

Transition to a sustainable society:

Influence of Enjoyment and manipulated Ease of Retrieval on Vegetarian Self-Identity and Behavioural Intention

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Abstract

Climate change is a global phenomenon that threatens the future of earth's inhabitants. Many types of individual behaviour can have their effects on climate change, with food choice being one of them. But what are contributing factors to carrying out pro-environmental behaviour? Prior research suggests that self-identity may play a part in influencing pro-environmental behaviour (Gatersleben, 2014). Based on previous experiments such as one by Schwarz et al. (1991) this study uses the ease of retrieval manipulation of 'Few versus Many' in order to influence a person's vegetarian self-identity. Furthermore, a correlational effect between vegetarian self-identity and behavioural intention to carry out pro-environmental behaviour is investigated. Lastly, a potential moderation effect of enjoyment is looked at. An online experiment was issued to gather information from a relatively homogenous sample. The participants had to go through an attempted ease of retrieval manipulation after which they were tasked to answer questions concerning difficulty of the task, vegetarian self-identity, enjoyment, and behavioural intention. The attempted manipulation of ease of retrieval has proven unsuccessful in this study. Despite that, results of a regression have shown a significant correlation between ease of retrieval and vegetarian self-identity. Furthermore, a significant correlation between vegetarian self-identity and behavioural intention was found. Lastly, a moderation effect of enjoyment on the correlation effect of vegetarian self-identity and behavioural intention was found. This has shown that enjoyment is moderating the effect of vegetarian self-identity on behavioural intention as the positive effect of vegetarian self-identity on behavioural intention has shown to be stronger when enjoyment is lower than when enjoyment is higher.

Apart from the not working manipulation, the results are corresponding with previous findings. Ease of retrieval and vegetarian self-identity as well as vegetarian self-identity and behavioural intention are shown to be significantly correlated with 'Enjoyment' being a new variable that has been considered among the already established variables of self-identity and behavioural intention in the context of pro-environmental behaviour.

Introduction

The global climate is changing increasingly during our lives. It is not a problem that can be solved in the future but must be tackled in the present. While the climate has changed throughout all the earth's recorded history, these current, drastic changes are unnatural and human made (Pörtner et al., 2022). The continuous output of emissions from aeroplanes and factories and the destruction of mitigating factors such as forests, cloud the atmosphere and trap the heat of the sun (United Nations, n.d.). The results of this are devastating; Shrinking ice sheets, shifting plant and animal geographies (Pörtner et al., 2022; see also Global Climate Change, n.d.; NASA, n.d.), droughts, scarcity, increased frequency of natural disasters and whole regions becoming uninhabitable have been recorded in the most recent IPCC report (Pörtner et al., 2022). 6.5 million acres of wildland burned down in California only in 2020 and the following year, which is as many acres as the previous 9 years combined. The CO₂ emissions of those two years of wildfires are estimated at 191.8 million metric tons which is higher than the years 2010-2019 taken together (California Air Resource Board, 2022). It is therefore without doubt that climate change is having immediate effects and we as humans have a direct influence on it.

However, this is not the first time humanity has faced adversity in the form of the consequences of their actions. Through emissions caused by human activities, a hole in the ozone layer formed, which later healed shut following protocols and regulations regarding those emissions (UN Environment Programme, 2021; see also European Commission, n.d.; Ozone Secretariat, n.d.; UN Environment Programme, 2021). This example shows the capability of humans to change their environment for the better through regulations that are adhered to internationally. As demonstrated, we humans have the power to partly influence the environment and climate surrounding us on a global scale. We are able to influence it both negatively and positively. While the climate change problem appears to be more complex than the ozone layer problem, it may still help us be more confident in our ability to influence the environment surrounding us.

As there are extensive dangers connected with behaviours that damage the environment, behaviours that are beneficial, or at least not damaging, for the climate are the goal of this study. But what motivates a person to exhibit climate-friendly behaviours?

The amount of enjoyment connected with carrying out certain behaviours may influence what behaviours people set out to carry out (Wirtz et al., 2003). Classifying behaviours as enjoyable makes carrying them out more likely. However, not every pro-environmental behaviour will be enjoyed by everyone. Enjoyment is therefore only one factor that can help explain what motivates people to carry out pro-environmental behaviour.

Another factor that may have an influence is self-identity. Previous studies by Van der Werff et al. (2013), Nigbur et al. (2010) and Fielding et al. (2008) demonstrated that

Environmental self-identity has an influence on subsequent pro-environmental behaviour. This environmental self-identity in turn is influenced by the way a person perceives their past behaviours which is partly influenced by how easy examples come to mind i.e. ease of recall (Tversky & Kahneman, 1973; see also Menon & Raghuram, 2003; Schwarz et al., 1991). Consequently, a change of perception in that regard might lead to a change of self-identity which in turn may lead to a change in behaviour.

While these studies have shown the effect of environmental self-identity on behaviour, there are multiple, more specific acts of pro-environmental behaviour (Jakučionytė-Skodienė & Liobikienė, 2022). The negative influences of the current amounts of livestock demonstrate the importance of a reduced meat consumption (Grossi et al., 2019; see also Pörtner et al., 2019; Steinfeld et al., 2006), which consequently asks the question if vegetarian self-identity can be influenced similarly to previous research. Therefore, the specific type of pro-environmental behaviour of vegetarian self-identity will be subject to closer inspection in this paper.

In past studies, the effect of the ease of recall manipulation 'few vs many' has been researched which groups participants into two test groups being required to either list a few or many examples of past behaviours determining their difficulty of recall. These studies have shown to be able to influence how a person perceives themselves. The prospect of a variable that has an influence on pro-environmental behaviour and can also be manipulated makes self-identity an interesting focal point of research.

RQ: Does ease of retrieval have a significant positive effect on a person's vegetarian self-identity?

Theoretical Framework

Pro-Environmental Behaviour in Food Choice. Pro-environmental behaviour is defined within this paper as the behaviour that is carried out in order to be helpful, or at least not damaging, towards the environment.

Pro-environmental behaviour can be carried out in various aspects of life through different means. These might be household behaviour such as recycling, water savings or energy savings (Lynn, 2014) which can be categorised as pro-environmental behaviour as it prevents inflicting unnecessary harm on the environment (Van der Werff et al., 2013). However, there is a wide range of other means of behaviour aimed at protecting the environment.

The notion of Food Choice appears repeatedly when searching for methods of slowing down climate change through own behaviour. According to the 2022 IPCC report,

the number of livestock held contributes a significant amount of greenhouse gases (Grossi et al., 2019) and accounts for a major part of water consumption in agriculture (Pörtner et al., 2022). Climate change in turn has negative influences on many parts of food production such as fisheries or agriculture (Pörtner et al., 2022). The individual choice to consume more sustainable alternatives to meat is therefore deemed as a major part of pro-environmental behaviour and a topic of research.

In a study by Sparks and Shepherd (1992), the relationship between behaviour and self-identities was studied. The analyses concluded self-identities to be an important antecedent of pro-environmental behaviour regarding the consumption of organic food.

