The Effect of Judgmental Confidence and Trust in Government on Information Seeking Behaviour

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Abstract

A fair amount of research has been conducted that studies the importance of Information Sufficiency in Information Seeking behaviour, with one of the main frameworks being the Risk Information Seeking and Processing Model. However, these studies only examine the gap between the knowledge someone has and the knowledge someone needs, and not at the effect of the knowledge a person has at that moment. This study aims to determine if the knowledge someone has, referred to as Judgmental Confidence, has an effect on Information Seeking Behaviour. This was done by manipulating the Ease of Retrieval of the participants (N=67) in a survey about climate change, by letting them name either three or eight contributors to climate change. Additionally, this study aimed to determine if people's Trust in Government influences their information seeking behaviour notwithstanding their judgmental confidence. While the study showed that Ease of retrieval manipulation worked by being able to manipulate the perceived difficulty of naming examples, it showed no significant effect on Judgmental Confidence. Subsequently, there was no effect of Judgmental Confidence on Information Seeking Behaviour, nor does Trust in Government appear to moderate this relation. However, there was a significant association found with the involvement of participants and their Information Seeking behaviour. Limitations of this research are; the relatively low sample size, the situational dependence of Judgmental Confidence which could influence the workings of the Ease of Retrieval manipulation, and possibly an inaccurate type of measurement for this study to measure the Trust in Government. Further research should keep in mind to use the proper amount of participants to achieve an optimal statistical power of the study. Additionally, more research needs to be conducted to determine which type of behaviours can be altered using the Ease of Retrieval manipulation. Lastly, further research is needed to investigate the importance of involvement in information seeking frameworks such as the Risk Information Seeking and Processing model and the possible implementation in such frameworks.

1. Introduction

Currently people around the globe are dealing with the global Corona (also know as COVID-19 or SARS-CoV-2) pandemic, which forces almost everyone to stay home and maintain social distance from others. While Covid-19 brings many casualties with it, we cannot neglect some of the positive side-effects staying home due to the pandemic has brought. With the majority of people worldwide being forced to stay at home, it seems that some of the negative effects of climate change have taken a temporary halt. This can be observed by improvements such as the air pollution showing a significant decrease which can be seen from satellite imagery (ESA, 2020), since people are not able to use their automotive vehicles as frequent as they used to. Having these quite apparent environmental changes suddenly become visible can make us wonder if we really know to what extent our behaviour impacts the environment. While people can have a general idea as to what they do that contributes to climate change, looking for more information as to how to improve this might be a bridge too far.

Whether people want to seek out more information depends on a couple of factors. Chen and Chaiken (1999) found that people will look for information until this satisfies their need for information sufficiently. Therefore, if people believe they do not have enough information about climate change, or know which behaviour contributes to it, people will seek for more information until they believe they know enough, they will display Information Seeking Behaviour. This is contradicted by research conducted by ter Huurne and Gutteling (2008) who found no association between the need for more knowledge and the current knowledge someone has. Because the level of current knowledge individuals think they have is subjective, this factor will be termed as *Judgmental Confidence*.

Because a person's Judgmental Confidence is subjective, it should be able to be altered. This idea is based on research of Schwarz and his colleagues (1991) who altered a person's subjective perception of assertiveness. They achieved this by using the Ease of Retrieval manipulation. Hereby, perceived assertiveness was changed by changing the difficulty people had in naming (un)assertive behaviours (Schwarz et al., 1991). Because Judgmental Confidence is a subjective experience just as assertiveness is, the Ease of Retrieval manipulation was also applied in this study, to determine whether the judgmental confidence of a participant can be manipulated.

Besides Judgmental Confidence, other factors also contribute to Information Seeking Behaviour and should be taken into consideration. People who do not have sufficient knowledge about risk situations but still need to make judgements, will tend to look at the actions of responsible institutions (Siegrist & Cvetkovich, 2000; ter Huurne & Gutteling, 2008). For example, it can be that individuals might believe that they do not need more information because they trust that responsible institutions will handle the situation properly. Such an institution could be the government, it being an institution that creates and enforces laws that influences citizens. It is possible that people will put trust in their government if they have lower judgmental confidence, instead of looking for more information themselves, because people trust the government that they will handle situations in an appropriate manner.

The aim of the study will be to see if people's confidence in their current knowledge, their Judgmental Confidence, has an influence on their Information Seeking Behaviour. The Judgemental Confidence will be manipulated using the Ease of Retrieval manipulation. Additionally, this research wishes to establish whether Trust in Government moderates the relation between Judgmental Confidence and Information Seeking Behaviour and thus play a factor that should be taken into further consideration. The research question for this study will therefore be: "Is Judgmental Confidence able to be manipulated by the Ease of Retrieval and is there subsequently a relation between Judgmental Confidence and Information Seeking Behaviour, which is moderated by people's Trust in Government?"

1.1 Theoretical Framework

1.1.1 (Risk) Information Seeking

People have various manners and different reasons as to why they seek information. McGuire (1974) stated (as cited in Griffin et al., 1999) that information seeking can be categorized in two ways: passive and active seeking. Passive seeking is a less intensive way of information seeking. It is characterised by being more habitual behaviours, for example by looking at the news broadcast on tv every day at a certain time or checking the newspaper in the morning. Active seeking is a more effortful and goal driven way of information seeking. People will put more effort in looking for

information, by, for example, looking up extra information online or looking for the opinions of professionals.

Reasons why someone would seek information are, firstly, a person's social environment. People around you influence your desire to have more information when, for example, it is assumed that personal contacts have knowledge about certain topics and you feel like you should also have knowledge regarding those topics (ter Huurne & Gutteling, 2008). People are also inclined to look at the behaviour of their friends, family and peers when faced with risky situations and influence their decision based on their possible reactions (Neuwirth & Frederick, 2004).

Secondly, people seek information to reduce uncertainty. When uncertainty increases, people will want to seek for more information (Atkin, 1973 as cited in Knobloch-Westerwick, 2008). Berger and Calabrese (1975) described something similar in their uncertainty reduction theory: "High levels of uncertainty cause increases of information seeking behaviour. As uncertainty levels decline, information seeking behaviour decreases" (Berger & Calabrese, 1975, p. 103).

