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Abstract

Anthropogenic climate change is one of the most urgent problems of the 21st century. In order to reduce environmental harming consumption, it is important to understand the perception of greenhouse-gas intensive behaviour. To contribute to this field of research, the present study investigates the influence of the effort heuristic on the perception of pro-environmental impact. The effort heuristic states that for the same actions, higher effort is associated with a higher impact estimation. To test this hypothesis in the context of environmental protection, an online study with 252 participants was conducted. The participants were randomly assigned into two groups with both reading three scenarios about a change in behaviour for environmental protective reasons. While one group was reading that the change was done with sacrifice, the other group was reading about a change with ease. After reading each scenario, the pro-environmental impact was estimated with two items focusing on the change in behaviour and four items focusing on the acting person. A mean difference analysis showed that for the person-related item the pro-environmental impact estimation was higher in the sacrifice condition compared to the no sacrifice condition. For the change in behaviour-related items no effect was found. Additionally it was tested if personal attitudes moderate this effect. No moderating effects of the attitude towards protestant work ethic, green consumption values, hedonic plus gain and normative goal frames were found.

Keywords: anthropogenic climate change, effort-heuristic, protestant work ethic, green consumption values

Deutschsprachiges Abstract

Der anthropogene Klimawandel ist eines der dringlichsten Probleme im 21. Jahrhundert. Um klimaschädliches Konsumverhalten zu verringern, ist es wichtig die Wahrnehmung von treibhausgasintensiven Verhaltensweisen zu verstehen. Als Beitrag zu diesem Forschungsfeld untersucht die vorliegende Studie den Zusammenhang zwischen der Aufwandsheuristik und der Einschätzung positiver Umweltauswirkungen. Die Aufwandsheuristik besagt, dass für die gleiche Handlung ein höherer Aufwand mit einem besseren Ergebnis assoziiert ist. Um diese Hypothese im Kontext von umweltschützendem Verhalten zu untersuchen, wurde eine Studie mit 252 Teilnehmenden durchgeführt. Die Teilnehmenden wurden randomisiert zu zwei Gruppen zugeteilt, in welchen jeweils drei Szenarien über eine umweltschützende Verhaltensänderung präsentiert wurden. Während der einen Gruppe die Verhaltensänderung als Verzicht beschrieben wurde, bekam die andere Gruppe eine leichtfallende Verhaltensänderung zu lesen. Nach jedem Szenario wurden die positiven Umweltauswirkungen der Verhaltensänderung geschätzt. Zwei der Items legten den Fokus dabei auf die Verhaltensänderung, während vier Items auf die handelnde Person fokussiert waren. Eine Analyse der Mittelwertdifferenzen zeigte, dass für die personenbezogenen Items die positiven Umweltauswirkungen in den Verzichtsszenarien höher eingeschätzt wurden als in den Szenarien ohne Verzicht. Für die Items, in welchen der Fokus auf die Verhaltensänderung gelegt wurde, konnte kein solcher Effekt festgestellt werden. Zusätzlich wurden mögliche Einwirkungen von Persönlichkeitseigenschaften auf diese Effekte untersucht. Es zeigten sich keine Moderatoreffekte bezüglich der protestantischen Arbeitsethik, grünen Konsumwerten, hedonistischen- und Wachstumszielen sowie normativen Zielen.

Schlagwörter: anthropogener Klimawandel, Aufwandsheuristik, protestantische Arbeitsethik, grüne Konsumwerte

Sacrifice for Environmental Protection. How the Effort Heuristic Influences the Estimation of Pro-Environmental Impact

Humanity has to cope with several great challenges in the 21st century. From finding a proper and ethically justifiable use of artificial intelligence (Cath, 2018) to stopping the increasing inequality within countries (Goda & Torres García, 2017), all these challenges are characterized by a high level of complexity and interdisciplinarity as they concern various different societal and scientific areas (Rzevski, 2015). Additionally, many of them are similar, as there is no consensus in which way humanity should take action to fight them. Despite the uncertainty, taking action will be necessary as the pathways of all the great challenges are not self-determined but rather based on human behaviour and decisions.

If there is one challenge of the 21st century that is more pressuring than the others, it is the ongoing anthropogenic climate change (Dow & Downing, 2016; Nordhaus, 2019). This term refers to the increase in global mean temperature, which is caused by the rapidly increasing emissions of greenhouse gases due to human activities (Intergovernmental Panel on Climate Change [IPCC], 2014). Regarding anthropogenic climate change, the situation is rather different to other great challenges, as there exists a high scientific consensus about the existence of the anthropogenic climate change, as well as that it is necessary to take measures against it (Oreskes, 2018).

To avoid catastrophic global climate change consequences – i.e. to avert rising rates of food-insecurity (Wheeler & Von Braun, 2013), water scarcity (Gosling & Arnell, 2016) and flooding of whole earth regions (Mirza, 2011) – a drastic decrease of greenhouse gas emissions is needed (IPCC, 2014). Therefore, the stipulated target of the United Nations (UN) is to keep the global mean temperature below a 1.5 °C – 2.0 °C warming threshold compared to preindustrial

times (Cléménçon, 2016). To achieve this target it is necessary to take a closer look at various emitters of greenhouse gases and their underlying intentions and motivations. Research on the causes of the rising greenhouse gas emissions had shown household consumption as one of the main drivers, with western countries having emissions lying far above the world average (Ivanova et al., 2020).

If Europe wants to obtain a leading position in combating the anthropogenic climate change, a main aspect will be finding a path towards sustainable consumption. One possible way to achieve this goal is to increase the consumers' willingness to change their consumption patterns. Regarding the general perception of anthropogenic climate change, research has shown that a rising number of people are aware of the problems caused by anthropogenic climate change and share a positive attitude towards climate protection (Steentjes et al., 2017). Contradictory to those findings, the amount of European greenhouse gas emissions due to consumption is not decreasing (Ivanova et al., 2020).

The rising awareness for the necessity of climate protection (Steentjes et al., 2017) and the still very high consumption-based emissions (Steininger et al., 2018) show a discrepancy between attitudes and actual behaviour. Therefore, it is inevitable to do research on the underlying causes of this discrepancy in order to help overcome it and to enable people to act in an environmentally protective way.

Research gap

The discrepancy between one's attitude and actual behaviour is a well-known issue of psychological research. Primary research focused on intrapersonal factors, with findings indicating that visceral factors are a possible explanation for this discrepancy (Loewenstein, 1996). According to those results, drive states, such as hunger, sexual desire or thirst, activate a

desire to get rid of them, which is diminishing other goals (Loewenstein, 1996). In combination with a disproportionally overload of present visceral states, this can lead to behaviour which is not in line with the self-interest of the acting person (Loewenstein, 1996).

With the rising awareness of the important role psychological mechanisms play regarding environmental problems, psychologists started research on whether similar causes might be underlying the discrepancy between pro-environmental attitudes and behaviour that is harmful to the environment (e.g., Holmgren et al., 2018). It was shown that one explanation is a biased estimation of the environmental impact. When a set of items (e.g., 10 “normal” buildings) was presented to participants, the negative environmental impact was estimated higher than for the same items with additional “environmentally friendly items” (e.g., 10 “normal” buildings + 5 “green” buildings; Holmgren et al., 2018). This bias is called negative footprint illusion and occurs when people think that they can compensate harming behaviour with additional “green” behaviour (Holmgren et al., 2018). While substituting an environmentally harmful behaviour with a less emission-intensive one would reduce emissions, additional consumption will always increase emissions, even if it is “greener” than the first consumption good.

There are other findings which imply that in the process of rating the effectiveness of an action, people tend to consider factors for their estimation, which objectively do not influence the impact of an action on the environment (Hoogendoorn et al., 2019). For example, it was shown that actions are rated as having a lower impact on environmental protection if they were done for self-serving reasons rather than for purely environmentally protective causes (Hoogendoorn et al., 2019). While those reasons are important regarding subjective thoughts of fairness, the objective impact of environmentally protective behaviour does not depend on one’s intentions. As these results pointed out, people might have misconceptions about what it takes to act in an

environmentally protective way, which could prevent them from acting in line with their attitudes.

A possible underlying factor, which is not yet explored, is the effect of perceived sacrifice on the estimation of pro-environmental impact. Previous studies in other research areas (e.g., choice of pharmaceutical products) have shown that in some situations the perception of sacrifice mistakenly influences the estimation of outcomes and further the choice of relating actions (Cheng & Schrift, 2017; Labroo & Kim, 2009). The aim of this study is to bridge findings about the influence of sacrifice on outcome estimations into the context of environmental psychology.

Theoretical Framework

Sustainable consumption

To specify a certain problem – in this case the anthropogenic climate change – it is necessary to differentiate between underlying causes in order to avoid a potentially misleading generalization of results. The driver of anthropogenic climate change is the increasing amount of “greenhouse-gases” emissions, mainly since the beginning of the first industrial revolution (IPCC, 2014). Among those gases, carbon dioxide (CO₂) has the biggest influence on anthropogenic climate change (IPCC, 2014). While CO₂ is emitted in many different sectors, research has shown that about two third of the total emissions are linked to household consumption (Ivanova et al., 2020). The term household consumption refers to a wide range of consumption like purchasing food, daily transportation, or housing (Ivanova et al., 2020). Research has shown that a change of these patterns into less carbon-intensive ones offers a great mitigation potential and is therefore one pathway to act against anthropogenic climate change (Ivanova et al., 2020).

For a long period of time, consumption was scientifically explained within the “homo economicus” framework, which relies on the assumption that people behave in a completely rational way, are perfectly provided with knowledge, and therefore always choose the option which best fits them regarding the price and the quality of goods and services (Falk, 2001). As proven by previous research, this view is too simplistic, and actual consumption behaviour is affected by many different beliefs (e.g., moral beliefs), which are often unconscious to the consumers (Gigerenzer & Gaissmaier, 2011).

