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Areas of Individual Consumption Reduction: A Focus on Implemented Restrictions and Willingness for Further Cut-Backs

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Abstract: To reduce the high amount of Greenhouse Gas emissions, a more sustainable individual lifestyle is crucial. However, existing research regarding pro-environmental behaviors rarely focuses on a reduction in consumption. Hence, this study investigated different variables (e.g., habits, estimated efficacy of measures, estimated danger of climate change) that might enhance people's willingness to cut back on several private consumptions for the sake of the environment. In a German-speaking online survey ($n = 435$), different areas of consumption were looked at separately in different regression models. Additionally, we investigated whether a randomized highlighting of climate change consequences could further increase willingness to implement private cut-backs, which could not be confirmed in subsequent variance analyses. Overall, some variables seem to be connected with a higher willingness to implement cut-backs in most consumption areas and on several levels (e.g., estimated efficacy); other predictors are only involved in specific cut-backs and specific levels (e.g., materialism). Furthermore, different variables seem to be of importance when it comes to already implemented consumption restrictions as opposed to willingness to implement further cut-backs. These results lead to the conclusion that, in order to maximize mitigation potential, it is important to tailor suggestions to the area of consumption. Additionally, for most areas, awareness of the mitigation efficacy of the respective behavior seems crucial.

Keywords: consumption reduction; climate change mitigation; meat consumption; air travel reduction



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1. Introduction

Climate change is one of the biggest threats of the 21st century, and an outcry for behavioral change to limit its outcomes has often been made by a variety of researchers and organizations. Private households account for the biggest share of Greenhouse Gas Emissions (GHG), where household consumption is estimated to account for more than 60% [1] or even more than 70% [2] of GHG. Reducing private consumption has a big climate change mitigation effect, and knowledge about the mitigation potential is, among other factors such as effort or costs of the behavior change, important to adapt sustainable behaviors [3,4]. However, it has also been shown that people have difficulties in appropriately rating the climate mitigation effect of their behaviors. Some behaviors (e.g., meat consumption, air travel) are often underestimated regarding their mitigation potential, while others (e.g., not using plastic bags) are overestimated [3,5]. Overall, among the highest impact behaviors of households are car and plane mobility, meat and dairy consumption and heating [2]. Some of these behaviors seem more dependent on a given economic level (e.g., house or apartment size, car ownership) than others, which seem less dependent on specific economic levels (e.g., consumption of clothes or meat). Hence, the present research

investigates different correlates of the willingness to cut back some of the consumption behaviors that are usually accessible in a standard Western lifestyle, focusing on numerous correlates of pro-environmental behaviors that have repeatedly been investigated.

1.1. Acting Pro-Environmentally and Barriers to It

Pro-environmentalism is a socially desirable value [6], but that does not mean that individual behavior aligns with pro-environmental attitudes (e.g., [7,8]) or matching behavioral intentions (e.g., [8], for an overview). The connection of values and behavior in general has repeatedly been investigated based on the Theory of Planned Behavior (TPB, [9]). This theory postulates that planned behaviors stem from intention and perceived behavioral control. Intention itself depends on three parameters: attitude (how the behavior is evaluated by the individual), subjective norm (how significant others would evaluate the individual's engagement towards the behavior) and—again—perceived behavioral control. Several studies applying the TPB on environmental behavior add further correlates to their theory, such as habits, self-efficacy (believing in one's own capacity to take the required actions) and past behavior [10]. On top of that, the literature also shows additional influences of a broad variety of further correlates that often are disregarded or only partly included in many models, such as materialism [11] or—usually representing a minor correlate—socio-demographic influence factors such as gender or income levels [12]. Gifford and Nilsson [13] showed the magnitude of factors influencing pro-environmental behavior (PEB), including 18 personal and social factors, such as childhood experience, knowledge and education, but also sense of control, place attachment and proximity to problematic environmental sites. Inconsistent results have been found for proximity in time, which might have PEB-enhancing effects [14], but also no or negative effects in some situations [15]. A reason can be seen in the construal level theory (e.g., [16]) which posits that people hypothesize behavior depending on their values, and far distant situations remain rather abstract. When facing distant threats, people might imagine acting more in line with their values, but with more proximal threats, costs and benefits of behavior could be considered more strongly, which might inhibit costly PEB [15].

Generally, costs are an important factor when it comes to the link of environmental attitudes and behaviors. According to the Campbell paradigm, engaging in a specific PEB is a function of environmental attitude and behavioral costs [17]. Costs can be seen as a reason why the significance of attitudes for behavior are often underestimated, since many times costs are either not considered or it is not considered that costs are often person-dependent as opposed to behavior-specific [17]. Explaining a specific behavior is usually complex, since several reasons control specific activities (e.g., bike usage might be influenced by environmental, health or social reasons), but overall, it is important to consider the cost aspect in addition to attitudes. For example, it has been shown that while environmental attitudes are associated with acceptance for nature preserve restrictions, higher individual costs (e.g., higher individual nature preservation-related costs due to site proximity) are associated with dropping acceptance [18].

Aside from costs, a high sense of efficacy also plays an important role in PEB (e.g., [19]) and is believed to support maintaining behavior changes over longer periods of time [20]. Typically, efficacy is divided into several types, including self-efficacy (feasibility of taking action), response-efficacy (effectiveness of action), and collective-efficacy (capability of action-taking in groups), all of which all are connected to adaptive behavior to climate change (e.g., [20]). The beneficial effect of response-efficacy on peoples' PEB has also been shown in other studies (e.g., [21]).

All these factors can be linked to pro-environmental attitudes, values and partly pro-environmental behaviors. In case of a mismatch between attitude and behavior, feelings of unpleasantness might arise, which in turn could cause additional behaviors. One of the most popular theories in psychology, the Dissonance Theory [22], constitutes that when someone's behavior is inconsistent with their values, they experience an unpleasant feeling of cognitive dissonance. People try to avoid that feeling using several strategies: changing

their behavior, changing the cognitive component, e.g., via adding consonant elements (such as adding pro-environmental behaviors like recycling) and decreasing the importance of dissonant elements. Hence, behaviors resulting from dissonance reduction should also be taken into consideration, which might be compensatory behaviors or spillover effects (e.g., [23]).

1.1.1. General Barriers in PEBs

The present research focuses on individual barriers, though of course there are also societal and external barriers, such as economic or institutional ones (see [24] for an overview). In addition to the (individual) correlates mentioned above, which are connected to PEB, there are aspects that represent specific barriers to such behaviors. Kollmuss and Agyeman developed an extensive model for PEB and possible barriers to it, with the largest barrier representing old behavior patterns [7].

Focusing on psychological barriers, a recent study [25] investigated the underlying factors of possible barriers, finding five underlying factors: “change unnecessary”, “conflicting goals and aspirations”, “interpersonal relations”, “lacking knowledge” and “tokenism” [25]. Of course, these barriers might also be linked to existing psychological theories, e.g., in the light of the dissonance theory, “tokenism” reduces dissonance, since people might have the feeling that they already fulfilled their environmental duties via other actions. In terms of spillover effects, tokenism could be seen as a negative spillover effect, where one PEB reduces the probability for a subsequent pro-environmental action [26].

1.1.2. Cut-Back as PEB: Meat Consumption

An official FAO report estimates the share of livestock to account for 14.5% of human-induced GHG [27], with red meat and cattle accounting for the major part of that high amount.

Given the big impact on climate change, a reduction in meat consumption can be seen as beneficial from an environmental point of view, but eating habits are not very susceptible to change [28]. In fact, habits seem to be the most significant barrier to changing meat consumption, though values and attitudes are also important [29]. In addition to emotions and cognitive dissonance, knowledge of environmental impact and skills (how to act upon this knowledge) also represents an important influence factor [30]. A lot of people fail to acknowledge how big the impact of meat consumption and livestock is on climate change [31], decreasing their willingness to cut back on it. Accordingly, providing people with information about the impact of eating meat on the environment resulted in reduced meat consumption, with this behavior persisting even a month after the intervention [32]. In the context of reduced meat consumption, prior beliefs are crucial.: Among people who already are meat-skeptics, different types of messages (focusing on the climate impact or focusing on health impacts) were associated with intentions to decrease red meat consumption, but this was not the case for frequent red meat eaters [33]. While appeals to cut back meat consumption showed some success, especially in younger, more educated, less wealthy and more liberal populations, appeals for a total elimination of meat have not been successful [34].

