Crickets as an Alternative Source of Proteins –

How the Consumers' Willingness to try Crickets can be affected by different kinds of Information

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Abstract

Entomophagy represents one future option for dealing with one of the world's grand challenges: feeding the ever-growing world population while resources globally are declining. Nonetheless, entomophagy – or eating insects – is perceived as an unfamiliar phenomenon in the westernized parts of the world. Since the idea of edible insects in westernized cultures is rather unexplored, the insects' sustainable, as well as nutritional benefits, remain hidden. Especially crickets have shown to be a rich source of proteins compared to conventional meat. Not being aware of these nutritional benefits, western societies approach edible insects such as the cricket with scepticism and cannot avoid the feeling of disgust when being confronted with entomophagy. The necessary question arises: How to shift the perception about edible insects from an undesirable to a more desirable source of proteins? Research was undertaken in the form of an online experiment including three conditions. Each condition resembling an informational text about the cricket: personal beneficial information, general beneficial information and neutral information. Four hypotheses were investigated: The specific kind of information the participant receives has an effect on the participants' willingness to try a cricket. The specific kind of information provided to the participants has an effect on their feeling of disgust. The motivation for the specific diet of the participant has an influence on the willingness to try crickets as an alternative source of protein. There is a correlation between the participants' concern about the environment and the willingness to try the cricket. A sample of 86 mainly German participants between 18 years and 28 years completed the study. One-way ANOVA tests and Kendall's Tau-b correlation did not reveal any significant relationships regarding the four main hypotheses. Yet, Kendall's Tau-b correlation showed a positive correlation between the participants' level of disgust and their unwillingness to try a cricket. Based on this finding, future research should investigate how to decrease the disgust of people from westernized cultures regarding entomophagy. Decreasing the level of disgust could lead to a higher willingness to try insects. This would be of high importance in finding a future option on how to feed the ever-growing world population in a nutritious and sustainable manner.

1. Introduction

7.8 billion people are living in the world in the year 2020. Thirty years ago, in 1990, 5.3 billion people were living on planet earth. Thirty years further, as estimated, the world population will rise to about 10 billion people, reaching its maximum (Fess, Kotcon, & Benedito, 2014) and almost double the world population compared to 60 years ago. This steady increase of world inhabitants bears several challenges such as limited space to live, a decrease in resources and materials, as well as to feed the growing world population while staying environmentally sustainable (Hertel, 2015). While the world population is expected to come to its peak in 2050, resources such as water and land used for agriculture are declining on a global scale (Hertel, 2015). This constitutes one of the world's tremendous challenges. However, people in the westernized world are often living with the fantasy that all goods are available and everything can be eaten at any time. In line with this assumption, meat is consumed in immense amounts in the western world and worldwide the meat consumption has grown from 47 million tons to 308 million tons in the last 60 years (Pfeiler & Egloff, 2018). Implying that each meat-consuming person more than doubled their meat consumption annually from 17kg to 43kg. The demand for meat and animal protein is growing and is expected to increase up to 76% from 2005-2007 until 2050 (van Huis, 2016). Due to this demand for conventional meat, meat production has to happen faster and more efficiently. Higher needs for meat which has to be available at any time cannot guarantee that meat is produced in an environmentally friendly and sustainable manner anymore. On the contrary, it results in industrial livestock farming which causes animal suffering (Williams, 2008) and is a main reason for climate change (Wellesley, Froggatt, & Happer, 2015).

1.1 The Need for an Alternative Source of Protein

An alternative source of protein is needed to guarantee a more sustainable, environmentally friendly food production (Hartmann & Siegrist, 2017) that occupies less space of land and is not raising animal suffering. One possible alternative would be plant-based proteins which are already on the market in the westernized world. People who resign to eat meat and fish or fully disclaim animal-based products are following a vegetarian or vegan diet out of the motivation to behave environmentally friendly (Fox & Ward, 2008). Further reasons to stop eating animal-based products might be health-related or to stop animal suffering. Hence, the abstinence of animal products is emerging out of several motivations and includes to sustain the proteins only out of plant-based sources. Nonetheless, plant-based products do not fully imitate meat: neither in its consistency, odour or taste.

Another alternative of meat in the form of pork, chicken and beef are *edible insects*. They are superior to most plant-based protein sources – and even to some conventional meat sources as consumed in the westernized world. Eating insects is called *entomophagy*. Edible insects as a source of animal proteins have a lot to offer, as they are low in greenhouse gas emission, low usage of land, are highly nutritious and have high feed conversion efficiency (van Huis, 2016). To be more specific, farming insects uses up to 50-90% less land per kg protein and produces 1000-2700g less greenhouse gas emissions per kg mass gain compared to conventional meat production (Payne, Scarborough, Rayner, & Nonaka, 2015). One insect that is especially efficient as an alternative source of conventional meat is the *cricket*. Several studies found that crickets have a higher amount of protein per 100 gram compared to other insects (Zielińska, Baraniak, Karaś, Rybczyńska, & Jakubczyk, 2015; Kuntadi, Adelina, & Maharani, 2018). Additionally, they encompass two to three times "more complete protein than a beefsteak on the same weight basis" and deliver more iron, fibre and amino acids than beef ("Why you should eat insects: cricket VS beef," 2019). Considering these facts, eating crickets instead of beef would be a climate-friendly possibility to cope with the problem of feeding the growing world population and deliver a rich source of proteins which are needed in the daily human diet.

1.1.2 Perception of an Alternative Source of Protein

Crickets are known in the westernized world. Yet, they are more known as the kind of insects living in the forests and grasslands – rather than for being eatable and nutritious. Whether crickets and other insects are perceived as a part of the food culture and accepted in the daily dietary or not, is culturally and contextually dependent (Tan et al., 2015). Unlike countries such as Thailand, where crickets are familiar and perceived as a natural food product, crickets are seen with *scepticism* and even *disgust* in the westernized cultures when it comes to entomophagy. Shepard and Frazer (2015) define disgust as "a basic reaction of avoidance, from a sour taste, bad smell, or another person". While the emotion of disgust is universal and felt all over the planet, the reasons for feeling it differ among cultures. Thai cultures, for instance, do not feel any disgust when eating insects. Western cultures, however, are triggered by that thought and connect it with the feeling of disgust. This reaction is based on unfamiliarity and on the fact that people do not know much about crickets as an alternative source of protein. Rather, insects are known for transmitters of disease (Tan et al., 2015), while studies show that less than 0.2% of all insects in the world are considered as harmful for "plants, men and animals" (van Huis, 2016).

1.2 Change of Perception through Information

In order to get people in the westernized world to acknowledge crickets to be less harmful and disgusting and more desirable, the perception of the consumer and his/her behaviour has to be affected to be ultimately changed. The behaviour of the consumer can be explained by the low-cost hypothesis which states that "behavioural costs moderate the attitudes on behaviours" (Tobler, Visschers, & Siegrist, 2012). A behaviour that creates discomfort in the consumer is perceived as a cost (-behaviour) and subsequently less likely to appear (Tobler, Visschers, & Siegrist, 2012). Since eating insects is connected to the feeling of disgust and discomfort, it is regarded as a cost. The consumers need to receive more positive aspects of the crickets so that the consumers are less sceptical toward entomophagy. Based on the fact that scepticism, as a defence mechanism, is decreasing pro-environmental behaviour – which eating insects can be counted as – this scepticism has to be reduced, too.