The emergence of consumption decisions is a highly researched topic in psychological research (e.g., Alba & Williams, 2013), whereas there are fewer findings explicitly focusing on consumption related to the emissions of greenhouse gases. In this context, the term sustainable consumption was established, which refers to consumption that is not as environmentally harmful as “normal” consumption (e.g., second-hand textiles, vegan / vegetarian diet) and is one approach to tackle anthropogenic climate change from the side of consumers’ behaviour (Anantharaman, 2018).

Environmental impact is inherent neither to the price nor the quality of a product, and providers of sustainable products and services must therefore apply different strategies to appeal to their consumers. To enhance the perception of sustainable products, a first step is to better understand which factors are related to a change from a normal to a sustainable consumption. Therefore, this study focuses on possible influences of sacrifice (The effort heuristic; Kruger et al., 2004), effort-related traits (The protestant work ethic trait; Mirels & Garrett, 1971), the perceived importance of environmental protection (Haws et al., 2014) as well as different goal frames (Lindenberg & Steg, 2007) on the estimation of environmental impact.

Effort Heuristic

The main target of the present study is to connect the estimation of pro-environmental impact to the perception of sacrifice. This is based on the effort heuristic, which states that perceived effort leads to the estimation of better outcomes. While this heuristic was named differently among research with slightly changed conditions (Kramer et al., 2012; Kruger et al., 2004; Labroo & Kim, 2009), the link between effort and outcome was the same for all studies. Heuristics in general are intuitive estimations, based on learned probabilities, which facilitate decision making in ambiguous situations (Tversky & Kahnemann, 1974). While heuristics are sometimes very useful and lead to good estimations in simple situations, they can also often be misleading. For example, it was shown that people tend to overestimate the occurrence of unlikely events if they are recalled easily (e.g., airplane crashes), which is called the availability heuristic (Tversky & Kahnemann, 1974).

The intuitive estimation that effort leads to better outcomes is a special type of heuristic which occurs over a broad range of different situations. When people pursue a goal, they tend to believe that a higher effort (e.g., metacognitive difficulty) leads to better goal attainment (Labroo & Kim, 2009). One explanation of the occurrence of this heuristic is that it is often necessary to invest effort to obtain a goal (Labroo & Kim, 2009). People might wrongly presume this correlation to be a causality, even if the pure existence of invested effort does not indicate any superior outcome (Labroo & Kim, 2009). An example of this would be a person investing a lot of effort into studying to pass a test. To predict if that effort has a positive effect on the results of the test, additional information is needed. If the person studies the wrong topics or applies a bad learning strategy, the invested effort might not show in the test results. Concerning these findings about the effort heuristic (Labroo & Kim, 2009), people would tend to predict a positive effect of

learning effort on the test result even without any further information about the effectiveness of this effort.

Similar results were found in the research area of consumer preferences, where it was shown that people with high involvement (e.g., people having an allergy) tend to estimate medicine with more side effects to be more effective compared to medicine with fewer side-effects (“No-Pain, No-Gain Lay Theory”; Kramer et al., 2012). While these studies focused on the estimation of directly self-related outcomes, researchers found that the perceived effort another person invests (e.g., a painter into her/his painting) is also an indicator for the estimated outcome (“Effort heuristic”; Kruger et al., 2004).

In the present study, all these heuristic varieties will be referred to as effort heuristic, as this study aims to understand estimations of other peoples’ behaviour. They have in common that they intuitively link effort and outcome in a way that might lead to wrong estimations under uncertainty. Regarding climate protection, it is undoubted that effort is needed to stop anthropogenic climate change (Boto-García & Buccioli, 2020). A special form of effort is sacrificing, what means to waive one’s own preferences in order to do something good for other people or the society. Acting in an environmental protective way is often requiring sacrifice as many greenhouse gas-intensive behaviours like flying or eating meat are perceived as pleasurable by many people (Broome, 2008). According to the mentioned studies about the effort heuristic, people might wrongly suppose this connection to be a causality. This would mean that in peoples’ perception, there is no environmental protection in line with pleasure, even if this could often be the case (e.g., taking the train instead of the plane could lead to pleasure in form of new travel experiences). Therefore, sacrifice might be perceived to be crucial to generate positive environmental impact. This assumption leads to the first hypothesis:

H1: An intended change in behaviour, which is done for environmentally protective reasons is perceived to have a greater pro-environmental impact if the change requires sacrifice compared to a change with ease.

Protestant Work Ethic

The conception that higher effort will lead to better outcomes is not a new psychological phenomenon. Almost 100 years ago, Max Weber proposed that this mindset had helped the protestants to gain material wealth because they were willing to work harder and sacrifice more, compared to people from non-religious or less effort-focused religions (Van Hoorn & Maseland, 2013). Originally, this concept only regarded the attitude towards work, which led Weber to name it the “Protestant Work Ethic” (PWE; Van Hoorn & Maseland, 2013). First, only thought of as a religiously induced attitude, the PWE was found to be an interpersonal attitude with no inevitable connection to religious beliefs (Mirels & Garrett, 1971). Later research (Cheng & Schrift, 2017; Schrift et al., 2016) has shown that this conception of ethics has spread into more contexts of life, possibly influencing many daily decisions. For example, it was shown that people with high scores on the “Protestant ethic scale” (Mirels & Garrett, 1971) rated unpleasant-tasting medicine as more effective compared to people with lower scores (Cheng & Schrift, 2017). Similar results were found in other tasks, like rating the relation of price and quality, in which people with stronger PWE attitudes assumed a higher positive correlation (Cheng & Schrift, 2017). As those results show, the attitude towards the PWE is closely related to the connection between sacrifice and outcome estimation across different fields of research. A field not yet explored is climate change related behaviour. While climate protective behaviour will be one of the most important targets in the upcoming years (Oreskes, 2018), it is also often perceived as requesting a high level of sacrifice (Broome, 2008). As pointed out above, the PWE

trait might play a crucial role in this perception, as stronger attitudes could lead to an overestimation of the influence of sacrifice on the real pro-environmental impact. This leads to the second hypothesis:

H2: People with stronger attitudes towards the protestant work ethic suppose a stronger impact of sacrifice on desired outcomes compared to people with weaker attitudes.

Therefore, with the rise of protestant work ethic attitudes, the correlation between sacrifice and estimated pro-environmental impact increases. This means that the strength of protestant work ethic attitudes is a positive moderator of this correlation.

Green Consumption Values

While results show that the effort heuristic occurs in a wide range of different areas, there are factors which might influence its strength. The supposedly most important factor underlying this heuristic is if an action is perceived as suitable to attain a personal goal (Cheng & Schrift, 2017; Kramer et al., 2012; Labroo & Kim, 2009). This means that if an outcome is not perceived as desirable for oneself, the effort heuristic is weaker or does not occur (Labroo & Kim, 2009). As argued before, a likely explanation of the effort heuristic is that people mistake the correlation between effort and outcome to be a causality, leading to the estimation that higher effort always leads to better outcome (Labroo & Kim, 2009). If an outcome is not seen as an important goal and the effort heuristic is therefore not used for the estimation, there should be a non-existent or even negative correlation between effort and outcome. In the context of the present study, the outcome is the pro-environmental impact of a changing behaviour, and the goal to be attained is environmental protection. One way to measure the importance of this goal in the context of consumption is to assess the level of green consumption values (Haws et al., 2014). These values refer to the tendency to express the importance of environmental protection in the form of one's

own consumption behaviour (Haws et al., 2014). Consequently, this would imply that people with higher green consumption values would be more susceptible to the effort heuristic. This leads to the third hypothesis:

H3: People with higher green consumption values are more likely to use the effort heuristic to estimate the pro-environmental impact of an intended change in behaviour. Therefore, with rising levels of green consumption values, the correlation between sacrifice and estimated pro-environmental impact increases. This means that the level of green consumption values is a positive moderator of this correlation.

Goal Framing

While the importance of goals regarding the effort heuristic seems undoubted, it is noteworthy that there are different goal frames within each person, which might be rather contrary than complementary (Fishbach & Dhar, 2005). One scientific goal-framing theory that fits the purpose of this study distinguishes between the three goal frames hedonic, gain and normative (Lindenberg & Steg, 2007). Hedonic goals refer to the seeking of pleasurable moments and feelings, gain goals to the aim of extending one's resources and normative frames to acting in line with societal norms (Lindenberg & Steg, 2007). Regarding greenhouse gas intensive behaviour, hedonic and gain framed goals often oppose the normative goal. A common example is that flying is often cheaper and faster than taking the train. In this case, the price (gain goal) and the avoidance of long travel times (hedonic goal) are incompatible to the avoidance of greenhouse gas emissions (normative goal). The decision a person takes in this kind of situation is affected by the strength of framing for each type of goal (Lindenberg & Steg, 2007). On an intrapersonal level, those goals do not strictly oppose each other, which means that a person can show high levels of hedonic and gain goal framing as well as a high level of normative goal

framing. As argued before, perceiving an outcome as a personal goal is a basis for the occurrence of the effort heuristic. Connecting this argument to the goal-framing theory leads to the assumption that the individual level of framing for each type of goal moderates the correlation between sacrifice and pro-environmental impact estimation. To predict the direction of the moderator effect, the underlying structure of the three types of goals must be examined. For the present study, the three types of goals were distinguished into those focusing on oneself and to those focusing on society. Gain and hedonic goal frames aim at fulfilling one's needs and therefore belong to the first category. Normative goals are the opposite, with a focus on societal needs and therefore belong to the second category. People with strong hedonic and gain goal frames are assumed to estimate the sacrifice of giving up a valued behaviour as higher because sacrificing for society is incompatible with these goals. In contrast, people with strong normative goal frames are assumed to perceive less sacrifice because in their belief, changing a behaviour for societal needs might be an ordinary rather than a sacrificing act. This leads to the following hypotheses:

H4: People with stronger hedonic and gain framed goals rate the sacrifice of changing a liked behaviour higher compared to people with weaker framings at these goals.