1.1.3. Cut-Back as PEB: Consumption of Consumer Goods

In a globalized world, the climate impact of consumer goods might be underestimated, since GHG emissions are not always assessed from a consumption side. Manufactured products such as clothing cause large GHG impacts in other producing countries, as it has been shown for Sweden [35], and the mechanisms are the same for other importing countries. Findings reveal that the emissions needed to sustain Austria’s consumption are about 50% higher in a consumption-based accounting system (considering emissions along the whole production chain to satisfy the country’s demand) than when reported by the conventional production-based accounting system [36], and Germany’s GHG emissions are about 25% higher estimated from a consumption side [36]. Therefore, consumption reduction plays an important role in GHG mitigation, but research on a general cut-back of

consumption is scarce. Overall, a study investigating consumption restrictions in Canadian students showed that the principles of the Theory of Planned Behavior are applicable, but overall intentions for restrictions are modest [37]. Instead, research about responsible consumption often focuses on minor aspects, such as plastic packaging [38], or general “green” buying behavior [39–42], even though limited consumption in terms of a sufficient lifestyle has a larger impact on footprint reduction than green consumerism [43]. Green consumerism, but not necessarily behaviors of higher importance, seems to be connected to sympathy for the environment [44]. Furthermore, while green consumption is perceived as environmentally friendly, this might even lead to environmental misjudgments when quantity is not taken into account. The judgment regarding environmental impact in green consumption seems biased in regard to an insensitivity for quantity. For example, people are rated to have a smaller environmental impact when they own a hybrid car in addition to a conventional one than people who own just a conventional car [45]. Similarly, the carbon footprint of a meal is rated smaller when it contains an environment-friendly side dish than the very same meal without a side dish [46]. Such a “negative footprint illusion” has been confirmed in many, but not all, contexts with some individual variations, e.g., depending on reflective reasoning [47].

Hence, we need to reflect on whether green consumerism is indeed environmentally beneficial or just a matter of labelling. The vast number of factors contributing to green consumerism, including influences of socio-demographic factors and the products themselves [39], leads to the question of whether different types of consumer goods should be assessed at the same time. Decisions for specific consumer goods might be influenced by additional factors that are not applicable in other consumption areas. For example, in the context of sustainable clothing, consumption is influenced by aesthetic risk and being associated with unfashionable perception [48].

1.1.4. Cut-Back as PEB: Air Travels

Though traveling in airplanes has a high impact on GHG production, the perceived impact of long-distance flights or flight reduction on GHG mitigation is underrated [5,21]. Nevertheless, a study from Iceland showed that even participants who were aware about the climate impact of their flight behavior were not willing to quit flying. Instead, different themes of justifications were mentioned, ranging from compensatory behaviors to carbon offsetting [49]. Tourists with regular international flying behavior were more aware about climate change, but they were least willing to alter their travel behavior as opposed to less active tourists who seemed more willing to travel less [50]. However, people who travel frequently were also willing to pay a higher amount of carbon offsets than those who do not travel very often [51]. In a mainly German sample, it was shown that being aware of environmental problems leads to a perceived dilemma and results in paying carbon offsets [52]. The most common reasons why people use airplanes are usually leisure (e.g., need to get away, see something new, visit family or friends) and business (e.g., meetings or conferences) [53]. As a result, alternative methods of transportation seem especially important. In a Swiss study, availability of alternative means of transportation was most frequently mentioned as a requirement for flight reduction [54].

1.2. Enhancing Mitigation via Communication: Presentation of Consequences

All the findings above relate to (relatively) stable traits, attitudes and influence factors on different PEBs, but some research has also led to the question of whether the method of presenting information might additionally increase PEB. Staats et al. [55] found that a presentation of GHG information increases knowledge, but not necessarily problem awareness or behavioral change, and the relationship between problem awareness and behavior was modest, at best. Thus, it is not surprising that many campaigns targeting an increase in knowledge to change behavior do not really succeed [56], but there is evidence in the literature of beneficial effects of information delivering messages on behavior change in people who hold higher environmental values than others [57].

Several investigations have dealt with the question of whether messages should be framed as a gain or a loss, but results are indifferent, finding both loss [58] and gain-framing superior [59,60] for increasing different forms of PEB. A study about responsible tourism suggests that differences in response to framing might be due to group involvement. In groups of low involvement, i.e., in groups of people who were less interested and concerned, gain-framed messages showed greater influence [61]. Additionally, the appeal of messages as rational vs. emotional seemed to be of importance. A high-involvement group tended to favor objective and logical facts, whereas a low-involvement group was impacted by emotional appeals [61]. As has been shown for advertisements, emotions are evoked in social causes rather than in non-social causes [62], hence, it also remains a matter of research whether presenting social contexts of climate change is more effective in groups of lower involvement.

Social contexts might also have beneficial influences on other groups as well. A recently conducted experiment [63] with a small, mostly female sample concluded that both environmental and social frames can increase pro-environmental behavior compared to a control group, while pro-social framing increases PEB even more.

1.3. Aims and Scopes of the Present Study

Based on the listed findings above, the present study aims to assess a vast number of PEB-connected variables in the context of consumption reduction—an environmentally important, but in research rather underrepresented field. Additionally, different areas of consumption will be looked upon separately in order to get an idea of whether different motivators are of importance for different areas of self-restriction.

2. Materials and Methods

To get an idea of the relative importance of different predictors on the willingness to reduce consumption in different areas, a vast number of possible factors contributing to the willingness for cut-backs were assessed. The main research questions to be answered in this study are:

- (1) What are main correlates of the willingness to cut back consumption for the sake of the environment, both regarding already implemented consumption restriction (1a) as well as reported willingness for further cut-backs (1b)?
- (2) Does a presentation of climate change consequences enhance people's willingness to limit their consumption to a certain threshold value for the sake of the environment (both overall as well as for a group of low involvement)?

2.1. Study Design

Data was collected as part of an extensive climate-change survey that additionally aimed to investigate social competencies and feelings of fairness (in prep.), presenting a German online questionnaire battery to a convenience sample mostly from Germany and Austria. The online questionnaire link was shared and distributed unsystematically in diverse social networks, (psychology) study networks in Austria and Germany and on online survey sites designed for study participations. An overview of all questionnaires and tasks presented can be found in Table 1. After filling out a major part of the questionnaires, participants were randomly assigned to one of three groups. All three groups were asked to read a short text before continuing to give the rest of their answers. One group received a text that highlighted social consequences of climate change (220 words; experimental group 1), a second group received a text highlighting environmental consequences such as the melting of glacier and polar ice as well as the loss of biodiversity due to climate change (222 words; experimental group 2), and a third group was presented a text about health benefits from physical activity (194 words; control group). Sample size was roughly estimated a priori, where it was hypothesized that effects of the experiment would lead to mean differences of 0.5 standard deviations at best, probably less. Comparing means, a

difference of 0.5 standard deviations ($\alpha = 0.05$, $\beta = 0.8$) required 64 people/group, whereas a difference of 0.33 standard deviations required already 146 participants per group.

Table 1. Overview about assessed areas, specific assessed variables in the present study and their theoretical background.

