

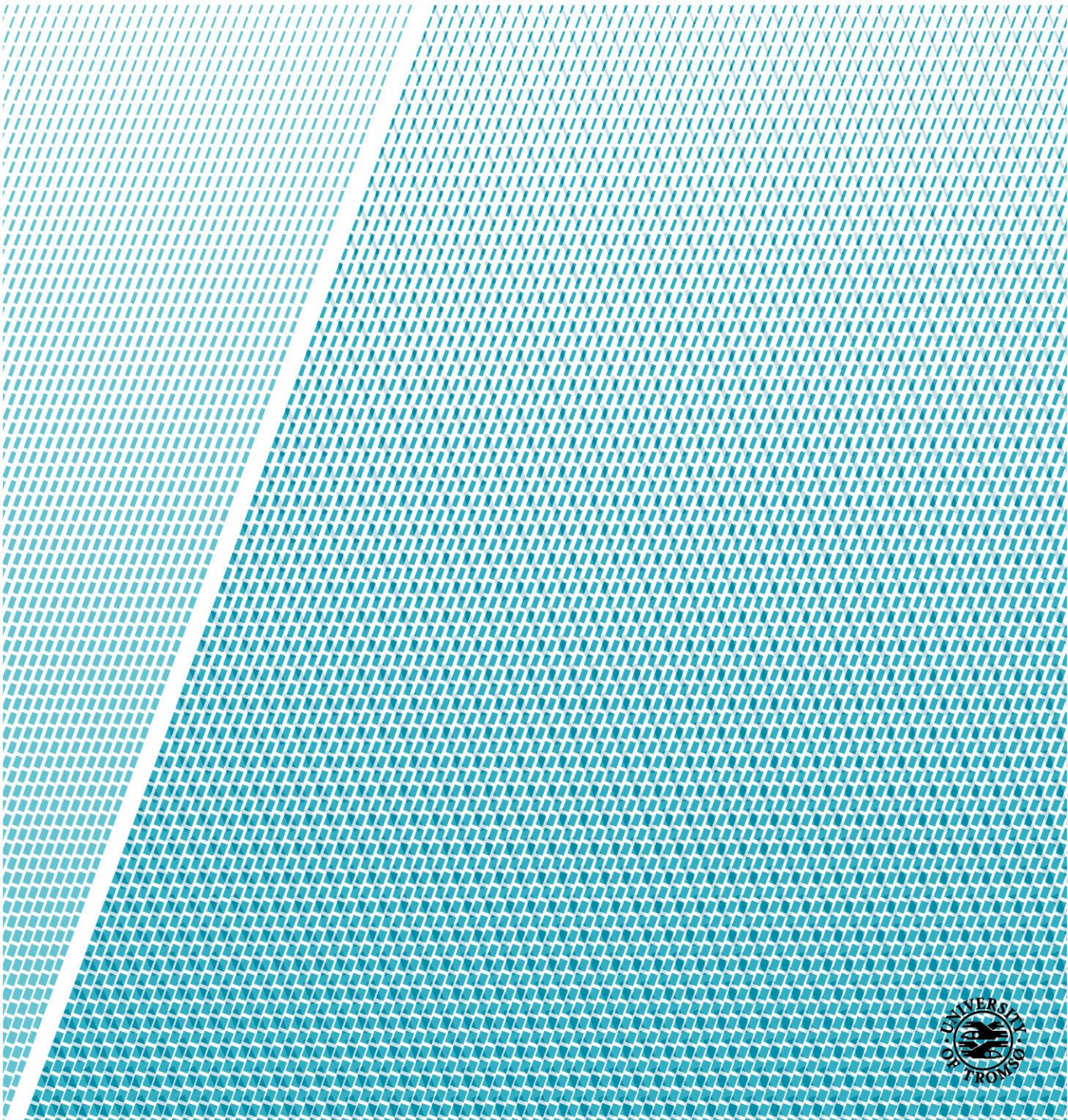


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Using if-then planning to change attitudes towards meat

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Master's thesis in Psychology PSY-3900 – May 2018





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Preface

My journey to this master's program and to this specific research project started in April 2016. I came across an event happening at the University of Oslo with mini presentations about how we can use psychology to solve environmental issues we are facing today. On a personal level, I would say that this was the day that all the pieces came together, and I knew that this was the field of research I wanted to be in.


Once I started my master's in psychology at the University of Tromsø, I reached out to Torsten Martiny-Huenger and proposed a collaboration. Although I was not sure exactly how we would combine our interests, I was hoping that in some way we could take on a perspective that could add to the body of research on how we can reduce meat consumption in society. After diving into what was previously an unknown field to me; if-then planning, our collaboration has resulted in two experiments and the following master's thesis.

As I was initially unknown to the field if-then planning, Torsten provided me with research articles to get me started. Apart from these, all literature searching was done by me, as well as writing content for the questionnaires, collecting data, and writing the thesis itself. During all of this, Torsten has consistently provided me with constructive feedback, suggestions and guidance. In addition to this, I would especially like to thank him for the work he put into coding and uploading the online questionnaires, as well as taking the time to go through statistical analyses with me.

Lastly, I would like to give a big thanks to my classmates. Together we have helped each other, supported each other and lifted each other up! You are all a major reason why I have not only reached the finish line, but can also say that this is a thesis I am proud of. Thank you!



Kelsey Tisthammer
Master's student



Torsten Martiny-Huenger
Thesis adviser

Forfatter: Kelsey Tisthammer

Tittel: Å bruke hvis-så planlegging til å endre holdninger til kjøtt

Masteroppgave i psykologi

Våren, 2018

Sammendrag

I denne studien har vi undersøkt om det å lese hvis-så planer som innhold i en reklameplakat kan endre holdninger til kjøtt. Hvis-så planlegging har normalt blitt brukt som en selv-reguleringsstrategi innenfor områder som forsker på måloppnåelse, men de underliggende mekanismene som gjør strategien effektiv her har også vist seg å kunne fungere innenfor holdningsendring. I to eksperimenter ($N = 124$) har deltakerne enten lest innhold i en reklameplakat som inkluderte en hvis-så plan, eller lest samme informasjon formidlet med en annen setningsoppbygging (kontroll). Vi predikerte at å lese en hvis-så plan ville skape assosiasjoner mellom kjøtt og et negativt konsept, som ville resultere i at holdningsoppbyggingen som helhet ville dreie i en mer negativ retning. Vår hypotese var at deltakere som leste en hvis-så plan i reklameplakaten ville ha mer negative holdninger til kjøtt enn deltakere i kontrollgruppen. Vi fant ikke støtte for hypotesen i resultatene fra de to eksperimentene. Denne forskningen bidrar til en bedre forståelse og kartlegging av mulighetene til å bruke hvis-så planlegging som en metode til å endre holdninger. På grunn av at kjøtt er et objekt som det kan være sterke vaner og assosiasjoner tilknyttet til, anbefaler vi at fremtidig forskning undersøker denne metoden videre med andre holdningsobjekter.

Nøkkelord: holdningsendring, atferdsendring, hvis-så planlegging, selv-regulering

Author: Kelsey Tisthammer

Title: Using if-then planning to change attitudes towards meat

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Abstract

In the present research, we investigated whether processing if-then plans as content in advertisements could induce changes in attitudes towards meat. If-then planning has conventionally been used as a self-regulation strategy in the field of goal attainment, but more current research has suggested that the underlying mechanisms that make them effective in goal attainment can also enable them to be effective in changing attitudes. In two experiments ($N = 124$), participants either processed content in an advertisement presented as an if-then plan or the same information formulated differently (control). We predicted that processing if-then plans would create associative links between meat and a negative concept, biasing the attitude construction more negatively and resulting more negative attitudes towards meat. In both experiments we hypothesized that participants who processed if-then plans would have more negative attitudes towards meat in comparison to the control condition. Results found no significant differences in attitudes towards meat. This research contributes to a better understanding of the potential of if-then planning as a method to change attitudes. Due to meat being an attitudinal object that might be affiliated with stronger habitual behavior than other food types, we suggest that future research investigates this method with less habitually associated attitude objects.

Keywords: attitude change, behavioral change, implementation intentions, self-regulation

Using if-then planning to change attitudes towards meat.

There is a general consensus that human consumption of meat has a negative impact on the environment (McMichael, Powles, Butler, & Uauy, 2007). The supporting research provides evidence from multiple perspectives, but often the aspect that is emphasized is in relation to global greenhouse-gas (GHG) emissions (Hedenu, Wirsenius, & Johansson, 2014). Global agriculture and food production is responsible for approximately 25% of all global GHG emissions, and of this nearly 80% is a result of livestock production (Springmann, Godfray, Rayner, & Scarborough, 2016).