As actual behaviour cannot be measured with this study, behavioural intention to carry out pro-environmental behaviour will be measured instead. Behavioural intention is treated as an indicator of pro-environmental behaviour.

Vegetarian self-identity. According to Stryker (1980), 'self-identities' or 'role identities' can be defined as "internalized positional designations" of which the sum of the identities form the self (Lee et al. 1999). Environmental self-identity is the perception a person has of their behaviours regarding the environment. A person that considers the preservation of the environment as important and tries to preserve it through behaviours such as recycling or only buying locally sourced products, can be considered as having an environmentally friendly self-identity (Van der Werff, Steg; Keizer, 2013; Lacasse, 2016). Studies have demonstrated multiple self-identities as subcategories of environmental self-identity with green self-identity for example which, among others, relates to water and energy savings (Van der Werff et al., 2013). Vegetarian self-identity specifically relates to the self-identity linked to the consumption of meatless meals.

Various studies studied the effectiveness of self-identities on behaviour. For instance, Sparks and Shepherd (1992) found an effect of self-identity on behavioural intention of consuming organic food. Nigbur et al. (2010) and Gatersleben et al. (2012) found a similar effect on recycling behaviour and general pro-environmental behaviours respectively. According to Whitmarsh and O'Neill (2010), food intake is classified as a behaviour representing part of the broader environmental self-identity. Therefore, having an environmental self-identity might be crucial in pro-environmental behaviour and an important predictor as it resembles previous findings but is more specific.

Given the importance self-identity has in determining pro-environmental behaviour, previous experiments that have attempted to influence self-identity are looked at. One particular study by Schwarz et al. (1991) tried to manipulate the extent to which people perceive themselves as assertive. The study has demonstrated that the extent to which a person perceives themselves as being something can be manipulated (Schwarz et al.,

1991). This shows the possibility of influencing a person's self-identity and subsequently influencing their behaviour towards being more environmentally friendly.

Ease of Retrieval. The ease of retrieval effect is part of the availability heuristic. According to Menon and Raghurir (2003), people use the ease of retrieval heuristic in order to make decisions based on "the ease with which information comes to mind". The easier the retrieval is, the faster you can think of information surrounding examples. Thinking of bike brands will be easier for a bike-centric person than thinking of car brands for example (Folkes, 1988; Schwarz, Strack, Bless, Klumpp, Rittenauer-Schatka, Simons, 1991). This is because bike brands are more prevalent in the life of a bike-centric person and therefore makes it easier for them to recall.

Ease of retrieval describes the assessment of situations or objects through the ease with which they come to mind (Folkes, 1988; see also Schwarz et al. 1991). When asked to estimate how many bicycles there are in the world, a bike-centric person might think of themselves driving the bike lane to work, putting their bike to many others in the bike rack and only seeing a few cars nearby or driving a cycling event with like-minded people. Consequently, their judgement on how many cars and bikes there are in the world could mostly be based on how easy it was to think of situations in which they encounter cars and bikes. However, it was estimated in 2019 that there were around 50% more cars than bikes in the world (Pioneer Sports, 2019).

It was demonstrated in multiple studies that manipulation of the ease of recall through methods such as recalling few versus many instances (Schwarz et al., 1991) or judging the frequency of easy versus hard items (Tversky & Kahneman, 1973) can change how people perceive themselves. Changing the perception one has of oneself like in Schwarz et al. (1991) shows the potential of influencing pro-environmental behaviour by influencing the self-identity through the means of a manipulation. Few versus many manipulations have shown their effectiveness before and the method used by Schwarz et al. (1991) will be the manipulation method used within this study.

"Few versus Many". 'Few versus Many' relates to a method of manipulation used in ease of retrieval experiments such as recalling 3 or 8 chronic diseases (Tybout et al., 2005) or recalling 6 versus 12 examples of assertive behaviours (Schwarz et al., 1991). The idea behind both those experiments is changing the self-perception of an individual in the short term by either making the task easier, like in the 'few' condition (3 chronic diseases, 6 examples of assertive behaviours) or more difficult like in the 'many' condition (8 chronic diseases, 12 assertive behaviours). Results from the Schwarz et al. (1991) study have shown people estimate themselves higher on assertiveness when dealt the easier task of recalling only 6 examples of assertiveness. In contrast, people placed in the more difficult situation of having to think of 12 items estimated themselves to be lower on a scale of

assertiveness. Within the survey, the participants confirmed the assumption that having to recall many items was significantly more difficult than having to recall only a few items (Schwarz et al., 1991). These results were similar to the later study by Tybout et al. (2005).

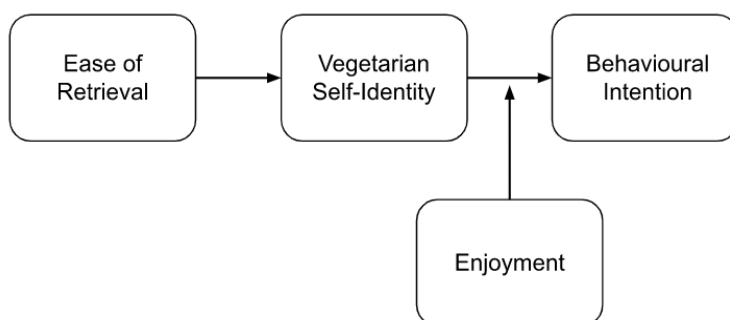
The different degrees of difficulty in this few versus many manipulation have shown that the self-perception of a participant can be influenced at least in the short term. These results indicate that it can be expected that a few versus many manipulation of ease of recall could influence the vegetarian self-identity of participants as well. Furthermore, since self-identity is found to affect behavioural intention, this manipulation may also indirectly influence behavioural intention (Gatersleben et al., 2014). In addition to (manipulated) self-identity, the enjoyment connected to carrying out behaviours also carry a role in the likelihood that these certain behaviours are enacted (Wirtz et al., 2003).

Enjoyment of Pro-Environmental Behaviour. This aspect describes the amount of enjoyment a person estimates they get from carrying out certain activities. People that remember past experiences as rather enjoyable tend to carry out this behaviour again or more frequently in the future whereas people who remember a certain aspect of behaviour as rather unenjoyable tend to avoid these behaviours, to the best of their abilities (Wirtz et al., 2003). In experiments by Ahn et al. (2020), motivation stemming from experienced enjoyment has been linked to pro-environmental behavioural tendencies. More specifically, the study linked the purchasing of environmentally friendly clothing with personal enjoyment (Ahn et al., 2020). It can be argued that for acts that are inherently enjoyable, the effect of self-identity may not play a role. These behaviours will be carried out for the sake of being enjoyable and not due to specific self-identities. This would indicate that high enjoyment makes self-identity negligible but low enjoyment does not.

Therefore, enjoyment has been determined as a potential influence of pro-environmental behaviour. Understanding how higher or lower expected enjoyment could influence the relationship between vegetarian self-identity and pro-environmental behaviour helps us understand the relationship between the latter two to a fuller extent.

