THE INFLUENCE OF INFORMATION IN THE FORM OF TEXT AND VISUALS ON WATER USAGE IN THE HOME

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Abstract

Water usage in the household is putting pressure on the Dutch Ground-water level. The ground-water level is of great importance to nature as well as to society. Thus, it is important that individuals use water more consciously and sustainably in the home. This study looks into the use of an informational intervention to decrease individuals' water consumption. This paper tries to answer the question: "How can information in the form of text and visuals decrease the water usage in the home?" This research question was attempted to be answered through an online experiment. Results showed no significant difference between the experiment and control group for water-saving intentions as well as all pro-environmental intentions. Thus, an informational intervention in the form of text and text and visual do not significantly influence these intentions. A positive relationship was found between individual's biospheric values and water-saving intentions and pro-environmental intentions. Possible reasons for these results are discussed as well as possibilities for additional future research.

Keywords: Water-usage, water-saving, values, informational intervention, text and visuals.

Introduction

The Dutch have lived in a love-hate relationship together with water for centuries and it has been a topic of interest to the Netherlands for a very long time (Haasnoot & Middelkoop, 2012). Knowledge and techniques are combined to keep the seawater out of our cities and countryside. The Netherlands is a country in which up to 60% of the land would be flooded occasionally if no measures were taken (Rijksoverheid, 2015). The Dutch show a great deal of expertise when it comes to fighting the rising sea levels that anthropogenic climate change is causing. On the other hand, the Netherlands needs its water to survive. For example, the prominent agricultural sector of the Netherlands values our water dearly (Huinink, Verstraten, Janssen, Mooij, Beijer, & Van der Wees, 1998). The fresh water is used to water the crops on the land as well as provide a livable environment for the livestock that is produced for meat and dairy products. However, crop farmers that produce close to the sea are afraid of salinization of the fresh water supply. If sea-levels keep rising and we do not counter the effect, salt water can seep into the in-land soil and increase the salt levels. Higher salt levels can be destructive to the current agriculture (de Boer & Radersma, 2011). These current crops are not able to withstand these high levels, and this would mean that they would be unable to be harvested anymore. These effects of salinization are in direct relation with the groundwater-level. Groundwater is fresh water that is situated beneath the surface.

The level of groundwater determines many different processes and is of great importance to society. As mentioned above salinization of agricultural grounds is related to the groundwater-level. Because, if the groundwater-level is low, seawater can more easily penetrate into the land and make the ground more salinized. However, a high groundwater-level would slow this process down and still gives the agricultural sector the ability to continue its crop harvesting (de Boer &

Radersma, 2011). Secondly the groundwater-level keeps our soil from subsiding. A low groundwater-level dries up the ground and eventually leads to a subsiding of the ground level. For many buildings and infrastructures this could mean extreme prolapsing and damage to the structures. Insurance companies have estimated that the foundations of up to 1 million households and other buildings will get damaged in the Netherlands alone until 2050 due to a low groundwater-level (Verbond van Verzekeraars, 2020). Thirdly, the groundwater-level is of great importance to nature. If the groundwater-level decreases the roots of plants and crops are unable to reach water. In periods of drought in which not much rainwater falls onto the ground, the plants can dry up and die completely. This has major consequences for the rest of the local ecosystem as well as being more prone to serious wildfires that can spread more easily through the dried-up nature.

Not only rain influences the level of groundwater, our own behavior does as well. In our daily lives we use water for a great array of activities, including cooking, cleaning, and hygiene. This amounts up to a total usage of up to 130 liter of water per person per day (CBS, 2020). This water comes clean out of our taps. However, before being cleaned and transported through our taps it was part of the groundwater. Thus, the consumption of tap water is in direct relationship with our groundwater-level. For all reasons mentioned above, it is important that we control our consumption and preserve the groundwater at a sustainable level. For the last few summers, the Dutch have already experienced a decrease in water pressure from the taps because too much water was consumed by the population. The pressure had to be decreased to ensure the groundwater would not reach disastrous low levels (Vitens, n.d.). In other words, the Dutch urgently need to reevaluate their water consumption and lower their consumption to fence off the aforementioned problems.