Therefore, with rising strength of hedonic and gain framed goals the correlation between sacrifice and estimated pro-environmental impact increases. This means that the strength of hedonic and gain framed goals is a positive moderator of this correlation.

H5: People with a stronger normative framed goals rate the sacrifice of changing a liked behaviour lower compared to people with weaker framings at these goals. Therefore, with rising strength of normative framed goals the correlation between sacrifice and estimated

pro-environmental impact increases. This means that the strength of normative framed goals is a negative moderator of this correlation.

The study

The basic structure of this study was to randomly assign participants to two different conditions. In each condition they read three scenarios, which described the same field of content but differed regarding the level of sacrifice the described people felt when changing a certain behaviour. After each scenario, participants had to estimate the pro-environmental impact of the behavioural change by answering four items which already have been used in a scientific study on green consumption (Kim & Schuldt, 2018) and two self-generated items. The other parts of the study were the same for all participants and included the protestant ethic scale (Mirels & Garrett, 1971), the green scale (Haws et al., 2014) and parts of the consumer motivation scale (Barbopoulos & Johansson, 2017). The study concluded with three questions regarding the perceived importance of behaviour affecting the environment and demographic questions about gender, age, and highest level of education.

Study Design

As the study design had no interactive parts between investigator and participants, and with the COVID19 situation having made it difficult to test in a laboratory, the study was conducted online. The participants were recruited through different online platforms. The link to the questionnaire was shared in various Facebook groups as well as on different Facebook profiles. Furthermore, it was sent via E-Mail to people in different working fields. Some of these participants again shared the link via Email or WhatsApp, which resulted in a snowball sampling. This term refers to a type of sampling in which participants are not only recruited by the investigator (Handcock & Gile, 2011). Rather, participants recruit new participants, which

themselves recruit more participants and so on, which should lead to a higher diversity within the final sample (Handcock & Gile, 2011). For the implementation of the questionnaire, the online tool “Unipark” was used.

At the beginning of the questionnaire, the participants were randomly assigned to one of two groups, which differed in their indications for the independent variable (level of sacrifice for a certain change in behaviour). Both groups had to read three scenarios, in which someone was planning to change their behaviour to act in an environmentally protective way. The topics of the scenarios included flying, meat consumption and purchasing clothes. The same change in behaviour was indicated for both groups, but in one group the change was very hard (sacrifice condition) while in the other group it was a rather easy change (no sacrifice condition). As two examples, the sacrifice scenario for consuming meat (1) and the no sacrifice scenario for flying (2) are presented below. Within both groups there were randomised sub-groups that differed in the gender of the described person, which was important for further analysis.. While the presented examples include female and male genders, participants only read either the female or the male version throughout the three scenarios. For the complete set of scenarios, see Appendix A.

(1) Susanne/Oliver had recently read a lot about climate change and found out that eating meat causes a lot of CO₂ emissions and therefore reinforces climate change. She/he highly enjoyed eating meat in the past and therefore consumed a lot. Nonetheless she/he now resolves to change to a vegetarian diet in the future.

(2) Lisa/Daniel had recently read a lot about climate change and found out that flying causes a lot of CO₂ emissions and therefore reinforces climate change. Lisa/Daniel was

used to fly on vacations very often but flew mainly due to her/his friends' preference.

She/he now resolves to take the train instead of flying in the future.

After reading each scenario, participants were asked to estimate the pro-environmental impact of the planned change in behaviour. This estimation consisted of six items which all had to be rated on a seven-point Likert scale. Four of the items (Kim & Schuldt, 2018) aimed mainly at estimating the pro-environmental impact with a broader focus on the described person:

“Compared to other people, how small or large is the described person’s carbon footprint, in your best guess?” (1 = *much smaller* and 7 = *much bigger*; Kim & Schuldt, 2018). For this item, a description of the concept of carbon footprint was given to ensure that participants knew what they were estimating (complete list of items in Appendix C). For the estimation of the environmental impact directly related to the change in behaviour, the two self-generated items “The change in behaviour of the described person is an important contribution to climate protection” and “On the base of what one person could do for climate protection, the change in behaviour of the described person is quite relevant” (1 = *strongly disagree* and 7 = *strongly agree*) were used. Additionally, the order of scenarios was randomised to prevent possible order effects. Table 1 shows an overview of the four randomised scenario variations.

Table 1

Randomised Scenarios

	Independent variable (sacrifice condition)	
	Female – No sacrifice	Female – Sacrifice
Gender of described person	Male – No sacrifice	Male - Sacrifice

The other parts of the questionnaire consisted of a general introduction and an agreement reading, four scales to test the moderator variables, demographic data, and open input typing

fields for a guess of the study purpose and feedback. For these parts, there was no difference between the four groups. To measure the attitude towards the protestant work ethic (Hypothesis 2), the “Protestant ethic scale” (Mirels & Garrett, 1971) was used. This scale consists of 19 items (e.g., “If one works hard enough, he is likely to make a good life for himself”; 1 = *I disagree strongly* and 7 = *I agree strongly*; see Appendix D). The scale had been used in many scientific research projects before (e.g., Lee, Pant & Ali, 2010; Smrt & Karau, 2011), which indicates a high relevance of this scale. Three items had to be recoded for analysis due to their opposite polarisation. The participants’ green consumption values (Hypothesis 3) were measured with the “GREEN scale” (Haws et al., 2014), which consists of six items. An example is “I am concerned about wasting the resources of the planet” (1 = *does not describe me at all* and 7 = *absolutely describes me*; see Appendix E). As for the protestant ethic scale (Mirels & Garrett, 1971), this scale is meant to have a strong relevance due to its high number of scientific citations (e.g., Maniatis, 2016). To assess different goal frames (Hypotheses 4 and 5) an election of items from the “Consumer motivation scale” (Barbopoulos & Johansson, 2017) was presented to the participants. The original scale consisted of 34 items that covered seven dimensions of goal framing. For this study, only three dimensions were used. The dimensions of quality and comfort were put together to test for hedonic and gain framed goals (Hypothesis 4), while the dimension of ethics was used to test for normative framed goals (Hypothesis 5). This led to an overall of 14 items, consisting of five normative, five gain and four hedonic related items (See Appendix F). The participants read the sentence “When I consume goods or services, it is important to me that what I consume is ...” and had to rate the importance of each item on a personal scale. Item examples are “is not morally wrong” (normative), “meets even the highest requirements and expectations” (gain) or “is smooth and comfortable” (hedonic). Ratings reached from 1 = *not*

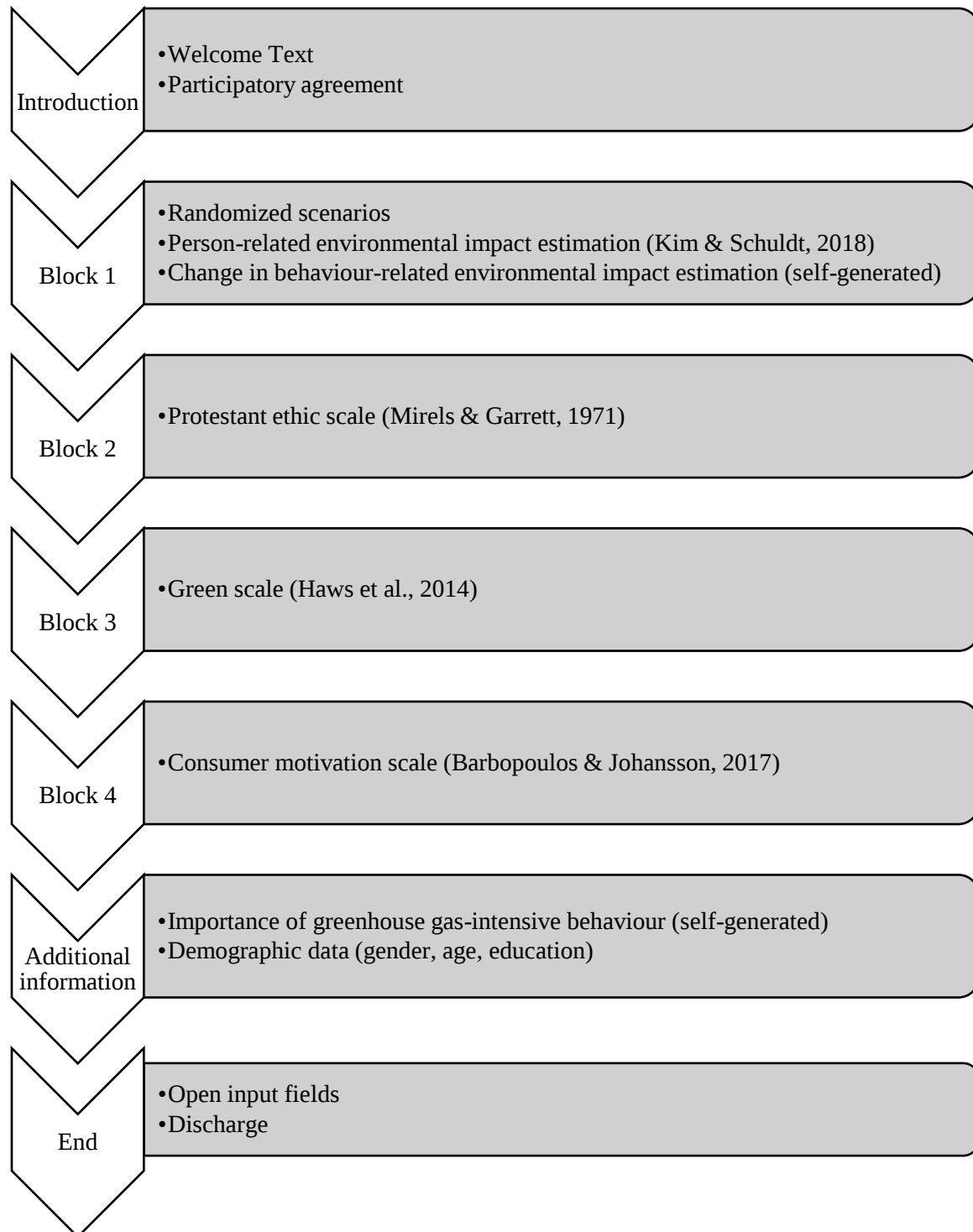
important at all to 7 = *very important*. As some items of the same dimension sounded quite similar, the order was randomized between all items to avoid tendencies to skim through similar items.