Assessed Area	Assessed Variables (Bold: Considered in the Analyses) including Their Operationalization	Link to Theoretical Background
• Demographic information	Gender, age, existence of children, educational level, income level, country of residence, area of education	Control variables; minor influences of socio-demographic factors
• Current behavior	Number of meat days/week, fish days/week and airplane trips (last five years)	Importance of habits and past behavior
• Implemented restrictions	Reported self-restriction of air travel during 12-month period; reported other self-restriction during the last month (1 item each, dichotomous as yes/no)	Possible compensatory or spillover-effects; (dependent variable for study question 1a)
• Interest and personal engagement for environmental protection	Connectedness to nature; interest in environmental protection; interest in climate change topics ; personal engagement in environmental protection (1 item each, 11-point scale, higher scores represent higher agreement)	Involvement
• Estimated danger of climate change	2 items: Estimated danger in 5 and 30 years (11-point scale, higher scores represent higher danger)	Perceived proximity
• Subjective efficacy of measures regarding climate change	Subjective efficacy regarding a range of measures both in an individual as well as in political context	Importance of efficacy
• Nature-agreeableness	Nature-agreeableness : overall score of a questionnaire [64], higher scores represent higher nature agreeableness	Influence of values and attitudes
• Materialism	Materialism : overall score of a questionnaire [65], higher scores represent higher materialism	Connections between materialism and PEB
• Social desirability	Positive and negative social desirability : 2 scales of a questionnaire [66], higher scores represent higher reported desirability	Control variable; possible bias
• Social competencies	Five subscales of an extensive questionnaire about social competencies	(not part of the present study)
• Distribution assignment in a social dilemma situation	2 items of a social dilemma embedded in a climate-change-context	(not part of the present study)
• Experimental condition: one of three different texts presented	(randomly assigned groups: 2 experimental and 1 control condition)	Influence of different types of framing
• Willingness to limit consumption to a certain threshold	1 item for each (11-point) of the following areas: meat, air travel, clothes consumption, consumption of technical equipment , cruise ship travel; higher scores represent higher reported willingness to limit consumption	(dependent variables for study question 2)

Table 1. Cont.

Assessed Area	Assessed Variables (Bold: Considered in the Analyses) including Their Operationalization	Link to Theoretical Background
Willingness for further cut-backs	Willingness to limit consumption minus current behavior in that area, transformed to four different categories: (1) Want to reduce less (current behavior exceeds willingness to reduce); (2) Want to stay the same when not being at a top level (current behavior is reported to be at the same amount as willingness to limit consumption, but not at the possible maximum); (3) Want to reduce more (willingness to reduce exceeds current behavior); (4) Want to keep a reached top level (both current behavior and willingness for further cut-backs are reported to be at a maximum level)	(dependent variables for study question 1b)
Hardest cut-backs and facilitating dragons of inaction	5 items representing dragons: change unnecessary, conflicting goals, interpersonal relations, lacking knowledge, tokenism	(not part of the present study)

2.2. Participants

Overall, 435 participants (123 male, 310 female, 2 diverse; mean age: 34 years; age range: 17–83, SD = 14.11) were included in the survey; one participant was excluded due to a high number of outliers in the responses. Nearly all participants lived in Germany ($n = 251$) or Austria ($n = 176$). A total of 21.1% ($n = 92$) of participants had a professional education or less, 35.6% ($n = 155$) a high school diploma and 43.2% ($n = 188$) had a bachelor's degree or higher. A total of 49% of the participants ($n = 213$) reported that their educational field is or was located in the social, health or educational area, 14% ($n = 61$) reported an economic or business area background, the rest mentioned other areas. The majority ($n = 314$; 71.7%) of participants reported not to have children. Given the demographics reported, the sample is not representative of the overall population in Austria or Germany.

2.3. Procedure

To assess which correlates contribute to the willingness to sacrifice for the environment, two different approaches were applied. For study question 1, it was investigated whether participants reported a recent purposeful consumption self-restriction (study question 1a) of air travel or other areas for the sake of the environment. Participants who reported an already implemented consumption restriction were compared to these who did not in two different binary logistic regression models (dependents: implemented restriction of air travel during the last year resp. implemented other restriction during the last month).

Regarding the question of which correlates are associated with a willingness for further cut-backs (study question 1b), four different areas were considered regarding a willingness to further limit consumption exceeding their current behavior: cutting back meat consumption, cutting back private air travel, cutting back consumption of clothes and cutting back consumption of technical equipment. The original question also assessed the area of cruise ship travel and showed extreme ceiling effects regarding willingness to stick to the target limit and was hardly ever mentioned as the hardest cut-back ($n = 4$), so this area was not considered for subsequent analyses. For the considered cut-backs, specific target limits were presented, where people had to rate their willingness not to exceed the given target limits: For meat the target was set at max. 1 meat day/week, for air travel at 1 trip per 3 years, for clothes at 2 pieces of clothes/month or less, and for technical equipment it was suggested that it should only be bought when the existing equipment is broken. Initial data inspections showed ceiling effects with a considerable percentage of participants reporting that they already meet the suggested target limits to a maximum degree. Depending on the area, between 22% (air travel) and 51% (clothes consumption) of participants answered that they fully limit their consumption to the suggested targets.

Hence, additional willingness was operationalized in consideration of whether target values were already met to a maximum degree or not.

To reach sufficient statistical power, we decided to use the total sample for answering both study questions, 1a and 1b, unless an effect of the experimental texts was shown (study question 2). In this case, it was decided to include only participants from the control group for possibly affected dependent variables.

The following variables were chosen as independent variables: socio-demographic factors (gender, age, existence of children, educational level in three categories); interest in climate change (11-point rating scale); estimated danger of climate change in 5 and in 30 years (11-point rating scale); rated effectiveness of the respective cut-back (11-point rating scale), materialism ([65]; questionnaire score) and nature-agreeableness ([64]; questionnaire score). Social desirability (questionnaire scores for positive and negative desirability [66]) was also included, since a social desirability bias cannot be ruled out, though overall it has been shown to be rather small [6]. Due to the importance of habits and old behavior patterns, amount of weekly meat days and air travel during the last five years (in five categories) were additionally added as predictors in the models regarding meat resp. air travel. For study question 1b, implemented restrictions were also added as independent variables. Frequencies of reported meat days and reported amount of air travel among the participants can be found in the supplement (Figure S1). Additionally, correlations of dependent and independent variables can be found in the Supplementary Materials (Table S1).

For study question 2, analyses of variance (ANOVAs) were applied. Willingness to limit consumption to given targets in four specific areas of behavior (meat consumption, air travel, consumption of clothes, consumption of technical equipment) were set as dependent variables and the presentation of climate change consequences as independent variables (3 groups: focus on social consequences of climate change, focus on environmental consequences of climate change, control text about a general health topic). Type-I-risk was set to $\alpha = 0.05$, but Bonferroni corrected to 0.0125 (4 dependent variables). The same methods and corrections were applied for the subgroup of low involvement only—a group that might react rather to emotional appeals than to facts [61]. Low involvement was defined as describing an interest in climate-change ranking in the lowest quartile of the total sample. Generally, meat reduction and flight reduction were mentioned most often as the hardest cut-backs, at least with respect to the given target limits (Figure 1).

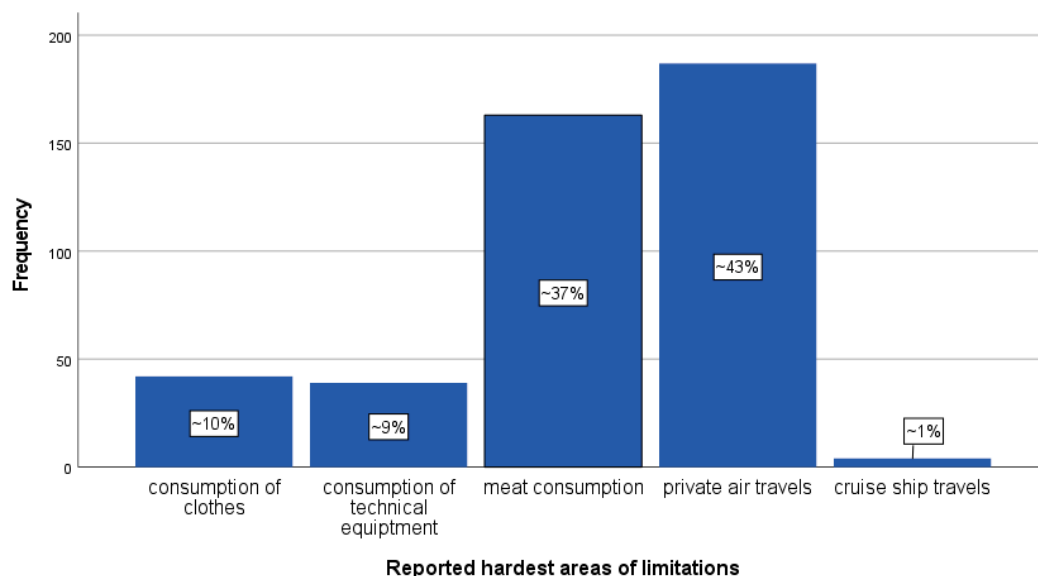


Figure 1. Mentioned hardest areas to limit considering the suggested targets in the total sample ($n = 435$).