Figure 1

Conceptual Framework



The Current Study

The current study aims to measure enjoyment, ease of retrieval, and vegetarian self-identity and their relationship with behavioural intention to carry out pro-environmental behaviour in order to check what factors may be able to facilitate pro-environmental behaviour. More precisely, the potential effect of manipulated 'ease of retrieval' on environmental self-identity is measured. A potential moderation effect of enjoyment of vegetarian self-identity on pro-environmental behaviour is also investigated.

Based on current findings, the following hypotheses have been formulated:

- H1:** There is a positive effect of Ease of Retrieval on Vegetarian Self-Identity
- H2:** Vegetarian Self-Identity is positively correlated with behavioural intention to carry out pro-environmental behaviour

Additionally, a potential moderation effect of enjoyment is explored. This suspected effect moderates the effect of self-identity on behavioural intention. As stated previously, behaviours that are considered to be inherently enjoyable are expected to be carried out regardless of vegetarian self-identity. The effect of vegetarian self-identity becomes negligible in that case. When enjoyment is low however, vegetarian self-identity is expected to be an important predictor. Therefore enjoyment is regarded as a moderating variable between these two. It can be expected that the effect of vegetarian self-identity is high for lower levels of enjoyment but it is theorised that the effect is low for higher levels of enjoyment. With the current lack of research into the involvement of enjoyment in vegetarian self-identity and behavioural intention, the research into the moderation of enjoyment hopefully advances the current knowledge.

Methods

Participants and Design

The participants were randomly allocated to one of two conditions in a one-factor between-participants design with (manipulated) ease of retrieval (few versus many) as an independent variable and vegetarian self-identity as the dependent variable. Meatless meal consumption was used as another dependent variable. Furthermore, three potential Moderators in subjective norm, animal welfare concern and enjoyment were measured. However only the potential moderator of enjoyment is relevant to the current study. Lastly, demographics were also collected.

The participants have been recruited through the participant gathering tool 'Sona-Systems' under the University of Twente licence. This type of sampling leads to the participants being mostly young students at the University of Twente. Additionally, convenience sampling was used to increase the number of participants. The link to the study was distributed among social circles and social media groups. Participants from the University of Twente were compensated for their time with Sona Credits. Participants that were not recruited from the University of Twente did not receive any compensation.

In total, 102 people participated in this study. Unfortunately, 32 responses had to be excluded from the dataset. Many responses were incomplete or non-responses (28). After the detailed debrief of the survey, 3 participants decided to withdraw their consent. One person misunderstood the manipulation task and filled in irrelevant information.

70 valid responses were collected ($n_{\text{male}} = 22$; $n_{\text{female}} = 46$), resulting in a response rate of 68.63%. The mean age amounted to 22.07 and ranged from 18 to 35. The participants mostly originated from the Netherlands ($n_{\text{netherlands}} = 40$, $N_{\text{german}} = 19$, $n_{\text{other}} = 11$) and, as nearly all valid participants at least completed their high school education, were educated ($n_{\text{highschool}} = 44$, $n_{\text{bachelor}} = 20$, $n_{\text{master}} = 5$, $n_{\text{other}} = 1$). Many of the participants were students ($n_{\text{student}} = 60$) or working ($n_{\text{working}} = 8$, $n_{\text{intern}} = 1$, $n_{\text{trainee}} = 1$). This means the sample was fairly homogenous.

Procedure and Measures

The study was conducted online through the survey tool Qualtrics. A link to the first page was shared with the participants, which contained a welcoming message including the participant's rights and a general description of the study (see Appendix A). At the end of the page consent of participation was asked which could be (given by checking a box. Followed by the informed consent, a small demographic questionnaire was to be filled out, asking for the age, gender, nationality, occupation, and educational level of the participant.

Ease of Retrieval. After the demographic questionnaire, participants received instructions for the upcoming task: *'In the following page you are asked to fill out a task that requires you to name meatless meals you have eaten in the last 30 days. Additionally, you will be given a definition of what meatless meals are. It is important that your answers are honest, complete and given without any help from the internet.'* As the definitions of meat differ, it is specified that in this study the definition from Cambridge is used (Cambridge University Press, n.d.), reading *'the flesh of an animal when it is used for food, in other words, fish is also included.'*

Subsequently, randomly assigned to one of the two experimental conditions, participants in the High ease of retrieval condition (High Ease paired with the easier task) were instructed: *'Please name 7 examples of meatless meals you have eaten in the last 30 days [you can only mention one type of dish once]'*. And participants in the Low ease of retrieval condition (Low Ease paired with the more challenging task) were instructed: *'Please name 14 examples of meatless meals you have eaten in the last 30 days [you can only mention one type of dish once]'*. All participants were asked to write down the examples from memory into empty fields provided, differing from 7 to 14 fields, depending on the ease of retrieval condition.

Manipulation Check. Lastly, as part of the ease of retrieval, a manipulation check was done with the ease of retrieval. Here, the participants had to rate the difficulty of the task by answering the following statement: *'I found the task...'* and the question *'How difficult was it for you to name these meals?'* Answers could be given on a seven-point Likert scale from 'Very easy' (1) to 'Very difficult' (7).

Vegetarian Self-Identity. On the next page, the vegetarian self-identity of the participants was measured (see Appendix B). The vegetarian self-identity questionnaire was derived from Van der Werff, Steg, and Keizer's (2013b) Environmental Self-Identity questionnaire, replacing the focus from the environment to meat replacement. The statements participants had to respond to, included to what extent a person feels like meat replacement is part of their life and identity. The 3 statements consisted of the next three statements: 'Eating meatless meals is an important part of who I am', 'I am the type of person who eats meatless meals', 'I see myself as a person who eats meatless meals', all of which could be rated on a 7 point-scale (Strongly disagree - Strongly agree). The vegetarian self-identity has shown good internal consistency $\alpha = .920$, $\lambda_2 = .921$. After the vegetarian self-identity questionnaire, three separate measurements were taken which regarded either subjective norm, enjoyment, or animal welfare concern.

Subjective Norm. *This variable does not apply to this paper but is listed as a means of full disclosure, as the participants have been shared among three studies.*

To acquire information about the participant's subjective norm relating to eating meatless meals, the direct measure of the subjective norm utilised in Verbeke and Vackier (2005) was used by tailoring it to the focus of this study (see Appendix D). Three statements formed the representation of the dependent variable subjective norm rated on a five-point Likert scale (Strongly disagree - Strongly agree). The measurement included the statements: '*People who are important to me, think I should eat meatless meals*'; '*People who influence my decisions think I should buy/eat meatless meals*'; '*People who influence my buying behaviour, think that I should buy/eat meatless meals*'.