Overall, this led to four different blocks consisting of the three different scenarios plus the environmental impact estimation (Kim & Schuldt, 2018), the protestant ethic scale (Mirels & Garrett, 1971), the green scale (Haws et al., 2014) and parts of the consumer motivation scale (Barbopoulos & Johansson, 2017). All of these blocks were again randomized to prevent possible order effects. Additionally, there were two more parts, which were presented after the four main blocks. In the first one, participants were asked to rate if flying, the consumption of meat and buying new clothes was important to them (those themes were covered up in the three scenarios). Answers ranged from 1 = *does not apply to me at all* to 7 = *totally applies to me*. Afterwards, participants were asked to answer some demographic questions. These consisted of age (open input field), gender (female, male or divers) and their highest level of education. The highest degree of education was assessed by the answers “I went from school without finishing”, “I finished mandatory school”, “I finished secondary school”, “I have done the school leaving examination”, “I have a university or college degree” and “I finished another school [open input field]”. These items allowed for additional analysis.

The last part of the questionnaire consisted of two open input fields. The first one asked the participants to guess the study purpose. As it is important that participants do not know the exact aim of a study, this input field was included to test whether this condition was fulfilled. The second open input field was aimed to allow participants to give general feedback, which is important in order to understand how the questionnaire was perceived and if there might be any weaknesses. Figure 1 shows an overview of the complete study design.

Figure 1

Complete study design (the order of the four blocks is randomized)



Before starting the survey, the required sample size was calculated with the free statistic tool G*Power. The calculation resulted in the need of approximately 250 participants. The study started in the beginning of September 2020 and was closed in the middle of October 2020, when the required number of participants was reached. Subsequently, the data was downloaded and imported into the program “Statistical Product and Service Solutions” (SPSS). The whole data analysis was conducted with SPSS. As a first step, it was scanned for possible outliers, in order to check if any data had to be excluded from the sample. In a second step, the items were aggregated into scales, with each scale tested for reliability. After those preliminaries, the hypotheses were tested. For the moderating hypotheses (2 – 5), the additional SPSS tool “Process” (Hayes, 2012) was used. This tool was programmed to facilitate moderating analysis within SPSS. Finally, the results were exported and transformed into the APA 7th edition formation.

Participants

The sample consisted of 252 participants with a mean age of 34.5 ($SD = 14.7$), ranging from a minimum age of 14 to the maximum of 76. Four age values were missing in the data. The gender was unequally distributed, with $n = 146$ (58,2%) female participants compared to $n = 104$ (41,4%) male and $n = 1$ (0,4%) diverse participants. One participant declined this answer. On average the participants had a high level of education, as $n = 148$ (58,7%) had a university or technical college degree, $n = 91$ (36,1%) finished high school, $n = 8$ (3,2%) finished secondary education and $n = 4$ (1,6%) finished compulsory school. One participant had a different type of education not included in this list. Table 2 provides an overview of the participants’ demographics. Additionally, the randomization of groups led to a nearly equal distribution

between the two main groups, with $n = 125$ for the sacrifice and $n = 127$ for the no-sacrifice condition.

Table 2

Demographics Age, Gender and Highest Education

Demographics	<i>n</i>	%	<i>M</i>	<i>SD</i>
Age	248		34.5	14.7
Gender				
Female	146	58,2		
Male	104	41,4		
Divers	1	0,4		
Highest education				
University or technical college	148	58,7		
High school	91	36,1		
Secondary education	8	3,2		
Compulsory school	4	1,6		
Other education	1	0,4		

Results

Before testing the hypotheses, the collected data was structured, and a preliminary analysis was conducted. The structure of this first analysis was to aggregate the single items into the defined scales, to identify any outliers, test the reliability of the aggregated scales, and finally to show the distribution within and the connections between the scales. The last step guided the orientation within the data and built the bridge to the subsequent testing of hypotheses.

At the beginning of the analysis, the items were checked for completeness. A few answers from the assessed scales were missing. As those missing values showed no regularity and no participant missed more than two questions, all participants were left in the dataset. The mean values for scales with missing answers were calculated with the reduced number of items. Next,

the items were aggregated into the predefined scales, thereby poling the inverse items into the same direction as the other items. Afterwards, the items belonging to a respective scale were calculated as a mean value. After having aggregated the items, a frequency analysis was conducted in order to detect possible error outliers. These are outliers, which are obviously the result of a mistake from either filling out the survey or the data transfer (e.g., if the data includes an age of 245 years; Leys et al., 2019). The frequency analysis showed that all data was either in the range defined by the scale (e.g., 1-7 for protestant work ethic) or a probable value (maximum age was 76). Additionally, z -values for each data set were calculated. Absolute z -values higher than three standard deviations away from the mean value indicate a high probability for an outlier, as 99.7 percent of normally distributed observations lie within this range (Leys et al., 2019). According to this definition, at least one possible outlier was detected for almost every scale (except for the protestant ethic scale). A closer look at these outliers showed that all of them were in line with the other given answers by the respective participants, which makes them unlikely to be given out of inattention or carelessness. Therefore, an exclusion from the analysis could confound the results (Leys et al., 2019), which is why all data was left in the dataset for the testing of the hypotheses.

As no data was excluded, the next step was to calculate the number of participants assigned to each of the four randomized conditions. The four groups resulted out of a $2 * 2$ scenario variation between sacrifice and no sacrifice as well as between the gender of the described person (female or male). Results show that overall $n = 63$ participants were assigned to the no-sacrifice female, $n = 64$ to the no-sacrifice male, $n = 53$ to the sacrifice female and $n = 72$ to the sacrifice male condition. The group sizes of the randomized distribution differed between the described gender

but were almost equal between the independent variable conditions no-sacrifice and sacrifice (see Table 3).

Table 3

Participants in Randomised Groups

	No sacrifice	Sacrifice	<i>n</i>
Female	63	53	116
Male	64	72	136
<i>n</i>	127	125	252

To further measure the consistency, all scales were tested for reliability. The results show high Cronbach's alpha coefficients for the protestant ethic scale (.78), the green scale (.87) as well as for the normative- (.86), and hedonic plus gain (.73) goal frames. The Cronbach's alpha coefficient for the change in behaviour-related impact estimation (.89) shows a high value, while the Cronbach's alpha for the person-related impact estimation (.60) is relatively low but still sufficient to use it for scientific analyses. An overview of all reliabilities is provided in Table 4.

Table 4

Reliabilities of Scales

Scale	Cronbach's alpha
Protestant ethic scale (Mirels & Garrett, 1971)	.78
Green scale (Haws et al, 2014)	.87
Normative goal framing (Consumer motivation scale; Barbopoulos & Johansson, 2017)	.86
Hedonic plus gain goal framing (Consumer motivation scale; Barbopoulos & Johansson, 2017)	.73
Person related environmental impact estimation (Kim & Schuldt, 2018)	.60
Change in behaviour related environmental impact estimation (Self-generated)	.89

As the reliability analysis showed sufficient values for each scale, a first statistical analysis was conducted to get an overview of the collected data. Therefore, the mean value, the standard deviation and the variance were calculated for each scale. As all scales ranged on a scale from 1 to 7 (the higher the rating, the higher the impact estimation or the relevance of the construct tested), the mean scores allowed for a preliminary comparison. The results show that both environmental impact estimations have a high mean value with the change in behaviour-related estimation ($M = 5.7$, $SD = 1.1$) being rated higher than the person-related impact estimation ($M = 5.0$, $SD = 0.7$). The level of green consumption values ($M = 5.2$, $SD = 1.0$), the hedonic and gain goal framing ($M = 5.3$, $SD = 0.7$) as well as the normative goal framing ($M = 5.5$, $SD = 1.0$), show similarly high ratings, indicating an overall high level of green consumption values and activated goal frames. The lower mean score of the protestant ethic scale ($M = 3.4$, $SD = 0.7$) not only indicates that the participants are skeptical about this ethic, but also proves that the high ratings of the other scales are not just a result of inattentive participants choosing the highest values for each item. As a further preliminary analysis, the correlation between each scale was calculated. While the significant correlation between the two different environmental impact estimations ($r = .28$, $p = <.001$) shows that those estimations do not measure completely different concepts, their relatively low correlation coefficient proves the plausibility of conducting separate analyses for those estimations. Regarding the correlation between the different scales, it was observed that every scale correlates significantly with at least one of the two environmental impact estimations, which implies that the theoretical framework used to derive the hypotheses is solid in terms of the existing connection between the constructs. Also, there are many significant correlations between the scales. Those correlations include a negative correlation between attitude towards the protestant work ethic and green consumption values ($r =$

-.21, $p = .001$) as well as a positive relation between normative goal framing and the scale for green consumption values ($r = .58$, $p = <.001$). The correlation between the scales proves their interconnectedness and gives interesting first insights into the data, which show that the protestant work ethic is opposing green consumption values, while normative goal frames are closely connected to them. Those results as well as additional correlations and statistical parameters of the scales are presented in Table 5.