This paper will look into the possibilities to change behavior and intentions to consume less water in the household through the use of information provision. This paper tries to answer the following question: “How can information in the form of text and visuals decrease the water usage in the home?”

The aim of this paper is to answer this research question through the use of a literature review and an online experiment.

Literature Review

Climate change is a problem of huge proportions for people and planet and has to be fought accordingly by many different actors, such as governments, large corporations, and individuals (IPCC, 2014). Individuals can also help to mitigate the effects of climate change. Their behavior and choices can have a direct influence on the environment around them (Liverani, 2009). That is why, in addition to the large corporations and governments, individuals should also be guided in becoming aware of climate change and how they can help fight climate change. When trying to raise awareness and eventually change behavior one of the first topics that comes up is providing information (Abrahamse & Matthies, 2012). This is a valid idea since recent research has shown, that a layperson's knowledge about the technicalities of climate change is very limited (Taube, Ranney, Henn, & Kaiser, 2021). In other words, many people will have heard about climate change in the media or in conversations because it is such an important and modern topic. However, only very few people actually know what climate change entails on a technical level and know the working systems behind this change of climate. This means that a layperson is often also not aware of impact that humans have on the environment (Tabue et al,

2021). This is in line with the knowledge deficit model (Sloman & Fernbach, 2018). This model explains that individuals do not know enough about a certain environmental problem and additionally do not possess the knowledge to deal with the problem and form a solution. Such a knowledge deficit can be overcome through the use of an informational intervention (Schultz, 2002). Which thus can lead to more climate action (Schultz, 2002).

Improving an individual's knowledge through an informational intervention can still give quite varying outcomes. This is all determined by the form and type of knowledge that is presented to an individual. Very recent research shows that the formulation of a text can have a significant influence on the success of an intervention (Taube et al. 2021). In the research participants were presented with a text which either informed them about climate change through a mechanical explanation or a text in which climate change was explained through the use of a metaphor. The research found that a mechanical explanation resulted in a larger knowledge increase within participants compared to the participants who read the metaphorical text. This means that individuals are more likely to learn something from a plain technical explanation instead of using metaphorical phrasing and context (Taube et al. 2021)

Whereas researchers found that providing information will increase knowledge-levels, it does not increase motivation or stimulate change in behavior (Abrahamse & Matthies, 2012). Purely providing scientific information does not give enough inspiration for individuals to change their behavior when it comes to climate change related problems (Roosen, Klöckner & Swim 2017). This means that whenever an individual comes into contact with an informational intervention containing purely scientific information they are mostly not engaged or motivated enough the change their behavior. Which is one of the main goals of many interventions targeting climate change. The individuals do receive and process the information, but they are unable to act

upon the just received information. An example of this can be seen in a research by Bolderdijk and colleagues (2013). In their research one group of individuals was shown an informational video about bottled water and its environmental impact, a second group saw a video unrelated to this topic. After the video, the individuals were questioned about their knowledge and intentions to reduce their consumption of bottled water. The researchers found that although the video about bottled water did raise knowledge levels, there was no significant difference between the two groups to reduce their consumption of bottled water. This clearly shows that providing purely information is inadequate to change an individual's behavior (Bolderdijk, Gorsira, Keizer, & Steg, 2013). Hence, in addition to information a form of motivation is also necessary to instigate behavioral change by an intervention.

Climate change has been one of the main subjects of discourse for the last few years. However, communication regarding climate change has been mostly rationalized. Which means that all emotion is missing, this makes it harder for people to engage with the received information and pursue action (Roosen, Klöckner & Swim, 2017). Thus, it is visible that in addition to a lack of motivation to pursue climate action, emotions are often also missing in a purely textual information. A complete lack of these two aspects makes it even harder for individuals to change their behavior.

Information can be transferred in many different formats such as plain text, audio, or visuals such as text and video. Information is often provided by many different actors, such as the media by newspapers, film, television, but also by other institutions such as NGO's who want to bring attention to climate change (Boomsma, Pahl, & Andrade, 2016). This same quantitative research showed that more than two thirds of the news articles published about climate change are accompanied by a visualization (Boomsma, Pahl, & Andrade, 2016). This is not done without

reason. Visuals can help individuals understand the article and see an aspect that was not immediately visible from the text. A picture can help to convey a strong message and condense difficult information (Boomsma, Pahl, & Andrade, 2016).