A way in which the consumer's attitude and behaviour toward the edible crickets might be affected and changed is by providing the consumer with *information*. Griffin, Dunwoody and Neuwirth (1999) found out that "information does something" to the individual and that interventions can be developed that might make people change their behaviour. Subsequently, the consumers' perception and his/her willingness to try insects might be affected by the specific kind of information the consumer receives. In a study done by Tobler, Visschers and Siegrist (2012) on climate change and environmental behaviour, it was stated that people are concerned with climate change but perceive it as less important than "other environmental, personal or social issues". Which shows that consumers attach a varying relevance onto different concerns. Furthermore, it is known that it is important to inform and educate the consumer about new food technologies and that new information must be linked to actual benefits in order to change the perception of the new food (Siegrist, 2008). When the perceived benefits of eating crickets would outweigh the costs and risks associated with eating them, this might influence the consumers' willingness to try eating the crickets. This is due to the fact that perceived costs and benefits are critical determinants in behaving in a climate-friendly manner (Tobler, Visschers, & Siegrist, 2012). These benefits could appear in the form of an informational text about the cricket and should outweigh the consumers' perceived costs associated with eating them. This risk and benefit perception of the consumer concerning his/her behaviour can be explained with the well-established Theory of Planned Behaviour (TBP), developed by Ajzen in 1998, which originated from the Theory of Reasoned Action, developed by Fishbein and Ajzen in 1975 (Griffin, Dunwoody &, Neuwirth, 1999). TBP has been repeatedly used to test a wide range of human action,

amongst which also responses to “health-risks of various kinds” and was found to predict health-related behaviours “quite well” (Griffin, Dunwoody &, Neuwirth, 1999). Since eating crickets in the westernized world is perceived as a health-risk, TBP can be applied. The Theory of Planned Behaviour thus relates the consumers’ perception of risks and benefits of eating crickets with their willingness to try a cricket (behaviour). Respectively, it helps to understand how the consumers’ behaviour might be ultimately affected by the specific kind of information they will receive.

1.3 Relevance of the current Study

Since there is little specific research available concerning the relationship of the provided information and the willingness to try insects by people in the westernized world, it is worthwhile to examine whether a link might exist. This could help in the process of finding a future option to deal with the world’s grand challenge to feed the steady growing world population sustainably. Furthermore, it might provide evidence on how the world population could find a way to counteract climate change. And, not to be forgotten, by investigating the information needed for a consumer to be more willing to try a cricket, it might become more likely for an individual to eat insects in the future – which would be a more healthy and sustainable option to receive the protein the body needs. The finding that it might be more effective to give people the information they *need* rather than the information experts would advise to give them (Griffin, Dunwoody, & Neuwirth, 1999) leads to the assumption that different kinds of information might affect consumers differently since relevance and benefits of information are perceived in a subjectively.

The information about the crickets will be provided to young adults between 18 years and 28 years since entomophagy is especially relevant for feeding the future world population. Young adults, thus, should become aware of the challenge to feed the ever-growing world population in a sustainable manner and should be informed as well as get familiar with possible options – such as entomophagy. Moreover, young adults aged between 16 years and 26 years were found to place a high value on environmental policy and animal welfare (YouGov Survey plc., 2019), which might make them more sensitive and open to entomophagy, since entomophagy would be one option to improve both of these aspects.

1.3.1 The current Study

In this study, three groups will receive different kinds of information regarding the cricket to investigate if and how the texts will affect the participants. Group one will be provided with information that has a *personal benefit* such as health benefits of eating crickets: information that may be needed by the respondents to change their perception about

entomophagy. Another group of respondents will receive information that is more *generally beneficial* and concerns not only them personally, but society in general – such as pro-environmental behaviour. The third group will receive information that bears *no relevance* or *benefits* of eating crickets and will include information about where the cricket lives or how they move.

1.4 Sum up and Hypotheses

With the main aim of investigating whether different kinds of information have a different effect on the consumers' willingness to try crickets as an alternative source of protein (Figure 1), the following hypothesis arises:

H1. The specific kind of information the participant receives has an effect on the willingness of them to try a cricket.

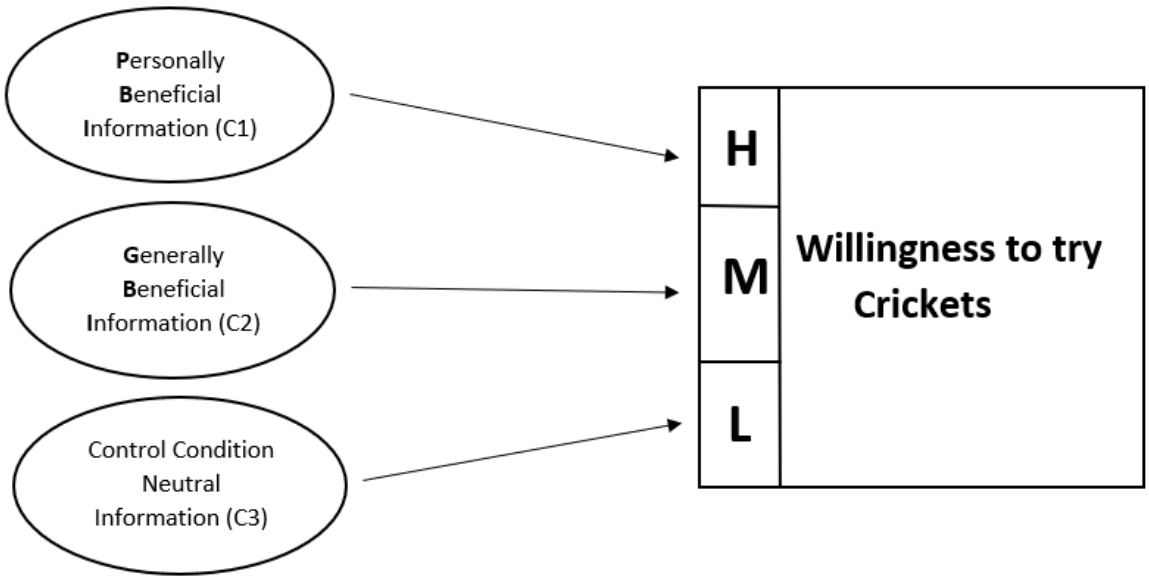

Figure 1. Conceptual model of the main hypotheses. Visually representing how the different kinds of information (PBI, GBI, CC) are expected to influence the willingness to try crickets in different ways (high, medium and low influence).

The information provided to each participant might influence their willingness to try a cricket in different ways. In line with that, the provided information might also affect the feeling of disgust of the individual participant. Since individuals in the westernized world generally are more disgusted by the thought of eating insects and correspondingly probably less willing to try a cricket, it is worthwhile to find out if and how this feeling might be mitigated. The following hypothesis emerges:

H2. The specific kind of information provided to the participant has an effect on their feeling of disgust.

Furthermore, diets already exist which are supportive in counteracting climate change but also are done out of health-related or ethical reasons: being vegetarian or vegan. Eating crickets can be considered as an environmentally friendly diet as well. Thus, the following hypotheses are stated:

H3. The motivation for the diet of the participant has an influence on the willingness to try crickets as an alternative source of protein.

> **H3a.** Participants following a vegan diet out of *environmental reasons* are more likely to try crickets as an alternative source of protein than consumers following a vegan diet out of *health-related reasons*.

H4. There is a correlation between the participants' concern about the environment and the willingness to try the cricket.

2. Methods

2.1 Participants

Originally, the study consisted of a convenience sample including a total of N = 101 young adults. For further analyses of the data, the original sample was reduced to a total of N = 86, due to excluding 15 cases who did not fully continue the study after agreeing to the informed consent. The final sample (N = 86) mainly consisted of participants from Germany (89.5%), followed by the Netherlands (4.7%) and 5.8% from other westernized countries including Austria, Belgium, Sweden and the UK. 65% of the sample were female and 35% of the sample were male. The age ranged from 18 years to 28 years (M = 22.25, SD = 2.11). Most of the participants were Bachelor students (59.3%). More than half of the participants (59.3%) were indicating to follow a diet including animal-based products. 26.7% of the participants were indicating to follow a vegetarian diet and 14% of the participants reported a fully plant-based, vegan diet. Participants were recruited via the social media platforms Instagram and WhatsApp as well as via word of mouth marketing. The study was available from the 15th until the 25th of April in the year 2020.