Table 5*Statistical Parameters and Correlations between Scales*

Variable	<i>M</i>	<i>SD</i>	σ^2	1	2	3	4	5
1. Person-related environmental impact estimation	5.0	0.7	0.50	–				
2. Change in behaviour-related environmental impact estimation	5.7	1.1	1.15	.28**	–			
3. Protestant work ethic	3.4	0.7	0.55	-.10	-.13*	–		
4. Green consumption values	5.2	1.0	1.09	.28**	.43**	-.21**	–	
5. Hedonic plus gain goal framing	5.3	0.7	0.43	.16*	.06	.08	.03	–
6. Normative goal framing	5.5	1.0	1.06	.30**	.42**	-.10	.58**	.21**

* $p < .05$ ** $p < .01$

After having conducted the preliminary analysis, the first hypothesis was tested, which stated that the same intended change in behaviour is rated to have a higher positive impact on environmental protection if the change is done with sacrifice, compared to a change with ease. The environmental impact estimation was divided into a person-related estimation and a change in behaviour-related estimation. The person-related items asked the participants to estimate how

environmentally conscious the described person's behaviour was in general, if they thought the person would describe themselves as an environmentalist and how their environmental behaviour was compared to other people. The comparison between the described person and other people was also queried in terms of the ecological footprint, which is an indicator for the greenhouse gas emissions of products and services. This definition was presented to all participants before rating the ecological footprint in order to prevent confusion resulting from a lack of terminology. The four items were taken from a questionnaire about the environmental impact of green consumption (Kim & Schuldt, 2018). The change in behaviour-related estimation was tested with two self-generated items, which asked participants to rate how much the change in behaviour contributes to climate protection, and if this change is relevant regarding what one person could do on his/her own. The hypotheses were tested with a t-test for independent samples for the person-related as well as for the change in behaviour-related estimation. This means, that the t-test was used to compare the mean of the sacrifice condition with the mean of the no-sacrifice condition. Regarding the person-related impact estimation a significant difference between the two groups was found, with a higher rating in the sacrifice condition, $t(250) = -2.13$, $p = .035$, 95% CI[-0.36, -0.01]. For the change in behaviour impact estimation, no significant difference between the mean values of the two conditions was found, $t(250) = 0.20$, $p = .984$, 95% CI[-0.26, 0.27]. Therefore, hypothesis1 was confirmed for the person-related impact estimation (H1a) but rejected for the change in behaviour impact estimation (H1b, see Table 6).

Table 6

Mean Differences between the Conditions Sacrifice and No Sacrifice for the Environmental Impact Estimations

Environmental impact estimation	<i>M</i>		95% <i>CI</i>		<i>df</i>	<i>T</i>	<i>p</i>
	No sacrifice	Sacrifice	<i>LL</i>	<i>UL</i>			
Person-related (H1a)	4.9	5.1	-0.36	-0.01	250	-2.13	.035
Change in behaviour-related (H1b)	5.7	5.7	-0.26	0.27	250	0.20	.984

The rejection of hypothesis 1b, which stated that a higher perceived sacrifice would lead to a higher change in behaviour-related environmental impact estimation, offers two possible explanations. The first one is that participants are able to objectively estimate the impact of a specific behaviour and are not influenced by the situation or their individual attitudes. The second explanation would be that the ratings are subjective but that sacrifice is simply not one of the affecting factors. These two explanations were tested in an additional analysis in order to identify significant correlations between the change in behaviour related impact estimation and the assessed scales. These scales were the “Protestant ethic scale” (Mirels & Garrett, 1971), the “Green scale” (Green consumption values; Haws et al. 2014) as well as the “Consumer motivation scale” (Normative and hedonic plus gain goal framing; Barbopoulos & Johansson, 2017). The results show that the change in behaviour-related environmental impact estimation significantly correlates with the green consumption values ($r = .44, p < .001$) and the normative goal framing ($r = .41, p < .001$), while negatively correlating with the level of protestant work ethic ($r = -.14, p = .032$). Only for the hedonic and gain goal framing, no significant correlation exists (see Table 7). These results support the explanation that the change in behaviour-related environmental impact estimations are not objective but rather influenced by individual factors.

Table 7

Correlations between Change in Behaviour-Related Environmental Impact Estimation and assessed Scales

		Green consumption values	Normative goal framing	Protestant work ethic	Hedonic and gain goal framing
Environmental Impact estimation	<i>r</i>	.44	.41	-.14	.04
	<i>p</i>	<.001	<.001	.032	.568

Additionally, a correlation analysis regarding the change in behaviour-related environmental impact estimation and additional variables was conducted to further check possible influencing factors. The first two variables were the gender of the participants and the gender of the described person. The gender of the described person was randomly varied within the study, which means that participants randomly either read only female or only male names in all three scenarios. The results show significant correlations between the gender of the participant, the gender of the described person and the change in behaviour-related environmental impact estimation. In detail, women did not only rate the environmental impact significantly higher ($r = .28, p < .001$) but the estimation was also significantly higher if the described person was female ($r = .13, p = .035$).

As gender was not the only factor with a possible influence on environmental estimations, two more control variables were tested for significant correlations, namely the participants' age and their ascribed importance to greenhouse gas-intensive behaviour. While the age was asked as part of the demographic data, the importance of behaviour was measured with three items directly after the last scale of the study. Those items asked the participants how important each of the three described topics flying, meat consumption and the buying of new

clothes are for their personal life. The mean of these answers showed a significantly negative correlation ($r = -.45, p < .001$) with the change in behaviour-related environmental impact estimation. This means that the more important the topics were for the participants, the lower they rated the environmental impact of changing a behaviour into a more climate protective one. For the variable age, there was no significant correlation found within the sample. Table 8 gives an overview of the described correlations.

Table 8

Correlation between the Control Variables and the Change in Behaviour-Related Environmental Impact Estimation

		Gender of participants	Gender of described person	Importance of greenhouse gas- intensive behaviour	Age
Environmental impact	<i>r</i>	.28	.13	-.45	.03
estimation	<i>p</i>	<.001	.035	<.001	.637

Note: The positive correlation between gender of participants and the impact estimation signifies that women estimated a higher impact. The positive correlation between gender of described person and impact estimation signifies that described women were rated to generate a higher impact.

For additional interpretation of the collected data, further gender differences were considered. According to literature, men are on average more likely to emit greenhouse gases than women (Arora-Jonsson, 2011). To test if this also proves true for this study, a mean difference analysis regarding the aggregated importance (“How important is it for me to...”) for the greenhouse gas-intensive behaviours flying, eating meat and buying new clothes was

conducted, comparing the scores between female and male participants. As shown in Table 10, women ($M = 2.7$) had significantly lower mean than women ($M = 3.2$), ratings $t(198) = 3.39$, $p = .001$, 95% CI [0.23, 0.85]. This result (see Table 9) is in line with previous findings (Arora-Jonsson, 2011). The smaller number of degrees of freedom compared to the mean difference analysis for the main hypothesis is due to a significant score at the Levene-test for variance ($F = 4.5$, $p = .035$), which required a calculation with unequal variances.

Table 9

Mean Difference Analysis for Gender regarding the Importance of Greenhouse Gas Intensive Behaviour

Importance of greenhouse gas-intensive behaviour	<i>M</i>		<i>95% CI</i>		<i>df</i>	<i>T</i>	<i>p</i>
	Female	Male	<i>LL</i>	<i>UL</i>			
	2.7	3.2	0.23	0.85	198	3.39	.001

Although these correlative and mean difference calculations were not original parts of the hypotheses, they are relevant to this study for two main reasons. First, they show that the scales used worked in the intended way, as all correlations fit within previous research results. This is important to guarantee that insignificant results are valid and not just a product of chance or the result of a bad study design. The second point is that they show how subjective environmental impact estimations are and how heavily affected these estimations are by personal attitudes. This strengthens the underlying core idea of the study that environmental protection policies should not assume rationally acting individuals. These two points will be further explained in the discussion section of the paper.

Besides the first hypothesis that perceived sacrifice increases the estimated environmental impact, four additional hypotheses were derived from previous research. All these hypotheses

supposed that specific personal attitudes moderate the correlation between perceived sacrifice and the pro-environmental impact estimation. This means that with changing levels of attitudes the correlation should get stronger or weaker depending on the direction of the supposed moderating effect. Therefore, moderator analyses were conducted to test if the interaction term between independent and moderator variables were significant.

According to the second hypothesis, the level of protestant work ethic was meant to be a positive moderator on the correlation between sacrifice and estimated pro-environmental impact, which means that this correlation should get stronger with increasing attitudes towards the protestant work ethic. The level of attitude was assessed with the “Protestant ethic scale” (Mirels & Garrett, 1971). Afterwards, the interaction term with the person-related as well as with the change in behaviour-related environmental impact estimation was calculated with the SPSS tool “Process” (Hayes, 2012). These interaction terms were tested for significance. The test showed no significant moderator, neither for the person-related, $F(1,248) = 1.01, p = .315$, nor for the change in behaviour-related environmental impact estimation, $F(1,248) = 0.02, p = .898$ (see Table 10).

Hypothesis 3 expected the participants’ level of green consumption values to be a positive moderator on the correlation between sacrifice and environmental impact estimation, which means that the correlation should get stronger with increasing levels of green consumption values. Therefore, the interaction terms of the “Green scale” (Haws et al, 2014) and the level of sacrifice for the person and change in behaviour-related estimations were calculated and tested for significance. As for the second hypothesis, results show no significant interaction regarding change in behaviour-related, $F(1,248) = 0.09, p = .760$ or person-related environmental impact estimation, $F(1,248) < 0.01, p = .974$ (see Table 11).