As explained above, information only consisting of pure text is often not engaging and motivational (Bolderdijk, Gorsira, Keizer & Steg, 2013). Research has shown that visualization or art can increase an individual's engagement with a text. Visualization can increase an individuals' motivation to engage in problem solving (Roosen, Klöckner, & Swim. 2017). Attitudes and behavior are best changed when an artwork or visualization is very much engaging for the viewer (Roosen, Klöckner, & Swim. 2017). In other words, informational text can benefit greatly by a supportive visualization. From the other perspective, a visualization is more effective when it is backed up by understandable and important information. If the story behind the visualization is explained, it is more comprehensible for the viewer, and they are more likely to engage with the artwork or picture (Roosen & Klockner. 2020).

From the previous literature we can see that a text in combination with a visualization may be more effective when changing attitudes and behavior than providing only textual information. More and fitting information about pro-environmental related subjects and behavior should lead to higher intentions to engage in water-saving behaviors as well as in pro-environmental behavior in general (Hypothesis 1).

In addition to the presentation and form of information, the recipient also has influence on the success of the message that is being conveyed. The recipient's values are especially important to this. Every individual has certain values. These values are split up in four main groups, these are biospheric, altruistic, egoistic, and hedonic values. These values all determine how individuals perceive and judge incoming information (Bolderdijk, Gorsira, Keizer & Steg, 2013).

Schwartz (1992) already showed that values are very much a stable construct, meaning that an individual's values change very little over time. Stronger or weaker values also determine to what extent you can connect with certain information. For example, when an individual with low biospheric values watches a pro-environmental film, they are not motivated at all to take action. However, on the other hand, a person with high biospheric values is more likely to be motivated by the film. In some cases, participants with low biospheric values who watched the pro-environmental film even showed weakened intentions and acceptability to take climate action compared to a control group who watched a film about an unrelated topic (Bolderdijk, Gorsira, Keizer, & Steg, L. 2013). On the other hand, it does have a positive effect on individuals who have values aligned with the film, and it does increase positive behavior intentions within these individuals. Although values are very much a stable construct, and do not change quickly, certain values can be made more salient than others (De Groot & Steg. 2009). For example, this means that biospheric values can be made more salient and thus have a more significant influence on behavior. One approach to make these biospheric values more salient is through the use an informational intervention on climate change and in this specific case on water-usage.

A second hypothesis is followed on the abovementioned findings. Meaning, that an individual with higher biospheric values will display higher pro-environmental intentions (Hypothesis 2).

Method

Participants and Procedure

In spring of 2021 an internet-based experiment built with Qualtrics.com was distributed on social media and internal online networks. The questionnaire was also distributed among students of Campus Fryslân. The research did not require special characteristics of the participants; hence all adult participants were able to fill in the questionnaire. In total 103 adult participants filled out the questionnaire, after filtering out participants who did not fill out the questionnaire seriously (determined through the completion time and answers to the knowledge questions) a total of 87 adults remained. This group consisted of 52 females, 32 males, and 3 choose not to specify their gender. There is a slight bias towards the female side. The age of the participants ranged from 18 to 75 with a mean age of 35 years (SD= 18).

The study started by giving a brief introduction and explanation of the research to the participants. However, the real reason for the study remained hidden for the participants until after completion of the test. The participants were told that they helped in a research project to study the relation between values and the perception of information.

The participants got divided into three equal groups (N=29). The first group was asked to read a short text about water usage in the Netherlands (group Text). The second group read the same text about water usage and in addition were also provided with a photograph of nature in the Netherlands damaged by drought (group TextPic). A third group was the control group and read a text of similar length about narcissistic behavior in traffic (control-group). The participants were then asked to answer some knowledge questions about the text to determine if they had read the text. In the final part of the questionnaire the participants were asked about their pro-

environmental intentions. At the end of the questionnaire participants were thanked for their participation and debriefed about the actual purpose behind this research.