Enjoyment. To assess the enjoyment of participants regarding meatless meals, a scale was created (see Appendix E). The questionnaire consisted of three statements, namely: '*The chance that I enjoy eating meatless meals is high*', '*I like eating meatless meals most of the time*', '*Normally I dislike eating meatless meals*'. The latter statement is a reverse item and is thus to be recoded to be able to sum up the three items to calculate the total score. This scale has shown decent internal consistency $\alpha = .860$, $\lambda^2 = .861$.

Animal Welfare Concern. *This variable does not apply to this paper but is listed as a means of full disclosure, as the participants have been shared among three studies.* Animal Welfare Concern [AWC] was measured via the 20-item scale called '*the Composite Respect for Animals Scale-Short*' ([CRAS-S] Randler et al., [2018](#); Appendix C). The questionnaire contains 10 different themes of attitudes towards animal welfare, each with two questions. The themes covered are (1) use of animals in research, (2) use of animals for food, (3) farm animal husbandry, (4) animals as pets, (5) animal use for recreation, (6) humans as superior, (7) conservation of animals, (8) animal use for clothing, (9) hunting/angling, and (10) commitment (emotional affection). All 20 items use a 5-point Likert scale (Fully Agree - Fully disagree, including an 'undecided' response option). Seven out of 20 items are reverse coded. After recoding the reversed items, adding all the mean scores together results in the total score in which a higher score means a higher pro-animal attitude.

Behavioural Intention. As the design of this study does not allow for measuring actual behaviour, behavioural intention will be used as an indicator of pro-environmental behaviour and is measured through participants giving information about their future behaviour regarding meat replacement (see Appendix F). Again, three statements were to be rated on a 7-point scale (Strongly disagree - Strongly agree), namely: '*The chance that I eat meatless meals in the next 2 weeks is high*', '*I am planning to eat meatless meals in the next 2 weeks*', '*My willingness to eat meatless meals is large*'. The scale for Behavioural Intention has shown in testing to have a fairly good internal consistency $\alpha = .890$, $\lambda^2 = .892$.

Since information about the actual goal of the study was withheld from the participants, participants were made aware of the situation through a debriefing page displayed after the completion of the questionnaires. They were subsequently asked if they

would like to withdraw from the study after being informed about the study's true nature. Regardless of their choice, they are provided with a message in which they are thanked for their participation.

Data Analysis

The data was collected through Qualtrics and is investigated using the 28th version of the statistical package SPSS by IBM.

Firstly, the dataset was filtered for non-responses, withdrawn consent, incomplete responses and responses that did the task wrong, albeit intentionally or accidentally.

Secondly, the data was investigated for potential violations of the assumptions for regression analyses. These were the assumptions of normality, equal variance, linearity, and independence of residuals. The assumptions were checked for manipulation group and ease of retrieval and for ease of retrieval as an independent variable and vegetarian self-identity as a dependent variable. Potentially, non-parametric alternatives were used in case of violation of these assumptions.

Thirdly, the manipulation check was investigated to review whether there were significant differences between the manipulation group of 'Easy' and 'Difficult' and whether these results, if they were significant, really show the difficult condition to be more difficult. These differences were investigated through an independent sample t-test.

Fourthly, the regression analysis was completed. For the regression analysis, an alpha of .05 was used corresponding to a confidence interval of 95% or two standard deviations. Ease of retrieval was plotted on vegetarian self-identity. In case a significant positive correlation and a working manipulation are observable, the first hypothesis is not rejected. Shall that not be the case, the hypothesis is rejected.

Lastly, a moderation analysis was carried out to answer the second hypothesis and the exploratory question. The moderation analysis was carried out using the Hayes process macro for SPSS (Hayes, 2017). A confidence interval of 95% was used here again.

On the one hand, the potential correlation between vegetarian self-identity and behavioural intention is assessed with this analysis. In case of a significant positive correlation, the second hypothesis is not rejected. If the analysis fails to produce such a result, the hypothesis must be rejected. On the other hand, the suspected effect of moderation is investigated, and the question can be answered whether enjoyment has a moderating effect on vegetarian self-identity and behavioural intention.

Results

Checking the assumptions for the analyses of the manipulation group and ease of retrieval, vegetarian self-identity and behavioural intention and ease of retrieval regressed on vegetarian self-identity resulted in finding a violation of normality (see Appendix G, Appendix H). However, previous simulations have shown that analyses can still be performed as regression analyses have proven themselves to be robust despite nonnormality (Duncan, 1973). Based on these findings emphasised by Hayes (2018) the analyses with a violated assumption of normality will be used for further investigation with parametric tests. The other three assumptions, linearity, independence of residuals and equal variance were adhered to for all but the one analysis (see Appendix G, Appendix H, Appendix I). For the regression of vegetarian self-identity on behavioural intention the assumption of equal variance was also violated (see Appendix I). Due to this violation, the non-parametric alternative of Spearman's rho was calculated between VSI and BI. The results show a strong positive correlation between these variables $r(68) = .8, p < .01$.

In order to review the effectiveness the task can exert in manipulating the self-identity of the participant, we first need to check whether the participant, on average, really perceived the task classified as 'Difficult' as more difficult than the 'Easy' condition. Looking at the means and standard deviations, there is only a small difference between the easy ($M = 3.71, SD = 1.86$) and difficult ($M = 3.78, SD = 1.79$) condition. Directly comparing these groups by doing an independent sample t-test confirms that there is no significant difference ($t(68) = -0.16, p = .871$) between the two groups in the sample. Furthermore, to confirm whether the manipulation really failed or whether it was merely the manipulation check that failed to measure difficulty sufficiently, two linear regression is carried out. The first analysis regresses the dichotomous variable manipulation group on vegetarian self-identity and the second one regresses the manipulation group on behavioural intention. There is neither an effect on vegetarian self-identity ($F(1, 68) = 0.44, p = .510$) nor on behavioural intention ($F(1, 69) = 0.48, p = .490$) observable. This further confirms the suspicion that the manipulation was not successful. While this means that the manipulation has failed and causality cannot be concluded in this study, the sample can still be used for analysis, albeit with only one group merging the two distinct groups (easy versus difficult).

There have been multiple significant correlations found between different variables which can be observed in Table 1.

Table 1*Means, Standard deviation and correlation for relevant variables*

Variable	M	SD	Variable							
			1	2	3	4	5	6	7	
Manipulation Group	0.46	0.50	1							
Ease of Retrieval	3.74	1.79	.02	1						
Vegetarian Self-Identity	4.62	1.82	.08	-.40**	1					
Enjoyment	5.73	1.31	.02	-.38**	.76**	1				
Behavioural Intention	5.80	1.59	-.08	-.46**	.80**	.80**	1			
Age	22.07	2.85	.02	.06	.15	.15	.13	1		
Gender	1.71	0.52	-.05	-.10	.14	.16	.04	-.32**	1	

Note. $N=70$. This table shows the correlations of various variables and their significance which can be identified by two stars behind the correlation showing their significance at $p < .05$. Manipulation group is a dichotomous variable with 0 and 1 as values and the other variables are 7-point Likert scales (values 1 to 7).