Lastly, people need knowledge to make calculated decisions. When individuals need to make a decision, they are prompted to seek more information and are faced with the difference in knowledge they already possess and the knowledge they feel would be sufficient. According to the model of Information Search Process (ISP) (Alaszewski, 2005), when in need of decision making the person becomes aware of the possible lack of knowledge and thus will seek information. A similar theory is the Anomalous State of Knowledge (ASK) model (Belkin, 1980 as cited in ter Huurne & Gutteling, 2008) which states that that the gap between what the individual knows and wants to know is motivation to seek for more information. Two other theories that describe the discrepancy are the Heuristic systematic Processing Model (HSM) (Chaiken et al., 1989) and the Risk Information Seeking and Processing (RISP) (Griffin et al., 1999) model in which the HSM is incorporated. These models state that information seeking happens when there is a gap between the current knowledge and the desired knowledge which causes an information insufficiency. These two models will be further elaborated upon.

1.1.1.1 Risk Information Seeking and Processing Model (RISP). Risk information seeking theories focus on the role an individual has in the information-seeking process to acquire more

information that influences (behavioural) decisions. The RISP model integrates components of the HSM (Chaiken et al., 1989) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991) with the aim to "disentangle the social, psychological, and communicative factors that drive risk information seeking" (Yang et al., 2014, p20). The model consists of a multitude of factors starting with people's individual characteristics which influence people's perceived hazard characteristics, their affective response, and informational subjective norms, which in turn influence people's information sufficiency. Their information sufficiency together with relevant channel beliefs and perceived information gathering capacity influences the information seeking and processing of a person. This study only aimed to investigate the effect of current knowledge from the information sufficiency factor and the information seeking and processing ways, which are adapted from the HSM.

1.1.1.2 Heuristic Systematic Model (HSM). Information that people received needs to be processed. The model that explains the processing of information in a proper manner is the Heuristic Systematic Model. This model states that information processing can happen in two different ways: heuristically or systematically.

1.1.1.2.1 Heuristic Information Processing. Heuristic information processing is a cognitively low manner of information processing because it happens more superficially, Reason being that this manner of processing happens to circumvent the more cognitive tasking systematic processing, by using more accessible and simple information, and using cognitive heuristics (Chaiken et al., 1989; Kahlor et al., 2006; Yang et al., 2014). Heuristic processing happens when, for example, a person has a time constraint (Ratneshwar & Chaiken, 1991) or when they want to avoid information that is contradictory to what they believe (Giner-Sorolla & Chaiken, 1997 as cited in Chen & Chaiken, 1999)). The use of heuristic processing is however limited by a couple of factors. First, the heuristic must be available in memory. Secondly, the heuristic needs to able to be accessible from memory to be retrieved when needed. And lastly, the heuristic must be applicable to the judgemental task (Chen & Chaiken, 1999).

1.1.1.2.2 Systematic Information Processing. Systematic information processing is a more cognitively demanding way of processing than Heuristic Processing. Systematic processing happens when an individual needs to process information that is of personal importance. They will put in more

effort to understand and evaluate the information and will focus more on the content rather than superficial characteristics (Chen & Chaiken, 1999). For systematic processing to happen it requires the person to have the cognitive ability and capacity to process the information in a more analytical manner. This way judgment will be evaluated more thoroughly and will be related to already existing information (Trumbo, 2002).

1.1.1.2.3 Information Sufficiency. The Risk Information and Processing Model (RISP) suggests that the need to have sufficient information is motivation for actively seeking and systematic processing of information (Chaiken et al., 1989; Yang et al., 2014). According to Chaiken et al. (1989), people want to maximize confidence in their judgments and minimize the cognitive effort needed to process the message (Chen & Chaiken, 1999; Kahlor et al., 2003). This idea stems from the sufficiency principle of the HSM. The sufficiency principle states that "people will exert whatever effort is required to attain a 'sufficient' degree of confidence that they have satisfactorily accomplished their processing goals" (Eagly & Chaiken, 1993, p. 330). So, the two important points in this sufficiency principle are the level of actual confidence, and the level of desired confidence (or sufficiency threshold). To close the threshold gap between the actual and desired confidence and to thus have sufficient judgmental confidence, people will need to use more cognitive effort. Furthermore when heuristic processing does not generate sufficient confidence, people will be more likely to use systematic processing to close the information sufficiency gap (Chen & Chaiken, 1999). Despite systematic processing requiring more cognitive effort, it is more effective in increasing subjective confidence (Chen et al., 1999).

1.1.2 Ease of retrieval

The availability heuristic (Tversky & Kahneman, 1973) is that when someone thinks of an event, people will be more likely to believe it happened more often, or that it will happen more frequently, if the event comes to mind quicker i.e. is more available from memory. Schwarz and his colleagues (1991) used this availability heuristic to study the ease of retrieval effect, so the ease with which an individual is able to retrieve information from memory, by investigating the effect of the ease of retrieval on people's opinions. Participants were asked to either write down six or twelve of their assertive or unassertive behaviours and were afterwards asked to rate their own assertiveness.

The participants who had to write down twelve assertive behaviours had more difficulty in thinking of behaviours than participants who had to think of six behaviours. Furthermore, even though they had to think of more assertive behaviours, they rated themselves as less assertive than the participants who only had to write down six behaviours. A similar effect was seen in the group who had to write down six or twelve unassertive behaviours. The participants who had to write more unassertive behaviours rated themselves as more assertive than the participants who had to write down less unassertive behaviours. Schwarz et al. concluded that "The experience of ease or difficulty of recall may qualify the implications of what comes to mind, even to the extent that the inferences drawn are opposite in valence to the implications of the recalled content." (Schwarz et al., 1991, p197).

Additionally, the ease of retrieval has an effect on other aspects as well. Kelley and Lindsay (1993) conducted a couple of experiments by manipulating the ease of retrieval and concluded that the ease with which people were able to think of an answer contributed to the individual feeling more confident about their answer. Ease of retrieval is also used to make judgments when knowledge is moderately accessible (Raghubir & Menon, 2005; Tybout et al., 2005) and to make inferences, which is seen already in 6 year old children (Barnes et al., 1996).

1.1.3 Trust in Government

First the term "Trust in Government" needs to be defined. Fung and colleagues (2018) described it as: "the extent to which individuals depend on the government or its authorized agencies to protect them from health threats" (p. 40).These measures are, for example, implementing measures that protect them from climate related hazards such as drought. When people trust the actions that are taken by the government, they will be less likely to take action themselves (Wachinger et al., 2013). However, this research speaks of people taking physical actions such as placing barricades against flooding. Barely any research has been done in the trust in the government and how this influences information seeking behaviour. The things that have been researched is that when people do not possess the knowledge of a certain subject, they will look at the assessment of an institution (Cvetkovich et al., 2002; Earle & Cvetkovich, 1995), for example the government. Furthermore, according to research by Locander and Hermann (1979) people who were more confident, were less

likely to want to seek for more information. However, this research does not speak of the possibility of another factor that can influence the confidence and subsequently the seeking for more information.