Materials and design

Participants were randomly allocated to one of the three groups. The text about water (Appendix 2) covered the general usage of water in households in the Netherlands (e.g. “In the Netherlands we use on average 130 liters of tap water per person per day” and “ An individual uses on average around 49,2 liters of warm water to shower 9 minutes per day”) and tips to decrease an individual’s water consumption (e.g. “ If you would shower 1 minute less on average, you would save around 1800 liters of water per year!” and “Try thinking about turning off the water while brushing your teeth or doing the dishes, this can also save a lot.”). The picture that accompanied the text about water usage depicted a typical piece of Dutch nature which was completely dried out, this picture was taken during a heatwave in 2020 (Appendix 3).

The control-group read a text (Appendix 1) of similar length about narcissistic behavior in traffic. The text had no link to water usage or any form of pro-environmental behavior.

Knowledge

The participants answered 3 knowledge questions after reading the text. The knowledge questions were formulated to ask about topics that were discussed in the text. These questions differed between the water-consumption text and the driving behavior text. (e.g., “What is one of the most water-consuming activities?” or “How should you respond to someone showing narcissistic behavior?”). The questions were formulated as multiple-choice questions. The knowledge questions were used as a control check to see whether the participants read and understood the text.

Values

The participants values were determined with the use of a 16-item examination adopted from Steg and colleagues (Steg, Perlaviciute, Van der Werff & Lurvink 2014). Participants were asked to rate all 16 values, including biospheric, altruistic, hedonic, and egoistic values. (e.g., "SOCIAL POWER" or " PROTECTING THE ENVIRONMENT:") on a point scale ranging from -1: "opposed to my values", 0: "not important at all", to 7: "of supreme importance". Because this research focuses on environmental behavior, we are most interested in biospheric values. 4 of these 16 items assessed the biospheric values of the individuals, these consisted of: "Respecting the earth", "Unity with nature", "Protecting the environment", and "Preventing pollution". The mean values were calculated with the 4 biospheric values, which formed an internally reliable score ($\alpha = 0.80$, M = 4.6, SD = 1.23, Min = 0.5, Max = 7.0).

Intentions

Pro-environmental intentions were tested through an 11-item examination. This list consisted of 8 items that were adopted from a prior conducted research (Addo, Thoms, & Parsons, 2019), this list covered mainly water-saving related intentions since that is the focus of this study. However, the other 3 items covered items such as recycling and the use of public transport. All items were formulated as statements "I want to..." (e.g., "I want to water my garden less" or "I want to shower at a lower temperature"). The participants were asked to rank the statements on a 5-point Likert scale (1: strongly disagree to 5: strongly agree), they also had the ability to click "not applicable" if they did not own a garden personally for example. All 11 items were computed and provided a good reliable score ($\alpha = 0.84$, M = 3.9, SD = 0.70, Min = 0.56, Max = 5).

Results

The results of the questionnaire were analyzed through the use of Stata/SE 16.1.

Knowledge questions

The knowledge questions were used as a control check to ensure the participants read and understood the text. After filtering, the remaining individuals answered at least 2 or more questions correctly. In Table 1 the results are visible for group Text and group TextPic. As visible in the table there was little difference between the percentages of correct answers between group Text and group TextPic. The control-group read a different text and thus answered different questions regarding their text. The results for the control-group are visible in Table 2.

Table 1
Percentage of Correct Answers for the Experiment Groups

Questions	Group Text	Group TextPic
1	83%	79%
2	97%	93%
3	86%	90%

Table 2
Percentage of Correct Answers for the Control Group

Questions	Control Group
1	93%
2	100%
3	76%

Relationship between Text and Intentions

Next, the water-saving intentions and all pro-environmental intentions were analyzed per experiment group. The individual's intentions for pro-environmental behavior differed over all the three groups. In Table 3 below the Means and SD for all three groups are visible, for both the water saving intentions as well as all pro-environmental intentions. As visible in the table the Means of the water-saving intentions and all intentions showed great similarity.