2.2 Design

In this research, a between-groups questionnaire design was employed. Participants were randomly assigned to one of the three conditions of the main independent variable (personally beneficial information, generally beneficial information, neutral information). All

participants of each condition had to fill in the questionnaire once. The two further independent variables next to the *kind of information* were the *consumers' diet* and the *consumers' perception of climate change*. The three independent variables were tested on the two dependent variables: the *consumers' willingness to try insects* and the *consumers' level of disgust*. In total, there were three independent variables tested on two dependent variables.

Manipulation. To provide the participants with *different kinds of information (IV1)* regarding the cricket, each condition got a different text about the cricket after completing the questions about climate change. The first group received a text including health-related and personal-beneficial information about eating crickets instead of conventional beef. While each group got a picture at the end of the informational text that showed a meal including crickets (see Appendix A.a), this group also received an image displaying specific health-benefits about eating crickets compared to eating beef (see Appendix A.b). The second group was exposed to a text concerning general and environmentally-related information about eating crickets. Next to the picture of the meal including crickets, this group was provided with an image showing a table with facts about the sustainability of eating crickets instead of beef (see Appendix A.c). Lastly, the control condition received a neutral text about crickets which was composed of statements such as *"Adult crickets can vary in colour but most often appear in black or brown. Additionally, they are getting about one inch long."* Furthermore, the control group got a picture next to the text displaying the natural habitat of crickets (see Appendix A.d).

The pictures in this study were included since pictorial stimuli were found to have a more direct effect on the consumer, rather than text alone (Edell & Staelin, 1983). The picture that is present in each condition displays the cricket in a processed form since the imagination of entomophagy is still very unfamiliar in the westernized world. Presenting the cricket already malted in a meal still conveys scepticism. However, if the picture would show an unprocessed cricket, the scepticism and feeling of disgust might outweigh any kind of willingness to try it. Generally, by providing a picture, the respondents are able to form a more clear image on the topic and what they are dealing with.

2.3 Materials

The online questionnaire consisted of 36 questions in total, out of which four were demographic questions concerning the country of origin, the age, the gender and the level of education of the participants. The three scales that were used were taken from previous research. Please see Appendix B.

Independent Variables. Measured were the participants' *diet and their motivation for that specific diet (IV2)* as well as the *participants' perception of climate change (IV3)*. Concerning the *participants' diet*, participants were asked to indicate whether they consume meat, follow a vegetarian diet or live fully plant-based. The item was constituted like this: *"The diet I am following…"* with the three answer options: *"includes animal products", "is vegetarian (no fish and meat)", "is vegan (fully plant-based)"*. In case participants were vegetarian or vegan, they received another question concerning their motivation for following that diet. The participants could choose one of the three motivations: environmental reasons, health-related reasons, or to mitigate animal suffering.

Regarding the *participants' concern or worry about climate change*, participants had to answer seven items taken out of the Concern about Climate Change Scale (Tobler, Visschers & Siegrist, 2012) which generally is composed of four items about assessing the perceived risk of climate change and three items relating to the concern about climate change. The items were presented in a matrix table and could be answered on a six-point Likert Scale with answer options ranging from "Strongly disagree" to "Strongly agree". The internal reliability was high with a Cronbach's alpha of $\alpha = 0.90$. Since six out of the seven items were suggesting negative consequences about climate change and might bias the participant, three additional items were added. The added items were indicating "positive aspects" of climate change. The final questionnaire about the participants' perception of climate change encompassed ten items and had a Cronbach's alpha of $\alpha = 0.83$. The three added items were put at the end of the original Concern about Climate Change Scale.

Dependent Variables. The *participants' feeling of disgust (DV1),* as well as the *participants' willingness to try a cricket (DV2),* were measured. The questions about the participants' *level of disgust* were taken out of the Food Disgust Scale developed by Hartmann and Siegrist (2018). The original Food Disgust Scale is composed of 32 items and eight subscales which measure different types of disgust. For this study, the two subscales "Animal Flesh" and "Poor Hygiene" were chosen since linear regression analysis showed that they were most predictive of the willingness' to try insect-based products, with the hygiene scale being the strongest predictor (Hartmann & Siegrist, 2018). The hygiene scale consists of five items and has a Cronbach's alpha of $\alpha = 0.87$. The Cronbach's alpha of the animal meat subscale, which consists of four items, has a Cronbach's alpha of $\alpha = 0.79$. This indicates good to high internal reliability of the two subscales. The items were depicted in a matrix table and could be answered on a five-point Likert Scale ranging from "Not disgusting at all" (1) to "Very disgusting" (5).

The last ten questions of the questionnaire were taken from the Food Neophobia Scale (FNS) developed by Pliner and Hobden (1992). These items were stated to measure *the participants' (un)willingness to try new foods* after being exposed to one of the three informational texts. The Food Neophobia Scale has been used to assess the reaction to new foods in studies conducted around the world and was found to accurately predict responses to novel foods. The items of the FNS could be answered on a six-point Likert scale with answer options ranging from "Disagree strongly" (6) to "Agree strongly" (1) (Ritchey, Frank, Hursti, & Tuorila, 2003) and were displayed in matrix table. Cronbach's alpha of $\alpha = 0.85$ indicated that the internal reliability of the scale is high (Stratton et al., 2015). Please see Appendix C for the items per scale and the corresponding mean scores per item.

2.4 Procedure

Before the study was executed, it was approved by the BMS Ethics Committee of the University of Twente (request number 200331). The experiment was conducted in the form of an online questionnaire and filled out by the participants in an online environment. The participants received the study via the social media platforms Instagram and WhatsApp. Before the participants could take part in the online experiment, they were given an informed consent form which they had to agree to in order to participate (see Appendix D). In the informed consent, the participants were told that the study was designed to explore their attitudes regarding their consumption behaviour. Participation was entirely voluntary. Each participant was randomly assigned to one of the three conditions of the online questionnaire. Firstly, the participants had to answer four subject-related questions followed by two questions concerning their current diet (see Appendix E). After these questions, ten questions about their concern about climate change had to be answered. As a next step, the participants were to read one of the three informational texts (see Appendix F), depending on which condition they had been assigned to. Subsequently – to measure the dependent variables – the participants had to answer nine questions regarding their level of disgust. As the last step, ten questions about the participants' willingness to try new foods were asked. Participants then were thanked for their participation and the questionnaire was finished. On average, participants completed the questionnaire within nine minutes.

2.5 Data Analysis

The recorded data were quantitative and therefore analysed using the programme Statistical Package for Social Sciences (SPSS). Nine reversed items had to be rescaled. Out of these nine items, four of them were from the Concern about Climate Change Scale and five were from the Food Neophobia Scale (see Appendix C). The recoding was undertaken so that

later examinations on the specific informational text and the willingness' to try new foods would be easier to execute. Following that, mean and range were computed for the demographic variables. The scales' internal reliability was checked, by running a reliability analysis and mean item scores per variable were computed (see Table 1). Factor analyses (see Appendix G) were conducted for the three variables concern about climate change, level of disgust and the willingness to try new foods. For the original scales (see Appendix H.a) and subscales of the Level of Disgust Scale (Animal Meat scale and Hygiene Scale) reliability analyses were computed, please see Appendix H.b. Kendall's Tau-b correlation tables were computed since the Concern about Climate Change Scale was neither meeting the assumptions for Pearson's Correlation nor for Spearmen's Rank Test (Weaver et al., 2017). To test the first three hypotheses, a one-way between-groups ANOVA was conducted. Lastly, it was examined whether a general concern about climate change would be related to a higher willingness to try new foods (H4). This was done by using non-parametric Kendall's Tau-b.

3. Results

3.1 Descriptive Statistics

Results showed the participants' level of disgust to be medium to high (M = 3.57, SD = 0.75). However, when considering the division of the scale into the two subscales, the feeling of disgust in both cases was high (S1: M = 5.00, SD = 1.19 and S2: M = 5.00, SD = 0.69). The participants' concern about climate change is rather high (M = 5.29, SD = 0.54). The participants showed a high willingness to try new foods (M = 5.70, SD = 0.81). Please see Table 1.

