have been the reason for difficulties while filling in the questionnaire. Even though there was a small information text about CAs and the climate crisis in

the beginning of the survey, there might not have been enough information provided, for participants to have a well-informed opinion about the topics.

Another limitation was the low internal reliability in the variable Self-Efficacy. This was due to a translation mistake in one of the items.

#### 6.5. Strengths

One strong point of this study was the large sample size, which led to more reliable data. Moreover, it was positive that this combination of topics has not been researched before. There was research about citizen assemblies and climate change in combination, but not together with the demanding of it and the psychological factors influencing this protective behaviour.

#### 6.6. Suggestions for future research

Suiter, Farrell, and O'Malley (2016) found out that the following group of people are most likely to change or adjust their opinion during a deliberative process like a citizen assembly: People who were at a medium age, who have a moderate amount of knowledge and opinions, and who are disclosed to people who disagree. This implies that during the study of this paper, there might be differences between peoples' opinions related to peoples' age and educational backgrounds. Thus, possible hypotheses for further research could be the following: First, the older people are, the less likely they are to change their opinion about demanding citizen assemblies. Second, the higher the educational background of respondents, the less likely they are to change their opinion about demanding citizen assemblies.

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## 8 Appendix

#### Survey

Welcome to the research study!

Thank you for participating. We are interested in understanding people's perception about the climate crisis and about a possible solution. You will first be presented with relevant information (sources will be presented in the end) and then asked to answer questions about it. Your responses will be kept completely confidential and you, as well as your data, will stay anonymous. We are solely interested in people's general opinions; this is not a knowledge test, so there are no right or wrong answers.

The survey should take you around 5 - 10 minutes to complete. Since the participation in this research is voluntary, you have the right to withdraw at any point, for any reason, and without any prejudice. If you would like to contact the Principal Investigator to discuss this research, or if you have any questions, please e-mail Anni Kruse, a.kruse@student.utwente.nl.

By giving your consent, you acknowledge that your participation is voluntary, you are 18 years or older, and you are aware that you may choose to leave the study at any time and for any reason.

## Please carefully read this short information text.

It is important for understanding the survey questions (which will start after the next page).

The United Nations (2019) stated that, even though there are action plans, the impacts of the climate crisis have been growing and require exceptional efforts by governments and businesses throughout the world. They conclude that, "while momentum exists, we need much more climate ambition by <u>all segments of society</u>".

How can we, the citizen segment, support the government with this challenge we are facing?

According to politicians, it can be difficult to implement necessary reforms. One reason is that they "have to deal with every subject in the world". Scientists suggest that policies need to engage public support, rather than assume passive consent from the voters.

A potential support of us, "the voters", can be to demand politicians to implement <u>Citizens'</u> <u>Assemblies</u>, which...

...bring citizens into **small, facilitated groups** to learn, deliberate and make recommendations on an issue that can be too controversial for politicians to deal with successfully by themselves.

...teach members about **critical thinking** before they hear balanced information from experts.

...include **randomly selected members** of the population who are **representative** (in terms of gender, age, ethnicity, education level) and can, therefore, make **independent decisions** based on citizens' needs.

...are a form of **participatory democracy** as a counterweight to the current system which prioritises short-term electoral gain over the long-term needs of current and future generations.

... use **deliberative processes**, supported by safeguards against bias, which lead to more diverse and informed voices than in a purely elected body.

Citizens' Assemblies around the world have shown that the public can understand complex information, and make fair and impartial choices. The recommendations of Ireland's Citizens' Assembly on Tackling Climate Change are currently being incorporated into the Government's action plan.

## **Beginning of the survey**

Please indicate how much you agree or disagree with the statements below. There are no right or wrong answers.

- I understand why it can be difficult for politicians to act fast when it comes to the climate crisis.
- I understand what citizen assemblies are.
- I think I know enough about the climate crisis to have an opinion about it.

## (Questions testing **Risk Perception** [Perceived Severity and Perceived Susceptibility]):

Please read the questions carefully. Again, there are no right or wrong answers.

- I believe that the climate crisis is severe. (*Perceived Severity*)

- It is unlikely that the climate crisis has any negative consequences for me. (*Perceived Susceptibility*)

- I believe that the climate crisis is going to be extremely harmful for the country I live in. *(Perceived Susceptibility)* 

- Thoughts about the climate crisis do not scare me. (*Perceived Severity*)

- I feel a moral duty to do something about the climate crisis. (*Perceived Severity*)

- The climate crisis is something that worries me. (*Perceived Susceptibility*)

(Questions testing Self- and Response Efficacy):

- Citizen assemblies can be effective in slowing down the climate crisis. (Response Efficacy)

- I am confident that the public can demand the government to implement citizen assemblies. *(Response Efficacy)* 

- If I demand the government to implement citizen assemblies, I am less likely to suffer from negative effects due to the climate crisis. (*Self-Efficacy*)

- Citizen assemblies are likely to stop the climate crisis. (Response Efficacy)

- I, on my own, am not able to demand the government to implement citizen assemblies. (*Self-Efficacy*)

- It is likely that the government will implement citizen assemblies if demanded by a large group of citizens. (*Response Efficacy*)

- I am confident that I, together with a group of other people, can demand the government to implement citizen assemblies. *(Self-Efficacy)* 

## (Questions testing Social norm):

- When it comes to demanding citizen assemblies, I want to do what my close friends think I should do.