An ANOVA regression was conducted to see the effect the experiment had on the intentions. The results of an ANOVA can be seen in Table 4. The regression revealed that the three groups did not significantly differ between each other for neither the intentions to engage in water-saving behaviors nor to engage in pro-environmental behaviors in general. This is against the first hypothesis. No significant difference was found between the control group and the experiment groups in the extent to which individuals portrayed water-saving and overall pro-environmental intentions. Thus, there is no significant difference between the three different groups.

Table 3
Mean Scores on Intentions per Group

Groups	Water-saving Intentions		All pro-environmental Intentions	
	Mean	SD	Mean	SD
Control	3.71	.86	3.73	.80
Text	4.05	.75	4.09	.72
TextPic	3.83	.60	3.89	.56

Table 4

Anova Regression of the Groups for Water-Saving Intentions and All Intentions

Water-saving intentions	SS	df	MS	F	Prob > F
Between groups	1.59	2	.80	1.45	0.24
Within groups	45.93	84	.55		
Total	47.52				

All intentions	SS	df	MS	F	Prob > F
Between groups	1.80	2	.90	1.83	0.17
Within groups	41.29	84	.49		
Total	43.09				

Relationship between Biospheric Values and Intentions

A second analysis was conducted to study the relationship between biospheric values and water-saving and pro-environmental intentions. The average biospheric values over all participants had a Mean of 4.60 (SD 1.23). Results showed a positive relationship between an individual's biospheric values and water-saving intentions $F(2,84) = 4.24$, $p < .02$). As expected from Hypothesis 2, higher biospheric values led to higher water-saving intentions ($\beta = .18$, $t(84) = 2.85$, 95% CI [.05, .30], $p < .02$). This same relationship could be found between the biospheric values and all intentions ($F(2, 84) = 5.02$, $p < .01$). As expected from Hypothesis 2, higher biospheric values led to higher pro-environmental intentions ($\beta = .18$, $t(84) = 3.06$, 95% CI [.06, .30], $p < .01$).

The interaction effect between biospheric values and the condition did not yield a statistically significant result. A new variable was added named "Bio_x_Condition" multiplying the average biospheric values with the condition. However, as visible in Table 5, this new variable was also not able to predict the pro-environmental intentions significantly: $p > .05$.

Table 5

Regression Between the Bio_x_Condition Variable and Water-Saving Intentions as well as all Intentions

Water-saving Intentions	Coef.	Std. Err.	Tukey T	Tukey P > |T|	Tukey [95% Conf. Interval]	
Bio_x_Condition	-.13	008	-1.65	0.10	-.29	.03

All Intentions	Coef.	Std. Err.	Tukey T	Tukey P > |T|	Tukey [95% Conf. Interval]	
Bio_x_Condition	-.10	0.08	-1.33	0.19	-.25	.05

Discussion

The results showed no clear support for the first hypothesis. There was no significant relationship between the type or way of presented information per group and an increase in water-saving intentions as well as overall pro-environmental intentions. This means that the experiment-groups (Group Text and Group TextPic) did not present significantly higher scores of intentions when compared to the control group or each other. Surprisingly, this is contradicting the existing literature. Interestingly the overall score of pro-environmental intentions was already moderately high. For the control group, whose intentions should not have been influenced, the average score for pro-environmental intentions was already relatively high with a mean of 3.73 and a mean score of 3.71 for water-saving intentions on the scale of 1 to 5. An already high score of intentions within the control group meant that it was more difficult for the condition groups to score a significant higher mean score of intentions.

To explain the outcomes of the experiment, the water-saving text was re-evaluated, and contact was sought with participants to ask about their opinion regarding the text and

questionnaire. The answers given by the participants were fully voluntary. Many of the participants thought that the water-saving text was clear, and they felt that not much was missing from the text. It felt like the text was quite complete. The participants who were part of group Text were also presented with the picture after the evaluation of the text and asked about their opinion regarding the picture and whether it would contribute to the text. Some participants explained that the image might give a deeper meaning and make the message more urgent. However, others actually stated that the picture would not have been very beneficial for the text because the text was already very much complete on its own. One participant mentioned one particularly interesting point. This participant explained they wrote many articles for an online webpage and stated that when they do so they always include a picture. This is done to make the text lighter and easier to read, in other words less heavy and academic. This is a consequence which would influence the portrayed intentions. This is a process that was not anticipated prior to the experiment. Some participants might experience the text as less heavy and less pressing due to the added picture. If the information is perceived as not that pressing, an individual might not present as high intentions as expected. Whereas the previous literature suggested that an additional picture improved the text (Roosen, Klöckner & Swim, 2017) (Roosen & Klockner, 2020) the results of the current study may suggest otherwise.