Table 1

Mean Item Score and Standard Deviation of the three Scales "Concern about Climate Change", "Food Disgust Scale" and "Willingness to try new Foods" and for the two Subscales of the "Level of Disgust Scale" (N = 86).

	Mean	SD
Food Disgust Scale	3.57	0.75
Subscale 1 – Animal Meat	5.00	1.19
Subscale 2 – Hygiene	5.00	0.69
Concern about Climate Change Scale	5.29	0.54
Willingness to try new Foods	5.70	0.81

3.2 Inferential Statistics

A positive correlation between the participants' level of disgust and them not being willing to try new foods was found to be statistically significant ($t_b = 0.24$; $p < 0.01$). The higher the participants' level of disgust was, the higher was their unwillingness to try new foods. A significant positive correlation was found between the participants' level of disgust regarding animal meat (subscale 1) and the participants' unwillingness to try new foods ($t_b = 0.26$; $p < 0.01$). The more disgusted participants' were by the animal meat items, the higher was their unwillingness to try new foods. There was no significant correlation found between the participants' willingness to try new foods and their level of disgust concerning hygiene (subscale 2). Analyses did not show a significant correlation between the participants' concern about climate change and their willingness to try new foods. Please see Table 2 and refer to Appendix I for the p-values.

Table 2

Kendall's Tau-b Correlation on the three original Scales "Concern about Climate Change", "Food Disgust Scale" (including the two Subscales) and "Willingness to try new Foods" (N = 86).

		1.	2.	3.	4.	5.
1.	Concern about Climate Change Scale	1.000	0.20*	0.19*	0.07	0.07
2.	Food Disgust Scale	0.20*	1.00	0.76**	0.65**	0.24**
3.	Subscale 1 - Animal Meat	0.19*	0.76**	1.00	0.38**	0.26**
4.	Subscale 2 - Hygiene	0.07	0.65**	0.38**	1.00	0.14
5.	Willingness to try new Foods	0.07	0.24**	0.26**	0.14	1.00

**Correlation is significant is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

3.2.1 Hypotheses Testing: Specific kind of information on Willingness to try new Foods (H1)

The first hypothesis stated that the specific kind of information the participant receives has an effect on the participants' willingness to try new foods. When comparing the means,

general beneficial information had the highest mean (M = 3.82, SD = 0.32), followed by personal beneficial information (M = 3.74, SD = 0.36). The control condition with neutral information about the cricket had the lowest mean (M = 3.68, SD = 0.39). A one-way ANOVA showed that the differences between the means were not significantly different (p = 0.33). Please see Table 3 for the means and Appendix K.a for the p-values.

Table 3

Means of the three Conditions in Relation to the Willingness to try new Foods

	Mean	N	SD
Personal beneficial Information	3.74	26	0.36
General beneficial Information	3.82	31	0.32
Control Condition	3.68	39	0.39

3.2.2 Hypothesis Testing specific kind of information on the level of disgust (H2)

Hypothesis two emphasized that the different informational texts influence the level of disgust a participant has after reading the texts. Means were compared, once for the original scale and once for the two subscales that emerged based on factor analysis (see Appendix L). The mean for neutral information was the lowest, considering the original disgust scale (M = 3.47, SD = 0.71). The mean for personal beneficial information was M = 3.65 (SD = 0.68) and the mean for general beneficial information was M = 3.64 (SD = 0.66) (see Table 4). A one-way ANOVA test showed that the differences are not significant (p = 0.68), refuting the outcomes. Please see Appendix K.b for p-values.

Results revealed, that the means for subscale two, which measures the level of disgust experienced through hygiene (e.g. “Another person’s hair in my soup”) were steadily higher than the means of subscale one, which is referring to animal meat (e.g. “To see raw meat”). However, a one-way ANOVA for both subscales showed that the differences per condition are insignificant (subscale 1: p = 0.22, subscale 2: p = 0.94). Please see Appendix K.c for p-values.

Table 4

Means for the three Conditions: Personal Beneficial Information (N = 26), General Beneficial Information (N = 31) and Control Condition (N = 29) on the “Food Disgust Scale” and it’s Subscales

	Food Disgust Scale		Subscale One: Animal Meat		Subscale 2: Hygiene	
	Mean	SD	Mean	SD	Mean	SD
Personal Beneficial Information	3.65	0.68	3.16	0.51	4.67	0.39
General Beneficial Information	3.64	0.66	3.23	0.47	4.73	0.41
Control Condition	3.47	0.71	2.72	0.44	4.76	0.45

3.2.3 Hypothesis Testing: Specific Diet on Willingness to try new Foods (H3)

The third hypothesis predicted that the motivation for eating vegan/vegetarian influences the willingness to try new foods. It was hypothesized that participants following a vegan/vegetarian diet out of environmental reasons would be more likely to eat a cricket and be more willing to try new foods than participants who follow a mostly plant-based diet out of health-related reasons. 12 participants indicated to follow a vegan/vegetarian diet out of environmental reasons. This group showed the highest willingness to try new foods (M = 3.90, SD = 0.35). Only four out of 35 participants who followed a vegan/vegetarian diet indicated to do so due to health-related reasons. In line with that, their willingness to try new foods was the lowest (M = 3.50, SD = 0.08). 19 participants were following a mainly plant-based diet to mitigate animal suffering. Compared to the other two conditions, their willingness to try new foods was right in the middle with M = 3.77 (SD = 0.38) (see Table 5). A one-way ANOVA test was computed. The test showed that the differences between the means are not significantly different (p = 0.43). Please see Appendix K.d.

Table 5

Means for the three Conditions: Mitigate Animal Suffering, Counteract Climate Change and Health-Related Reasons on the Willingness to try New Foods

	Mean	N	SD
Mitigate Animal Suffering	3.77	19	0.38
Counteract Climate Change	3.90	12	0.35
Health-Related Reasons	3.50	4	0.08

3.2.4 Hypothesis Testing: Concern about Climate Change and Willingness to try new Foods (H4)

The last hypothesis assumed that there is a correlation between the participants' concern about climate change and their willingness to try the cricket. To check this, Kendall's Tau-B correlation was run. There was no significant relationship between the concern about climate change a participant has and his/her willingness to try new foods, found. Please see Table 2.

4. General Discussion

4.1 Summary of the Main Findings

This study examined four different possible relationships by carrying out a between-subjects online experiment. Firstly, it was examined whether different kinds of informational texts would have an effect on the willingness to try a cricket. Secondly, it was researched whether the three different texts would have an effect on the participants' level of disgust. Furthermore, this study aimed to find out whether a link between a participants' reason to follow a vegan/vegetarian diet and his/her willingness to try a cricket. Lastly, it was investigated whether a correlation between the participants' concern about climate change and his/her willingness to try a cricket exists. Taking the results altogether, no support for either of the four hypotheses could be found, which is why the four hypotheses have to be rejected. Hypotheses were tested on a sample including participants from westernized countries, with the main part of the participants being from Germany. Means were computed, one-way ANOVA tests and Kendall's Tau-b correlation were carried out. Constructs were reliability measured. While no significant support for one of the four hypotheses could be found, a significant correlation between a persons' level of disgust and his/her (un-) willingness to try new foods got evident.