3. Results

Regarding study question one (main correlates of the willingness to cut back), different predictors are of importance both regarding the content of the cut-back area as well as to whether they are significant regarding an already implemented self-restriction or a reported willingness for future cut-backs.

In the context of already implemented consumption restrictions for the sake of the environment (study question 1a), binary logistic regression models are significant for nature agreeableness in both assessed areas, and recent restrictions for the environment are a significant predictor for air travel restriction and vice versa. Additionally, for recent air travel restriction, estimated efficacy of the restriction is a significant predictor, whereas for consumption restriction several demographic variables show significance (see Table 2).

Table 2. Binary logistic regression models for implemented consumption restrictions of air travel (top) respective other implemented consumption restrictions (bottom).

Variable	B	SE	Exp(B)	95% CI	p	Nagelkerke R ²
Dependent: Air travel restrictions ^a						0.315
Gender (male > non-male)	0.031	0.291	1.031	[0.583; 1.823]	0.916	
Age (years)	0.020	0.013	1.020	[0.995; 1.046]	0.117	
Children (yes > no)	−0.622	0.405	0.537	[0.243; 1.187]	0.124	
Education (reference: professional education or less)					0.879	
Education: High school diploma	0.160	0.391	1.173	[0.545; 2.524]	0.683	
Education: Bachelor or higher	0.188	0.372	1.207	[0.582; 2.502]	0.613	
Climate change interest	0.140	0.102	1.150	[0.942; 1.405]	0.169	
Danger in 5 years	0.035	0.092	1.035	[0.865; 1.240]	0.706	
Danger in 30 years	0.060	0.126	1.061	[0.829; 1.359]	0.637	
Materialism	−0.028	0.016	0.972	[0.942; 1.004]	0.089	
Nature agreeableness	0.062	0.018	1.064	[1.027; 1.102]	<0.001	
Estimated efficacy *	0.195	0.069	1.215	[1.062; 1.390]	0.005	
Recent consumption restriction (yes > no)	0.901	0.406	2.463	[1.112; 5.454]	0.026	
Desirability: positive	0.281	0.233	1.324	[0.839; 2.090]	0.228	
Desirability: negative	0.330	0.201	1.391	[0.937; 2.064]	0.101	
Air travels/5 years (reference: none)					0.594	
1–2 air travels	0.177	0.429	1.193	[0.515; 2.764]	0.680	
3–5 air travels	−0.321	0.422	0.726	[0.318; 1.658]	0.447	
6–10 air travels	−0.335	0.457	0.715	[0.292; 1.751]	0.463	
11+ air travels	−0.259	0.499	0.772	[0.290; 2.051]	0.603	
Constant	−10.077	1.795			<0.001	
Dependent: Recent consumption restriction ^b						0.375
Gender (male > non-male)	−0.694	0.299	0.500	[0.278; 0.898]	0.020	
Age (years)	−0.023	0.013	0.977	[0.953; 1.002]	0.072	
Children (yes > no)	0.032	0.397	1.033	[0.475; 2.247]	0.936	
Education (reference: professional education or less)					0.002	
Education: High school diploma	1.005	0.366	2.733	[1.335; 5.594]	0.006	
Education: Bachelor or higher	1.167	0.353	3.214	[1.610; 6.415]	<0.001	
Climate change interest	0.123	0.095	1.130	[0.938; 1.363]	0.199	
Danger in 5 years	0.097	0.102	1.102	[0.903; 1.345]	0.341	
Danger in 30 years	−0.133	0.118	0.875	[0.694; 1.104]	0.260	
Materialism	0.014	0.017	1.014	[0.980; 1.049]	0.431	
Nature agreeableness	0.073	0.019	1.076	[1.037; 1.116]	<0.001	
Estimated efficacy clothes consumption	0.121	0.096	1.128	[0.935; 1.362]	0.208	
Estimated efficacy consumption of tech. equip.	0.032	0.096	1.033	[0.855; 1.247]	0.739	
Air travel restriction (yes > no)	0.960	0.401	1.128	[1.191; 5.726]	0.017	
Desirability: positive	0.376	0.229	1.456	[0.929; 2.280]	0.101	
Desirability: negative	0.136	0.208	1.146	[0.762; 1.722]	0.513	
Constant	−6.203	1.504			<0.001	

Note. $n = 435$; bold and italic = significant; * efficacy of the respective behavior; details regarding the assessed variables can be found in Table 1. The same regression models with only significant predictors included can be found in the Supplement Materials (Table S3). ^a Hosmer–Lemeshow Chi-square: 6.055; $df = 8$, $p = 0.641$;

^b Hosmer–Lemeshow Chi-square: 8.514; $df = 8$, $p = 0.385$.

Regarding willingness for further cut-backs, significant results can be found for habits resp. current behaviors (amount of air travel and number of meat days) and for estimated efficacy for the respective behavior with exception for technical consumption, where efficacy shows no significance. Some of these predictors are connected to both a higher and lower willingness to implement cut-backs compared to participants who do not want to change their current consumption behavior: Compared to the group who does not want to change their behavior, number of meat days reduces the probability of being in the group that wants further cut-backs in meat, but they reduce the probability of being in the group who want to keep their top-level of cut backs even more, as this is already defined as the group with low meat consumption. A similar effect can be found regarding the amount of air travel in the past on the willingness for cutting back further air travel. Materialism appears to be connected to the consumption of material goods (clothes and technical equipment), but only shows significance when it comes to keeping the top-level, while on lower levels this predictor does not significantly contribute. Efficacy of the respective behavior is usually connected in a pro-restriction way, but also shows connections to intended behavior changes regarding a less restricting behavior. For clothes consumption as well as for air travel, high estimated efficacies are connected to higher probabilities of being both in the groups who want to cut back more as well as being in the groups who want to cut back less compared to their current behavior. Correlations of estimated efficacies with current fulfillments of the target limits can also be found and are presented in the Supplementary Materials (Table S2). Other predictors, namely socio-demographic factors, positive social desirability—in opposite direction than expectation—, nature agreeableness and estimated danger of climate change in the far future are partly associated with the dependent variable, but only in particular areas. Nagelkerke R^2 -values varies widely, where explained variance has been shown to be much lower in areas where the actual amount of current consumption was not assessed (Nagelkerke R^2 clothes: 0.263; Nagelkerke R^2 technical equipment: 0.194), as opposed to areas where the actual amount of consumption was included in the model (Nagelkerke R^2 meat: 0.732, Nagelkerke R^2 air travels: 0.522). Multinomial regression models regarding further willingness to limit consumption can be found in Tables 3–6, the same models with only the significant predictors included can furthermore be found in the Supplement Materials (Tables S4–S7). Results of the additional regressions with just the significant variables stay basically the same with an exception for danger in 30 years, which does not reach statistical significance for air travel reduction when fewer variables are considered (see Table S5).

Table 3. Multinomial logistic regression model of the willingness for further cut-backs in meat consumption.

Variables for Further Cut-Backs in Meat	B (SE)	Exp(B)	95% CI	p
Want to reduce less				
Gender (reference: male)	−0.701 (0.542)	0.496	[0.172; 1.434]	0.196
Age (years)	−0.030 (0.024)	0.971	[0.926; 1.018]	0.223
Children (reference: yes)	−0.814 (0.731)	0.443	[0.106; 1.857]	0.265
Education (reference: Bachelor or higher)				
Education: High school diploma	−0.921 (0.656)	0.398	[0.110; 1.442]	0.161
Education: Professional education or less	−0.417 (0.635)	0.659	[0.190; 2.286]	0.637
Climate change interest	0.146 (0.172)	1.157	[0.826; 1.621]	0.396
Danger in 5 years	−0.079 (0.173)	0.924	[0.659; 1.296]	0.647
Danger in 30 years	0.027 (0.206)	1.027	[0.686; 1.537]	0.897
Materialism	−0.002 (0.032)	0.998	[0.938; 1.062]	0.944
Nature agreeableness	−0.004 (0.034)	0.996	[0.932; 1.065]	0.916
Estimated efficacy *	−0.008 (0.104)	0.992	[0.809; 1.217]	0.941
Air travel restriction (reference: yes)	−0.485 (0.646)	0.615	[0.173; 2.183]	0.452
Recent consumption restriction (reference: yes)	−0.211 (0.598)	0.809	[0.251; 2.614]	0.724
Desirability: positive	−0.330 (0.451)	0.719	[0.297; 1.739]	0.464
Desirability: negative	−0.096 (0.377)	0.909	[0.434; 1.902]	0.799
Meat Days/Week	−0.419 (0.185)	0.658	[0.458; 0.945]	0.024
Constant	4.446 (3.120)			0.154

Table 3. Cont.