The surprisingly lower score for intentions of group TextPic might be a result of a dual process that was triggered by the picture. The dual process theory suggests that humans can process information in two different ways (Kahneman & Frederick. 2005). These two processes are also called system 1 (intuitive) and system 2 (conscious). System 1 is used to give easy answers and thoughts on information we already expect to know. Whereas we use system 2 in the brain to create a deeper, more detailed understanding of a situation or text (Kahneman &

Frederick. 2005). For group TextPic in the questionnaire the additional picture to the text might have activated system 1 for some and system 2 for others. This might have resulted in a much lower score for the pro-environmental intentions for the individuals who had processed the information through system 1. The individuals from group TextPic who processed the text more consciously through system 2, might have answered more along the hypothesized lines. In other words, the additional picture of the dried-up nature might actually have a limiting effect on the processing and perception of the information. Additional research might determine the influence of the dual process theory on pro-environmental information and behavior.

The results for the pro-environmental and water-saving intentions in relation with the participants' biospheric values were in line with the existing literature Bolderdijk, Gorsira, Keizer, & Steg, L. 2013). The participants all identified biospheric values as already rather important. The mean score of biospheric values was 4.60 (scale from -1 to 7), meaning that the mean score was more than 1.5 point higher than the halfway point of 3. Still, the results show that participants with higher biospheric values were more likely to indicate higher pro-environmental intentions. Thus, there is a positive relationship between these two variables.

The new variable that was created, Bio_x_Condition, was not able to significantly explain the water-saving intentions or pro-environmental intentions. Meaning, that the biospheric values in combination with the different condition groups did not have a significant influence. Thus, meaning that the biospheric values had no influence on the perception of the text and/or picture. The dual process discussed above was thus most likely not triggered by the level of an individual's biospheric values.

With the results of this current study, this would mean that an informational intervention by for example governmental institutions or the water provider would not lead to an actual

decrease of water usage intentions in individuals. In the future, when ground-water levels reach a threatening level again and the water consumption needs to decrease, water providers need to think of additional interventions next to an informational approach to ensure that water-usage will decrease.

Limitations and Future Research

The experiment did not show the results expected from the literature. This might have several causes. Possibly, the time of the experiment was of influence. The experiment was now carried out around April, thus a period of spring in which everyone can see nature flourishing and growing. If this same experiment had taken place in late summer, when people might have fresher memories of heatwaves and periods of drought, they might be more prone to engage with the text and recognize the image the picture depicts. Secondly, a rewritten version of the text or a different picture might have evoked better results. These might be factors that have played a role in the outcome of this study. It is also interesting for future research to look into other fields of sustainability. For example, more focusing on recycling or public transport. Further research is necessary to determine if and too what extent these factors might have influenced the results.

Conclusion

In this current study it was not possible to conclude to what extent the presentation of information has on an individuals' water-saving and pro-environmental intentions. Although previous literature suggested that information in the form of text and in text and picture would increase intentions, this relationship was not found in the results of this study. There still might

be an indication that information positively influences pro-environmental intentions. However, this can not be concluded with certainty. A positive relationship between biospheric values and water-saving intentions was found, as well as a positive relationship with overall pro-environmental intentions.

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Appendices

Appendix 1:Text Control-group

This text has been translated and adjusted to fit the questionnaire. The original text can be found at De Stentor: https://www.destentor.nl/auto/de-meeste-verkeershufters-hebben-last-van-deze-persoonlijkheidsstoornis~a674a42c/

Most Traffic jerks Suffer from a Personality Disorder

Flashing the lights, overtaking on the right, taking right of way and tailgating: these are actions performed almost exclusively by people with a narcissistic driving style. German psychologist Ralf Buchstaller explains the characteristics of these road maniacs.