4.1.1 Correlation between Level of Disgust and Willingness to try new Foods

Results revealed a significant relationship between a participants' level of disgust and their (un-) willingness to try new foods. The more disgusted a person is by a new food, the more unwilling is this person to try this new food. This finding is important in understanding the perception of edible insects in the westernized world and to be able to alternate this perception. To be more specific, crickets are perceived with disgust in the westernized world. Since disgust can be classified as a cost behaviour (Tobler, Visschers, & Siegrist, 2012), this perception of the crickets has to be modified in order to make the crickets – or entomophagy generally – more desirable in the westernized countries. If the level of disgust, the cost, would be rated lower, the willingness to try the cricket would probably be

higher. Therefore, the level of disgust remains an important determinant in how willing a person is to try insects. Taking the TBP into consideration, a persons' behaviour might be ultimately affected by his/her perception of entomophagy, which is still acknowledged as a health-risk-behaviour. If this perception of entomophagy as a risk-behaviour could be changed into a more familiar or standard diet, the level of disgust would be lower. Subsequently, the willingness to try crickets as well as the ultimate behaviour would be more willing towards eating insects.

4.2 Comparison with prior Research

In line with this study, prior research found that food-neophobia and the level of disgust of a person might be correlated when it comes to edible insects (La Barbera et al., 2018). Nonetheless, the correlation found in this study was rather weak. This might be aligned with the fact that, although food-neophobia and level of disgust both contribute to a lack of willingness to try a cricket, they still are independent constructs as found in a study done by La Barbera et al. (2018). The two constructs do contribute to the lack of willingness to try a cricket in different and independent ways. This was not sufficiently accounted for in this study, since both, food-neophobia as well as the level of disgust were linked to the concept of *unfamiliarity*. Yet, level of disgust can be better defined in terms of associations with a broader category of disgust-eliciting objects (La Barbera et al., 2018) and transmitters of diseases (Tan et al., 2015). While food-neophobia actually can be defined in terms of how familiar or novel a food is.

The way in which constructs were defined might have contributed to the rejection of the first two hypotheses. The hypotheses assumed that the three informational texts would, on the one hand, have an effect on the willingness to try the cricket and, on the other hand, might affect a persons' level of disgust. Here, the definition of a *benefit* and *cost* might have been too general and the presented benefits too weak to outweigh the costs of being willing to eat a cricket. The study presupposed that benefits would be either health-related, as presented in the personal-relevant text or environmentally-related, as conveyed to the participants in the general-relevant text. So, it was assumed that participants would be interested in their health and how an alternative diet might even enable them to increase their health. This assumption is in line with the finding of Betts et al. (1997) who found that graduates aged between 18 years and 24 years place more importance on the nutritional values of food than on the convenience of the food. However, this importance of choosing food with good nutritional values had to be coupled with the graduates' perceived skills to purchase and prepare the foods. Crickets are still novel foods in the westernized world and which is why participants

are not familiar with where to get insect-based foods and how to prepare them. This might lead to a lower interest in trying them since the *costs* – purchasing and preparing them – might overweigh the nutritional *benefits*.

Additionally, young adults aged between 16 years and 26 years place a high value on environmental policy and animal welfare (YouGov Survey plc., 2019), as assumed for the general relevant text. Nonetheless, it is not defined exactly, what is included in the concern about the environment and the welfare of animals. While this study assumed to include climate concern in the context of environmental policies, this is not sufficiently researched yet. The assumption that counteracting climate change is a *benefit* for young adults that outweighs the *cost* of eating a cricket might be too general and broad in order to use this information for the general-relevant text.

4.3 Methodological Issues

The rejection of hypothesis three can be best explained when considering the methodological issues of this study. Hypothesis three assumed that the specific motivation to follow a vegan/vegetarian diet would lead to a different willingness to try a cricket. In fact, a tendency in this direction could be observed. Yet, differences were non-significant. This probably is related to the small number of participants who were indicating to follow a vegan/vegetarian diet (N = 35). In total, 35 participants were following a vegan/vegetarian diet. The highest number of participants for one condition were N = 19 indicating to follow a vegan/vegetarian diet to counteract animal suffering. The lowest group of participants was N = 4, revealing to follow a vegan/vegetarian diet out of health-related reasons. Hence, a contributor to reject hypothesis three might have been the small sample size per condition.

Methodological issues might also be a contributor for rejecting hypothesis four, which assumed a correlation between a participants' environmental concern and his/her willingness to try a cricket. While the participants' concern about climate change was rather high, the difficulty to investigate this hypothesis properly was that only 29 out of the 86 participants got to read the general-relevant informational text which was encompassing why eating crickets could be a possibility to counteract climate change and lead to more sustainability. The other 57 participants did not get to read the environmental benefits of eating crickets and could not link climate change to eating crickets if prior knowledge has not been present. Here as well, the sample size did not suffice to give meaningful results.

A more general methodological constraint of this study was the self-report nature of the online experiment. In this way, it cannot be controlled for social desirability biases and the accuracy of the results.

Although there were some methodological constraints, this study has shown to only integrate questionnaires with a good too high internal reliability. The Concern about Climate Change Scale, which was complemented with three additional items, was displaying a slightly lower Cronbach's alpha compared to the other scales. Still, it is representing a good internal consistency. Considering that the other scales had an even higher internal reliability, all scales do adequately measure their intended concepts, being a methodological strength of this study.

4.4 Practical Implications for Future Research

First of all, considering the fact that this study was done using a self-report measure, future studies could investigate the topic via longitudinal designs which might better account for actual changes in perception of edible crickets. In line with longitudinal designs on researching the perception of entomophagy in westernized cultures, future studies could include larger samples which are obtained through probability sampling. This might account for more significant and generalizable results.

Furthermore, the Food Neophobia Scale is indeed measuring responses to novel foods in general (Pliner & Hobden,1992) but does not measure the reaction to eating insects or crickets more specifically. Since novel foods in general not necessarily have to be in line with the feeling of disgust – such as crickets in the westernized world are – the Food Neophobia Scale might not be the best predictor of whether a participant is willing to try a cricket. A possible implication would be to state one straight forward follow-up question after each condition (PBI, GBI and CC) as to whether participants would be willing to eat a cricket: *"Would you be willing to eat a cricket as an alternative source of protein?"*. In this way, it would additionally accounted for whether the informational text has an influence on the consumers' willingness to try a cricket.

Regarding the Concern about Climate Change Scale, which measures how much a participant worries about climate change, including its reasons and consequences (Tobler, Visschers & Siegrist, 2012), it would have been even more aligned with eating insects if the scale would have encompassed other environmental aspects as well. Including not only climate change but also aspects such as usage of land and would have enlightened more factors that are related to the positive sides of entomophagy. In this way, a correlation between a consumers' willingness to try a cricket and his/her concern about the environment (not *only* climate change) would have been more likely.

Another limitation of the study is that it did not account for prior knowledge. Especially in the context of the westernized world, it would have been of valence to know whether participants already are informed about eating insects and the assets it is bringing

with it. In future research, this could be done using pilot tests asking about a participants' knowledge concerning health-related and environmental benefits of eating crickets. Also, in the beginning of the questionnaire the question could be stated, whether a participant ever tried a cricket, or another insect, before and whether trying a cricket has changed his/her perception of entomophagy: *"Have you ever tried a cricket?"* and *"Did eating a cricket change your perception of eating insects?"*. If the perception was changed, follow-up question could be stated about whether entomophagy got discerned as more or less desirable. And, in line with that, whether eating insects might have become a more realistic future option by trying it.

Additionally, future research could implement the way in which the three informational texts were structured and supported by pictures in another way. The picture displaying the cricket could, on the one hand, present a cricket in its unprocessed form. This would underline the novelty of the cricket as a food in the westernized world. On the other hand, the same questionnaire could be implemented including a fully-processed picture of crickets (e.g. in the form of a snack bar or flour). By comparing the outcomes research could gather new findings on whether the condition of the cricket (processed vs. unprocessed) makes a difference in the willingness to try a cricket.

4.5 Final Comments

Although this study has its limitations, it also has its value in scientific research regarding entomophagy. It was the first study to investigate whether different kinds of information would affect the consumers' willingness to try crickets. Due to the fact that entomophagy is a future option to feed the increasing world population this study gave a new impulse into how to bring the westernized world closer to the topic: through information and education. This education, in the best possible way, would lead to more awareness and familiarity – and eventually to an increasing willingness to eat insects. In this way, the westernized societies would move away from the fantasy of being able to have access to any kind of resource at any time and would move forward to a generally more sustainable way of consuming and living.