Variables for Further Cut-Backs in Meat	B (SE)	Exp(B)	95% CI	p
Want to reduce more				
Gender (reference: male)	0.091 (0.396)	1.095	[0.504; 2.380]	0.819
Age (years)	0.012 (0.17)	1.012	[0.979; 1.047]	0.480
Children (reference: yes)	0.740 (0.520)	2.096	[0.756; 5.812]	0.155
Education (reference: bachelor or higher)				
Education: High school diploma	−0.334 (0.457)	0.716	[0.292; 1.756]	0.466
Education: Professional education or less	−0.749 (0.474)	0.473	[0.187; 1.197]	0.114
Climate change interest	−0.003 (0.118)	0.997	[0.792; 1.255]	0.979
Danger in 5 years	−0.013 (0.127)	0.987	[0.769; 1.267]	0.920
Danger in 30 years	0.081 (0.155)	1.085	[0.800; 1.471]	0.600
Materialism	−0.011 (0.023)	0.989	[0.946; 1.035]	0.635
Nature agreeableness	0.053 (0.024)	1.054	[1.007; 1.104]	0.025
Estimated efficacy *	0.093 (0.075)	1.097	[0.947; 1.272]	0.217
Air travel restriction (reference: yes)	0.591 (0.492)	1.806	[0.688; 4.739]	0.230
Recent consumption restriction (reference: yes)	−0.502 (0.411)	0.605	[0.271; 1.353]	0.221
Desirability: positive	−0.627 (0.314)	0.534	[0.289; 0.988]	0.046
Desirability: negative	0.140 (0.261)	1.151	[0.689; 1.921]	0.591
Meat Days/Week	−0.073 (0.125)	0.930	[0.728; 1.188]	0.560
Constant	−1.351 (2.250)			0.548
Want to keep a top level				
Gender (reference: male)	−0.363 (0.732)	0.696	[0.166; 2.918]	0.620
Age (years)	−0.009 (0.029)	0.992	[0.936; 1.050]	0.771
Children (reference: yes)	0.261 (0.898)	1.298	[0.224; 7.541]	0.771
Education (reference: Bachelor or higher)				
Education: High school diploma	0.280 (0.735)	1.323	[0.313; 5.588]	0.704
Education: Professional education or less	−1.022 (0.827)	0.360	[0.071; 1.821]	0.217
Climate change interest	−0.137 (0.212)	0.872	[0.576; 1.321]	0.518
Danger in 5 years	0.118 (0.230)	1.125	[0.716; 1.768]	0.609
Danger in 30 years	−0.069 (0.275)	0.934	[0.545; 1.600]	0.803
Materialism	−0.028 (0.036)	0.973	[0.906; 1.044]	0.446
Nature agreeableness	0.080 (0.041)	1.083	[0.999; 1.174]	0.053
Estimated efficacy *	0.391 (0.135)	1.479	[1.136; 1.925]	0.004
Air travel restriction (reference: yes)	1.068 (0.716)	2.909	[0.715; 11.834]	0.136
Recent consumption restriction (reference: yes)	0.164 (0.800)	1.178	[0.246; 5.652]	0.838
Desirability: positive	0.163 (0.543)	1.177	[0.406; 3.413]	0.764
Desirability: negative	−0.105 (0.513)	0.900	[0.330; 2.460]	0.838
Meat Days/Week	−3.223 (0.424)	0.040	[0.017; 0.092]	<0.001
Constant	−0.430 (3.943)			0.913

Note. $n = 435$. $R^2 = 0.653$ (Cox–Snell), 0.732 (Nagelkerke). Model Chi-square ($df\ 48$) = 460.184 (<0.001). Reference category: Want to stay the same. Bold and italic: significant. * Estimated efficacy of the respective behavior. Details regarding the assessed variables can be found in Table 1. Category distribution: Want to reduce less: $n = 30$ participants; want to stay the same: $n = 46$ participants; want to reduce more: $n = 235$ participants; want to keep a top level: $n = 124$ participants.

Table 4. Multinomial logistic regression model of the willingness for further cut-backs in air travels.

Variables for Further Cut-Backs in Air Travel	B (SE)	Exp(B)	95% CI	p
Want to reduce less				
Gender (reference: male)	0.009 (0.398)	1.009	[0.462; 2.202]	0.983
Age (years)	0.015 (0.017)	1.015	[0.983; 1.049]	0.364
Children (reference: yes)	0.185 (0.534)	1.203	[0.422; 3.429]	0.729
Education (reference: Bachelor or higher)				
Education: High school diploma	0.111 (0.403)	1.118	[0.507; 2.461]	0.783
Education: Professional education or less	−0.110 (0.479)	0.896	[0.350; 2.292]	0.819
Climate change interest	−0.068 (0.125)	0.934	[0.731; 1.194]	0.588
Danger in 5 years	−0.108 (0.125)	0.898	[0.703; 1.147]	0.388
Danger in 30 years	0.265 (0.156)	1.303	[0.959; 1.770]	0.091
Materialism	0.033 (0.023)	1.034	[0.989; 1.080]	0.143
Nature agreeableness	−0.038 (0.023)	0.963	[0.920; 1.008]	0.102
Estimated efficacy *	0.173 (0.085)	1.189	[1.007; 1.403]	0.041
Air travel restriction (reference: yes)	−0.571 (0.438)	0.565	[0.239; 1.332]	0.192
Recent consumption restriction (reference: yes)	−0.149 (0.448)	0.862	[0.358; 2.072]	0.740
Desirability: positive	0.242 (0.305)	1.274	[0.701; 2.314]	0.427
Desirability: negative	0.066 (0.259)	1.068	[0.643; 1.774]	0.798
Air travels (reference: 11+ air travels)				
6–10 air travels	0.738 (0.748)	2.092	[0.483; 9.056]	0.323
3–5 air travels	1.911 (0.704)	6.761	[1.702; 26.867]	0.007
1–2 air travels	2.677 (0.715)	14.537	[3.583; 58.977]	<0.001
No air travels	3.077 (0.906)	21.685	[3.670; 128.121]	<0.001
Constant	−4.169 (2.268)			0.066

Table 4. Cont.