An experiment in a driving simulator confronted 60 students in the United States with common traffic situations: sometimes someone else took right of way, they were stuck in traffic, or they waited forever at a traffic light. In other words: frustrations sometimes ran high.

The research team made the students believe that the other cars were also being driven by test subjects. The result: some students started swearing and others even caused virtual accidents. Interesting detail: the majority of them had previously completed a questionnaire that showed that they had a narcissistic personality.

"The reason narcissists drive so aggressively is because they claim special rights for themselves," explains Brad Bushman, study director at Ohio State University. The psychologist

has been researching the causes of aggression for about 30 years. According to him, narcissistic people believe the road is theirs. They feel they have the right to drive when they want, where they want and how they want. ” According to the American university union, narcissists are therefore a danger on the road.

Ralf Buchstaller, psychologist at the German research institute TÜV NORD, thinks that extreme forms of narcissism are a disorder and can create problems for fellow road users. "The more narcissistic, the stronger the self-centeredness and belief to be superior to others," explains Ralf Buchstaller. "And that increases the risk of violations behind the wheel."

A narcissistic driving style is especially common in men. A representative survey of insurers commissioned by an accident investigation in 2016 showed that more than one in four motorists had at one time or another forced right of way. One in three admitted to tailgating if someone didn't get to the right fast enough. "Typical narcissistic behavior of people who consider the street as their territory and want to assert their alleged rights," said Buchstaller. According to Buchstaller, it is not smart to reply to these types of people. The psychologist advises to keep your distance and not to return evil for evil. However, it may help in accepting lousy road behavior. "The knowledge that these are people with a mental disorder may help in the processing of antisocial behavior by these kinds of maniacs," said the psychologist.

Appendix 2: Text Experiment Group

Water in the Netherlands

The summer periods in the Netherlands have been getting warmer and drier. This means that nature and agriculture are in danger of drying out. When there is little precipitation, the

groundwater level decreases. This can lead to more fires and crop failures because plants are unable to reach to groundwater and dry out even further. A loss of plants and a drier ground also makes it harder for new saplings to develop and a loss of biodiversity. A low groundwater level also results in salinization of the groundwater which means that fresh water becomes saltier, which is also destructive for agriculture. When the groundwater is very low peat dikes are also in danger of drying out and breaking. The groundwater level is not only dependent on precipitation. Even more so is human consumption. In the drier summer months water treatment plants have to pump up the water from the ground, clean it and send it through our taps. This means extremely large amounts of water. In the Netherlands we use on average 130 liters of tap water per person per day. This totals to 800 billion liters of tap water per year in the Netherlands. This amount is even increasing again because during the summer people tend to use more water to seek cooling, water our plants or fill up pools. Most of the water we use goes immediately down the drain after usage. Only a few liters are used for cooking and drinking. To ensure our groundwater level stays at a sustainable level it is important to use our water responsibly. This is important, not only in the summer period but the whole year around.

Fortunately, there are effective ways to decrease water consumption in the household. Showering is one of the most water consuming activities to do. An individual uses on average around 49,2 liters of warm water to shower 9 minutes per day. If you would shower 1 minute less on average, you would save around 1800 liters of water per year! Not only is this saving water, it is also saving gas. Warm water costs around 50x more energy than cold water. Try thinking about turning off the water while brushing your teeth or doing the dishes, this can also save a lot. Efficient use of smart appliances can also decrease your water usage substantially. The dishwasher and washing machine are two other appliances that use a lot of water. By using the

eco-setting on your washer, you can limit the water use. Another good way to decrease the water usage by these machines is to wait until they are completely full, so you make sure you use it to its full potential. More conscious use of our water will help limit the impact on our society and environment.

Appendix 3: Picture and Caption Experiment Group

"This photo was taken in 2020 as part of a study initiated by de Volkskrant, looking at how nature reacts to extreme drought, wetness and a heat wave. Here we see a piece of peat soil that, despite the proximity of a small pond, has dried up and is cracked as a result. Photographer: Ronald Bakker."