1.1.4 Current study

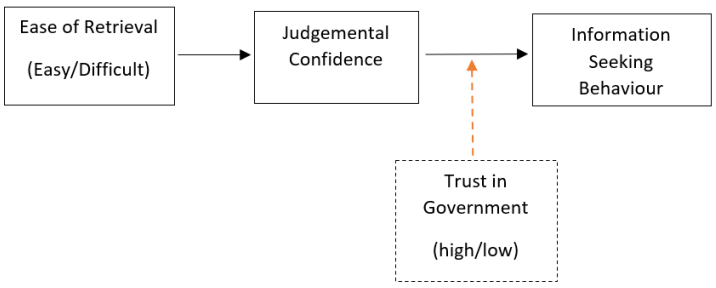
The role that judgmental confidence has on information seeking is not something that has been researched much. To determine if Judgmental Confidence influences Information Seeking Behaviour, the confidence in people's current knowledge has to be manipulated. This is where the "Ease of Retrieval" (EoR) will be implemented. Based on literature (Schwarz et al., 1991) this should be able to generate less confidence by asking the participant to recall more information, and higher confidence by asking the participant to retrieve less information. Based on whether the participant has high or low confidence we want to see if it influences the information seeking behaviour. To investigate whether the ease of retrieval is conducted properly, the factor "Involvement" will have to be considered, since how involved someone is can have a possible effect on how easy it is to recall information, or on their need to seek more information.

Additionally, barely, if any, research has been conducted that looks at how people's trust in government affects their information seeking behaviour. Analysis will be performed to determine whether Trust in Government affects the relation between Judgmental Confidence and Information Seeking behaviour. The following hypothesis and model (figure 1) were constructed:

- **H1**: Participants within the easy Ease of retrieval condition will have a higher judgmental confidence and thus will be less likely to display information seeking behaviour.

Figure 1

Proposed Model of the Effect of Judgmental Confidence on Information Seeking Behaviour.



Note. Proposed model of effect of Judgemental Confidence, manipulated by the Ease of Retrieval, on Information seeking behaviour (H1) with Trust in Government as moderator (additional analysis). With the black arrow indicating a causal effect and the orange arrow a moderator effect.

2. Method

2.1 Design & Participants

The current experimental quantitative research had a randomized Ease of Retrieval (EoR) group with Ease of Retrieval manipulation (Easy vs difficult) as independent variable. Additional independent variables used in this study are the Difficulty/Ease naming examples, Involvement, Systematic Processing, Avoidance, (Non)Routine Seeking, and Trust in Government. Dependent variables used in this study are Judgmental Confidence and Information Seeking Behaviour.

All survey responses that were not completed will be dismissed, because at the end of the survey the respondents need to give consent for their data to be used for analysis a second time. If participants did not give consent this second time, their data could not be used. This also causes that partial responses could not be included into analysis since they didn't give consent a second time. This reduced the amount of cases from the original 93 to 67 cases to be used for analysis of this study. Of the 67 participants, 29 are male, 37 female and one categorised themselves as other, ranging in the age of 18 to 59 (M= 25.54, SD=9.56). From the participants 24 were Dutch, 30 were German and 13 participants had another nationality. The participants were randomly assigned to the easy to retrieve (N=34), or difficult to retrieve (N=33) Ease of Retrieval manipulation condition. Participants were recruited to participate in the study, firstly, from the University of Twente through the Test Subject Pool System (SONA), where they can be rewarded with credits for their participation. Secondly, participants who did not had access to the SONA system were recruited to participate in the study through the use of social media (Facebook and LinkedIn) and personal contact recruitment. Criteria to take part in this study were to have an intermediate or advanced proficiency in English. Before the experiment, participants were given a written informed consent form (Appendix A). The research was approved by the BMS Ethics Committee (EC) from the University of Twente on the 14th of April 2020.

2.2 Procedure

Prior to the start of the experiment the participants were asked to read the informed consent form (Appendix A) and either gave consent or refused participating in the study. Once the participants gave consent to participate the survey started. The setup and questions of the survey are shown in Appendix B. First, the participants were asked to give demographic information regarding sex, age, and level of completed education. With the level of education, the participants could choose between *High School namely […], Bachelor, Master, PhD, , and other namely […].*

After the participants filled in their demographic information, the Ease of Retrieval manipulation took place. During the manipulation participants were randomly asked to list either three or eight human actions that contribute to the global warming of the planet. They were then asked how they experienced it to think of either three or eight examples on a scale from "1 - *extremely easy*" to "5 - *extremely difficult*".

After this, participants were asked for their current information about climate change and about their sufficiency threshold. These questions are based on the items developed by Griffin, Dunwoody, Neuwirth, and Giese (1999). With both these questions the respondents needed to give a score between zero (*Knowing Nothing)* and 100 (*Knowing Everything)* on a slider scale. The question about their current information was used as measure for Judgmental Confidence and stated the following

> "First, we would like to rate your knowledge about this risk, please use a scale of zero to 100, where zero means knowing nothing and 100 means knowing everything you could possibly know about this topic. Using the given scale, how much do you think you currently know about the risk climate change poses?"

To check if a participant's involvement in climate change did not have an effect on the manipulation, five questions were asked regarding involvement which were adapted from the Climate Stewardship Survey (CSS) (Walker & McNeal, 2012). These questions could be answered on a five-point Likert scale from "1 - *Not well at all*" to "5 - *Extremely well*".

After this the participants were asked to read the article: "Fires and Floods: maps of Europe predict scale of climate catastrophe" (Rankin, 2020), regarding the consequences of climate change (as

shown in Appendix B), where the reading time was being registered. Once done reading the participants were asked to write down what elements/facts they remembered from the article and three questions were asked about details of the article, where they could choose from a couple of options.