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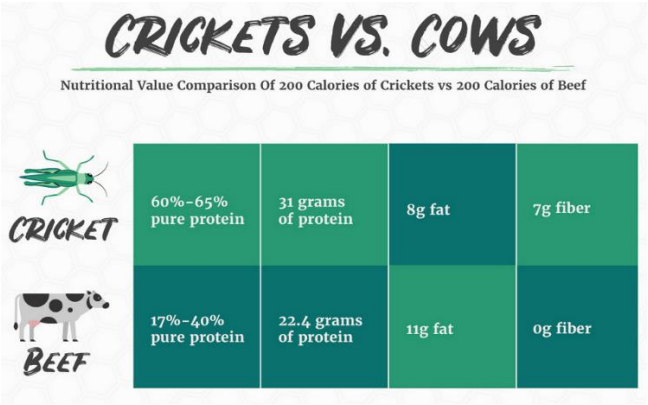
Appendix

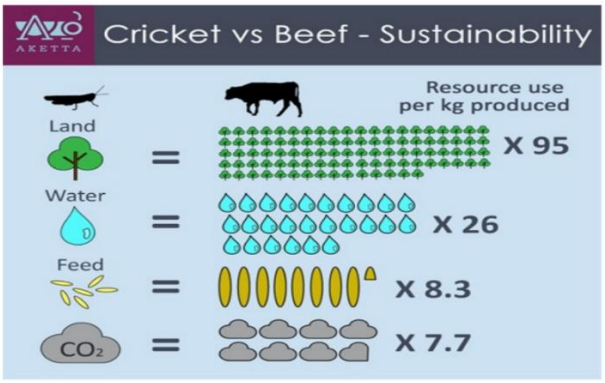
A. Pictures displayed in the questionnaire

A.a Picture of questionnaire displaying a meal with crickets

A.b Picture of the questionnaire added to personal beneficial text



A.c Picture of the questionnaire added to the general beneficial text



A.d Picture of the questionnaire added to the text with neutral information

B. The Subscales of the Questionnaire

B.a Concern about Climate Change Scale

The following questions will ask you about your view and your attitude toward climate change. Please respond to each question using the scale below. Please answer open and honestly. There are no right or wrong answers.

Please indicate which option suits you the best. The options are ranging from "strongly disagree" to "strongly agree".

	Strongly disagree.	Disagree.	Somewhat disagree.	Somewhat agree.	Agree.	Strongly agree.
I worry about the climate's state.	○	○	○	○	○	○
Climate change has severe consequences for humans and nature.	○	○	○	○	○	○
Climate protection is important for our future.	○	○	○	○	○	○
We must protect the climate's delicate equilibrium.	○	○	○	○	○	○
There is no need to be anxious about climate change, as it will change anyway, like during an ice age.	○	○	○	○	○	○
I worry about what will happen due to climate change.	○	○	○	○	○	○
I worry about the cause of climate change.	○	○	○	○	○	○
One positive side of climate change is that it makes our climate warmer. So it is not that cold all the time.	○	○	○	○	○	○
We do not have to do anything about climate change since it will not affect us humans directly.	○	○	○	○	○	○
I do not worry about climate change because it gives me a longer summer time.	○	○	○	○	○	○

B.b Food Disgust Scale

In the following you will be asked to indicate how you feel about the stated scenarios regarding your feeling of disgust. Please respond to each question using the scale below. Please answer open and honestly. There are no right or wrong answers.

Please indicate which option suits you the best. You can choose the answers ranging from "not disgusting at all" to "very disgusting."

	Not disgusting at all.	Slightly disgusting.	Neutral.	Disgusting.	Very disgusting.
To eat with dirty silverware.	○	○	○	○	○
A meal prepared by a cook who has greasy hair and dirty fingernails.	○	○	○	○	○
If the cook in a restaurant has an open cut.	○	○	○	○	○
If people blow their nose before they serve my meal.	○	○	○	○	○
Another persons' hair in my soup.	○	○	○	○	○
To put animal cartilage in my mouth.	○	○	○	○	○
To see raw meat.	○	○	○	○	○
To eat a stake that is still bloody.	○	○	○	○	○
To see a whole pig roatsed on a skewer.	○	○	○	○	○

B.c Food Neophobia Scale

In the following you will be asked to indicate your level of willingness to try the specific option. Please answer open and honestly. There are no right or wrong answers.

Please indicate which option suits you the best.Please respond to each question using the scale below, ranging from "strongly disagree" to "agree strongly".

	Disagree strongly.	Disagree moderately.	Disagree slightly.	Slightly agree.	Agree moderately.	Agree strongly.
I am constantly sampling new and different foods.	○	○	○	○	○	○
I don't trust new foods.	○	○	○	○	○	○
If I don't know what a food is, I won't try it.	○	○	○	○	○	○
I like foods from different cultures.	○	○	○	○	○	○
Ethnic food looks too weird to eat.	○	○	○	○	○	○
At dinner parties, I will try new foods.	○	○	○	○	○	○
I am afraid to eat things I have never eaten before.	○	○	○	○	○	○
I am very particular about the foods I eat.	○	○	○	○	○	○
I will eat almost anything.	○	○	○	○	○	○
I like to try new ethnic restaurants.	○	○	○	○	○	○

C. *Items per Scale and their corresponding Mean Scores*

Scale	Items	Mean Scores per Item
Concern about Climate Change		
1	I worry about the climate's state.	5.20
2	Climate change has severe consequences for humans and nature.	5.58
3	Climate protection is important for our future.	5.65
4	We must protect the climate's delicate equilibrium.	5.40
5	There is no need to be anxious about climate change, as it will change anyway, like during an ice age.*	4.99
6	I worry about what will happen due to climate change.	5.00
7	I worry about the cause of climate change.	4.80
8	One positive side of climate change is that it makes our climate warmer. So it is not that cold all the time.*	5.00
9	We do not have to do anything about climate change since it will not affect us humans directly.*	5.63
10	I do not worry about climate change because it gives me a longer summer time.*	5.66
Food Disgust Scale		
Subscale 1: Animal Meat		
1	To put animal cartilage in my mouth.	3.64
2	To see raw meat.	2.37
3	To eat a stake that is still bloody.	3.06
4	To see a whole pig roasted on a skewer.	3.08
Subscale 2: Hygiene		
5	To eat with dirty silverware.	3.83
6	A meal prepared by a cook who has greasy hair and dirty fingernails.	4.27

7	If the cook in a restaurant has an open cut.	4.01
8	If people blow their nose before they serve my meal.	4.03
9	Another persons' hair in my soup.	3.84
Food Neophobia Scale		
1	I am constantly sampling new and different foods.*	4.43
2	I don't trust new foods.	4.67
3	If I don't know what a food is, I won't try it.	3.74
4	I like foods from different cultures.*	5.24
5	Ethnic food looks too weird to eat.	4.45
6	At dinner parties, I will try new foods.*	5.10
7	I am afraid to eat things I have never eaten before.	4.23
8	I am very particular about the foods I eat.	3.38
9	I will eat almost anything.*	3.51
10	I like to try new ethnic restaurants.*	4.69

*reversed items

D. Informed Consent of the Questionnaire

INFORMED CONSENT TO PARTICIPATE IN AN ONLINE EXPERIMENT

Welcome!