The first hypothesis stated that there would be a positive effect of ease of retrieval on vegetarian self-identity. As the manipulation method has failed this study, causation cannot be properly tested with the current data. However, the ease of retrieval and the vegetarian self-identity variables may still show a correlation between them. Checking their relation reveals a significant correlation effect $\beta = -.399$, ($F(1, 68) = 12.89$, $p < .001$), meaning that when the difficulty of ease of retrieval was higher, the participants considered themselves lower on vegetarian self-identity. Therefore, with increasing ease of retrieval, the participants rated themselves as having a higher vegetarian self-identity. While there is a correlation between ease of retrieval and vegetarian self-identity, we cannot conclude that there has been a causal relationship due to the manipulation being unsuccessful.

In the second hypothesis, it was predicted that vegetarian self-identity would be positively correlated with behavioural intention. A spearman's rho as the nonparametric alternative resulted in the following results: $r(68) = .8$, $p < .01$. According to the rules of thumb regarding a spearman correlation, this is considered to place at the upper end of a

strong correlation (Prion & Haerling 2014). Therefore we can conclude that in the analysis vegetarian self-identity and behavioural intention were indeed positively correlated, as hypothesis 2 (H2) predicted.

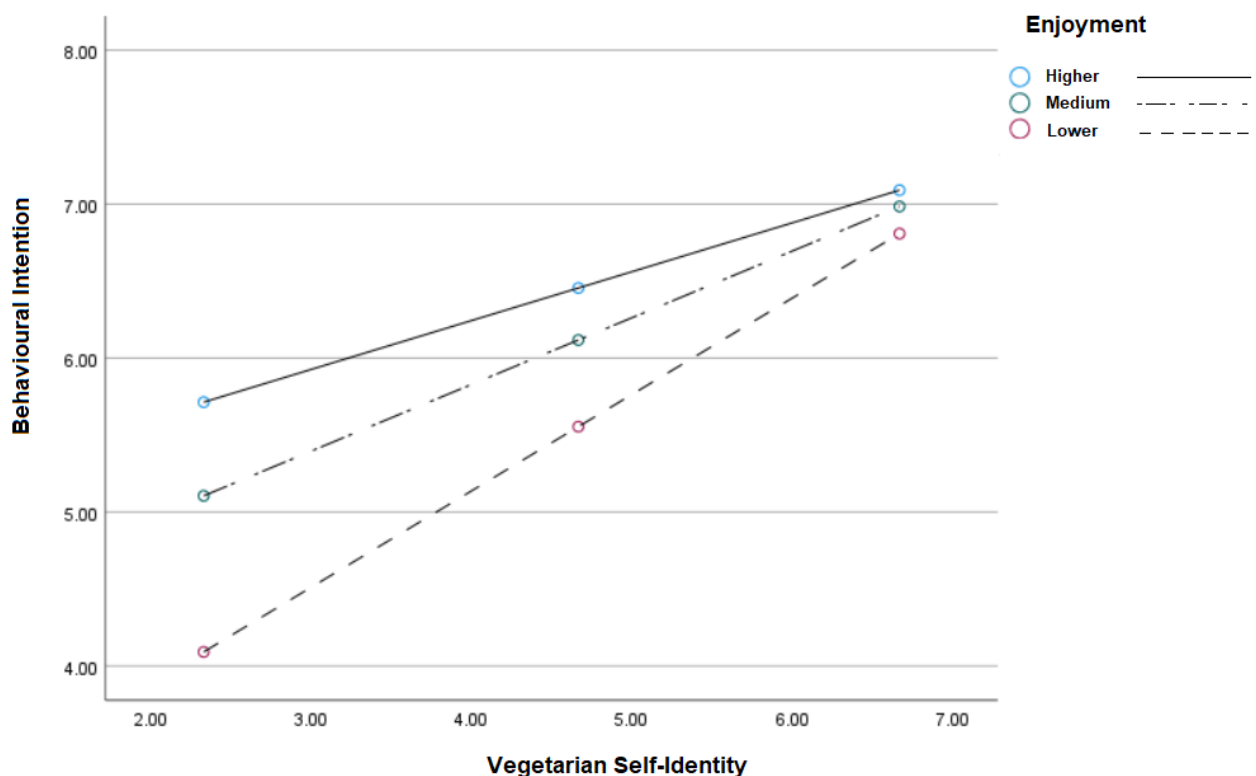
A moderation analysis has been conducted using the process macro for spss created by Andrew Hayes (2017). Interpreting the results, a significant effect can be seen from enjoyment on behavioural intention $B = 0.88$, $t(66) = 5.18$, $p < .001$. Additionally, it can be seen that enjoyment is significant as a moderator $B = -0.11$, $t(66) = -2.75$, $p = .008$. *Figure 2* shows the different slopes that can be seen for different extents of enjoyment of meatless meals with 'Medium' representing the mean and 'Higher'/'Lower' representing one SD from the mean. The effects are significant for each of the three slopes ($t_{\text{higher}}(66) = 3.61$, $p < .001$, $t_{\text{medium}}(66) = 5.47$, $p < .001$, $t_{\text{lower}}(66) = 5.78$, $p < .001$).

Using this moderation analysis also reaffirms the previous findings that there is a significant correlation between vegetarian self-identity and behavioural intention $t(3, 66) = 4.202$, $p \leq .001$.

Figure 2

Changes in Behavioural Intention factored by Vegetarian Self-Identity and moderated by Enjoyment

Graph



Discussion

Hypotheses and Research Question

The first hypothesis stated that there is a positive effect of ease of retrieval on vegetarian self-identity. Analyses have shown that participants who perceived the assignment as easier generally rated themselves as having a higher vegetarian self-identity than those who perceived the task as more difficult. While the manipulation has failed in this study, the general correlation between ease of retrieval and vegetarian self-identity was still observable. Despite that correlation, without the functioning manipulation causation cannot be established and the first hypothesis must be rejected.

Using a spearman correlation, a significant positive correlation between vegetarian self-identity and behavioural intention was established. This means that, in general, participants with a higher vegetarian self-identity tended to have a stronger intention to consume meatless meals than those who rated lower on the vegetarian self-identity questions. This finding supports the second hypothesis.

A more exploratory question was posed in the beginning. Through the previously carried out analysis the possible moderation effect was checked. It was theorised that the effect of self-identity is high when enjoyment is low but low when enjoyment is high. Checking the results of the moderation analysis confirms these assumptions. As can be seen in Figure 2, there is a significant moderating effect of enjoyment where self-identity plays a significant role at the lower spectrum of enjoyment but not at a higher level.

Overall, the research question tried to shed light on the effect of ease of retrieval on self-identity. While it was hypothesised at the beginning of the study, the analyses confirmed a correlational effect between ease of retrieval and vegetarian self-identity within this study. Ease of retrieval does correlate with vegetarian self-perception to at least an extent. The findings of this study regarding the two hypotheses are mostly in accordance with previous literature (Sparks, Shepherd, 1992; Schwarz et al., 1991, Tybout et al., 2005, Van der Werff et al., 2013) with the only exception being the failed manipulation of ease of retrieval. Ease of retrieval has a significant effect on self-identity as the results have shown. Schwarz et al. (1991) have shown this by having participants recall examples of assertiveness. Van der Werff et al. (2013) have shown this to be applicable even with general environmental self-identity. The findings of this paper suggest that this effect is also applicable in the more specific context of meatless food choice or diet.