When participants finished with the article component of the survey, they had to indicate on a couple of questions how likely they are to deal with information about climate change. These questions are adapted from Griffin, Dunwoody, Neuwirth, and Giese (1999), and measure information processing. This is based on their answers of the components ”*Systematic Processing*” and “*Heuristic Processing*”. It further measures the participant’s information seeking based on the components “*Avoidance*” and “*(Non) Routine- Seeking*” on a 5-point Likert scale ranging from “1 - *Extremely unlikely*” to “5 - *Extremely likely*”.

The Cronbach’s Alpha of the variables showed that the internal consistency for the factor Heuristic Processing was “Unacceptable” (α=.29). Correcting it by removing the item with the lowest reliability still gave it an unacceptable rating (α =.42). The factor heuristic processing was thus removed for further analysis. This should not hamper further analysis because the factor Systematic Processing is the opposite of the factor Heuristic processing. After correcting the other factors, by removing the item that would yield the highest Cronbach’s Alpha, the internal consistency for the factors Involvement (α =.71), Avoidance (α = .78) and (Non)Routine Seeking (α = .75) are “Good” and “Acceptable” for the factors Systematic processing (α = .68) and Trust in Government (α = .68).

Lastly participants were asked about to what extent they trust the government when it comes to climate change on six questions adapted from Nicholls and Picou (2013). These questions existed out of two or three statements which the participant had to choose from about behaviour of the government.

Once the participants completed the survey, they were notified about the true conditions of participating in the study. They were told that they were either put in the easy or difficult Ease of Retrieval manipulation condition so the researchers can measure whether it had an effect on the judgmental confidence of the participant. After they received this information participants were once more asked if they consent to the use of their data for analysis now knowing the true conditions of the study.

2.3 Data analysis

2.3.1 Screening dataset.

Independent variables (IV) used for analysis were: Ease of Retrieval (EoR) group, Difficulty/ease naming examples, Involvement, Systematic Processing, Avoidance, (Non)Routine Seeking, and Trust in Government. Dependent variables (DV) for analysis were the Judgmental Confidence and Information Seeking Behaviour. The factor Information Seeking Behaviour was created by first reverse coding the scores for Avoidance and then calculating the mean score. This score was added to the mean score of Systematic Processing and (non)Routine Seeking, and lastly to get a score for Information Seeking Behaviour, the mean of the three variables was taken.

The options of the items that indicate Trust in Government were recoded and transformed to a 5-part scale, from "1- *Less Trusting*" to "5-*Most Trusting*". From the items the mean scores indicated the average trust in government score of each of the participants.

Using a One-Sample Kolmogorov-Smirnov Test showed that the variables Involvement, Systematic Processing, and Information Seeking Behaviour are normally distributed ($p > .05$) meaning that for these variables a parametric test could be used.

2.3.2 Manipulation check

To see if the independent variable Ease of Retrieval manipulation worked, it needed to be established that the Easy manipulation group had an easier time naming examples, and the participants in the Difficult manipulation group had a more difficult time naming examples that contribute to climate change. This was done making an Easy and Difficult naming examples category by splitting the scores that participants had in two, categorising the scores below the median as "Difficult", and the scores above the median as "Easy" to correct for any outliers. To determine if these scores are significant a Pearson's Chi-Squared test was conducted.

To see if the manipulation was conducted as intended it needed to be assessed if the dependent variable Involvement has an effect on the Ease of Retrieval, since it can be that the intended effect of the difficult condition is diminished by how involved a person is. This because a person who is more involved might find it easier to name more examples. This was done by taking Involvement as a covariate and conducting an ANCOVA.

2.3.3 Hypotheses checking

For hypothesis 1: *Participants within the easy Ease of retrieval condition will have a higher judgmental confidence and thus will be less likely to display information seeking behaviour*, it first needs to be assessed if the Ease of Retrieval manipulation had the desired effect on the Judgmental Confidence and Information Seeking Behaviour and whether Trust in Government influenced this relation. This is done by conducting a MANCOVA, with Judgmental Confidence and Information Seeking Behaviour being the dependent variables, Ease of Retrieval being the independent variable and Trust in Government being the covariate.

2.3.4 Analysis of the effect of Trust in Government.

For the additional analysis to determine whether Trust in Government is of importance in moderating the effect of Judgmental Confidence on Information Seeking Behaviour, a Hierarchical Regression analysis has to be performed. In stage 1 the variable Judgmental Confidence and Trust in Government have to be analysed, and in stage 2 the interaction term between Judgmental Confidence x Trust in Government. If a significant interaction is found, further analysis will be conducted to determine if when Trust in Government is higher the effect of Judgmental confidence on Information Seeking Behaviour will be weaker, compared to when Trust in Government is lower.

3. Results

3.1 Correlations of the factors

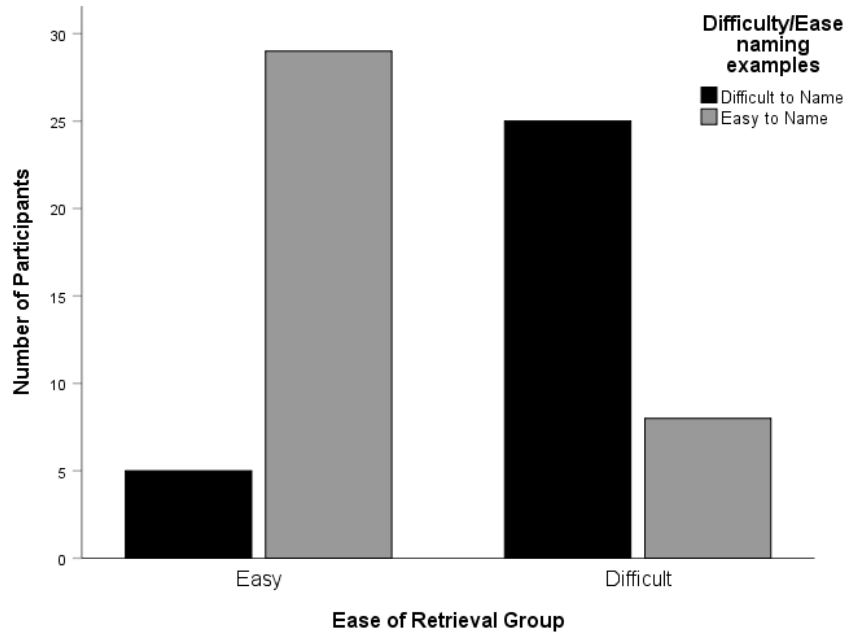
In order to measure if there are any correlations between the factors used for analysis, a Bivariate Pearson Correlation analysis was conducted using all the variables used in the survey (Appendix C). This showed an association between a couple of factors that could be of importance; First, there is a negative association between the Ease of Retrieval manipulation group a participant was in and the difficulty/ease in thinking of examples the participants had, $r(65) = -.67$, $p < .01$. Next to this Judgmental Confidence, $r(65) = .44$, $p < .01$, and Involvement $r(65) = .39$, $p < .01$, also had a positive association with the difficulty/ease of thinking of examples. Involvement is positively associated with Judgmental Confidence, $r(65) = .61$, $p < .01$, and with Information Seeking Behaviour, $r(65) = .35$, $p < .01$. Lastly, Trust in Government seems to have no association with any of the factors.