You are going to participate in an online experiment in form of a questionnaire, which will take you approximately 10 minutes. Before you start, please read the following information **carefully:**

This study is done in order to investigate young adults' attitudes about how they behave and consume. While filling out the questionnaire you have the right to withdraw from the study at any time. Your data will be made completely anonymized if used for any scientific publications or publications of any other manner. Furthermore, your data will not be disclosed to third parties without asking for your permission. In case you have other questions or want to be informed about the results of the study do not hesitate to contact me:

Maren Lechtermann

m.s.lechtermann@student.utwente.nl

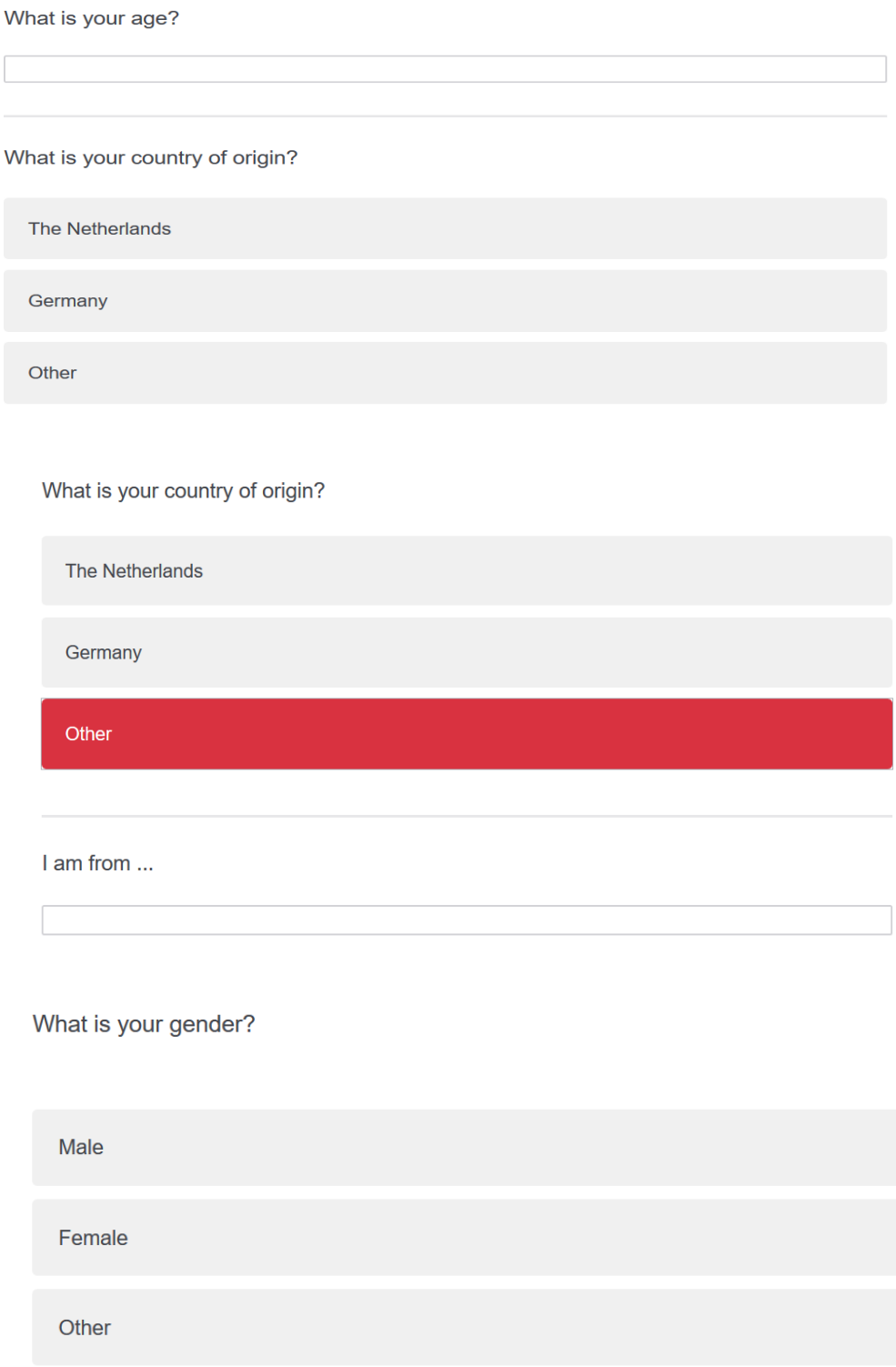
Thank you for your time.

Please indicate below that you have read and understood this form and consent to participate in this study.

Yes, I do consent.

No, I do not consent.

E. Demographic Questions and Questions about the Diet



What is your current level of education?

- Student at Secondary School
- School Leaving Examination
- BA Student
- MA Student
- PhD
- Apprenticeship
- Employed

The diet I am following

- includes animal products.
- is vegetarian (no fish and meat).
- is vegan (fully plant-based).

The main reason why I am following a vegetarian/vegan diet is

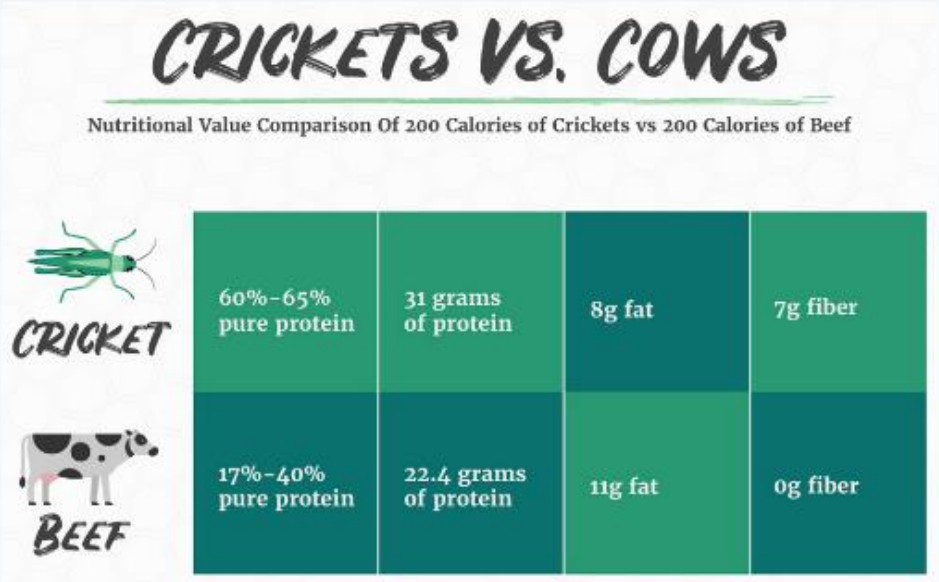
- to mitigate animal suffering.
- to counteract climate change.
- based on health-related reasons.

F. Informational Texts

F.a Condition one: Personal Beneficial Information (PBI)

In the following, you will be provided with some information regarding the cricket. Please read carefully.

Eating insects is seen as perfectly normal and part of the eating habits in some parts of the world. For example, Thai people are used to eating several kinds of insects and even appreciate them for their **nutritional value and health-benefits**. In these cultures, insects are used as a meat-supplement which is serving them as an alternative source of protein.
One insect, research found, is especially high in proteins: **The Cricket**. When comparing the cricket with conventional beef – as usually consumed in Germany or the Netherlands – the cricket encompasses many health-related benefits as can be seen in the following table:

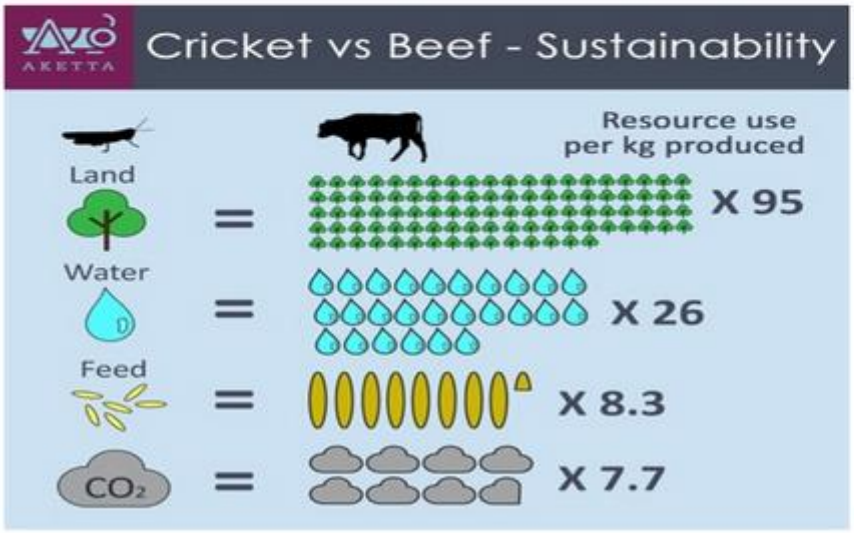


The cricket has **more important proteins than beef while at the same time having less fat**. Due to the low amounts of fat, researchers assume that eating insects might be an effective way to **fight obesity** and its related diseases (Whiteman, 2016). Additionally, the crickets are **higher in fibers** which are important for the digestive system and to drop the levels of cholesterol.
Here is a picture of how you could imagine a meal including crickets:

F.b Condition two: General Beneficial Information (GBI)

In the following, you will be provided with some information regarding the cricket. Please read carefully.