- The majority of people, who are similar to me, are not willing to demand the government to implement citizen assemblies.

- Most people, whose opinions I value, would approve of me demanding the government to implement citizen assemblies.

- Many people I respect and admire will demand the government to implement citizen assemblies.

## (Questions testing Intention):

As a result of participating in today's study, how willing are you, within the next year, to perform the following behaviours that might help slow down negative effects of the climate crisis?

I am willing to...

- ...do research/ inform myself about movements/ organisations that demand the government to implement citizen assemblies.

- ...share my knowledge about citizen assemblies with friends and family members.

- ...join activities (e.g. demonstrations) where a movement/ organisation demands citizen assemblies.

- ...support a movement/ organisation that demands citizen assemblies (e.g. by helping them organise activities or by donating money to them).

(Demographics):

Please indicate your gender:

What is your educational background?

What is your age?

Table 3. Factor Pattern Matrix with the	regression coefficients for each	titem on each factor ( $N = 211$ )

	Rotated Factor Loadings			ngs
Item	1	2	3	4
SE - If I demand the government to implement citizen assemblies, I am less likely to suffer from negative effects due to the climate crisis.	.76	05	.03	.02
RE - Citizen assemblies are likely to stop the climate crisis.	.70	02	02	05

SN - Many people I respect and admire will demand the government to implement citizen assemblies.	.67	.07	.06	12
RE - Citizen assemblies can be effective in slowing down the climate crisis.	.66	.25	.08	.04
SN - Most people, whose opinions I value, would approve of me demanding the government to implement citizen assemblies.	.48	.12	.12	12
RP - Thoughts about the climate crisis do not scare me (recoded).	.10	.78	23	09
RP - I believe that the climate crisis is severe.	.11	.76	.12	.08
S - The climate crisis is something that worries me.	.12	.73	11	19
S - I believe that the climate crisis is going to be extremely harmful for the country I live in.	21	.59	.23	07
S - It is unlikely that the climate crisis has any negative consequences for me (recoded).	.08	.59	.06	.06
RE - It is likely that the government will implement citizen assemblies if demanded by a large group of citizens.	01	.14	.85	.12
SE - I am confident that I, together with a group of other people, can demand the government to implement citizen assemblies.	.09	04	.72	17
RE - I am confident that the public can demand the government to implement citizen assemblies.	.21	15	.69	13
I am willing to do research/ inform myself about movements/ organisations that demand the government to implement citizen assemblies.	.03	02	07	88
I am willing to share my knowledge about citizen assemblies with friends and family members.	.08	08	01	84
I am willing to join activities (e.g. demonstrations) where a movement/ organisation demands citizen assemblies.	.18	.10	.18	64
RP - I feel a moral duty to do something about the climate crisis.	21	.39	.13	61
I am willing to support a movement/ organisation that demands citizen assemblies (e.g. by helping them organise activities or by donating money to them).	.30	.06	.18	54
Eigenvalues	6.86	1.88	1.31	1.10
% of variance	38.13	10.45	7.30	6.13
Extraction Method: Principal Component Analysis.				

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Note: Factor loadings over .40 appear in bold.

Item	Rotated Factor Lo			igs
-	1	2	3	4
SN - Many people I respect and admire will demand the government to implement citizen assemblies.	.76	.28	.36	45
SE - If I demand the government to implement citizen assemblies, I am less likely to suffer from negative effects due to the climate crisis.	.75	.12	.28	30
RE - Citizen assemblies can be effective in slowing down the climate crisis.	.73	.41	.38	36
RE - Citizen assemblies are likely to stop the climate crisis.	.71	.15	.24	34
SN - Most people, whose opinions I value, would approve of me demanding the government to implement citizen assemblies.	.60	.31	.37	41
S - The climate crisis is something that worries me.	.32	.80	.20	47
RP - I believe that the climate crisis is severe.	.29	.79	.35	28
RP - Thoughts about the climate crisis do not scare me (recoded).	.23	.76	.06	34
S - I believe that the climate crisis is going to be extremely harmful for the country I live in.	.03	.63	.35	27
S - It is unlikely that the climate crisis has any negative consequences for me (recoded).	.20	.60	.24	21
RE - It is likely that the government will implement citizen assemblies if demanded by a large group of citizens.	.27	.34	.85	19
SE - I am confident that I, together with a group of other people, can demand the government to implement citizen assemblies.	.41	.25	.80	42
RE - I am confident that the public can demand the government to implement citizen assemblies.	.48	.15	.76	38
I am willing to do research/ inform myself about movements/ organisations that demand the government to implement citizen assemblies.	.38	.29	.21	86
I am willing to share my knowledge about citizen assemblies with friends and family members.	.42	.24	.26	84
I am willing to join activities (e.g. demonstrations) where a movement/ organisation demands citizen assemblies.	.54	.43	.48	81
I am willing to support a movement/ organisation that demands citizen assemblies (e.g. by helping them organise activities or by donating money to them).	.60	.38	.47	74

Table 4. Factor Structure Matrix with the correlation coefficients for each item on each factor (N = 211)

RP - I feel a moral duty to do something about the climate crisis.	.19	.60	.37	70
Eigenvalues	6.86	1.88	1.31	1.10
% of variance	38.13	10.45	7.30	6.13

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization. *Note:* Factor loadings over .40 appear in bold.