3.2 Checking the Ease of Retrieval Manipulation

The majority of participants, as seen in figure 2, who were in the Easy Ease of Retrieval group found it easier to name examples of things that attribute to climate change (43.3%) compared to participants who were in the easy group and had a difficult time (7.5%). Participants who were in the difficult manipulation group found it more difficult to name examples (37.3%) in comparison to those in the difficult manipulation group who had an easier time naming examples (11.9%). This showed to be statistically significant as shown by conducting a Pearson's Chi-Squared test, χ^2 (1, N = 67) = 25.24, p < .01, supporting that the Ease of Retrieval manipulation worked.

Figure 2

Number of Participant Finding it Easy or Difficult to Name Examples Depending on the Ease of Retrieval Group They Are In



The Pearson's correlation showed that Involvement has a positive association with Information Seeking Behaviour, $r(65) = .35$, p <.01. To check if Involvement does not influence the effect of the independent variable Ease of Retrieval on the dependent variable Information Seeking Behaviour, an ANCOVA was performed with Involvement as covariate. This showed that there was

no significant effect of Ease of Retrieval manipulation on Information Seeking Behaviour after controlling for the effect of Involvement, $F(1, 64) = 2.24$, $p = .14$.

3.3 The effect of Ease of Retrieval, Judgmental Confidence, and Information Seeking Behaviour

To check hypothesis 1, a MANCOVA was performed to determine if there is a relation between the independent variable Ease of Retrieval manipulation, and the dependent variable Judgmental Confidence, and if there is a relation between Ease of Retrieval and the dependent variable Information Seeking Behaviour.. Furthermore, it needs to be assessed if Trust in Government (with the interaction as the independent variable) is influencing the relation between the dependent variables. Analysis showed that the influence of Trust in Government was not statistically significant, $F(2, 61) = 2.04$, $p = .14$, Wilks' $\Lambda = .94$, partial $\eta^2 = .06$. Furthermore, there was no significant effect of the Ease of Retrieval on Judgmental Confidence and Information Seeking Behaviour, $F(2 ,62) = 1.79$, $p = .18$, Wilks' $\Lambda = .95$, partial $\eta^2 = .06$, after controlling for the influence of Trust in Government, undermining hypothesis 1.

3.4 The effect of Trust in Government

To test if Trust in Government moderates the relationship between the independent variable Judgmental Confidence and the dependent variable Information Seeking Behaviour, a hierarchical multiple regression analysis was conducted. In the first stage Judgmental Confidence, $\beta = .20$, $t(64) = 1.68$, $p = .09$, and Trust in Government, $\beta = -.08$, $t(64) = -0.68$, $p = .50$, were included, which showed that they did not statistically significantly contribute to Information seeking behaviour, $R^2 = .05$, $F(2,64) = 1.69$, $p = .19$.

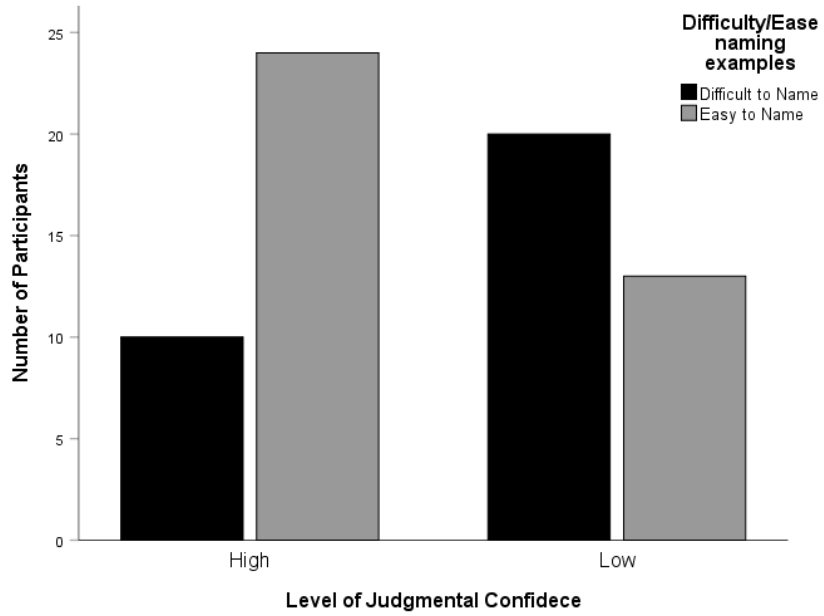
To diminish multicollinearity, the variables Judgmental Confidence and Trust in Government were centred, and an interaction term was made between them. In de second stage the interaction term Judgmental Confidence x Trust in Government was added which showed that the interaction Judgmental Confidence x Trust in Government, $\beta = .42$, $t(63) = 0.45$, $p = .66$, did not contribute to any more variance than Judgmental Confidence, $\beta = .-.15$, $t(63) = 0.19$, $p = .85$, and Trust in Government $\beta = .-32$, $t(63) = -0.59$, $p = .56$, on their own, R^2 change = .003, $F(1, 63) = 0.20$, $p = .66$. Indicating that Trust in Government is not a significant moderator between the amount of Judgmental Confidence and Information Seeking Behaviour.

3.5 Additional analysis

The Pearson correlation analysis further showed a positive association between Judgmental Confidence and the Difficulty/Ease of naming examples $r(65) = .44$, $p < .01$. As seen in figure 3, participants who have a have an easier time naming examples have a higher judgemental confidence (35.8%), in contrast to participants who have a high level of Judgmental confide and have more difficult time naming examples (14.9%). Furthermore, participants who have a lower Judgemental confidence have a more difficult time naming examples (29.9%), compared to those who had low Judgmental confidence and an easier time (19.4%). This is statistically significant as shown by a Pearson's Chi-Squared test, $\chi^2 (1, N = 67) = 6.59$, $p = .01$.