With meat production playing a central role in global GHG emissions, reducing meat consumption has been understood as a necessary step to mitigate the current situation (Bajželj et al., 2014). Despite this, studies show that meat consumption is expected to continue to rise on a global level, and it is specifically in developed countries that we find populations with the highest levels of consumption. The average amount of meat consumed in the UK and US is about 3 times as high as the global average (Macdiarmid, Douglas, & Campbell, 2016).

This current paradox of increased global consumption when there is a need for significant reductions, emphasizes the importance of research on how we can counteract the trend in western societies. In general, changing behavior is difficult (Sheeran & Webb, 2016) and the more habitual it is the more difficult it is to change (Wood & Neal, 2007). From the perspective of reducing meat consumption, eating is a part of our daily lives and therefore considered highly habitual. One study found that as much as half of what we eat is due to habitual behavior (Naik & Moore, 1996). Still, changing behavior is possible. In research on behavioral change our attitudes have been found to play an important role (Ajzen & Fishbein, 2005). Thus, methods that contribute to attitudinal change can be vital in work aiming to change behavior.

Based on this reasoning, we have created two experiments where we attempt to change attitudes towards meat. We investigated whether a method known as if-then planning could change attitudes by creating negative associations to meat. In our experiments we used advertisements to convey the information format (if-then plan format vs. control format), enabling us to test whether processing the statements as content in an advertisement could induce changes in the participants' attitude, and allowing us to compare effects on attitudes depending on the information format. In the following we will first elaborate more on why changing attitudes is important when researching methods to change behavior. After this we will explain the theoretical background of what attitudes are and how their construction enables them to be changed. We will then introduce our method of inducing attitudinal change; if-then planning, by explaining what they are, how they have been conventionally used, and how their underlying mechanisms can make them effective in changing attitudes. Lastly, we will explain in detail how we have attempted to change attitudes using this method in our two experiments, and how this research will contribute to a better understanding of the potential to use if-then planning to change attitudes.

The relationship between attitudes and behavior.

When researching possible solutions to behavioral issues we are faced with today, it is necessary to understand the role that attitudes and attitudinal change play in relation to behavior. Attitudes can be defined as the sum evaluation of an object of thought (Vogel & Wanke, 2016). Simply put this means that our attitudes include our positive and negative associations, our likes and dislikes and whether we consider something to be "good" or "bad". Although the relationship between our attitudes and our behavior is understood to be complex (Vogel & Wanke, 2016), we know that attitudes can influence behavior (Ajzen, 1991). With consumption

being the focus in our experiments, research on the relationship between attitudes and approach/avoidance behavior is of particular interest. Attitudes consist of our likes and dislikes, and we are more inclined to approach what we like and avoid what we dislike. Although this may seem like a natural assumption, Chen and Bargh (1999) provided evidence for this in two studies. Using a lever, participants were asked to pull it towards themselves as an act of approaching positive stimuli and push it away as an act of avoiding negative stimuli. The results showed that when participants were presented with positive stimuli they responded with faster approach behavior and slower avoidance behavior. When presented with negative stimuli they responded with faster avoidance behavior and slower approach behavior. Results such as these provide empirical evidence for an idea that may for many seem intuitive; we approach what we like and we avoid what we don't like. This relationship between attitudes and behavior lays the groundwork for how changing attitudes can have respective effects on behavior.

The theory of attitudes as constructs.

According to one theory an attitude can be visualized as a pattern of associations that are all linked together to create a sum evaluation (see Figure 1). This pattern is continuously reactivated when we encounter or think about the attitude object, and during reactivation it is continuously susceptible to changes. The current situation, context or goal are examples of factors that can have an influence on the pattern of activation (Schwarz, 2007). Most of the time this occurs automatically and with little conscious awareness or control (Duckworth, Bargh, Garcia, & Chaiken, 2002). Links between the associations can be strengthened or weakened depending on how often they are included as relevant. An example could be that every time someone encounters the attitude object "meat" it involves a tasty meal. As a result, the associative link between "meat" and the positive association "tasty" would be strengthened. With

a strong positive association to meat, the pattern of activation would likely be biased more positively, resulting in a more positive sum evaluation and attitude. Simultaneously, weaker links between the attitude object and an association can be strengthened, and new associations can be added. An individual who has a strong positive association between “meat” and “tasty” may begin to associate “meat” with “slaughterhouses” and a new associative link between “meat” and the negative association “disgust” could become strengthened. Reactivation of this negative association would result in the attitude towards meat becoming biased more negatively and affecting the sum evaluation. In other words, attitudes are evaluative judgments that are constructed as patterns of activation, therefore they are continuously being recreated depending on which associative links that are activated.

Continuous reactivation between the same associative links will create stronger attitudes. When we hear that someone has a strong attitude towards an object, part of what we might assume this means is that they can communicate with immediacy what their attitudes are. This is also in line with the definition of a strong attitude; that they are highly accessible in memory. High accessibility in memory is one of the reasons why strong attitudes are better predictors of behavior (Ajzen & Fishbein, 2005).

This theory of attitudes as constructs lays the groundwork for a fundamental understanding of how attitudes can be changed. We will use the theory of attitudes as constructs to argue that the underlying mechanisms of if-then planning can be an effective method used to change attitudes.

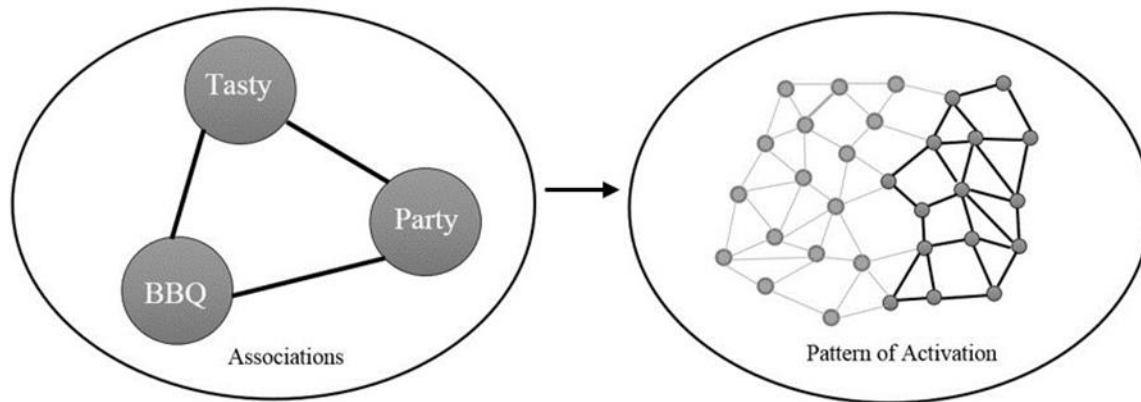


Figure 1. A visual representation of how an attitude is constructed, consisting of a pattern of activation that creates a current sum evaluation.

If-then planning.

As previously stated, in the present research we will investigate whether if-then planning can be used to change attitudes towards meat when processed as content in an advertisement. The following will begin by introducing if-then planning in general, what it is and how it has conventionally been used in the majority of research. After this we will present more current research that has tested whether the underlying mechanisms that make if-then planning effective as self-regulation strategies in goal-attainment, can also make them effective in changing attitudes. Lastly, we will explain how we in the present experiments intend to take the more current research a step further and change attitudes towards meat by presenting the if-then plans as content that is processed in an advertisement, without participants committing to a goal or the plan as a self-regulation strategy.

Many of us are familiar with wanting to make a change in our lives and setting goals in order to achieve this change. What many of us also often experience is that despite our desires to reach our goals, very often various obstacles arise that prevent them from happening. The disparity between our goal intentions and our subsequent behavior is known as the intention

behavior ‘gap’ (Sheeran, 2002) and those who fall into this category are often referred to as ‘inclined abstainers’ or ‘unsuccessful intenders’ (Hagger et al., 2016). Common obstacles are failing to remember to get started, failing to get started due to initial reluctance, failure to stay on track, and failing to disengage once it becomes clear that the goal is unattainable (Gollwitzer, 2015). Our goal intentions, meaning the instructions we give ourselves to reach a certain goal (I want to reach Z), have been shown to account for approximately 28% of the variance in goal-directed behavior (Sheeran, 2002). Although many people fail to reach their goals, the existence of the initial goal intention means that some form of motivation is already in place. Thus, interventions that only focus on motivation will likely have a limited effect. As a result, researchers have looked closer at what can be done in addition to having goal intentions and motivation in order to increase the likelihood of reaching our goals. One method to help overcome these obstacles is through the use of an intervention known as if-then planning.