The goal-framing theory (Barbopoulos & Johansson, 2017) was the theoretical ground for hypotheses 4 and 5. Hypothesis 4 presumed strong hedonic and gain goal frames to positively moderate the correlation between sacrifice and environmental impact estimation, which means that the correlation should get stronger with increasing levels of these goal frames. Results show a rejection of this hypothesis for the change in behaviour-related, $F(1,248) = 0.04, p = .841$ as well as for the person-related environmental impact estimation, $F(1,248) = 0.57, p = .452$ (see Table 12). Hypothesis 5 stated that high levels of normative goals should negatively moderate the correlation between perceived sacrifice and environmental impact estimation, which means that the correlation should get weaker with increasing levels of this goal frame. As for the other moderator analyses, no significant interaction effect was found neither for the change in behaviour-related, $F(1,248) = 1.78, p = .184$, nor for the person-related environmental impact estimation, $F(1,248) = 0.65, p = .421$ (see Table 13).

In summary, the results show that, according to the first hypothesis, sacrifice increases the person-related environmental impact estimation, which queried the perception and estimated impact of the described person. For the change in behaviour impact estimation, which focused more on the change than on the person, no significant effects were found. Significant correlations between the change in behaviour impact estimation and the factors gender of participants, gender of described person and participants' importance of greenhouse gas-intensive behaviour showed the highly subjective character of these estimations.

Table 10*Moderator Analysis for the Interaction of the Protestant Work Ethic and the Level of Sacrifice*

Model	Coefficient	SE	t	p	95% CI		
					LL	UL	
H2a: Person-related							
Constant	5.60	0.64	8.81	<.001	4.35	6.85	
Sacrifice	-0.21	0.41	-0.52	.603	-1.02	0.60	
Protestant work ethic	-0.27	0.18	-1.47	.142	-0.63	0.09	
Sacrifice * protestant work ethic	0.12	0.12	1.01	.314	-0.11	0.35	
H2b: Change in behaviour-related							
Constant	6,50	0.98	6.66	<.001	4.57	8.41	
Sacrifice	-0.76	0.63	-0.12	.904	-1.31	1.16	
Protestant work ethic	-0.22	0.28	-0.79	.428	-0.78	0.33	
Sacrifice * protestant work ethic	0.02	0.18	0.13	.898	-0.34	0.38	

Table 11*Moderator Analysis for the Interaction of the Green Consumption Values and the Level of**Sacrifice*

Model	Coefficient	SE	t	p	95% CI		
					LL	UL	
H3a: Person-related							
Constant	3.73	0.66	5.67	<.001	2.44	5.03	
Sacrifice	0.16	0.45	0.36	.717	-0.72	1.05	
Green consumption values	0.18	0.12	1.50	.136	-0.06	0.43	
Sacrifice * green consumption values	<0.01	0.08	0.03	.974	-0.16	0.17	
H3b: Green consumption values / change in behaviour-related							
Constant	3.18	0.95	3.34	.001	1.31	5.05	
Sacrifice	0.17	0.65	0.26	.797	-1.11	1.44	
Green consumption values	0.50	0.18	2.79	.006	0.15	0.85	
Sacrifice * green consumption values	-0.37	0.12	-0.31	.760	-0.28	0.20	

Table 12

Moderator Analysis for the Interaction of Gain and Hedonic Goal Framing and the Level of Sacrifice

Model	Coefficient	SE	t	p	95% CI	
					LL	UL
H4a: Person-related						
Constant	4.53	1.07	4.22	<.001	2.42	6.63
Sacrifice	-0.35	0.72	-0.49	.628	-1.78	1.08
Protestant ethic	0.03	0.20	0.15	.880	-0.36	0.43
Sacrifice * gain plus hedonic goal framing	0.10	0.14	0.75	.452	-0.17	0.37
H4b: Change in behaviour-related						
Constant	5.57	1.67	3.34	.001	2.29	8.86
Sacrifice	-0.23	1.13	-0.20	.841	-2.45	2.00
Protestant ethic	0.03	0.31	0.10	.918	-0.58	0.65
Sacrifice * gain plus hedonic goal framing	0.04	0.21	0.20	.841	-0.37	0.46

Table 13

Moderator Analysis for the Interaction of Normative Goal Framing and the Level of Sacrifice

Model	Coefficient	SE	t	p	95% CI	
					LL	UL
H5a: Person-related						
Constant	3.04	0.70	4.37	<.001	1.67	4.41
Sacrifice	0.57	0.48	1.18	.239	-0.38	1.51
Protestant ethic	0.30	0.12	2.42	.016	0.06	0.54
Sacrifice * normative goal framing	-0.07	0.09	-0.80	.421	-0.24	0.01
H2: Change in behaviour-related						
Constant	4.61	1.02	4.53	<.001	2.60	6.61
Sacrifice	-0.93	0.70	-1.32	.187	-2.31	0.45
Protestant ethic	0.21	0.18	1.15	.252	-0.15	0.56
Sacrifice * normative goal framing	0.17	0.12	1.33	.184	-0.80	0.41

Regarding the expected moderator effects derived from hypotheses 2 – 5, no significant effects were found for levels of protestant work ethic, green consumption values, hedonic plus gain and normative goal frames. An interpretation of those findings is given in the following discussion section.

Discussion

The main target of the present study was to test if perceived sacrifice heightens the estimation of pro-environmental impact as well as to test if a moderating effect of the attitudes towards protestant work ethic, green consumption values and different goal frames exists. According to preliminary analyses, the environmental impact estimation was separated into two parts. The first one was the person-related impact estimation, which queried about the perception of the described person after the change in behaviour regarding carbon footprint, the chance of being an environmentalist or the impact compared to other people. The second was the change in behaviour-related estimation, which asked about the estimated impact directly related to the change in behaviour. The results show a significant positive correlation between sacrifice and environmental impact estimation for the person-related items, while no effect is found for the change in behaviour related items. This indicates that the effort heuristic only occurs in the context of person-related estimations.

The different results for the impact estimations point out that there might be different underlying perceptions depending on the focus of the question items. A feedback from a participant, which focuses on the perception of accountability for climate change leads to a first explanation. According to this feedback (“We have to shift from individual response to political and societal response”), the individual should not be held responsible because stopping climate change is a matter of system. If more participants thought the same way, the sacrifice condition

focused on the change in behaviour might not induce the effort heuristic simply because participants felt that a change in an individual's behaviour is overall not relevant regarding climate change. This lack of perceived behavioural control is postulated as the collective action problem, which occurs when people feel like they have no individual impact on tackling broader scaled problems (Olson, 1965). Anthropogenic climate change fits perfectly into this definition as it is a problem that can only be tackled effectively on a global scale (Nordhaus, 2019). In line with this assumption, the collective action problem was identified to be one psychological barrier for greenhouse gas mitigating actions (Gifford, 2011). Contrary to the theoretical basis, the data of the present study revealed the collective action problem to be an unlikely explanation for the rejection of the first hypothesis regarding the change in behaviour-related items. The mean estimations for the change in behaviour items were higher ($M = 5.7$, $SD = 1.0$) than the person-related estimations ($MD = 5.0$, $SD = 0.7$), which indicates that the change in behaviour was rated as having an important impact on climate change.

A different explanation for the different results regarding the hypotheses 1a and 1b is that people give objective estimations when focusing on the change in behaviour but tend to use the effort heuristic when the items are related to a specific person. This indicates that a person willing to sacrifice could be perceived as acting better than other people even if the change in behaviour outcome is estimated equal for both conditions. The theoretical background for this assumption is the concept of indirect reciprocity. This concept refers to actions, which are viewed as altruistic because no immediate reward is granted (Nowak & Sigmund, 2005; Wedekind & Braithwaite, 2002). The theory of indirect reciprocity states that for altruistic behaviour the reward is given later in the form of a good reputation within a group (Wedekind & Braithwaite, 2002). Indirect reciprocity is meant to occur when the behaviour fulfills both

conditions of being altruistic (Wedekind & Braithwaite, 2002) and having a high observability (Yoeli et al., 2013). A change in behaviour for environmentally protective reasons, which is made observable by presenting it in an online study, is fulfilling both conditions. Therefore, participants might activate this scheme when estimating the environmental impact while focusing on the sacrificing person. To understand how indirect reciprocity might influence the estimations, one must recap the circumstances under which the effort heuristic occurred in previous research. One important factor was that the estimating person was involved in the situation (e.g., an allergic rating the effectiveness of medicaments; Kramer et al., 2012). While reading a scenario and focusing on the change in the behaviour might not cause high involvement of the participants, a focus on the sacrificing person might induce indirect reciprocity, which would lead to a higher involvement. This involvement would enable the occurrence of the effort heuristic and therefore explaining the difference between the two impact estimations.

Summing up the possible explanations for the difference between person-related and change in behaviour-related impact estimations, it was shown that the collective action problem is unlikely to be the responsible factor. The more likely explanation is that the concept of sacrifice is closely linked to the concepts of indirect reciprocity and involvement, which were induced with the person-related items. This would indicate that regarding greenhouse gas-intensive behaviour people only use the effort heuristic if they get involved through a focus on the sacrificing person.

A further look into the results shows that all moderator hypotheses were rejected, which raises the question of possible reasons. In the following, two possibilities are discussed. A first explanation is that something was wrong with the experimental implementation, for example,

unreliable scales or inattentive participants. Additional data analysis proved this explanation to be quite unlikely. All but one of the scales were taken from scientifically proven papers, with the self-constructed items also showing high reliability. Further, many of the measured scales significantly correlated with each other and with the dependent variables of environmental impact. Although these significant correlations were not part of the moderator hypotheses, they show that the scales were assessed correctly and that the answers were not given by chance.