Variables for Further Cut-Backs in Air Travel	B (SE)	Exp(B)	95% CI	p
Want to reduce more				
Gender (reference: male)	−0.197 (0.314)	0.821	[0.444; 1.518]	0.529
Age (years)	−0.005 (0.014)	0.995	[0.968; 1.022]	0.707
Children (reference: yes)	−0.557 (0.431)	0.573	[0.246; 1.334]	0.196
Education (reference: Bachelor or higher)				
Education: High school diploma	0.315 (0.306)	1.371	[0.748; 2.511]	0.307
Education: Professional education or less	−0.099 (0.389)	0.906	[0.422; 1.943]	0.799
Climate change interest	−0.007 (0.104)	0.993	[0.809; 1.218]	0.944
Danger in 5 years	−0.146 (0.098)	0.864	[0.713; 1.048]	0.139
Danger in 30 years	0.265 (0.125)	1.303	[1.019; 1.666]	0.035
Materialism	−0.025 (0.017)	0.975	[0.944; 1.008]	0.136
Nature agreeableness	−0.008 (0.018)	0.992	[0.957; 1.028]	0.648
Estimated efficacy *	0.168 (0.065)	1.183	[1.042; 1.342]	0.009
Air travel restriction (reference: yes)	−0.128 (0.343)	0.880	[0.449; 1.721]	0.708
Recent consumption restriction (reference: yes)	−0.322 (0.359)	0.725	[0.359; 1.464]	0.369
Desirability: positive	−0.142 (0.239)	0.868	[0.543; 1.385]	0.552
Desirability: negative	0.150 (0.214)	1.161	[0.764; 1.766]	0.484
Air travels (reference: 11+ air travels)				
6–10 air travels	0.133 (0.372)	1.142	[0.551; 2.367]	0.721
3–5 air travels	0.099 (0.394)	1.104	[0.510; 2.388]	0.802
1–2 air travels	−0.226 (0.455)	0.798	[0.327; 1.948]	0.620
No air travels	−0.843 (0.857)	0.431	[0.080; 2.307]	0.325
Constant	0.361 (1.743)			0.836
Want to keep a top level				
Gender (reference: male)	0.375 (0.518)	1.455	[0.528; 4.013]	0.469
Age (years)	−0.012 (0.021)	0.988	[0.948; 1.030]	0.571
Children (reference: yes)	−0.880 (0.629)	0.415	[0.121; 1.424]	0.162
Education (reference: bachelor or higher)				
Education: High school diploma	−0.175 (0.506)	0.840	[0.312; 2.264]	0.730
Education: Professional Education or less	−0.392 (0.578)	0.675	[0.218; 2.097]	0.497
Climate change interest	0.043 (0.157)	1.044	[0.948; 1.030]	0.785
Danger in 5 years	0.148 (0.168)	1.159	[0.834; 1.611]	0.379
Danger in 30 years	−0.050 (0.197)	0.951	[0.647; 1.398]	0.798
Materialism	−0.041 (0.030)	0.960	[0.906; 1.017]	0.168
Nature agreeableness	0.013 (0.030)	1.013	[0.955; 1.076]	0.660
Estimated efficacy *	0.356 (0.114)	1.428	[1.143; 1.784]	0.002
Air travel restriction (reference: yes)	−0.539 (0.509)	0.583	[0.215; 1.583]	0.290
Recent consumption restriction (reference: yes)	1.029 (0.566)	2.798	[0.922; 8.489]	0.069
Desirability: positive	−0.013 (0.393)	0.987	[0.457; 2.135]	0.974
Desirability: negative	0.044 (0.337)	1.045	[0.540; 2.024]	0.896
Air travels (reference: 11+ air travels)				
6–10 air travels	−0.269 (1.461)	0.764	[0.044; 13.402]	0.854
3–5 air travels	1.394 (1.155)	4.030	[0.419; 38.787]	0.228
1–2 air travels	3.355 (1.110)	28.652	[3.251; 252.499]	0.003
No air travels	5.646 (1.238)	283.262	[25.048; 3203.336]	<0.001
Constant	−5.742 (2.988)			0.055

Note. $n = 435$. $R^2 = 0.483$ (Cox–Snell), 0.522 (Nagelkerke). Model Chi-square (df 57) = 285.328 (<0.001). Reference category: Want to stay the same. Bold and italic: significant. * Estimated efficacy of the respective behavior. Details regarding the assessed variables can be found in Table 1. Category distribution: Want to reduce less: $n = 72$ participants; want to stay the same: $n = 97$ participants; want to reduce more: $n = 190$ participants; want to keep a top level: $n = 74$ participants.

Table 5. Multinomial logistic regression model of the willingness for further cut-backs in clothes consumption.

Variables for Further Cut-Backs in Clothes Consumption	B (SE)	Exp(B)	95% CI	p
Want to reduce less				
Gender (reference: male)	0.256 (0.503)	1.292	[0.482; 3.464]	0.610
Age (years)	−0.001 (0.202)	0.999	[0.960; 1.039]	0.950
Children (reference: yes)	−0.516 (0.644)	0.597	[0.169; 2.109]	0.423
Education (reference: Bachelor or higher)				
Education: High school diploma	−0.406 (0.558)	0.667	[0.223; 1.989]	0.467
Education: Professional education or less	−0.448 (0.599)	0.639	[0.198; 2.068]	0.455
Climate change interest	−0.108 (0.154)	0.898	[0.664; 1.214]	0.483
Danger in 5 years	0.030 (0.159)	1.031	[0.754; 1.408]	0.850
Danger in 30 years	−0.011 (0.192)	0.989	[0.678; 1.442]	0.954
Materialism	−0.047 (0.029)	0.954	[0.902; 1.010]	0.106
Nature agreeableness	−0.045 (0.030)	0.956	[0.901; 1.014]	0.131
Estimated efficacy *	0.325 (0.117)	1.385	[1.100; 1.742]	0.005
Air travel restriction (reference: yes)	−0.843 (0.581)	0.430	[0.138; 1.345]	0.147
Recent consumption restriction (reference: yes)	−0.429 (0.587)	0.651	[0.206; 2.056]	0.465
Desirability: positive	0.593 (0.386)	1.809	[0.849; 3.855]	0.125
Desirability: negative	0.481 (0.332)	1.618	[0.845; 3.098]	0.147
Constant	1.262 (2.624)			0.630

Table 5. Cont.

Variables for Further Cut-Backs in Clothes Consumption	B (SE)	Exp(B)	95% CI	p
Want to reduce more				
Gender (reference: male)	0.551 (0.404)	1.735	[0.786; 3.830]	0.173
Age (years)	−0.033 (0.017)	0.967	[0.935; 1.001]	0.056
Children (reference: yes)	−0.173 (0.525)	0.841	[0.301; 2.354]	0.742
Education (reference: bachelor or higher)				
Education: High school diploma	−0.813 (0.435)	0.444	[0.189; 1.041]	0.062
Education: Professional Education or less	−1.254 (0.489)	0.285	[0.109; 0.744]	0.010
Climate change interest	0.018 (0.127)	1.018	[0.794; 1.305]	0.888
Danger in 5 years	0.113 (0.125)	1.120	[0.876; 1.431]	0.366
Danger in 30 years	−0.041 (0.156)	0.959	[0.706; 1.304]	0.791
Materialism	−0.020 (0.023)	0.980	[0.938; 1.025]	0.379
Nature agreeableness	0.005 (0.024)	1.005	[0.959; 1.052]	0.845
Estimated efficacy *	0.205 (0.093)	1.228	[1.023; 1.473]	0.028
Air travel restriction (reference: yes)	−0.335 (0.482)	0.715	[0.278; 1.841]	0.487
Recent consumption restriction (reference: yes)	0.423 (0.439)	1.527	[0.645; 3.613]	0.336
Desirability: positive	0.227 (0.294)	1.254	[0.704; 2.233]	0.441
Desirability: negative	0.225 (0.271)	1.252	[0.736; 2.129]	0.407
Constant	0.004 (2.206)			0.999
Want to keep a top level				
Gender (reference: male)	−0.266 (0.385)	0.766	[0.360; 1.630]	0.490
Age (years)	−0.009 (0.016)	0.991	[0.960; 1.022]	0.557
Children (reference: yes)	0.168 (0.506)	1.182	[0.439; 3.185]	0.740
Education (reference: bachelor or higher)				
Education: High school diploma	−0.580 (0.431)	0.560	[0.241; 1.303]	0.178
Education: Professional education or less	−0.840 (0.471)	0.432	[0.172; 1.087]	0.075
Climate change interest	−0.066 (0.124)	0.936	[0.734; 1.193]	0.593
Danger in 5 years	0.069 (0.122)	1.071	[0.843; 1.361]	0.574
Danger in 30 years	−0.098 (0.149)	0.906	[0.676; 1.215]	0.510
Materialism	−0.080 (0.023)	0.924	[0.884; 0.965]	<0.001
Nature agreeableness	0.034 (0.024)	1.035	[0.988; 1.084]	0.149
Estimated efficacy *	0.315 (0.091)	1.370	[1.146; 1.638]	<0.001
Air travel restriction (reference: yes)	−0.471 (0.469)	0.624	[0.249; 1.565]	0.315
Recent consumption restriction (reference: yes)	0.155 (0.438)	1.167	[0.495; 2.754]	0.724
Desirability: positive	0.317 (0.293)	1.373	[0.773; 2.441]	0.280
Desirability: negative	0.391 (0.270)	1.479	[0.872; 2.508]	0.147
Constant	0.163 (2.121)			0.939

Note. $n = 435$. $R^2 = 0.240$ (Cox–Snell), 0.264 (Nagelkerke). Model Chi-square (df 45) = 119.336 (<0.001). Reference category: Want to stay the same. Bold and italic: significant. * Estimated efficacy of the respective behavior. Details regarding the assessed variables can be found in Table 1. Category distribution: Want to reduce less: $n = 41$ participants; want to stay the same: $n = 51$ participants; want to reduce more: $n = 142$ participants; want to keep a top level: $n = 201$ participants.