If-then plans are effective verbal self-regulation strategies. Whereas a goal intention has to do with deciding that you want to reach Z, an if-then plan is preparing and planning out specific behavior in situations that are related to Z, thereby increasing the likelihood of reaching Z. An if-then plan might sound like; “If I encounter situation X, then I will respond with Y” (Gollwitzer, 1999). Here X is a specific critical cue that is paired with the specific goal-directed response Y. One meta-analysis concluded that approximately one hundred studies using if-then planning had found a medium to large effect on increased rate of goal attainment (Gollwitzer & Sheeran, 2006). Furthermore, Papiés, Aarts, & De Vries (2009) found that the associations created from if-then planning were strong and would stay associative and stable over time. The literature on if-then planning has presented its usefulness in a broad range of areas, spanning from health, academic and interpersonal domains. In all of these domains, empirical research

supports that the use of if-then plans to help us overcome our obstacles and close the intention behavior ‘gap’ (Gollwitzer, 2015).

The effectiveness that these studies have found can be explained based on the premise that controlled conscious thought can lead to automatic action. If-then plans improve a person’s perceptual readiness for specified cues and to perform the behavioral response (Gollwitzer, 2014). Although we consciously make if-then plans, over time our behavioral responses should become automatic and non-conscious (Orbell & Verplanken, 2010), because the presence of cues increases automaticity (Webb, Sheeran, & Luszczynska, 2009). This hypothesis is based on studies that have shown features of automaticity such as immediacy, efficiency and non-conscious involvement (Gollwitzer, 2015).

To explain this effectiveness, Martiny-Huenger, Martiny, Parks-Stamm, Pfeiffer, and Gollwitzer (2017) have described the simulation theory that can account for the underlying mechanisms, and have also recently extended it for attitudes (Martiny-Huenger & Roth, 2017, in prep.). They argue that the way our brain processes verbal content overlaps with the area of the brain that processes the sensory and motor aspects of the content. Such an overlap in activity strengthens the connections between them. For instance, thinking of the verbal content skiing should also activate the visual area in the brain that is involved with the visual perceptions we associate with skiing, and for those who have had personal experience with this activity; activate the motor area of the brain involved with the actual physical activity of skiing. When we process an if-then plan, we are establishing an association where the specific cue activates the sensory area of the brain, and the specific response activates the motor area of the brain. This creates a perception-action link that generates behavioral automaticity.

Using if-then planning to change stereotypes and attitudes. Although if-then plans are conventionally used to change behavior in the context of goal attainment, the basic mechanisms behind its effectiveness has lead researchers to study whether they can be used in other contexts as well. The associative links created by processing if-then plans should facilitate strengthening of the same links in the attitude construct. This should result in biasing the attitude construction and with it the sum evaluation. These parallels between how attitudes consist of associative links and if-then plans themselves creating associations, makes us question whether if-then plans could be used as effective methods to change attitudes. Some research has already begun to investigate this. Three studies stand out in their ability to provide groundwork in this area with empirical data. The first one focuses on the possibility of changing stereotypes, while the second and third focus on changing attitudes.

In a study from 2008, researchers attempted to reduce automatic stereotyping by using if-then plans. Participants were asked to perform a weapons identification task. This task requires being presented with a black or Caucasian face before being shown either a tool or a weapon, and responding as quickly as possible to whether you saw a tool or a weapon. Prior to the task, all participants were warned about the racial bias that is known to influence responses; seeing black faces typically activates thoughts about threat. Participants were distributed into two conditions, where both conditions were asked to silently say an if-then plan to themselves. Only one condition was given a relevant counterstereotypical if-then plan. These participants were asked to commit themselves to thinking ‘safe’ when responding to the black face, and silently say, “Whenever I see a Black face on the screen, I will think the word “safe”. Their main dependent variable measured misidentified guns as tools and tools as guns. The results found significantly less misidentified tools as guns for those who were asked to say the relevant if-then

plan associating “Black face” with “safe” (Stewart & Payne, 2008). This study adds supportive empirical research to the idea that automatic activation of stereotypes can be controlled with the use of if-then planning.

Hofmann, Deutsch, Lancaster, and Banaji (2010) investigated whether if-then plans could be used to create less positive associations to chocolate, and, as a consequence, could lead to less positive implicit and explicit attitudes towards chocolate. In an online questionnaire, participants were asked to visualize situations where they may be tempted to eat chocolate. They were prompted with one situation where they are in a movie theatre. While visualizing being in the movie theatre, they were told to write down and repeatedly say the following if-then plan to themselves, “If my friend offers me chocolate during the film, I will say no thanks and concentrate on the film”. Their findings indicate that those participants who used if-then planning in such a manner were shown to have reduced their automatic positive approach to chocolate in an implicit association test. There are some issues regarding how this study was executed, with the most notable being that participants in the if-then plan condition were the only ones who were told to create a goal of not eating chocolate. This makes it difficult to draw stronger conclusions. However, despite there being some confounding variables, this research presents interesting groundwork for using if-then planning to change attitudes.

Martiny-Huenger and Roth (2017, in prep.) have studied whether if-then planning can be used to changed attitudes. Specifically, participants were asked to commit to one of two if-then plans linking cupcakes with either a positive or a negative association. Participants wrote down, memorized and visualized either the plan; “Whenever I see a cupcake, then I will think of disgusting fat!” or “Whenever I see a cupcake, then I will think of delicious sweets!”. The main dependent variables measured implicit attitudes towards cupcakes and explicit attitudes towards

cupcakes and houses (control object). Their analyses showed that participants in the condition that committed to the if-then plan with a negative concept had more negative attitudes towards cupcakes than the positive concept condition. This indicates that this is a strategy that can be used to self-regulate one's own attitudes. These findings add to the body of research supporting that the underlying mechanisms behind if-then planning can also have important functions in contexts other than in goal-attainment.

Present research

Given the current global situation of increased meat consumption and the need for methods that can mitigate this, we believe that an emphasis on research on attitudinal change can be an important contribution. The parallels between attitude construction and the associations created through if-then planning, along with previous research showing positive results in this area, leads us to believe that they can be an effective strategy in changing attitudes towards meat.

In two separate experiments, we have tested whether reading and processing an if-then plan as content in an advertisement, without committing to a goal or using it as a personal self-regulation strategy, can change attitudes towards meat. We argue that the underlying mechanisms that make if-then planning effective as personal self-regulation strategies will also create associative links when being read and processed as content in an advertisement.

According to Martiny-Huenger and Roth (2017, in prep.), processing the content creates a perception-action link that does not require an explicit commitment to the plan. Once the associative link has been created, encountering the critical cue from the processed if-then plan should reactivate the association, resulting in the attitude becoming biased in a more negative direction (see Figure 2).

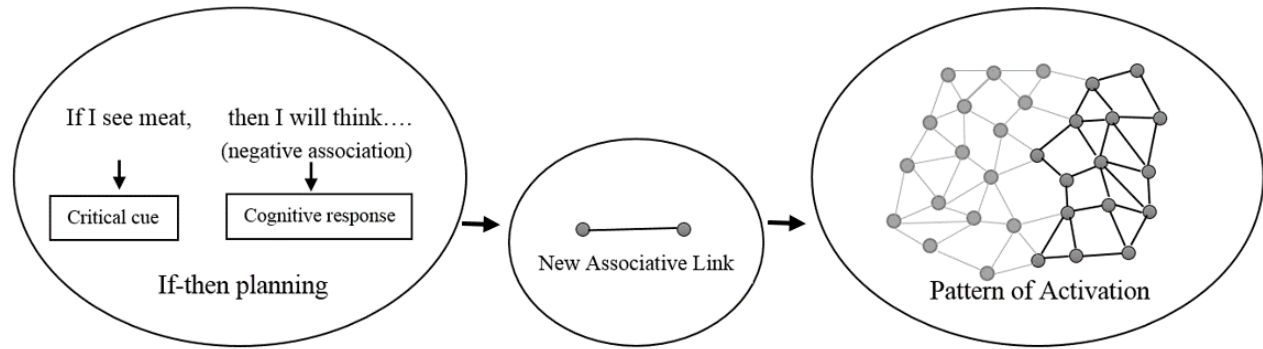


Figure 2: A visual representation of how the underlying mechanisms in if-then planning create associations between a critical cue and cognitive response, and how the new associative link created as a result of this will bias the pattern of activation of the attitude construct.