The second, more likely explanation is that the results were correct, and no moderator effects of the assessed attitudes occur in the population. Taking a closer look at the theoretical background of the moderator hypotheses (2-5) offers an explanation in the form of ambiguous influences of the assessed attitudes on the relation between sacrifice and environmental impact estimation. The core argument of all of the hypotheses is that either the strength of the link between sacrifice and impact estimation varies or the level of sacrifice itself varies with different levels of the attitudes. While the expected directions of the moderating effects were deducted from previous research, there might be additional factors that point in the opposite direction. Rises in the protestant work ethic trait (H2) and in green consumption values (H3) were meant to strengthen the relation between sacrifice and the environmental impact estimation. The underlying assumptions were that people with strong attitudes towards the protestant work ethic value sacrifice more, as they tend to believe that hard work is necessary to achieve a goal. Higher levels of green consumption values are associated with stronger ascribed importance to the goal of environmental protection. Both mechanisms should induce a stronger effort heuristic regarding the connection between sacrifice and environmental impact estimations. Even if these assumptions might be true, it is possible that the relation between perceived sacrifice and impact estimation was strengthened, while the absolute level of perceived sacrifice was decreased. This

would lead to a balancing of the effects and make them unobservable in the results. The underlying thought for this claim is that people who have high levels of protestant work ethic attitudes might perceive giving up a valued behaviour not as a big sacrifice but rather as a necessary action. This is due to their world view that hard work is always needed to obtain a goal. People with high levels of green consumption values might do the same downrating of sacrifice if they perceive environmentally protective actions as necessary rather than heroic. If the decrease of perceived absolute sacrifice and the increase in influence of sacrifice on the environmental impact estimation were kept in balance, results would look like no effect exists, while truthfully two effects in opposing directions exist.

Regarding the influence of different goal frames, the same balance could occur due to slightly different mechanisms. For the goal framing hypotheses, it was theoretically deducted that high levels of gain and hedonic goal frames should heighten the level of perceived sacrifice and therefore heighten the environmental impact estimation (H4), while normative framed goals should lower the level of perceived sacrifice and therefore also decrease the environmental impact estimation (H5). The opposing effects might occur based on two presumptions. Firstly, people who have strong gain and hedonic goal frames might rate the sacrifice higher, while estimating a lower influence of sacrifice on the impact. This might be due to their view that sacrificing for higher purposes does not have any impact, which is self-serving in the way that it justifies the strive for personal gain and hedonic experiences. For people with high normative goal frames, this effect could occur in the inverse direction. These people might rate the sacrifice lower, while estimating a higher impact of sacrifice on the environmental impact.

Simultaneously, for people with strong hedonic and gain framed goals this can be explained due to self-serving reasons because in order to justify sacrifices for environmental protection a strong

effectiveness of the sacrifice must be expected. A balance between these effects could lead to a seemingly non-existing effect.

Summarizing these explanations, the non-significant moderator hypotheses might be a result of opposing effects that kept balance. A way to test this explanation would be to assess the absolute level of perceived sacrifice for each participant and therefore be able to isolate the opposing effects. This possibility is discussed in the further research section at the end of the paper.

In addition to the main hypotheses, correlation analyses were conducted to allow better interpretation and to gain further insights into the relations of the assessed attitudes. The results show significant correlations between the environmental impact estimation, the level of protestant work ethic, normative goal framing, the gender of the participants, their ascribed importance to greenhouse gas-intensive behaviour as well as their green consumption values. Following these results, there are two main implications for a better interpretation of the study conducted. The first one is a general but very important point. When people rate the environmental impact of changing behaviour, their estimations are not objective but rather based on personal attitudes. While these results might be important for environmental protection policies, they do not indicate whether the participants are aware of their subjective estimations, or if they perceive themselves to be individuals who rate on a strictly rational basis. This point will be revisited in the final section when dealing with further research implications. The second main point derives from the directions of the significant correlations and will be discussed in the following.

Female participants rated the environmental impact higher than their male counterparts, which is in line with previous research stating that women show higher concern for topics like

sustainable energy consumption (Imbulana Arachchi & Managi, 2021) or environmental impact of the fashion industry (Gazzola et al., 2020). Additionally, the scenarios with women were rated as generating a higher pro-environmental impact compared to the scenarios describing a male person. Previous studies offer possible explanations for the effect of gender as well as for the fact that described women were rated as having a higher environmental impact compared to men. First, women were found to have a higher risk perception regarding climate change (Van der Linden, 2015), which could cause a higher environmental impact estimation due to higher susceptibility for the need to take action to fight the perceived risk. Additionally, men on average were found to emit more greenhouse gases than women, based on factors like the ownership of more cars, longer travel distances and a higher meat consumption (Arora-Jonsson, 2011). Those findings were supported by the mean difference analysis conducted in this study, which showed that men gave significantly higher aggregated ratings on the importance of the greenhouse gas-intensive behaviours flying, buying new clothes and eating meat. Deriving from average gender differences regarding the emission of greenhouse gases, the gender of a described person might evoke a certain stereotype (e.g., women are more environmentally protective), which is decoupled from the facts described in the scenario. If this is the case, the environmental impact estimation might be compounded out of prefabricated stereotypes and described change in behaviour. This might have led to higher ratings for described women due to the assumption that women in general act in a more environmentally protective way.

Besides the effect of gender, further significant correlations were found for the importance of greenhouse gas-intensive behaviour of the participants, their attitude towards climate protection and their environmental impact estimation. The more important participants rated the described topics for themselves and the lower their levels of green consumption values

were, the smaller their impact estimation of the changed behaviour was. A possible explanation for this phenomenon is that people like to justify their own behaviour (or preferences) and consequently downplay the negative impact resulting from those actions. This would raise a societal problem regarding the persuasion towards more climate protective behaviour. As climate change is only sensitive to the absolute amount of greenhouse gas emission reduction, a main target is to reduce the emissions in areas with the highest emissions. The underlying theory for this assumption is the concept of marginal abatement costs (Huang et al., 2016). This theory states that there are different marginal costs of reducing unwanted behaviour (in this context, reducing greenhouse gas emissions). To ensure an efficient solution, reduction policies should target the points at which the costs of abatement are the lowest (Huang et al., 2016). These abatement costs are often lower for higher levels of initial emissions. An example to illustrate this abstract concept is to imagine two people who need their cars to get to work. If one of them drives a car with high emissions, it will be easier to change to a less emission-intensive car than for the other one who already drives such a car to change to any car at all. Both changes would lead to a decrease of greenhouse gas emissions, but the abatement costs (here in terms of personal costs) are higher for the second person. On the level of voluntary behaviour transitions, it is therefore important to particularly persuade people with high emissions to change their behaviour. The findings of this study show that these people might be exactly the ones who estimate a change of their behaviour as having only a small impact, which will likely impede a change in behaviour.

Additional significant correlations were also found for participants' attitudes towards protestant work ethic and their normative goal frames. The stronger their normative goal frames and the lower their attitudes towards protestant work ethic were, the higher their environmental

impact estimation was. The theoretical background for the moderator analyses (2 & 4) might explain this phenomenon. People with normative goals highly value actions that serve the society (Barbopoulos & Johansson, 2017), with acting for environmentally protective reasons being a prototype example for this kind of action. On the contrary, the protestant work ethic proposes that only hard work leads to personal success (Cheng & Schrift, 2017). Giving up personally gained amenities might therefore counter this belief. Following these findings regarding climate change prevention, it is desirable to find ways to shift more people from protestant ethic values to normative framed goals.

These correlation analyses showed the complexity and arbitrariness regarding the perception of climate change-related behaviour. Detailed interdisciplinary research will be needed to further understand the underlying mechanisms and to deviate policies, as it seems unlikely that simple answers can be provided for this multifaceted issue.

To sum up, the effort heuristic was found to occur in the context of person-related environmental impact estimation, while it did not occur for change in behaviour-related estimations. This was explained with the concept of indirect reciprocity, which might play a role only for the person-related estimations. The additional correlative analyses suggest that the scales were assessed in a reliable and valid way and offered an overview of the influence of attitudes towards the protestant work ethic, normative goal framing, gender, and the importance of greenhouse gas-intensive behaviour on the estimation of environmental impact. While these results might help guide future research, there are some limitations, which will be discussed in the following section.

Limitations

Regarding the findings of this study, there are some limitations which should be kept in mind when discussing them. The first one regards the external validity of the experiment. Compared to field experiments, laboratory- and online studies always have a lack of external validity, which means that the transfer of findings into real situations has to be handled carefully. Regarding the topic of climate change, there might be an additional factor influencing external validity, which is social desirability. This term describes the tendency of participants to give answers in a way they think society would want them to and not according to their own values (Grimm, 2010). As anthropogenic climate change is becoming an ever more pressing issue in the media and in social discussions, participants might tend to rate the pro-environmental impact of a changed behaviour within a study better than they would do in real situations.

Another limitation is the possibility that the level of perceived sacrifice mainly depends on the general connection between sacrifice and climate change and not on the variations of the scenario. This would mean that participants had a fixed idea of this connection before filling out the questionnaire (e.g., “Protecting the climate always requires making sacrifices”). This possibility should be considered for future research in the context of sacrifice.

Finally, the perception of climate relevant consumption might vary among different areas of consumption. To tackle this problem the scenarios used in this study included the issues flying, meat consumption and buying clothes. However, these only represent a selection of areas, with other important ones not being covered. According to the participants’ feedback, many wished for an additional scenario encompassing local transportation (car vs. public transport) as well as a more detailed differentiation between a vegetarian and a vegan diet.

Further Research Implications

Following the limitation that each area of consumption might be perceived differently, future research could explicitly focus on the perception of specific areas of consumption in contrast to each other. While, in the present study, the different scenarios were only used to obtain a mean of different types of consumption, research that aims to give practical advice should not try to tackle all fields at once. A focus on a specific form of consumption could be connected to a design which includes the role of gender regarding the perception of climate change affecting behaviour. Although the present study had no explicit hypotheses about the effects of gender, a significant correlation between the gender of the participants and their environmental impact estimation (women gave higher estimations) was found. This connection might be a starting point for further research related to the role of gender, different consumption and perception of climate change.