Table 6. Multinomial logistic regression model of the willingness for further cut-backs in consumption of technical equipment.

Variables for Further Cut-Backs in Tech. Equip.	B (SE)	Exp(B)	95% CI	p
Want to reduce less				
Gender (reference: male)	0.433 (0.368)	1.542	[0.750; 3.172]	0.239
Age (years)	0.004 (0.017)	1.004	[0.972; 1.037]	0.805
Children (reference: yes)	−0.853 (0.500)	0.426	[0.160; 1.134]	0.088
Education (reference: Bachelor or higher)				
Education: High school diploma	0.395 (0.382)	1.484	[0.702; 3.136]	0.301
Education: Professional education or less	−0.209 (0.443)	0.811	[0.341; 1.932]	0.637
Climate change interest	−0.195 (0.120)	0.823	[0.650; 1.041]	0.104
Danger in 5 years	−0.025 (0.116)	0.975	[0.777; 1.224]	0.829
Danger in 30 years	0.339 (0.153)	1.404	[1.041; 1.893]	0.026
Materialism	0.009 (0.021)	1.009	[0.969; 1.052]	0.654
Nature agreeableness	−0.011 (0.022)	0.989	[0.947; 1.032]	0.604
Estimated efficacy *	−0.014 (0.083)	0.986	[0.838; 1.162]	0.870
Air travel restriction (reference: yes)	−0.311 (0.396)	0.732	[0.337; 1.592]	0.432
Recent consumption restriction (reference: yes)	−0.312 (0.416)	0.732	[0.324; 1.653]	0.453
Desirability: positive	−0.115 (0.290)	0.892	[0.505; 1.575]	0.693
Desirability: negative	−0.297 (0.250)	0.743	[0.455; 1.213]	0.234
Constant	−0.303 (2.118)			0.886

Table 6. Cont.

Variables for Further Cut-Backs in Tech. Equip.	B (SE)	Exp(B)	95% CI	p
Want to reduce more				
Gender (reference: male)	0.234 (0.302)	1.264	[0.699; 2.283]	0.438
Age (years)	0.008 (0.014)	1.008	[0.980; 1.037]	0.569
Children (reference: yes)	−0.060 (0.441)	0.942	[0.397; 2.236]	0.892
Education (reference: Bachelor or higher)				
Education: High school diploma	0.344 (0.321)	1.410	[0.752; 2.647]	0.284
Education: Professional education or less	−0.484 (0.391)	0.617	[0.286; 1.327]	0.216
Climate change interest	−0.089 (0.103)	0.915	[0.748; 1.119]	0.387
Danger in 5 years	−0.013 (0.097)	0.987	[0.816; 1.193]	0.890
Danger in 30 years	0.177 (0.122)	1.194	[0.939; 1.518]	0.148
Materialism	0.008 (0.018)	1.008	[0.974; 1.044]	0.645
Nature agreeableness	−0.014 (0.019)	0.986	[0.951; 1.023]	0.466
Estimated efficacy *	−0.008 (0.070)	0.992	[0.865; 1.137]	0.906
Air travel restriction (reference: yes)	−0.307 (0.343)	0.736	[0.376; 1.440]	0.371
Recent consumption restriction (reference: yes)	−0.367 (0.357)	0.693	[0.344; 1.395]	0.304
Desirability: positive	−0.547 (0.244)	0.579	[0.359; 0.933]	0.025
Desirability: negative	−0.064 (0.204)	.938	[0.629; 1.399]	0.753
Constant	1.553 (1.782)			0.384
Want to keep a top level				
Gender (reference: male)	0.754 (0.336)	2.126	[1.099; 4.111]	0.025
Age (years)	0.019 (0.014)	1.019	[0.990; 1.048]	0.198
Children (reference: yes)	−0.188 (0.444)	0.829	[0.347; 1.978]	0.673
Education (reference: Bachelor or higher)				
Education: High school diploma	0.236 (0.341)	1.267	[0.649; 2.473]	0.489
Education: Professional education or less	−0.251 (0.396)	0.778	[0.358; 1.691]	0.527
Climate change interest	−0.136 (0.107)	0.873	[0.707; 1.076]	0.203
Danger in 5 years	0.112 (0.108)	1.119	[0.905; 1.384]	0.300
Danger in 30 years	−0.030 (0.128)	0.971	[0.755; 1.248]	0.817
Materialism	−0.037 (0.019)	0.964	[0.929; 1.000]	0.049
Nature agreeableness	0.022 (0.020)	1.023	[0.983; 1.064]	0.270
Estimated efficacy	0.113 (0.075)	1.120	[0.967; 1.298]	0.130
Air travel restriction (reference: yes)	−0.348 (0.346)	0.706	[0.359; 1.391]	0.315
Recent consumption restriction (reference: yes)	−0.360 (0.395)	0.698	[0.322; 1.512]	0.362
Desirability: positive	−0.079 (0.265)	0.924	[0.550; 1.554]	0.766
Desirability: negative	−0.235 (0.233)	0.791	[0.501; 1.249]	0.314
Constant	−0.829 (1.885)			0.660

Note. $n = 435$. $R^2 = 0.181$ (Cox–Snell), 0.194 (Nagelkerke). Model Chi-square ($df\ 45$) = 86.940 (<0.001). Reference category: Want to stay the same. Bold and italic: significant. * Estimated efficacy of the respective behavior. Details regarding the assessed variables can be found in Table 1. Category distribution: Want to reduce less: $n = 73$ participants; want to stay the same: $n = 100$ participants; want to reduce more: $n = 137$ participants; want to keep a top level: $n = 125$ participants.

Regarding presentation of climate change consequences (study question 2: possible enhancement of the willingness to limit consumption to a certain threshold via presenting different climate change consequences), no differences in the total sample can be found in either of the dependent variables. Table 7 shows the analyses of variance as well as descriptive statistics for the three groups.

Table 7. Analyses of variance regarding willingness to limit consumption to certain thresholds in different areas in the total sample (top) and the subsample of low involvement only (bottom).

Total Sample			Social Text (<i>n</i> = 147)		Environ. Text (<i>n</i> = 142)		Control Group (<i>n</i> = 146)	
Dependent [ANOVA]	<i>p</i>		Mean	SD	Mean	SD	Mean	SD
Meat consumption [F (2,432) = 0.940]	0.392		8.35	2.99	8.11	3.16	8.61	3.07
Clothes [F (2,432) = 1.241]	0.290		9.71	2.48	10.03	1.95	9.62	2.38
Tech. equip. [F (2,432) = 0.834]	0.538		9.20	2.27	9.04	2.66	8.87	2.61
Air travels [F (2,432) = 0.432]	0.649		7.14	3.18	7.09	3.38	6.81	3.37
Low Invol.			Social Text (<i>n</i> = 29)		Environ. Text (<i>n</i> = 35)		Control Group (<i>n</i> = 33)	
Dependent [ANOVA]	<i>p</i>		Mean	SD	Mean	SD	Mean	SD
Meat consumption [F (2,94) = 3.876]	0.024		7.83	2.95	5.77	3.44	7.61	3.45
Clothes * [Welch's F (2,58.138) = 2.845] *	0.066 *		8.03	3.50	9.71	2.37	8.64	3.13
Tech. equip. [F (2,94) = 0.404]	0.668		8.55	2.68	9.00	2.93	8.39	3.00
Air travels [F (2,94) = 0.596]	0.553		5.76	3.11	5.43	3.66	6.33	3.48

Note. * Levene statistics significant; ANOVA = Analysis of variances.

Looking at only participants with low involvement, a descriptive tendency that presentation of environmental, but not social, consequences of climate change backfires on the willingness to meet the meat target can be seen, but remains insignificant due to Bonferroni corrections. Descriptively, the mean value of meat-limitation-willingness after reading about social consequences is comparable to the mean value after not being informed about consequences. Regarding other areas, no group differences are found.

4. Discussion

The threat of human-induced climate change calls for urgent actions regarding individual behavior. Previous research has shown that PEB is influenced by a vast number of factors (e.g., [13,67]), but the existing fragmented research with different underlying behaviors shows that the involved factors increasing PEB might vary depending on the assessed behavioral aspect. According to previous findings, efficacy seems to play a role in various PEBs (e.g., [19,21]); habits seem to be especially important in meat consumption [29], whereas in air travel the availability of alternatives (e.g., different modes of transportation to travel to a location) is mentioned as crucial [54].