Experiment 1: If-then plans associating meat with environmental disaster.

In Experiment 1, participants were shown an informational advertisement that presented them with facts about the relationship between meat production and the environment. Depending on whether they were randomly assigned to the if-then plan condition or the control condition, participants either read an if-then plan (“If I see meat, then I will think about environmental disaster”; plan condition) across the advertisement or they received similar information but not in an if-then format (“Environmental disaster and meat are related!”; control condition). The purpose of presenting the relationship between meat and environmental disaster in the form of an if-then plan was to create a new associative link between meat (critical cue) and the negative association environmental disaster (cognitive response). With participants in the control condition being presented with the same content but with alternative wording, this experimental manipulation aims to study whether we can create a stronger negative association when processing an if-then plan, and whether it is strong enough to bias the attitude construction leading to a more negative attitude towards meat.

To investigate if this had an effect, our main dependent variable measured explicit attitudes towards meat (target object) and fruit (control object). Explicit attitudes were measured by participants rating meat and fruit on scales, where each scale was presented with a positive or negative attribute. We hypothesized that participants in the if-then plan condition would show more negative attitudes towards meat than participants in the control condition, and that attitudes towards fruit would not differ between the two conditions.

Method

Participants and design. Data was collected by distributing the survey link on social media, as well as by participants forwarding it to friends and acquaintances. This resulted in data from a total of 53 participants. We excluded 3 participants due to outlier analyses in the advertisement viewing time (see exclusion criteria section below), resulting in a final sample of 50 (30 women, 20 men) between the ages of 20 and 59 ($M = 27.65$, $SD = 7.63$). Out of all the participants, 2% identified as vegan, 4% as vegetarian, 10% as pescatarian and 84% as omnivore. The study was designed with one between-participant factor information format (if-then plan [$n = 25$] vs. control [$n = 25$]) and one within-participant factor stimulus type (meat vs. fruit). Our main dependent variable measured explicit attitudes towards meat (target object) and fruit (control object).

Procedure and materials. The questionnaire was created with the research software jsPsych (De Leeuw, 2015). Given that this was an online study, participants decided themselves the time and place they chose to take it, and what device they used to fill it out. The first thing they saw when opening the study link was the consent form. They were told that it would take approximately 10-15 minutes to complete, and that the purpose of the study was to better understand how advertisements intended to be used for good causes should be structured and

designed to work effectively. They were also informed that participation is voluntary, and they may choose to discontinue at any time without data being saved. We also emphasized that once they had completed the questionnaire their responses would be saved anonymously with no way of tracing it back to them (see Appendix A). We decided not to disclose all of the information about the true purpose of our study, as knowledge about the manipulation could lead to both intentional and unintentional biased responses. All participants went through the same procedure during the questionnaire, differing only during the presentation of the independent variable. After agreeing to participate, they were randomly assigned to one of two conditions; the if-then plan or the control. Once assigned to a condition, the first page they were shown contained an advertisement. The advertisement was our independent variable, and either included critical information presented in an if-then plan format (if-then plan) versus the same information but not in an if-then format (control) (see If-then planning (experimental manipulation) section below, and Appendix B for the two advertisements). After they had seen the advertisement they were given a manipulation check and asked questions regarding the content of the advertisement they had just seen. On the following page they received a distraction task where we asked them to think about something other than the relationship between meat and the environment (see Distraction task below). At this point in the questionnaire, participants were informed that the main part of the study was completed and that we would now collect some background information needed to better evaluate their answers. In actuality, it was at this point that we began with the main dependent variable, where participants rated fruit and meat on scales from 1 to 7. Each scale was presented with a positive or negative attribute (see Explicit attitude measurement below and Appendix E). On the following pages in the questionnaire we included additional variables by creating questionnaires measuring other explicit attitudes. Participants

answered questions about their attitudes regarding concern for environmental protection, attitudes towards human impact on the environment and attitudes towards eating less meat (see Additional measurements and Appendix G and H). Lastly, we included a demographic questionnaire asking participants about their diet (vegan, vegetarian, pescatarian, none of the above), approximately how many days per week they eat meat, as well as age, gender, field of study and current semester (see Appendix F).

If-then plan (experimental manipulation). The experimental manipulation was presented in the form of an advertisement with facts about the negative environmental consequences of meat production, and the subsequent positive impact less meat consumption can have (see Appendix B for the two advertisements; e.g., “About 18% of greenhouse gas emissions are caused by production of meat for us to eat”, “We need to commit to eating less meat!”). Larger text printed diagonally across the advertisement differed between the information formats. In the if-then plan format, participants were presented with the diagonally printed text formulated as an if-then plan, “If I see meat, then I will think of environmental disaster!”. Participants in the control format were presented with the same information, although not in the form of an if-then plan, “Environmental disaster and meat are related!”. The content in the diagonal text we manipulated communicated the same information, differing only in whether or not it was presented as an if-then plan. In other words, the advertisements as well as the questionnaire in its entirety remained identical for all participants except for the experimental manipulation in the diagonal text. In order to control for whether they had processed the if-then plan, participants were immediately presented with a manipulation check asking them what they should think about when they see meat.

Advertisement content questions and manipulation check. The first page following the advertisement asked participants to answer four multiple choice questions. The first three questions were related to the factual content that had been presented to them in the advertisement (see Appendix C; e.g., “Out of the 10 warmest years ever recorded, how many have been registered after the year 2000?”). The purpose of including this measure was to distinguish between participants who had read and remembered the information from those who had not. During the subsequent coding, incorrect responses were coded from 0 to 3. The fourth multiple choice question on this page was the manipulation check. Given that the most important aspect of our experiment was the manipulation in the advertisement, we included a question meant to measure if participants had processed this information. Participants were asked, “What should you think about when you see meat?” and given three options; “Co2”, “climate change” and “environmental disaster”. Their answers were later coded as either being correct 1 or incorrect -1

Distraction task. In order to facilitate a situation where participants would think about something other than the relationship between meat and the environment, we provided them with a distraction task. Between the independent and dependent variables, participants were asked two questions about advertising. These questions focused on advertisement design in general and consisted of open-ended questions regarding what makes an advertisement successful (see Appendix D; e.g., “We would like to know more about your opinion on successful advertising. Please take 2-3 minutes to write down a few sentences on how you think advertisements should be designed”). The topic of the distraction task was related to the cover story of the study being about how advertisements should be designed to be effective. We did not include their responses in the analyses given that the purpose of this task was to distract participants.

Explicit attitude measurement (main dependent variable). As our main dependent variable we measured explicit attitudes towards meat (target object) and fruit (control object). Participants were asked to rate meat and fruit on scales from 1 to 7 (1 = strongly disagree, 7 = strongly agree), where each scale was presented with a positive or negative attribute. Meat and fruit were rated with the same set of 3 positive (appealing, pleasant, delicious) and 2 negative (disgusting, repulsive) attributes. Given that the if-then plan presented in the advertisement was worded as, “If I see...”, we included pictures of the respective target and control objects in both measurements. During the analysis the two negative attributes were reverse scored and combined with the scores from the positive attributes, enabling us to code higher scores as indicating more positive attitudes. With satisfying Cronbach’s alpha values we found internal consistency for the set of attributes used for both the target object (5 items, Cronbach’s alpha = 0.93; $N = 50$) and the control object (5 items, Cronbach’s alpha = 0.60; $N = 50$). As a result, we were able to create a mean score for both attitudes towards meat and attitudes towards fruit to be used in further analyses.

Additional questionnaires. Unlike most research on if-then planning, where participants explicitly commit to a goal and to the if-then plan as a self-regulation strategy, we are testing whether reading an if-then plan as content in an advertisement is sufficient in inducing attitudinal changes. Participants may still have had varying degrees of goals and intentions to eat less meat or protect the environment prior to taking our questionnaire, therefore we measured additional variables related to this. The first was a measurement for explicit attitudes towards environmental protection. Participants were presented with three statements (see Appendix G. e.g., “I think that environmental protection is important!”) and asked to rate them on scales from 1 to 7 (1 = strongly disagree, 7 = strongly agree). One of the statements was reverse scored. A

satisfying Cronbach's alpha value (3 items, Cronbach's alpha = 0.60; $N = 50$) enabled us to combine the responses to a mean score for explicit attitudes toward environmental protection. Higher values indicated more positive attitudes. We also included a stand-alone statement; "I do not think that humans have a negative impact on the environment" with the same scale used in the previous measurements. This item measured attitudes towards human impact on the environment and was reverse scored during coding so that a higher score meant that the participant believed that humans have a negative impact on the environment. Following this questionnaire, we measured explicit attitudes towards eating less meat. This was done in the same procedure with three statements and scales (see Appendix H. e.g., "I'm interested in eating less meat!"). Once we had reverse scored one of the statements we were again able to combine them to a mean score for explicit attitudes towards eating less meat (3 items, Cronbach's alpha = 0.83; $N = 50$). Higher values indicated more positive attitudes. Lastly, we included a demographic questionnaire asking participants about their diet (vegan, vegetarian, pescatarian, none of the above), approximately how many days per week they eat meat, as well as age, gender, field of study and current semester (see Appendix F).