Regarding the influence of sacrifice on environmental impact estimations, future research could focus on the subjective perception of the level of sacrifice. In the present study, the level of sacrifice was manipulated with randomly presented scenarios, while it remained unassessed how high the sacrifice was perceived by each participant. Exploring the individual ratings could allow for further distinction between how much perceived sacrifice is environmentally induced and how much is based on personal attitudes. In this context, it could also be tested if other heuristics than the effort heuristic occur with regard to the perception of environmental affecting behaviour.

Closely linked to the subjective level of perceived sacrifice is the participants' consciousness of their own rating behaviour. As results show that many individual attitudes like the importance of greenhouse gas-intensive behaviour, goal framing or green consumption values correlate with the environmental impact estimation, it would be interesting to investigate

how aware the participants are of these connections. Further research could examine how the level of awareness influences the estimation and if different study designs could induce a higher awareness of the subjectivity of one's rating.

Finally, another important research implication is to focus on the relation between one's own behaviour and the perception of climate protecting behaviour in general. As there was a highly negative correlation between the importance of greenhouse gas-intensive behaviour and the impact estimation, research should take effort to find possible ways to undermine this correlation. Otherwise, this could lead to a vicious circle, where bad behaviour reduces the belief in the impact of one's own action, which again might lead to more environmentally harmful behaviour.

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Appendices

Appendix A – Welcome Text + Informed Consent

Liebe Teilnehmerin, lieber Teilnehmer,

Vielen Dank, dass Sie sich dazu entschieden haben an dieser Studie teilzunehmen. Diese wird im Zuge meiner Masterarbeit an der Fakultät für Psychologie an der Universität Wien durchgeführt. Ich beschäftige mich mit der Wahrnehmung von klimarelevanten Verhaltensweisen.

Es ist für mich wichtig, dass Sie alle Fragen beantworten. Wenn Sie sich bei einer Frage nicht ganz sicher sind, kreuzen Sie einfach das Feld an, das am ehesten zutrifft. Es geht um Ihre persönliche Einschätzung, es gibt keine richtigen oder falschen Antworten.

Die Studie dient ausschließlich wissenschaftlichen Zwecken. Alle Informationen werden vertraulich behandelt und anonymisiert ausgewertet, sodass keine Rückschlüsse auf Ihre Person möglich sind. Die Dauer der Studie wird etwa 15 Minuten betragen.

Mit dem Klicken des “Weiter”-Buttons, bestätigen Sie, die Einleitung gelesen zu haben, und willigen ein, an dieser Studie teilzunehmen:

"Ich bin damit einverstanden, dass meine Angaben ausschließlich für wissenschaftliche Zwecke am Institut für Arbeit, Wirtschaft- und Sozialpsychologie aufbewahrt und ausgewertet werden. Nach Beendigung des Forschungsvorhabens werden alle Daten gelöscht, die einen Bezug zu meiner Person erlauben."

Vielen Dank für Ihre Teilnahme an der Studie!

Appendix B – Scenarios*Sacrifice – flying*

Lisa/Daniel hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass Fliegen sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Lisa/Daniel ist in der Vergangenheit sehr gerne und dementsprechend oft in den Urlaub geflogen, nimmt sich jetzt aber vor in Zukunft nicht mehr zu fliegen, sondern nur noch mit dem Zug in den Urlaub zu fahren.

Sacrifice – eating meat

Susanne/Oliver hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass Fleisch zu essen sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Sie/Er hat in der Vergangenheit sehr gerne Fleisch gegessen und dementsprechend viel davon konsumiert, nimmt sich jetzt aber vor in Zukunft auf eine vegetarische Ernährung umzusteigen.

Sacrifice – buying clothes

Maria/Markus hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass die Produktion von Kleidung sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Maria/Markus hat in der Vergangenheit gerne und viel Kleidung gekauft, da sie/er es für wichtig hält sich immer gut präsentieren zu können. Sie/Er nimmt sich jetzt aber vor in Zukunft nur noch Kleidung zu kaufen, wenn sie/er tatsächlich neue Kleidung benötigt.

No sacrifice – flying

Lisa/Daniel hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass Fliegen sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Lisa/Daniel ist in der Vergangenheit sehr oft in Urlaub geflogen, hat dies aber eigentlich ihren/seinen FreundInnen zu Liebe getan. Sie/er nimmt sich jetzt vor in Zukunft nicht mehr zu fliegen, sondern nur noch mit dem Zug in den Urlaub zu fahren.

No sacrifice – eating meat

Susanne/Oliver hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass Fleisch zu essen sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Sie/Er hat in der Vergangenheit sehr viel Fleisch gegessen, hat dies aber nie besonders lecker gefunden, sondern es getan um nicht als kompliziert zu erscheinen. Sie/er nimmt sich jetzt vor in Zukunft auf eine vegetarische Ernährung umzusteigen.

No sacrifice – buying clothes

Maria/Markus hat sich in letzter Zeit viel mit Umweltschutz beschäftigt und dabei herausgefunden, dass die Produktion von Kleidung sehr viele CO₂ Emissionen verursacht, und deshalb zum Klimawandel beiträgt. Maria/Markus hat in der Vergangenheit sehr viel Kleidung gekauft. Eigentlich war ihr/ihm das zwar nie besonders wichtig, aber in ihrem/seinem Freundeskreis haben das alle so gemacht. Sie/Er nimmt sich jetzt vor in Zukunft nur noch Kleidung zu kaufen, wenn sie/er tatsächlich neue Kleidung benötigt.

Appendix C – Person related pro-environmental impact estimation (Kim & Schuldt, 2018)

Der ökologische Fußabdruck ist ein Indikator für den negativen Umwelteinfluss von Produkten oder Dienstleistungen. Je größer der ökologische Fußabdruck, desto mehr negative Umweltauswirkungen werden durch das Produkt/ die Dienstleistung verursacht.

1. Verglichen mit anderen Personen, wie groß schätzt du den ökologischen Fußabdruck der beschriebenen Person? (1 = Viel kleiner; 7 = Viel größer; reversed score)
2. Verglichen mit anderen Personen, wie würdest du das Verhalten der beschriebenen Person in Bezug auf Umweltschutz beurteilen? (1 = Viel schlechter; 7 = Viel besser)
3. Wie wahrscheinlich denkst du ist es, dass die beschriebene Person sich als UmweltschützerIn bezeichnen würde? (1 = Sehr unwahrscheinlich; 7 = Sehr wahrscheinlich)
4. Wie bedacht glaubst du ist die beschriebene Person generell mit ihrem Konsumverhalten? (1 = Sehr unbedacht; 7 = Sehr bedacht)

Appendix D – Protestant ethic scale (Mirels & Garrett, 1971)

1. Die meisten Leute verbringen zu viel Zeit mit unprofitablen Vergnügungen
2. Unsere Gesellschaft hätte weniger Problem, wenn Leute weniger Freizeit hätten
3. Leicht verdientes Geld (z.B. durch Glücksspiel oder Spekulation) wird normalerweise unvernünftig ausgegeben
4. Es gibt Weniges, das ähnlich zufrieden stellt, wie die Gewissheit das Beste im Job geleistet zu haben
5. Die anspruchsvollsten Universitätskurse sind normalerweise die lohnendsten
6. Die meisten Leute, die im Leben nicht erfolgreich sind, sind einfach faul
7. Wer sich Wohlstand selbst erarbeitet hat, handelt wahrscheinlich ethischer als jemand, der diesen geerbt hat
8. Ich fühle oft, dass ich erfolgreicher wäre, würde ich auf manche Vergnügungen verzichten
9. Leute sollten mehr Freizeit zum Ausruhen haben*
10. Jede Person, die hart arbeitet, hat gute Chancen erfolgreich zu werden
11. Leute, die in einem Job scheitern, haben es normaler Weise nicht hart genug probiert
12. Das Leben hätte wenig Sinn, wenn wir nicht manchmal leiden müssten
13. Harte Arbeit bietet wenig Erfolgsgarantie*
14. Kreditkarten laden zum unvernünftigen Ausgeben ein
15. Das Leben hätte mehr Sinn, wenn wir mehr Freizeit hätten*
16. Jemand der eine unangenehme Aufgabe mit Elan angehen kann, ist jemand der den anderen voraus ist
17. Wer hart genug arbeitet, hat gute Chancen sich ein gutes Leben zu machen

18. Ich fühle mich unwohl, wenn ich nicht genug Arbeit habe

19. Ein Widerwille für harte Arbeit reflektiert normalerweise eine Charakterschwäche

* Reverse Score

Appendix E – Green Scale (Haws et al., 2014)

1. Es ist wichtig für mich, dass Produkte, die ich verwende, keine Umweltschäden verursachen
2. Ich denke an mögliche Folgen meiner Aktionen, wenn ich meine Entscheidungen treffe
3. Meine Kaufgewohnheiten sind von meinem Umweltbewusstsein beeinflusst
4. Ich bin achtsam die Ressourcen des Planeten nicht zu verschwenden
5. Ich würde mich selbst als umweltbewusst beschreiben
6. Ich akzeptiere Unannehmlichkeiten, um umweltfreundlich zu handeln

Appendix F - Consumer motivation scale (Barbopoulos & Johansson, 2017)

Wenn ich Dienstleistungen oder Güter konsumiere, ist es mir wichtig, dass das was ich wähle,

Ethics (Normative)

1. moralisch nicht falsch ist
2. nicht meine Prinzipien verletzt
3. übereinstimmend mit meinen persönlichen und moralischen Verpflichtungen ist
4. übereinstimmend mit meinen Idealen und Überzeugungen ist
5. mir ein gutes Gewissen gibt

Quality (Gain) + Comfort (Hedonic)

1. von gleichbleibender und guter Qualität ist
2. erstklassig ist
3. gut hergestellt oder gut ausgeführt ist
4. sogar die höchsten Anforderungen und Erwartungen erfüllt
5. zuverlässig ist
6. angenehm und komfortabel ist
7. nicht zu unangenehm ist
8. nicht zu kompliziert oder stressend ist
9. genießbar ist