Our research assembles a variety of these previously discovered factors, investigating their contribution to different areas of consumption reduction as PEB—an underrepresented field—since research about private consumption covers consumption of sustainable or green products [39,40,42] rather than a more effective reduction in consumption itself [43].

Our results confirm several existing findings, but also showed some surprises. As one important outcome, our data shows that when it comes to already implemented consumption restrictions, partly different variables are of importance when it comes to willingness for further cut-backs. Nature agreeableness was slightly connected to already implemented restrictions, but—aside from meat—not connected to willingness for further cut-backs. For implemented restrictions in consumption other than air travel, education level showed a high importance, though overall the effect of socio-demographic factors on PEBs in the literature is usually rather small [12]. A high education level in our data made someone more than three times as likely to report self-restrictions for the sake of the

environment. However, this does not necessarily mean that higher educated groups have a more sustainable consumption behavior, as absolute level of consumption was not assessed. It cannot be ruled out that overall, higher educated groups in our sample consumed more and therefore found it easier to also make a small sacrifice.

Another surprising outcome of our data was the low evidence for compensatory or spillover effects. Only when it came to already implemented behaviors, purposeful restrictions of air travel was connected to purposeful other restrictions, but this could just as well represent a general sufficient lifestyle and must not necessarily be a spillover effect. When it came to willingness for further cut-backs that exceeded current behavior, no more influences of the already implemented restrictions could be found.

Regarding this mentioned willingness for further cut-backs, estimated efficacies of the respective behaviors proved to be significant predictors in three of the four assessed areas, though not always for all subgroups. The importance of estimated efficacy goes along with the literature's findings. However, an exception in our data can be found for willingness to limit the consumption of technical equipment, where efficacy does not show significance. This might partly be caused by a fallacy. In recent years, energy efficiency has become more important and investigated (e.g., [68,69]), and consumers do indeed pay attention to energy efficiency labels [70], but they are not necessarily able to correctly interpret the efficiency data [71]. Additionally, when it comes to electronics, the footprint resulting from production is often much bigger than the footprint due to the usage itself [72]. Hence economic efficiency labels can even have negative effects since people might think their energy consumption is not problematic [71], and a rebound effect might occur [73]. It might be due to such a misleading interpretation of increased energy efficiency in new or newer products, that this predictor did not show an effect, since in all other areas the estimated efficacy showed a significant influence on further willingness.

Aside from efficacy, the importance of old behavioral patterns that was found in previous research (e.g., [7,29]) can partly be confirmed by our data. Both number of meat days and amount of air travel are negatively correlated to the probability of being in a group who wants to consume more in the future. However, the same direction of effect can be found for being in the group who wants to keep a reached top level, probably because consuming hardly any meat makes it nearly impossible to further reduce that amount.

Materialism was only connected to consumption of technical equipment and clothes, and only showed significance after a certain threshold level with a very small effect on the odds ratio, where lower levels were significantly associated with the willingness to keep an already existing top-level.

To our surprise, estimated danger of climate change was rarely connected to further willingness for consumption reductions. Estimating climate change in 30 years as dangerous was connected to a higher willingness for further cut-backs in air travel (though missing the significant threshold in later additional calculations with just the significant variables), but estimated danger also showed contra productive effects when it came to limiting consumption of technical equipment. No effect of estimating climate change as dangerous in the near future could be found.

We also could not find evidence for a social desirability bias in reporting willingness to cut back. On the contrary, our data showed a negative connection between positive social desirability and further willingness in two subsections (further willingness to reduce meat and technical equipment). Though we initially assumed this to be caused by the fact that social desirability might lead to an overestimation of current fulfillments of the target value, which would leave less possibilities for future cut-backs, correlations between positive social desirability and current fulfillments of target limits were all insignificant (Table S2), so that further research is recommended to investigate whether social desirability might lead to a lower reported willingness in some cases.

We also investigated whether putting a focus on social or environmental consequences of climate change would rather increase willingness for cut-backs, but no effect of a short information text can be found at all. A small tendency that presenting environmental

consequences to a group of low involvement could even backfire on willingness to reduce meat remains insignificant due to Bonferroni corrections. Nevertheless, our data does not support a beneficial effect at all, hence it seems advisable not to impose climate change consequences on people who are not willing to listen to it.

Overall, the limits of meat and air travel were estimated to be the hardest sacrifices for the sake of the environment. Approximately 80% of the sample stated that they found one of these two consumption areas the hardest to reduce to the given target limits. Due to their high impact on GHG, especially these two cut-backs are of importance and are rather underestimated [5] so that raising awareness for consumers might be advisable—whilst being careful not to create psychological reactance (e.g., [74]).

Inclusion of all (significant and insignificant) independent variables led to only modest model performance regarding the willingness to cut back material consumption goods, where Nagelkerke R^2 values reached levels between 0.26 and 0.19, while R^2 -values for meat consumption and air travel reached rather high levels. This might also be due to the fact that only for meat consumption and air travel was the amount of current consumption assessed.

It has to be mentioned that we included a broad variety of factors, but there were still certain limits and contributors which we could not include. For example, situational factors resp. their perception might have a major influence on consumption decisions [75], but it could not be considered in the given context at all. Additionally, our study was also embedded in the given cultural context, since nearly all data was from Germany and Austria, and PEB might vary for societies with other cultural values [76]. Given a mean age of 34 and the high number of females in our convenience sample (with nearly half of the sample having a social/health/educational background regarding their field of education), the sample is not representative for the Austrian or German population, and it needs to be considered that measurement inaccuracies are much lower for underrepresented groups (e.g., males compared to females). As in all questionnaire studies, there might be slight biases in our data deriving from the operationalization of variables. With respect to our data, it cannot be ruled out that some questions were incorrectly interpreted, e.g., the amount of air travel might have been mixed with the number of flights (forth and back). However, it can be assumed that in case of a misunderstanding, it is equally distributed over all groups. Additionally, the operationalization of willingness for further cut-backs is based on the difference between reported willingness for limitations and reported current fulfillments of the presented target limits, which increases probabilities for self-reporting biases by the participants. Minor methodological limitations of our study include that some areas could only be assessed with one item per area (overall estimations) in order to keep the assessment time for participants at a reasonable level. Furthermore, it cannot be ruled out that the target limits that were set for cut-backs might additionally have had an influence on our results. For example, some participants might have had a higher willingness to cut back specific behavior, if the target limits had been more liberal (e.g., limiting meat days to 2 or 3 days per week instead of one).

5. Conclusions

To conclude, our results highlight the importance of considering different areas of consumption reduction separately. While some aspects are helpful in several areas (e.g., estimating efficacy of the cut-back), others (e.g., socio-demographic factors) vary regarding their relative weight or their significance in being a predictor depending on the area of consumption. Overall, current behavior seems to be one of the strongest predictors for future willingness to limit consumption. When current behavior is not taken into account, following our results, being aware about the behavior's efficacy on climate change mitigation seems to be an important asset for mitigation behavior. An exception is the area of technical equipment, where estimated efficacy does not show significance. Additionally, regarding the results mentioned, different predictors show importance when it comes to already implemented consumption restrictions compared to willingness for further cut-backs. Hence, in order to best motivate people for consumption restrictions, presented

explanations should be tailored to both the state of restriction behavior (already happening vs. planned) and the consumption area.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su15064956/s1>, Figure S1: Frequency of meat days and air travel in the sample; Table S1: Correlations of dependent and independent variables in the sample; Table S2: Significant correlations of positive social desirability, estimated efficacies and current fulfillments of the target limits, Table S3: Binary logistic regression models for implemented consumption restrictions of air travel (top) respective other implemented consumption restrictions (bottom); significant predictors only; Table S4: Multinomial logistic regression model of the willingness for further cut-backs in meat consumption; significant predictors only; Table S5: Multinomial logistic regression model of the willingness for further cut-backs in air travel; significant predictors only; Table S6: Multinomial logistic regression model of the willingness for further cut-backs in clothes consumption; significant predictors only; Table S7: Multinomial logistic regression model of the willingness for further cut-backs in consumption of technical equipment; significant predictors only.

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