The significant correlation between self-identity and behavioural intention also coincides with findings by Gatersleben et al. (2014). People who rated themselves as having a higher vegetarian self-identity, also indicated a higher behavioural intention to consume meatless meals.

Theoretical Reflection

Behavioural intention was used as a representation or indication of pro-environmental behaviour. This has been done as actual pro-environmental behaviour was not measured but rather self-report measures were used indicating behavioural intention of the participants. The use of behavioural intention as an alternative proved fruitful as results comparable to previous studies could be found. Nonetheless, actual pro-environmental behaviour was not measured which leaves an open gap to study actual pro-environmental behaviour and even relate that to self-reports of behavioural intention.

Previous research has focused on general self-identity or environmental self-identity. Sparks and Shepherd (1992), Nigbur et al. (2010) and Gatersleben et al. (2012) have all shown the potential that self-identity has on actual behaviour. This study attempted to recreate previous success in a more specific context. Due to the aforementioned studies, vegetarian self-identity was perceived as a prime candidate for showing influences on behavioural intention. While the proof of a causal relationship could not be provided in the end, a strong correlation between these two variables was established nonetheless. Therefore, this study added to the existing body of research strengthening the argument for a correlation between these two variables without being able to establish causation. A new study design might be capable of showing influences of self-identity on behaviour or behavioural intention instead of correlational effects.

As previous studies were able to show, influencing ease of retrieval may alter the self-identity of a person at least in the short term. Additionally, the ease of retrieval manipulation 'few versus many' has worked in previous research (Tybout et al., 2005; see also Schwarz et al. 1991.) However, contrary to these findings, the manipulation did not appear to be successful in this instance. Additionally, no effect of manipulation group on vegetarian self-identity or behavioural intention was found. The manipulation check instead revealed the easy and the hard groups not to be too different from each other. This unexpected finding may be explained by a faulty implementation of the manipulation method. Having the participants recall either 7 or 14 items may have been a misstep and an extensive pilot study might be able to provide a more relevant number of items. With a pilot study, the number of items the participants have to recall may have been able to represent more accurately what is difficult and what is simple i.e., what is too few or what is too many. Missing out on carrying out a pilot study with the relevant amount of data points can indubitably be classified as a shortcoming of this study. Whatever the actual cause of the failed manipulation, this study may still prove useful as a contradictory data point or as a baseline for improvement of future implementations of the few versus many method of ease of retrieval manipulation.

Enjoyment as a variable has been comparatively novel in the field of ease of retrieval, self-identity, and pro-environmental behaviour. This study tried to fill this apparent gap in literature and establish enjoyment as a relevant factor in these interactions. As has been shown in the results, the effect of vegetarian self-identity on behavioural intention is high for lower levels of enjoyment but is low for higher levels of enjoyment. Enjoyment thus establishes as relevant among the other relevant factors and helps us in understanding what factors influence people to intend to carry out pro-environmental behaviour.

Strengths and Weaknesses

An obvious weakness of the study is that due to the failed manipulation, no causal conclusions can be drawn. This is unlikely to be due to the limited number of people participating in this study. With 70 valid responses, the number of participants was higher in this study than in previous studies that were able to establish an effect (Schwarz et al., 1991).

Therefore, it may be possible that the conversion of this particular type of manipulation to this online implementation could not be done as efficiently as previously assumed. While it is apparent that one participant has misunderstood the assignment asked of them, there may have been others in a comparable situation. As the online administration of this test does not allow for immediate questions to the researchers, questions or other issues might have occurred that remained undetected by the researchers.

A third explanation could be that the manipulation check also may also have been open to previously unforeseen interpretation. While the intended meaning of the manipulation check was to assess the participant's personal difficulty or ease of completing the task, the formulation allows for the possibility of interpreting it as the theoretical difficulty of the task. The results of those two different assessments may lie separate from each other. This understanding might help future research to improve on their methods.

A second weak point that also could have factored into the failing manipulation is the lack of a sufficiently sized pilot study. A pilot study could have delivered already useful results that could have been used to adjust the number of items the participants have to list to ensure that the two different difficulties are significantly different from each other and do represent what they are supposed to. This indicates that a good pilot study is something that needs to be kept in mind when designing a manipulation of this kind.

While the effect was not visible in the data collected in this study, the effect may still exist as previous studies have shown. It is preferable that future research reevaluates the manipulation method. Albeit administering the questionnaire in person or implementing it differently.

The participants were relatively homogenous with young, educated people that were mostly students.. This most likely relates to the sampling method of convenience sampling

and using the test subject pool Sona. On the one hand, findings suggest that student populations do not necessarily reflect the general population (Bornstein et al., 2013; see also Hanel et al., 2016). On the other hand, this homogenous sample lets us generalise more confidently in regards to our specific sample demographic (Bornstein et al., 2013; see also Jager et al., 2017). Therefore this study is able to more accurately represent young students from the Netherlands and Germany.

A strong point has been the development of knowledge regarding the field of self-identity and behaviour. While there has been previous research researching similar effects in similar fields, this study successfully established its niche. Enjoyment has not been looked at in the context of this study and the confirmation of its theorised moderation effect shows the importance of recognising enjoyment in this context. With this insight, it is clear that enjoying pro-environmental behaviours is a big part in intending to carry them out and ensuring that pro-environmental behaviour is perceived as enjoyable may be an entry point into increasing pro-environmental behaviour. Future research may look at ways to increase enjoyment connected with certain behaviours and thus help the planet by contributing to a shift towards a population that carries out environmentally friendly behaviours.

Conclusion

To properly answer the hypothesis, the manipulation needed to work. Without this working manipulation, it cannot be determined if the perceived difficulty does influence self-identity. However, there was still an interesting effect observable; As aforementioned, the study succeeded in showing a positive correlation between ease of retrieval on vegetarian self-identity and a positive correlation between vegetarian self-identity and Behavioural Intention. Furthermore, it concluded that there is a moderating effect of enjoyment on vegetarian self-identity and behavioural intention with the effect of vegetarian self-identity on behavioural intention being higher when enjoyment was low than when enjoyment was high. Hopefully, these findings contribute to a clearer understanding of the role of ease of retrieval, self-identity, behavioural intention, and enjoyment of food choice and pave the path for future endeavours into this domain.

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Appendix

Appendix A

Online Informed Consent

Thank you for your interest!

The purpose of this study is to measure and gain insight in the causes and expression of food consumption. This study is part of the Bachelor's Theses by third year students of the University of Twente. It has been reviewed and approved by the University of Twente BMS Ethics Committee.