Exclusion criteria. The questionnaire distributed to participants was almost identical across the two conditions, differing only during the presentation of the advertisement. This highlights the importance reading and processing the information in the advertisement is when investigating whether the if-then plan had the intended effect. We controlled for this by measuring time spent viewing the advertisement. Three participants had an advertisement viewing time of less than 10 seconds. When removed, the average viewing time was 57 seconds ($M = 57.66$, $SD = 29.41$). Based on an average viewing time of almost a minute, we argue that a viewing time of less than 10 seconds would not be sufficient to properly read and process the

content and manipulation. We have therefore excluded three participants from the following data analyses.

Results

In this experiment we predicted that participants who processed an if-then plan would have more negative attitudes towards meat (target object) in comparison to participants in the control condition, and for attitudes towards fruit (control object) to remain the same across both conditions.

Main analysis. With the data program SPSS 24, we conducted our main analysis using a repeated measures analysis of variance (ANOVA) with one between-participant factor information format (if-then plan vs. control) and one within-participant factor stimulus type (meat vs. fruit). The dependent variable was liking ratings. We found no main effect for information format $F(1, 49) = 0.52, p > .4, \eta^2 = .01$, not significant (ns). A main effect was found for stimulus type $F(1, 49) = 21.30, p < 0.001, \eta^2 = .30$. Fruit ($M = 6.36, SD = 0.61$) was evaluated more positively than meat ($M = 5.02, SD = 1.78$). We found no significant information format by stimulus type interaction effect $F(1, 49) = 1.17, p > .2, \eta^2 = .02$ (ns). Mean scores for meat ($M = 4.77, SD = 1.96$) and fruit ($M = 6.44, SD = 0.60$) in the if-then plan condition were not significantly different from mean scores for meat ($M = 5.26, SD = 1.57$) and fruit ($M = 6.29, SD = 0.63$) in the control condition.

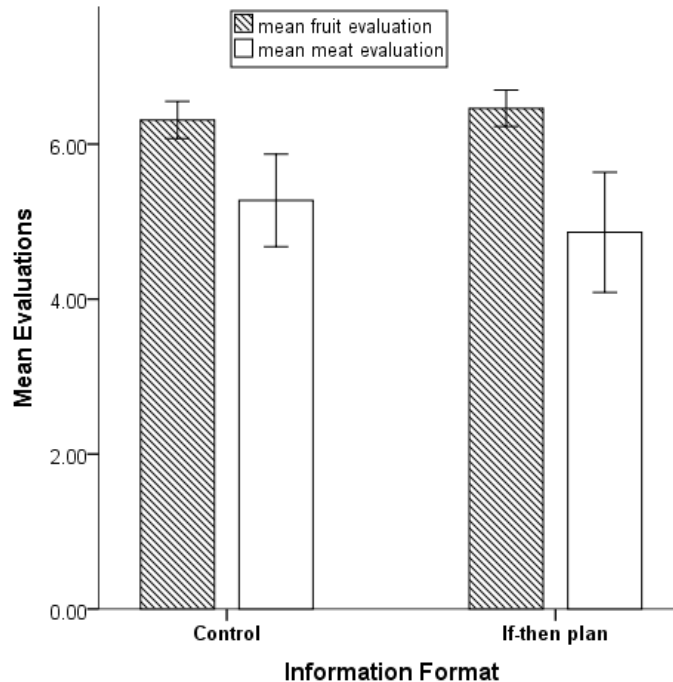


Figure 3. Attitudes towards meat (target object) and fruit (control object) by information format in Experiment 1. Whiskers represent +/- 2 standard error of the mean.

Exploratory analyses. In post-hoc analyses we added covariates to test for interaction effects. In a repeated measures analysis of variance (ANOVA) with a between-participant factor information format (if-then plan vs. control) and one within-participant factor stimulus type (meat vs. fruit), we added attitudes towards environmental protection as a covariate. We found a significant stimulus type by attitudes towards environmental protection interaction effect $F(1, 49) = 5.66, p = 0.02, \eta^2 = .10$. A Pearson's product-moment correlation coefficient was computed to assess the relationship. Attitudes towards environmental protection were significantly negatively correlated with attitudes towards meat ($r = -0.29, n = 50, p = 0.04$), and significantly positively correlated with stimulus type attitudes towards fruit ($r = 0.31, n = 50, p = 0.02$). These results show that participants with more positive attitudes towards environmental

protection had more negative attitudes towards meat and more positive attitudes towards fruit.

We repeated the same tests with variables measuring attitudes towards human impact on the environment, attitudes towards eating less meat, and self-reported days per week that participants eat meat as covariates. Results showed similar significant interaction effects for stimulus type by all covariates. The following will therefore present significance levels for interactions of stimulus type by covariate and the respective correlation coefficients. Stimulus type by attitudes towards human impact on the environment $F(1, 49) = 5.08, p = 0.02, \eta^2 = .09$. Attitudes towards meat correlated negatively, ($r = -0.28, n = 50, p = 0.04$), while there was no significant correlation with attitudes towards fruit ($r = 0.27, n = 50, p = 0.05$). This suggests that participants who had attitudes towards humans having a negative impact on the environment also had more negative attitudes towards meat. Stimulus type by attitudes towards eating less meat $F(1, 49) = 24.06, p < 0.001, \eta^2 = .33$. This correlated significantly with both stimulus types, with the direction being negative for meat ($r = -0.50, n = 50, p < 0.001$), and positive for fruit ($r = 0.44, n = 50, p = 0.001$). Participants who had more positive attitudes towards eating less meat also showed more negative attitudes towards meat and more positive attitudes towards fruit. Stimulus type by self-reported days per week of meat consumption $F(1, 49) = 34.13, p < 0.001, \eta^2 = .48$. This variable was also found to correlate significantly with both stimulus types, where the direction was positive for meat ($r = 0.68, n = 50, p < 0.001$) and negative for fruit ($r = -0.39, n = 50, p = 0.004$). These results indicate that participants who reported higher weekly meat consumption also showed more positive attitudes towards meat and more negative attitudes towards fruit.

Discussion

We hypothesized that participants who processed an if-then plan would show more negative attitudes towards meat (target object) than participants in the control condition, and for attitudes towards fruit (control object) to remain the same across both conditions. With no significant information format by stimulus type interaction, we were unable to find support for our main hypothesis. However, we did find a trend in a direction that supports our hypothesis. Although not statistically significant, descriptively, mean scores for meat in the if-then plan condition were more negative than mean scores for meat in the control condition. These descriptive differences are encouraging, as they show a slight difference between the conditions in the direction we predicted. That being said, a possible alternative explanation for this could be an unequal distribution of non-meat eaters, with the majority having been randomly assigned to the if-then plan condition.

During the process of randomly assigning participants to the two conditions, we did not account for there potentially being a unequal distribution in terms of diet. As a result, 6 of the total of 8 non-meat eaters that participated in the experiment ended up in the if-then plan condition. Because these participants, for various reasons, had already taken meat out of their diet, it is likely that they already held more negative attitudes towards meat. A study from 2001 found through self-report measures that non-meat eaters have more negative beliefs about meat (Povey, Wellens, & Conner, 2001). In 2007 another study built onto these results by researching implicit attitudes, and found that also spontaneous affective reactions resulted in non-meat eaters showing more negative attitudes towards meat (De Houwer & De Bruycker, 2007). This research supports the idea that the 8 non-meat eating participants in our experiment were likely already inclined to evaluate meat negatively when they completed our main dependent variable. Due to

the unequal distribution, these results gave the appearance of participants in the if-then plan condition having slightly more negative attitudes towards meat than the control condition. This initially gave the impression of a trend that supported our main hypothesis.