A main reason for climate change is the industrial live-stock farming. Producing high amounts of meat in the most efficient way to be able to sell it for the lowest possible price is what consumers in the westernized world accept in order to get their meat. This way of producing meat is neither sustainable nor environmentally friendly.
However, there might be a future solution that *is* both of it: **sustainable and environmentally friendly** – eating insects, such as **crickets**. Crickets have many advantages compared with the production of beef. As can be seen in the picture below:



In general, they need way less resources to be farmed than the production of beef needs. This includes **less land, water and feed**. Furthermore, when eating crickets instead of beef, **less CO2 is produced** as well as up to **1000-2700g less greenhouse gas emissions** per kg mass gain. So, when trying to behave more environmentally friendly and wanting to counteract climate change, trying a cricket might be a first step.
Here is a picture of how you could imagine a meal including crickets:

Cricket fritters
with roasted peanuts

F.c Control Condition: Neutral Information (CC)

In the following, you will be provided with some information regarding the cricket. Please read carefully.

Different kind of crickets exist all over the world. The two kinds of crickets most known are **field crickets and house crickets**. While house crickets can be found anywhere in your home – the basement or behind cupboards – field crickets mainly prefer to live outside. Adult crickets can vary in colour but most often appear in black or brown. Additionally, they are getting about one inch long.
Here is a picture of a crickets natural habitat:

While in the westernized world people know the crickets as insects living mostly outside, other cultures are knowing them as a kind of food and have them integrated in their daily eating habits. This might seem unfamiliar but is actually the case in up to 80% of the world.
When thinking about crickets as being edible, a possible meal including them could look like this:

Cricket fritters
with roasted peanuts

G. Factor Analyses Tables

G.a *Factor Loadings based on a Principal Component Analysis with Varimax Rotation for 10 Items from the Concern about Climate Change Scale with three Components extracted (N = 86)*

Item	Component 1	Component 2	Component 3
1. I worry about the climate's state.	0.88		
2. Climate change has severe consequences for humans and nature.	0.86		

3. Climate protection is important for our future.	0.86		
4. We must protect the climate's delicate equilibrium.	0.82		
5. There is no need to be anxious about climate change, as it will change anyway, like during an ice age.	0.68	0.47	
6. I worry about what will happen due to climate change.	0.56	0.44	
7. I worry about the cause of climate change.	0.43	0.39	0.31
8. One positive side of climate change is that it makes our climate warmer. So it is not that cold all the time.		0.79	
9. We do not have to do anything about climate change since it will not affect us humans directly.	0.44	0.58	-0.31
10. I do not worry about climate change because it gives me a longer summer time.			0.88

G.b *Factor Loadings and Communalities based on a Principal Component Analysis with Varimax Rotation for 9 Items from the Food Disgust a Scale with two Components extracted (N = 86).*

Item	Component 1	Component 2
1. To see a whole pig roasted on a skewer.	0.89	
2. To eat stake that is still bloody.	0.86	
3. To see raw meat.	0.86	
4. To put animal cartilage in my mouth.	0.65	0.38
5.A meal prepared by a cook who has greasy hair and dirty fingernails.		0.81
6. If people blow their nose before they serve a meal.		0.72

7. If the cook in a restaurant has an open cut.	0.72
8. Another persons' hair in my soup.	0.62
9.To eat with dirty silverware.	0.56

G.c *Factor Loadings and Communalities based on a Principal Component Analysis with Varimax Rotation for 10 Items from the Food Neophobia Scale with two Components extracted (N = 86).*

Item	Component 1	Component 2
1. I am constantly sampling new and different foods.	0.78	
2. I don't trust new foods.	0.74	
3. If I don't know what a food is I won't try it.	0.72	
4. I like foods from different cultures.	0.73	-0.38
5. Ethnic food looks too weird too eat.	0.69	
6. At dinner parties, I will try new foods.	0.65	
7. I am afraid to eat things I have never eaten before.	0.62	
8. I am very particular about the foods I eat.	0.44	
9. I will eat almost anything.	0.39	0.75
10. I like to try new ethnic restaurants.	0.52	0.67

H. Reliablity Measures

H.a *Internal Reliability of the three Scales of the Questionnaire as well as Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity*

Scale	Number of Items	Cronbach's Alpha	KMO	Bartlett's Test of Sphericity
Concern about Climate Change	10	0.83	0.79	0.00
Food Disgust Scale	9	0.81	0.75	0.00
Willingness to try new Foods	10	0.82	0.83	0.00

H.b *Reliability Analysis of two Subscales of the Level of Disgust Scale*

	Scale one – Animal Meat	Scale two – Hygiene
Cronbach's alpha	0.75	0.86

I. Kendall's tau-b correlation and p-values

Kendall's Tau-B Correlation Test on the three original Scales "Concern about Climate Change", "Food Disgust Scale" and "Willingness to try new Foods" (N = 86).

			1.	2.	3.	4.	5.
1.	Concern about Climate Change Scale	Correlation Coefficient	1.000	0.20*	0.19*	0.07	0.07
		P-Value	0.00	0.01	0.02	0.39	0.38
2.	Food Disgust Scale	Correlation Coefficient	.20*	1.00	0.76**	0.65**	0.24**
		P-Value	0.01	0.00	0.00	0.00	0.00
3.	Subscale 1 - Animal Meat	Correlation Coefficient	0.19*	0.76**	1.00	0.38**	0.26**
		P-Value	0.02	0.00	0.00	0.00	0.00
4.	Subscale 2 - Hygiene	Correlation Coefficient	0.07	0.65**	0.38**	1.00	0.14
		P-Value	0.39	0.00	0.00	0.00	0.08
5.	Willingness to try new Foods	Correlation Coefficient	0.07	0.24**	0.26**	0.14	1.00
		P-Value	0.39	0.00	0.00	0.08	0.00

**Correlation is significant is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

K. One-Way ANOVA Tests

K.a *One-way ANOVA between the conditions one (PBI) and two (GBI) and three (CC) on the Willingness to try new foods*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.35	2	14.17	1.12	0.33

K.b *One-way ANOVA between the conditions one (PBI) and two (GBI) and three (CC) on the Level of Disgust*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	36.19	2	18.09	0.38	0.68

K.c *One-way ANOVA between the three conditions personal beneficial, general beneficial and neutral information on the Level of Disgust Subscales*

		Sum of Squares	df	Mean Square	F	Sig
Subscale 1: Animal Meat	Between Groups	69.75	2	34.87	1.55	0.22
Subscale 2: Hygiene	Between groups	2.33	2	1.16	0.06	0.94

K.d *One-way ANOVA comparing on the three reasons to follow a vegan/vegetarian diet: Mitigate Animal Suffering, Counteract Climate Change, Health-Related on the Willingness to try new Foods*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.00	2	11.00	0.88	0.43