The participation in this study is entirely voluntary. During participation you may choose to withdraw at any time without explanation by simply closing the window. Withdrawing consent will bring no repercussions and the data created by you thus far will be deleted.

The dataset is completely anonymous and no personally identifiable information will be collected. The anonymous data will be used for scholarly research purposes and may be shared with other research members of the University of Twente. The data will be retained for five years. After this time, all collected data related to this study will be deleted.

The study starts off with a basic demographic questionnaire, followed by a task which consists of questions regarding past and current behaviour of food consumption. All in all the questions should take approximately 5-10 minutes to complete. Please answer all questions and be as truthful as possible. This questionnaire can be filled in through most devices (laptop, mobile phone, tablet, etc.).

If there are any remaining questions, concerns, or otherwise, feel free to contact one of the researchers:

Mart Nijkamp - M.g.nijkamp@student.utwente.nl

Saskia Weener - S.weener@student.utwente.nl

Lorenz Bünnemann - L.d.k.bunnemann@student.utwente.nl

- I have read and understood the study information listed above dated 08.11.2022 and confirm that I voluntarily participate.
- I am over the age of 16

Appendix B

Vegetarian Self-Identity Scale

Eating meatless meals is an important part of who I am

I am the type of person who eats meatless meals

I see myself as a person who eats meatless meals

Appendix C

The Composite Respect for Animals Scale-Short' ([CRAS-S]

As long as adequate food, warmth, and light are provided, there is nothing really cruel about battery hen farming.

It is wrong to kill crocodiles to make shoes and handbags from their skins.

I would like to be a veterinarian.

It is acceptable to test cosmetics/shampoos on animals, so that they will not harm humans.

There is nothing morally wrong with hunting wild animals for food.

In my opinion, animals are definitely inferior to humans.

All insects should be protected.

I think it is perfectly acceptable for animals to be raised for human consumption.

I find my pet a source of emotional comfort (or would if I had one).

It is wrong to keep animals in zoos.

I do not think that there is anything wrong with using animals in medical research.

Angling is cruel and inhumane to the animals.

It is wrong to kill animals to make fur coats.

It is wrong to keep chickens in battery cages.

I do not believe that humans are superior to animals.

I would like to spend some of my time telling people about the problems that an endangered animal faces.

Hunting helps people appreciate natural processes.

All animals should be conserved.

It is wrong to use animals in circuses.

I think of my pet as a member of my family (or would if I had one).

Items were answered on a 5-point Likert scale with the options 'Fully Disagree' (1), 'Rather disagree' (2) 'Undecided' (3), 'Rather agree'(4), and 'Fully Agree' (5).

Appendix D

Subjective Norm Scale

People who are important to me, think I should eat meatless meals

Most people whose opinions I value think I should buy/eat meatless meals

It is expected of me that I buy/eat meatless meals

Items were answered on a 7-point Likert scale with the options 'Strongly Disagree' (1), 'Disagree' (2) 'Somewhat disagree' (3), 'Neither agree nor disagree'(4), 'Somewhat agree' (5), 'Agree' (6) and 'Strongly agree' (7).

Appendix E*Enjoyment of Meatless Meals Scale (EMM)*

The chance that I enjoy eating meatless meals is high

I like eating meatless meals most of the time

Normally I dislike eating meatless meals

Items were answered on a 7-point Likert scale with the options 'Strongly Disagree' (1), 'Disagree' (2) 'Somewhat disagree' (3), 'Neither agree nor disagree'(4), 'Somewhat agree' (5), 'Agree' (6) and 'Strongly agree' (7).

Appendix F*Behavioural Intention Scale*

The chance that I eat meatless meals in the next 2 weeks is high

I am planning to eat meatless meals in the next 2 weeks

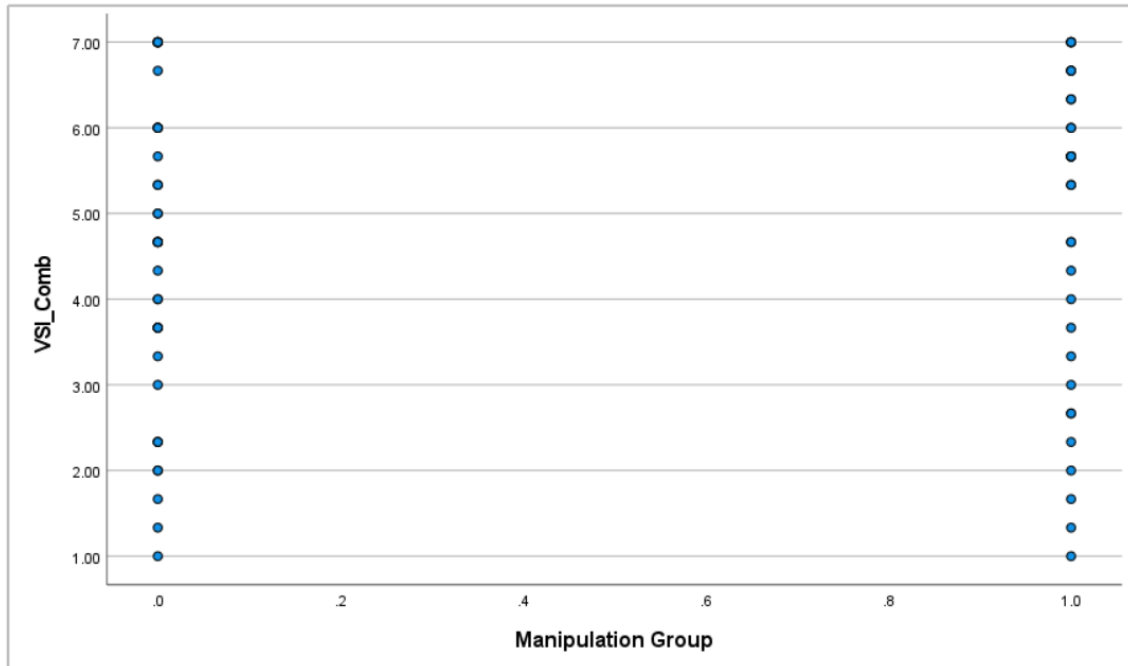
My willingness to eat meatless meals is large

Items were answered on a 7-point Likert scale with the options 'Strongly Disagree' (1), 'Disagree' (2) 'Somewhat disagree' (3), 'Neither agree nor disagree'(4), 'Somewhat agree' (5), 'Agree' (6) and 'Strongly agree' (7).