Interactions in exploratory analyses. With regard to the covariates, we found different interactions between all covariates added and attitudes towards meat and fruit. Two of the covariates; more positive attitudes towards environmental protection and attitudes towards humans having a negative impact on the environment, were both shown to be related to having more negative attitudes towards meat. We also found more positive attitudes towards environmental protection to be related to having more positive attitudes towards fruit. In light of the context and focus of our advertisement being the negative environmental consequences of meat consumption, and that this information was presented to participants across both conditions, this may have increased the likelihood of participants providing such responses. In addition to attitudes towards the environment, we found attitudes towards meat consumption to also be related to attitudes towards meat and fruit. Participants who held more positive attitudes towards eating less meat showed more negative attitudes towards meat and more positive attitudes towards fruit. Higher number of days in self-reported weekly meat consumption was also related to more positive attitudes towards meat and negative attitudes towards fruit.

Environmental disaster as a negative association. Although most people have heard about global warming, only a minority of people make an effort in their lives to mitigate these issues (Gifford, 2011). It seems that when people experience that there are no easy solutions to global climate change, they stop paying attention to the problems (Krosnick, Holbrook, Lowe, & Visser, 2006). One study found that when participants were more informed and educated on the matter, they also felt personally less responsible and showed less concern (Kellstedt, Zahran, &

Vedlitz, 2008). This points in the direction that when people begin to believe that the problems are too big to tackle and that their contributions will have little effect, the result is inaction.

From the perspective of our experiment, it is possible that choosing this as the cognitive response in the if-then plan contributed to a weaker association than we had predicted.

Participants were perhaps already familiar with the issues and were already inclined to distance themselves from such an idea. It is also possible that the concept “environmental disaster” was too broad, as it encompassed many issues that we brought up in the advertisement. This may have resulted in it being too abstract to elicit a quick negative association.

In Experiment 2, we have made changes that should strengthen our intervention by addressing the abovementioned issues. We hope to avoid unequal distribution of non-meat eaters in the two conditions by asking participants about their diets at the beginning of the questionnaire, and randomly distributing them based on their responses. Furthermore, we will change the context of the advertisement and the negative association to one that should quickly elicit a specific negative association, and thereby increase the likelihood of the if-then plan changing attitudes.

Experiment 2: If-then plans associating meat with disgusting slaughterhouses.

Based on the same theoretical background and empirical research that has laid the groundwork for Experiment 1, the purpose of Experiment 2 is to recreate the majority of the first but with some changes that we predict will influence the outcome. The context of the advertisement is the slaughtering process of pigs, cattle and sheep in Norway. Participants in the if-then plan condition read the if-then plan “If I see meat, then I will think of disgusting slaughterhouses!”, while participants in the control condition read “Slaughterhouses are where our meat comes from!”. In Experiment 2 we are interested in investigating whether eliciting

disgust with the negative association can bias the attitude more strongly compared to the more abstract negative association utilized in Experiment 1.

We predict that a negative concept that elicits disgust will bias the attitude construction more negatively based on multiple aspects from research on disgust. In an article by Rozin and Fallon (1987) exclusively on this emotion, they explain how it has been found to be salient in determining people's attitudes towards eating animal products. They state that almost all objects that are considered to be disgusting are related to animals. This could be either by being an animal, an animal part, animal product, resembling any of these or by having had contact with any of these. Considering our modern relationship to meat where consumption is high, it could seem odd that most disgusting objects are related to it. However, we should keep in mind how the majority of us disguise the origin of our food in the way that we prepare it. Seldom do we eat meat that includes distinctive parts such as their skin or head. This ties in with recent research in that domain. In a series of studies by Kunst and Hohle (2016), they found a relationship between levels of disgust and willingness to eat meat and willingness to consider an alternative vegetarian dish. Specifically, in study 2b, participants were presented with a picture of a pork roast that either had the pig's head still visible or had it removed. Those who saw the beheaded pork roast showed less disgust, more willingness to eat the meat, and less willingness to consider a vegetarian alternative. In study 5 participants were shown a menu where the meat dishes either contained the words "beef/pork" or "cow/pig". Those in the "cow/pig" condition showed higher levels of disgust, reduced willingness to eat the meat dishes and increased likelihood of choosing a vegetarian alternative. They concluded that the emotion disgust is an important mediator. Furthermore, in Martiny-Huenger and Roth's (2017, in prep.) study on changing attitudes with if-then planning, they elicited disgust with the cognitive response of thinking about "disgusting

fat”. They predicted that disgust would have this effect based on research on the effects of negative somatosensory responses. They argue that disgusting verbal content (e.g., “disgusting fat”) should activate for example olfactory brain areas known to be involved in processing during actual encounters. This has been documented with the word cinnamon (González et al., 2006).

In addition to the change in context and adding disgust as an elicitation for the cognitive response, Experiment 2 also presents participants with the advertisement (independent variable) a second time. We predicted that repetition should strengthen the process of creating an associative link. Lastly, due to the unequal distribution of non-meat eaters in the two conditions in Experiment 1, we controlled for an equal distribution in Experiment 2 by starting the questionnaire with 3 “lifestyle questions”, including one about their diet. Based on their response to the diet question they were randomly assigned to either the if-then plan condition or the control condition. With these differences and changes taken into account, we maintain the same prediction for Experiment 2 as we had for the first experiment. We hypothesize that participants in the if-then plan condition will show more negative attitudes towards meat than participants in the control condition, and for attitudes towards fruit to be consistent between the two conditions.

Method

Participants and design. Data was collected in two rounds. The first round took place in November and December 2017, when students taking a social psychology course at the University of Tromsø were informed that they could receive course credit for participating in this experiment. After receiving the survey link from their course instructor, a total of 13 students participated. Considering that the course was taught in English and open for international students, all participants were given an English version of the experiment, despite this not necessarily being their native language. The second round of data collection occurred in January

and February of 2018. This time the questionnaire was in Norwegian, as the majority of recipients were native Norwegians. A survey link was sent out via e-mail to 11 different Bachelor's programs at the University of Tromsø. Included in the e-mail was the incentive of having the option to be in the drawing of a gift card that could be used at the local shopping center at a value of 500 NOK. This resulted in the recruitment of 58 participants. Using the same data exclusion criteria as in Experiment 1, we identified 3 participants to be excluded from further analyses. After combining data from both rounds we were left with a final sample of 68 (56 women, 12 men) participants between the ages of 18 and 44 ($M = 24.12$, $SD = 4.77$). Out of all the participants, 4.41% identified as vegetarian, 2.94% as pescatarian and 91.17% as omnivore. The experiment was designed identical to Experiment 1, with one between-participant factor information format (if-then plan [$n = 37$] vs. control [$n = 31$]) and one within-participant factor (meat vs. fruit). Our main dependent variable measured explicit attitudes towards meat (target object) and fruit (control object).

Procedure and materials. The procedure for Experiment 2 was similar to Experiment 1. The questionnaire was created with the same research software as in Experiment 1, and participants were given the same information regarding the purpose of the study. To prevent an unequal distribution of non-meat eaters in either condition, participants were randomly assigned to either the if-then plan condition or the control condition based on their responses to a question about their diet. As in Experiment 1, participants saw the advertisement directly after being assigned to a condition. Between the independent and dependent variables they were given a distraction task. The dependent variable was the same measurement used in Experiment 1. After completing the dependent variable, participants rated on scales how much they agreed with statements related to animal welfare and eating less meat. The study ended with the same

demographic questionnaire used in Experiment 1. In the following we will only highlight differences made in Experiment 2.

Lifestyle questions. In order to prevent an unequal distribution of non-meat eaters in one of the two conditions, participants who had consented to participate were immediately asked 3 “lifestyle questions” that included one about their diet (see Appendix J. e.g., “Are you vegan, vegetarian, pescatarian, none of the above?”). It was based on their response to the diet question that they were randomly assigned to the if-then plan condition or the control condition.

If-then plan (experimental manipulation). Our independent variable was created in the same way as in Experiment 1. The changes made were related to context and subsequent informational content. The advertisement contained factual information on the slaughtering process of pigs, cattle and sheep in Norway (e.g., “Each year approximately 81 million animals are slaughtered for meat”). Larger text printed diagonally across the advertisement was where the manipulation was presented. Participants in the if-then plan condition read the if-then plan; “If I see meat, then I will think of disgusting slaughterhouses!”. Participants in the control condition saw the same advertisement but with the content in the text printed diagonally worded in a different way, “Slaughterhouses are where our meat comes from!”. As in Experiment 1, the content and information remained identical for all participants, differing only in whether the diagonal text was worded as an if-then plan or not (see Appendix I for the two advertisements). In contrast to Experiment 1, this section was followed by a second presentation of the advertisement. Participants were told; “Please take a look at the advertisement again. On the following page you will be asked another question about the content of the advertisement”. After seeing the advertisement they were asked a yes or no question on whether they had noticed any changes in the second showing of the advertisement compared to the first.