Figure 3

Number of Participants Finding it Difficult or Easy to Name Examples Based on Their Level of Judgmental Confidence



Note. The level of Judgmental Confidence is calculated by taking scores below the median as a low level of Judgmental confidence, and scores above the median as high level of Judgmental confidence.

4. Discussion

4.1 Outcomes

The research question of this study was if Judgmental Confidence was able to be manipulated by the Ease of Retrieval and there subsequently being a relation between Judgmental Confidence and Information Seeking Behaviour, which is moderated by people's Trust in Government. This study found that, while the Ease of Retrieval manipulation did influence the participants perceived difficulty in naming example of contributors to climate change, it did not influence their trust in their current knowledge, or in other words: the judgmental confidence. Subsequently, the judgmental confidence of the participants had no effect on their information seeking behaviour. Thus hypothesis 1: *Participants within the easy Ease of retrieval condition will have a higher judgmental confidence and thus will be less likely to display information seeking behaviour,* has to be rejected. While additional analysis showed that there did seem to be an association between the perceived difficulty of naming examples and the judgmental confidence, involvement seemed to play a more important role, with it being associated with judgmental confidence, as well as the information seeking behaviour.

Further analysis also proved that the trust a participant has in their government plays no effect in information seeking behaviour whether they have low or high judgmental confidence. Meaning that this study does not indicate that the trust in government plays a factor in the information seeking behaviour of people, regardless of their judgmental confidence.

The Ease of Retrieval manipulation method was chosen for the reason that according to Schwarz et al., (1991), a person's subjective perception could be changed based on their ease or difficulty of retrieving certain behaviours. While it did show an effect on participants perceived difficulty in naming contributors in climate change, which was expected since this is in line with other studies who tried and succeeded manipulating the difficulty people perceived they had to think of examples (Dijksterhuis et al., 1999; Schwarz et al., 1991; Tybout et al., 2005), there was no effect of the Ease of Retrieval manipulation on the judgmental confidence the participants perceived they had. This was not expected as Schwarz and his colleagues (1991) were able to manipulate their participants subjective perception of assertiveness.

Furthermore, there did not seem to be any relation between the judgmental confidence of the participants and their information seeking behaviour while this was expected based on research from Locander and Herman (1979), who found that the higher a person's confidence is, the less likely they are to look for more information.

While not being the main focus of this research, this study did find that involvement seems to play an important role in the information seeking behaviour of people. This is supported by research of Johnson (2005) and ter Huurne and Gutteling (2008), who found similar results in their research.

The trust participants have in the government seems to have no moderating effect on the relationship between judgmental confidence and information seeking behaviour, nor on the factors on their own. While it can be said that looking for information can fall under taking action, in contrary to research from Wachinger and colleagues (2013), there seems to be no association in this study between the people's trust in government and taking action.

4.2 Limitations and Recommendations

While this study uses the same principal of the Ease of Retrieval manipulation as Schwarz and his colleagues did, no significant relation was found with Ease of Retrieval influencing the judgmental confidence of the participants in this study. A limitation of this research could be that while Schwarz and his colleagues (1991) manipulated assertiveness, it being a more enduring personal factor, this study tried to manipulate the confidence a person has in their current knowledge. Both confidence and knowledge are more situationally dependent. For example, people can feel confident in familiar situations or when talking about domains they have interest in. So, if this study was about a different topic than climate change, the participants would have a different self-perception of their confidence. Furthermore, knowledge is a difficult thing to assess, as a person's knowledge can change quite rapidly because of a constant stream of information being produced.

This study shows that trust in government does not play a role between the judgmental confidence and the trust in government of a person. A possible explanation for not finding a relation, could be the measure with which Trust in Government is measured. In this case trust in government was measured by asking with which statement about governmental behaviours participants agreed with more for example: "How much of the time do you think you can trust the government in [your

country] to do what is right—*just about always, most of the time, or only some of the time* when it comes to climate change?". The question does not give the option to state that the participant does not know, forcing them to just choose something, which could give an inaccurate representation. It could simply be that the participants do not have enough knowledge about what the government all does and represents, and thus are unable to form a well formed opinion about the government, resulting in them not accurately being able to tell whether they trust the government or not. Trust in government can be measured in a variety of ways, for example by measuring people's trust in the information the government provides, the capabilities and intentions of the government, or trust in government in general (van Valkengoed & Steg, 2019), or by using a scale that measures people's perception of the ability, benevolence and integrity of institutions (Mayer et al., 1995). These could perhaps give a broader look of what a participant knows about the government and thus how much they trust it.

The overarching limitation of this study is the relatively low sample size. Usually with the size of the survey a larger sample size is needed for the study to have a greater reliability and validity. Sample size has implications on determining whether an effect within variables exist and how big this effect is. Additionally, sample size determines the power of the study to rule out type I or type II errors which can lead to falsely accepting or falsely rejecting a hypothesis (Baguley, 2004; Uttley, 2019). This study has a relatively low sample size, thus increasing the chance of a type II error and rejecting the hypothesis, while there is actually a significant effect.

Recommendations for further research would be to keep in mind the optimal number of participants for the study, that will guarantee the best statistical power to prevent any type II errors. Future research needs to be conducted to determine which type of behaviours can be altered using the Ease of Retrieval manipulation. Additionally, whilst this study did not find any result that people's trust in government plays a role in information seeking behaviour, further research could look at using a more optimal way of measuring trust in government. Using a different measure could give a better view of a person trust in government and subsequently if it has any influence on factors as people's information seeking behaviour. Lastly, further analysis should focus to signify the effect that a person's involvement in a topic has in risk information seeking theories, and to then possibly

implement it in already existing frameworks such as the Risk Information Seeking and Processing model.

5. Conclusion

The aim of the study was to see if a person's judgmental confidence has an influence on their information seeking behaviour, by manipulating the Judgmental Confidence with the Ease of Retrieval. Additionally, this study aimed to determine whether the trust people have in the government is an important factor in changing the information seeking behaviour of people notwithstanding their judgmental confidence. Analysis showed that while the Ease of Retrieval manipulation worked, there was no effect of this on the participant's judgmental confidence. Judgmental Confidence subsequently had no effect on participant's information seeking behaviour. Furthermore, Trust in Government does not seem to have an effect on the relationship between Judgmental Confidence and Information Seeking behaviour, nor on the variables independently. This meant that the hypothesis could be rejected and that trust in government does not appear to play an important role in people's information seeking behaviour. Analysis showed that involvement seems to be an important factor in risk information seeking, which is something that future research will have to determine if it plays and important role in risk information seeking frameworks and perhaps how it could be implemented in such frameworks.