Appendix G

Assumption Checks for Manipulation Group and Vegetarian Self-Identity

Linearity Assumption



Independence of Residuals Assumption

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.080 ^a	.006	-.008	1.82695	2.121

a. Predictors: (Constant), Manipulation Group

b. Dependent Variable: VSI_Comb

Normality Assumption

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VSI_Comb	.117	70	.019	.933	70	.001



a. Lilliefors Significance Correction

Equal Variance Assumption

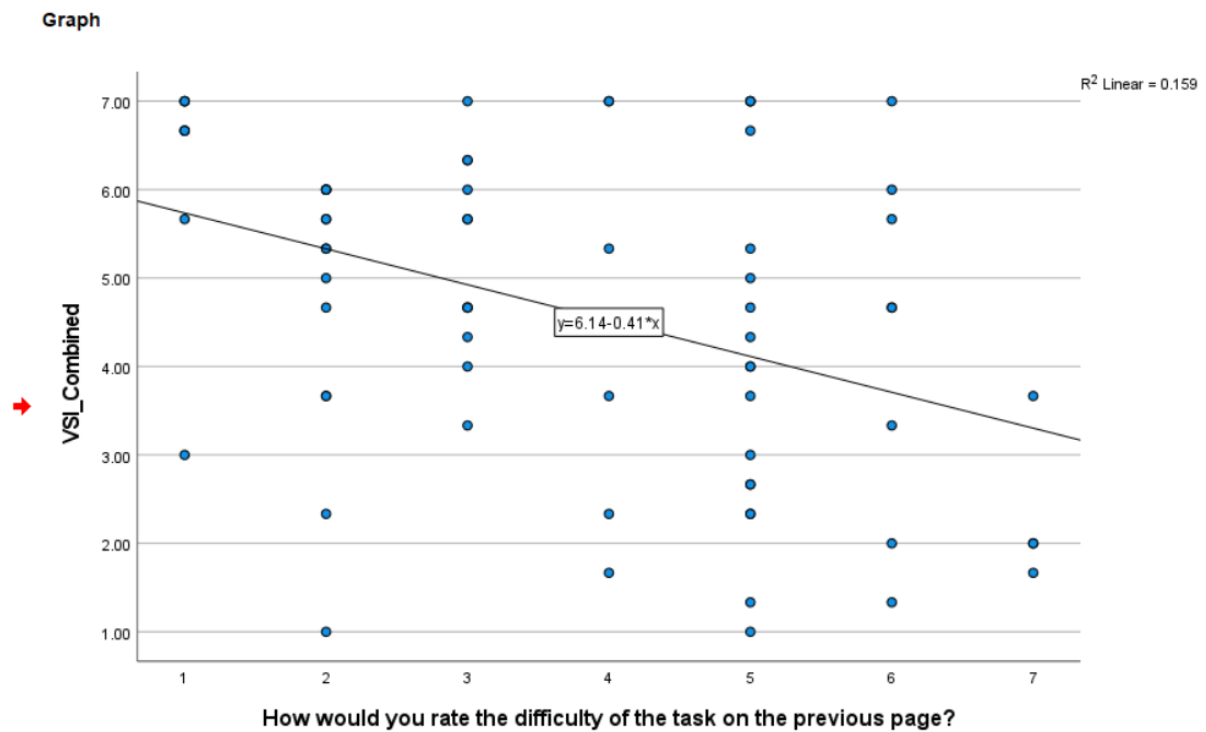
Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
VSI_Comb	Based on Mean	.299	1	68	.586
	Based on Median	.075	1	68	.785
	Based on Median and with adjusted df	.075	1	65.031	.785
	Based on trimmed mean	.267	1	68	.607

Appendix H

Assumption Checks for Ease of Retrieval and Vegetarian Self-Identity

Linearity Assumption



Independence of Residuals Assumption

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.399 ^a	.159	.147	1.68043	2.132

a. Predictors: (Constant), How would you rate the difficulty of the task on the previous page?

b. Dependent Variable: VSI_Comb

Normality Assumption

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VSI_Comb	.117	70	.019	.933	70	.001

a. Lilliefors Significance Correction

Equal Variance Assumption

Oneway

Tests of Homogeneity of Variances

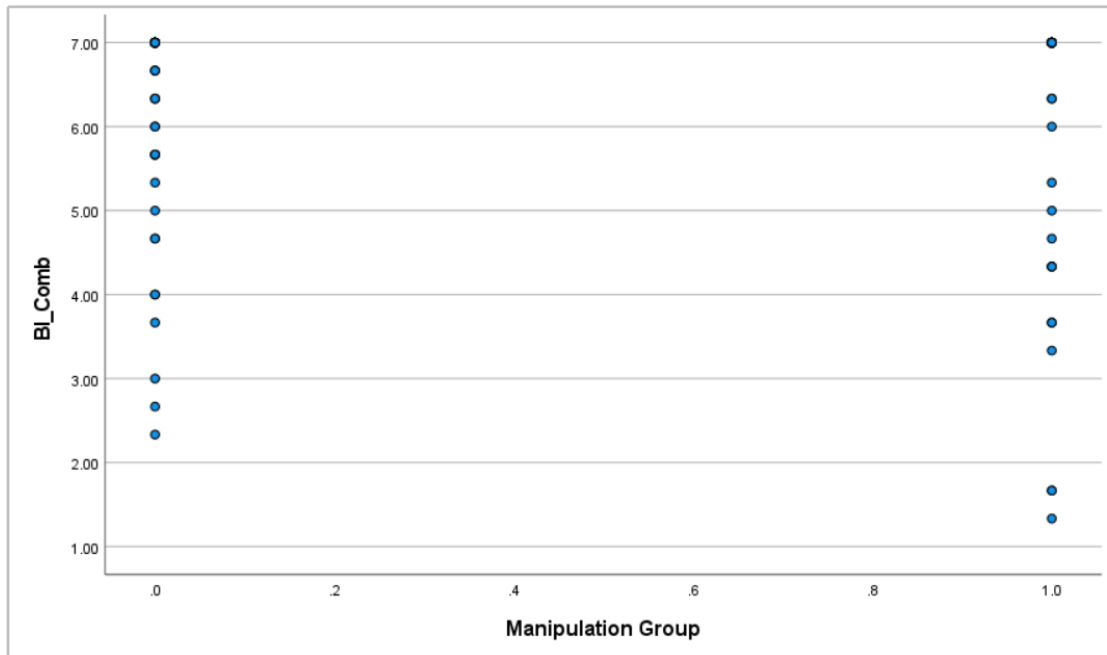
		Levene Statistic	df1	df2	Sig.
VSI_Combined	Based on Mean	1.805	6	63	.112
	Based on Median	1.689	6	63	.138
	Based on Median and with adjusted df	1.689	6	53.380	.142
	Based on trimmed mean	1.833	6	63	.107

Appendix I

Manipulation Checks for Enjoyment and Behavioural Intention

Linearity Assumption

→ Graph



Independence of Residuals Assumption

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.084 ^a	.007	-.008	1.59136	2.151

a. Predictors: (Constant), Manipulation Group

b. Dependent Variable: BI_Comb

Normality Assumption

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BI_Comb	.247	70	<.001	.775	70	<.001

a. Lilliefors Significance Correction

Equal Variance Assumption

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
BI_Comb	Based on Mean	4.369	1	68	.040
	Based on Median	.821	1	68	.368
	Based on Median and with adjusted df	.821	1	54.292	.369
	Based on trimmed mean	3.612	1	68	.062