Distraction task. As in Experiment 1, the distraction task consisted of two open-ended questions about how advertisements should be designed to be effective. This time we emphasized the topic of advertisements for good causes, rather than advertisements in general. We listed examples of various causes (don't drink and drive, anti-smoking, environmental issues) to increase the likelihood of participants thinking about something other than the relationship between meat and disgusting slaughterhouses (see Appendix L).

Explicit attitude measurement (main dependent variable). The main dependent variable measuring explicit attitudes towards meat (target object) and fruit (control object) was the same measurement used in the Experiment 1. With satisfying Cronbach's alpha values, we found internal consistency for the set of attributes used for both the target object (4 items, Cronbach's alpha = 0.77; N = 68) and the control object (4 items, Cronbach's alpha = 0.46; N = 68). As a result, we were able to create a mean score for both attitudes towards meat and attitudes towards fruit to be used in further analyses.

Additional questionnaires. We included two of the same additional variables used in Experiment 1; attitudes towards eating less meat (3 items, Cronbach's alpha = 0.76; N = 68) and the demographic questionnaire. Cronbach's alpha for attitudes towards meat was satisfying, enabling us again to combine them to a mean score. In addition to these we also measured attitudes towards animal welfare. We reasoned that given the context of the slaughtering process and eliciting disgust, it would be important to control for the degree to which participants consider animal welfare to be important. This could be interpreted as a form of goal or intention they have in their daily lives. Participants were presented with three statements (see Appendix M. e.g., "Animal welfare is important to me!") and asked to rate them on scales from 1 to 7 (1 = strongly disagree, 7 = strongly agree). One of the statements was reverse scored. A satisfying

Cronbach's alpha value (3 items, Cronbach's alpha = 0.77; $N = 68$) enabled us to combine the responses to a mean score where higher values indicated more positive attitudes.

Exclusion criteria. We have included the same data exclusion criteria used in Experiment 1. Three participants had an advertisement viewing time of less than 10 seconds. When removed, the average viewing time was 54 seconds ($M = 54.05$, $SD = 71.63$), close to average time in Experiment 1 ($M = 57.66$). In the following analyses we have reduced our total participant number from 71 to 68.

Results

In the present experiment, we predicted that participants who processed an if-then plan would have more negative attitudes towards meat (target object) in comparison to participants in the control condition, and for attitudes towards fruit (control object) to remain the same across both groups.

Main analysis. Using the same method of analysis as in Experiment 1, we did not find a main effect for information format $F(1, 67) = 1.62$, $p > .2$, $\eta^2 = 0.02$ not significant (ns). A main effect was found for stimulus type $F(1, 67) = 30.07$, $p < .001$, $\eta^2 = .31$. Fruit ($M = 6.41$, $SD = 0.58$) was evaluated more positively than meat ($M = 5.63$, $SD = 1.10$). We found no significant information format by stimulus type interaction effect $F(1, 67) = 1.86$, $p > .1$, $\eta^2 = .02$ (ns). Mean scores for meat ($M = 5.81$, $SD = 0.82$) and fruit ($M = 6.41$, $SD = 0.63$) in the if-then plan condition were not significantly different from mean scores for meat ($M = 5.41$, $SD = 1.34$) and fruit ($M = 6.41$, $SD = 0.52$) in the control condition.

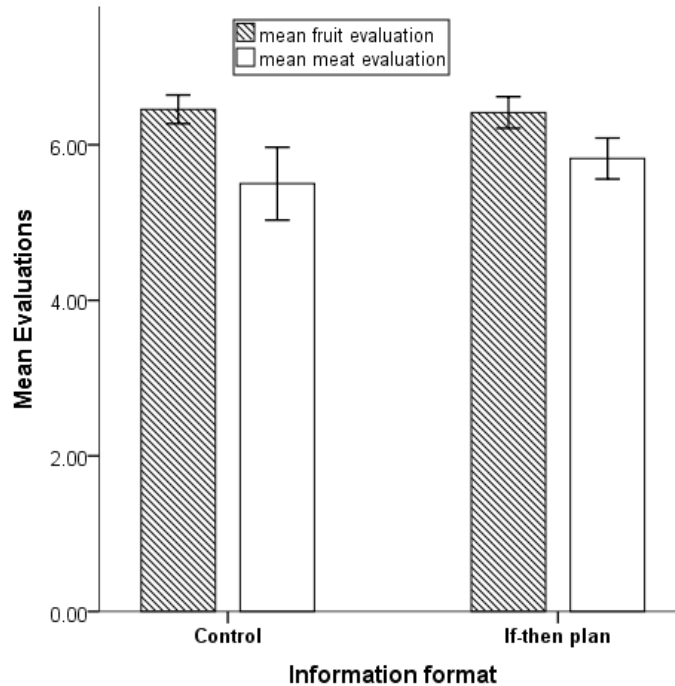


Figure 4. Attitudes towards meat (target object) and fruit (control object) by information format in Experiment 2. Whiskers represent +/- 2 standard error of the mean.

Exploratory analyses. As in Experiment 1, we added covariates in post-hoc analyses to test for interaction effects, resulting in significant interactions with both stimulus type by attitudes towards eating meat and self-reported weekly meat consumption. In the following, we will list each covariate found to interact significantly, followed by their respective Pearson's product-moment correlation coefficients. We will end with the covariate that did not interact significantly; attitudes towards animal welfare. Stimulus type by attitudes towards eating less meat $F(1, 67) = 7.05, p = 0.01, \eta^2 = .098$. Attitudes towards eating less meat correlated negatively with attitudes towards meat ($r = -0.27, n = 68, p = 0.02$), but was not significantly correlated with attitudes towards fruit ($r = 0.11, n = 68, p > 0.3$). These results indicate that participants who were more positive to eating less meat also had more negative attitudes towards

meat. Stimulus type by self-reported weekly meat consumption $F(1, 67) = 15.53, p < 0.001, \eta^2 = .19$. Weekly meat consumption was positively correlated with attitudes towards meat ($r = 0.45, n = 68, p < 0.001$), and not significantly correlated with attitudes towards fruit ($r = -0.06, n = 68, p > 0.6$). This shows that participants who reported higher number of days per week of meat consumption also showed more positive attitudes towards meat. Lastly, we found no significant interaction effect for stimulus type by attitudes towards animal welfare $F(1, 67) = 1.13, p > 0.2, \eta^2 = .01$.

Discussion

In Experiment 2 we predicted the same outcome as in Experiment 1, and hypothesized that participants who processed an if-then plan would show more negative attitudes towards meat (target object) compared to participants in the control condition, and for attitudes towards fruit (control object) to remain the same across both conditions. We found no significant information format by stimulus type interaction effect, and therefore did not find support for our hypothesis.

Interactions in exploratory analyses. In exploratory analyses we found interactions between our two covariates measuring attitudes related to meat consumption and our main dependent variable measuring attitudes towards meat. Participants who had more positive attitudes towards eating less meat also showed more negative attitudes towards meat itself. This was also the case for the actual amount of self-reported meat consumed weekly, where the more meat people reported consuming was related to having more positive attitudes towards meat. These results reflect what we would expect; attitudes that have to do with meat consumption are also found to be related to attitudes towards meat. Furthermore, the more abstractly the covariate was related to actual meat consumption, the weaker it was found to be related to attitudes towards meat.

General discussion

Previous research on if-then planning has indicated that the underlying processes that make them effective in the area of goal attainment can also enable them to be used as a method to change attitudes. In these studies participants have explicitly committed to the if-then plans and used them as a self-regulation strategy. With our two experiments we aimed to take previous research on the use of if-then planning as a method to change attitudes a step further. We tested whether they could induce attitudinal changes when processed as content in an advertisement, without participants committing to a goal or using the if-then plan as a self-regulation strategy. With the current situation of western societies on average consuming meat three times the global average (Macdiarmid et al., 2016), despite the need for significant reductions in order to cut global GHG emissions (Bajželj et al., 2014), we argued that a necessary attitude object to contribute to research on changing should be meat. Similar to related research (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011), we designed two experiments attempting to change attitudes towards meat by presenting participants with if-then plans as content in advertisements linking meat with a negative association. We hypothesized that participants in the if-then plan condition would show more negative attitudes towards meat (target object) than participants in the control condition, and that attitudes towards fruit (control object) would not differ between the two conditions.