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Appendix A: Informed Consent form

Thank you very much for wanting to participate in our research, which examines the influence of judgemental confidence on climate change-related risk-information seeking and processing. This study is done by Anniek Megens and Julia Hubbert, two third-year Psychology students at the University of Twente. Please read the following information carefully.

The aim of this study is to investigate the role judgemental confidence plays in seeking out and processing risk-related information about the topic of climate change, as well as examining the roles of current knowledge and trust in government. Completing this study will take you approximately 20 to 30 minutes.

Participation in this study is completely voluntary and please keep in mind that you can withdraw from the study at any time without having to give a reason. At the end of the study, you will be giving another chance to withdraw. The information given will be anonymized and treated strictly confidential. We do not expect any risks being associated with this study. If you have any further questions or comments, please contact the researchers:

Anniek Megens (a.megens@student.utwente.nl)
Julia Hubbert (j.m.hubbert@student.utwente.nl)

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-bms@utwente.nl .

I understand and consent that:

1) I am at least 18 years old.
2) I understand the content and voluntarily participate in this study.

3) I can refuse to answer questions and withdraw from participation at any time without having to give a reason. In case I decide to withdraw during the study or do not give my consent at the very end of the study, all my data will be deleted.
4) My data will be treated confidentially. All analysis of the given data occurs anonymized and only for the purpose of the study.
5) All my data can be evaluated and used for the research in case I do not withdraw or indicate otherwise.
6) I have been given the guarantee that this study has been reviewed and approved by the BMS Ethics Committee.

Yes, I do consent. (1)

No, I do not consent. (2)

Appendix B: Survey Setup

Set-up of Online-Experiment: The Influence of Judgemental Confidence on Risk-Information Seeking and Processing

1. **Informed Consent**

2. **Demographics**
- Age
- Gender
- Nationality
- Highest completed level of education

3. **Ease of retrieval manipulation:**
- Please list three [eight] examples of human actions that contribute to the global warming of the planet."
- Easy: Name 3 things
- Difficult: name 8 things

4. **Manipulation check:**
- How easy was it for you to come up with 3 [8] examples of human activities that contribute to climate change?

5. **Current knowledge/Judgmental Confidence** (0 to 100 scale)
- "First, we would like to rate your knowledge about the risk climate change poses, please use a scale of zero to 100, where zero means knowing nothing and 100 means knowing everything you could possibly know about this topic. Using the given scale, how much do you think you currently know about the risk climate change poses? "

6. **Sufficiency threshold** (0 to 100 scale)
- "Please use the same scale as before. This time, we would like you to estimate how much knowledge you would *need* to deal adequately with the possible risk climate change poses. Using a scale of zero to 100, how much information would be sufficient for you, that is, good enough for your purposes?"

7. **Involvement** - Control variable (5-Point Likert Scale)

Selected items from the Climate Stewardship Survey (Walker & McNeal, 2012), adapted

- How concerned are you about global warming?
- How well informed are you about…
    - How the Earth's climate system works?
    - Causes of global warming.
    - The consequences of global warming?
    - Methods to reduce global warming.

8. Showing article:

Fires and floods: maps of Europe predict scale of climate catastrophe

Without urgent action, rising sea levels by end of century could leave cities under water

▲ A digitally manipulated image showing a flooded Rotterdam. Photograph: Alexandre Rotenberg/Alamy

A series of detailed maps have laid bare the scale of possible forest fires, floods, droughts and deluges that Europe could face by the end of the century without urgent action to adapt to and confront global heating.

An average one-metre rise in sea levels by the end of the century - without any flood prevention action - would mean 90% of the surface of Hull would be under water, according to the European Environment Agency.

English cities including Norwich, Margate, Southend-on-Sea, Runcorn and Blackpool could also experience flooding covering more than 40% of the urban area.

Across the North Sea, Dutch cities including the Hague, Rotterdam and Leiden were predicted to face severe floods from an average one metre sea-level rise, which is forecast if emissions rise 4C-6C above pre-industrial levels.

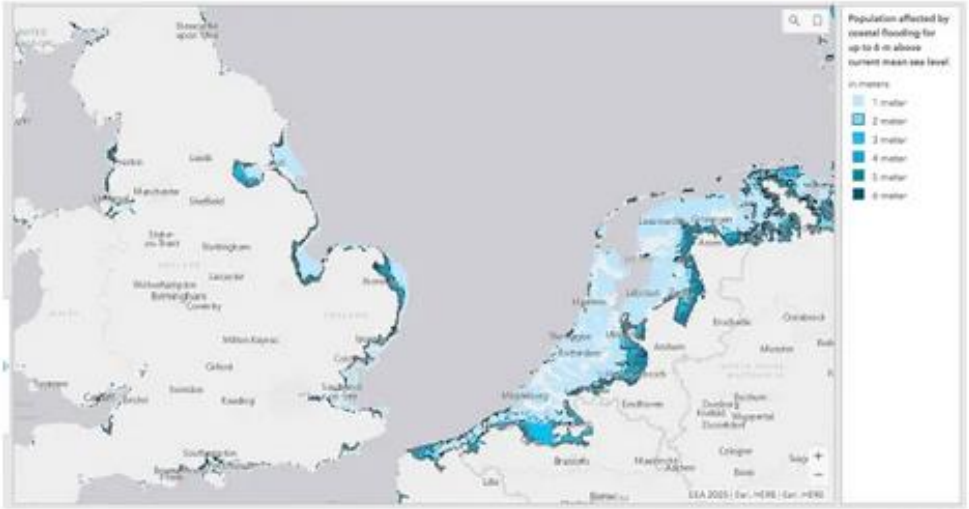
The model does not account for the Netherlands' extensive flood-prevention measures, although many other countries have not taken such action.

Meanwhile, large areas of Spain, Portugal and France would be grappling with desertification, with the worst-affected zones experiencing a two and half-fold increase in droughts under the worst-case scenario.

Hotter summers increase the risk of forest fires, which hit record levels in Sweden in 2018. If emissions exceed 4C, France, southern Germany, the Balkans and the Arctic Circle could experience a greatly increased fire risk. However, the absolute fire danger would remain highest in southern European countries, which are already prone to blazes.

Further north, winters are becoming wetter. Failure to limit global heating below 2C could mean a swath of central and eastern Europe, from Bratislava in the west to Yaroslavl in the east, will be in line for sharp increase in "heavy rain events" during autumn and winter by the end of the century.

In some areas of central and eastern Europe there is predicted to be a 35% increase in heavy rain events, meaning torrential downpours would be more frequent.



▲ Map predicting flood-hit areas. Photograph: Center for Remote Sensing of Ice Sheets/Eurostat

While the climate data has been published before, this is the first time the EU-agency has presented it using detailed maps on one site. Users can zoom in on small areas, for example, to discover that one-third of the London borough of Hammersmith and Fulham could be exposed to flooding by 2071.

The Copenhagen-based agency hopes the maps will reach decision-makers in governments and EU institutions, who would not usually read a lengthy EEA report on the impact of the climate emergency.

"It's very urgent and we need to act now," said Blaž Kurnik, an EEA expert in climate change impacts and adaptation.

Even if countries succeed in restricting global temperature rise, existing CO_2 in the atmosphere would still have an impact, he said.

"The number of extreme events and sea level rise will still continue to increase for the next decades to a century," Kurnik said. "Sea level rise, especially, can be problematic, because it is still increasing because of past emissions and the current concentration of greenhouse gases."

The agency wants governments to focus on adapting to unavoidable global heating. "Adaptation is crucial in the next decades of the century. Even if we are able to increase the temperature by 2C, adaptation is crucial for the next decades."

The EEA has concluded it is possible to limit the rise in global temperatures to 2C above pre-industrial levels, as long as greenhouse gas concentrations peak during the next 15 to 29 years.

Meeting a more demanding 1.5C limit requires concentrations to peak in the next three to 13 years. Under both scenarios, there is a 50% chance of overshooting the temperature.

9. **Risk-Information Seeking and Processing** (5-Point Likert Scale) by Griffin, Dunwoody, Neuwirth, and Giese (1999), adapted
    a. Information Processing
    - Systematic Processing:
        - After I encounter information about climate change, I am likely to stop and think about it.
        - If I need to act on this matter, the more viewpoints I get the better.
        - It is important for me to interpret information about the topic of climate change in a way that applies directly to my life.
        - After thinking about this topic, I have a broader understanding.
        - When I encounter information about climate change, I read or listen to most of it, even though I may not agree with its perspective.

- Heuristic Processing:
    - When I encounter information about climate change, I focus on only a few key points.
    - If I need to act on this matter, the advice of one expert is enough for me.
    - When I see or hear information about this topic, I rarely spend much time thinking about it.
    - There is far more information on the topic of climate change than I personally need

b. Risk Information Seeking

- Avoidance:
    - Whenever the topic of climate change comes up, I go out of my way to avoid learning more about it.
    - When this topic comes up, I'm likely to tune it out.
    - Gathering information about this topic is a waste of time.
- Non-Routine vs. Routine Seeking
    - When it comes to this topic, I'm likely to go out of my way to get more information.
    - When this topic comes up, I try to learn more about it.
    - When it comes to this topic, I'm content to let information come to me in the course of my daily life.

10. Trust in government

Adapted and edited to suit current context, from Nicholls, K., & Picou, J.S. (2013). Questions are related to the government of the respondent's country.

- How much of the time do you think you can trust the government in [your country] to do what is right—*just about always, most of the time, or only some of the time* when it comes to climate change?
- Would you say the government is pretty much *run by a few big interests looking out for themselves or that it is run for the benefit of all the people* when it comes to the topic of climate change?

- Do you think that people in the government *waste a lot of the money we pay in taxes, waste some of it, or do not waste very much of it?*
- Do you feel that almost all of the people running the government that are deciding about climate change-related topics *are smart people who usually know what they are doing, or do you think that quite a few of them do not seem to know what they are doing?*
- Do you think that quite a few of the people running the government *are a little crooked, not very many are, or do you think hardly any of them are crooked at all* when it comes to climate change related topics?
- Please indicate your level of trust in your national government when it comes to dealing with climate change: Do you have*: a great deal of trust; a good deal of trust; some trust; very little trust; or, no trust at all?*

Appendix C: Correlation Table

Pearson's correlations with Means (M) and Standard Deviations (SD) between the Variables

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 - Age	25.54	9.56	—															
2 - Gender	1.58	0.53	.06	—														
3 - Nationality	1.84	0.73	.15	.17	—													
4 - Education	1.76	1.32	**.59****	-.02	.04	—												
5 - Ease of Retrieval group[a]	1.49	0.50	-.07	-.01	-.02	-.07	—											
6 – Difficulty/ease thinking of ex.	3.28	1.14	.10	-.05	.18	.08	**-.67****	—										
7 - Judgmental Confidence	61.16	17.09	.23	-.11	.18	.11	-.15	**.44****	—									
8 - Knowledge need	71.12	21.36	-.09	.09	.08	-.02	.03	-.03	.19	—								
9 - Time reading article (min)	5.33	19.86	-.05	.10	.19	-.07	-.13	.19	.06	.15	—							
10 - Total correct answers art.	1.82	0.78	-.05	.15	.05	-.01	.15	-.11	.06	-.06	.19	—						
11 - Involvement	3.41	0.60	.10	-.05	.09	.07	-.05	**.39****	**.61****	.13	.07	-.05	—					
12 - Systematic Processing	3.68	0.66	.05	.20	.17	.09	.16	.10	.10	.17	.18	**.31***	.16	—				
13 - Avoidance	1.74	0.76	.04	-.10	-.22	-.16	-.12	-.19	**-.29***	-.13	-.14	-.13	**-.46****	**-.48****	—			
14 - (non) Routine Seeking	3.51	0.88	.19	**.29***	**.30***	**.32****	.12	.10	.14	.12	.08	.06	**.26***	**.67****	**-.55****	—		
15 - Trust in Government	2.74	0.47	-.12	.02	-0.10	-.01	-.05	.04	-.05	.12	-.09	-.20	-.08	-.15	.01	-.08	—	
16 - Information Seeking Behaviour	3.82	0.65	.09	.24	**.28***	.24	.15	.15	.21	.16	.15	.18	**.35****	**.83****	**-.80****	**.90****	-.09	—

[a] 1 = easy group, 2= difficult group.
*p < .05, **p < .01.