We made changes in Experiment 2 based on the results from Experiment 1 that we believed would strengthen the methodology. The context of the advertisement in Experiment 1 was possibly too abstract, and an environmental perspective meant to activate the cognitive response of thinking about environmental disaster would not function well as a negative association. This was changed to a context of the slaughtering process of animals for meat and

the cognitive response of thinking about disgusting slaughterhouses. Disgust is a strong emotion and was also the emotion elicited in the results found in Martiny-Huenger and Roth's (2017, in prep.) research. Therefore we argued that this change should increase the likelihood of creating a negative associative link in an if-then plan. In addition to this, in order to strengthen the negative association, we repeated the presentation of our experimental manipulation by showing the advertisement a second time. Neither of our two experiments found evidence to support our main hypothesis.

Lack of evidence to support our main hypothesis could initially be thought to be related to our measurements and if they were working as we intended. However, as it appears intuitive that being positive towards eating less meat would be related to having more negative attitudes towards meat, and consuming more meat would be related to having more positive attitudes towards meat, finding these relations and replicating the results in Experiment 2 provides evidence that the measurement methods were adequately designed, and measured what they were intended to measure. Nevertheless, we think that there could be other reasons why we did not find support for our main hypothesis.

In both experiments, participants in both conditions were all presented with almost identical questionnaires. Our only manipulation was whether or not the association between meat and the negative concept was worded as an if-then plan. This methodology allows us to control for any differences in the dependent variable and additional measurements between the two conditions being due to this single manipulation. We did not find any significant differences in attitudes towards meat between the two groups, but we think there could be a number of possible factors that contributed to this outcome. In the following we will present and discuss issues that we believe might have contributed to the lack of supporting evidence for our main hypothesis,

and why taking them into consideration in future research could contribute to a better understanding of the potential of using if-then plans to induce attitudinal changes.

If-then planning and habitual behavior.

Certain factors have been found to facilitate the strength of the effect if-then planning can have on behavior. The strength of the habit an individual is trying to change is highly relevant in terms of the effect the if-then plan might have (Hagger & Luszczynska, 2014). Research has indicated that the stronger the habit is, the less effective the intervention will be. Likewise, if the habit is weaker, the intervention will have a stronger effect. A common habit people have a desire to change is smoking, which is what a study from 2009 used in order to research whether habit strength facilitated the effect of if-then planning. Based on high school students between the ages of 17 and 21, this study found that if-then plans were only effective if the participants had weak to moderate smoking habits (Webb et al., 2009). However, in a more recent research article it has been suggested that we are not helpless against strong habits. Instead it's been suggested that when faced with strong habits one would like to change, an individual must form even stronger implementation intentions (Gollwitzer, 2015).

From the perspective of our two experiments, it is possible that the habits and associations meat eaters have to meat are too strong for if-then planning to induce changes in, especially when processed as content in advertisements. Meat is an attitudinal object directly related to eating, which as a daily occurrence is often associated with strong habits (Naik & Moore, 1996; Wood & Neal, 2007). Furthermore, meat might be considered a specific type of food that for multiple reasons might be affiliated with stronger habitual behavior than other food types. Studies have shown that meat, in particular, has strong cultural and traditional significance (Leroy & Praet, 2015). Much of what we eat, including meat, serves functions beyond nutritional

value, spanning into domains such as social norms, status and pleasure (Rozin, 2005). Moreover, studies have shown that habits pertaining to eating meat is something that people will acknowledge and explicitly state a personal reluctance to changing (Macdiarmid et al., 2016). One study found that, in spite of recognizing personal responsibility for, among other things, the environment and animal welfare, participants in the study had no desire to change their own dietary habits (Graça, Calheiros, & Oliveira, 2014). This research underlines the strength of the habits associated with meat eating.

In light of this and the abovementioned research on if-then planning and habit strength, we would argue that the strong habits associated to meat could have been an important factor that contributed to our results. It is possible that by replacing the attitudinal object that we attempted to change with one associated with less strong habits we could achieve a better understanding of the potential of using if-then planning to change attitudes. The results as they stand now leave questions surrounding whether the method itself is not sufficient in changing attitudes when processed as advertisement content, or if it was the attitude object itself that interfered with the method. Therefore, we would suggest that future research investigates this method further with less habitually associated attitude objects.

If-then planning and goal commitment.

In research using if-then planning as it has been conventionally used as an intervention to close the intention behavior ‘gap’, participants are asked to commit to the overarching goal that the intervention is meant to help them reach. Furthermore, the if-then plan is often referred to as a “verbal plan”, and participants are asked to either say it out loud, whisper it, write it down, think about it, or perform a combination of these tasks. In the three research articles that provide the first studies on using if-then planning to change stereotypes and attitudes, they also

ask participants to commit to a goal and the if-then plan. Steward and Payne (2008) asked participants in the context-relevant if-then plan condition to firmly commit to the task at hand, and to silently say the if-then plan to themselves. Hofmann et al. (2010) had their participants visualize being in situations relevant to the if-then plan while simultaneously writing the plan down and saying it to themselves. Lastly, Martiny-Huenger and Roth (2017, prep.) asked participants to first commit to the goal of eating healthier, and then write down, memorize and visualize the if-then plan.

We included variables measuring a form of goal or intention as attitudes in both experiments, and we intended for these to measure any potential preconceived differences in the degree to which participants considered such issues to be of importance. In Experiment 1 these were attitudes related to the environment and attitudes towards eating less meat, and in Experiment 2 we also measured attitudes towards eating less meat as well as attitudes towards animal welfare. Nevertheless, we did not make any explicit goals or commitments such as conventional if-then planning research and the three studies changing stereotypes and attitudes. We intentionally designed both of the experiments without these aspects as we wanted to take the research on if-then planning a step further and investigate the possibility of changing attitudes without a commitment or goal. This was done on the basis that the underlying mechanisms would still facilitate overlapping activation in the brain areas that would strengthen the connections between them (Martiny-Huenger & Roth, 2017, in prep.). Therefore, we are not discussing this as a limitation or an aspect that should be changed in future research, rather we are acknowledging that excluding this in our methodology could potentially be a major factor as to why we did not find evidence to support our main hypothesis.

Third condition.

In these experiments we created two conditions where the only difference between them was the manipulation during the presentation of the advertisement. This meant that all participants were provided with the context and related information that was included in addition to the manipulation itself. It is possible that the context and information changed attitudes equally in both conditions. From the purpose of measuring attitudinal change in general, it could have been of interest to include a third condition where participants would not be provided with the information pertaining to the manipulation. This could provide a better overview and understanding of the effects on attitudes in the experiments. As the experiments stand now, we are not able to measure whether attitudes may have been changed equally in both conditions and whether this is the reason why we did not find difference in attitudes between them. Due to time restraints we did not have the capacity to include a third condition. However, if it is the case that participants across both conditions have had their attitudes changed, this would not have had an influence on our results and main hypothesis as it would not be due to the manipulation we tested. Nevertheless, to increase the ability to interpret the results, future research might consider including a third condition where participants are not presented with the informational content that is affiliated with the manipulation in the advertisement.

Conclusion

In the two experiments we have investigated whether if-then planning can be used as a method to change attitudes towards meat, without participants committing to a goal or using the plan as a self-regulation strategy. Our experiments did find evidence to support our main hypothesis. The choice of meat as the attitudinal object stemmed from an environmental perspective, as research has shown that western societies need to reduce meat consumption for us

to cut global GHG emissions. However, our results in the two experiments indicate that the object of choice may have had such strong habits associated with it that it is difficult to draw strong conclusions about the potential of the method.

We used advertisements as the format to present the if-then plans, as this would facilitate a situation where they would be read and processed but not require a commitment from the participants. In addition to this, it fit well with a cover story where participants would understand that they needed to process the information thoroughly. However, we recognize the potential implications of testing the use of advertisements in this way. There is the possibility for marketing industries to use such methods to influence broad audiences without their explicit knowledge. In our two experiments, participants were informed that we were interested in advertisements for good causes, making it clear that reducing meat consumption was considered as such. Having tested the method with a good cause, and considering our results, it seems unlikely that marketing industries could use such a method to change the attitudes of their audiences.

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Appendix A: Consent form in Experiment 1 and 2

Informasjon om studien

Velkommen til denne web-baserte spørreundersøkelsen om evaluering av reklame. Studiet blir gjennomført av mastergradstudent i psykologi, Kelsey Tisthammer, i samarbeid med førsteamanuensis Torsten Martiny-Huenger. Målet med studiet er å forstå hvordan reklame med godt formål bør struktureres og designes for å virke effektivt.

Spørreundersøkelsen tar ca. 20 minutter å gjennomføre. Det er helt frivillig å delta, svarene blir behandlet anonymt og det blir ikke samlet inn informasjon som kan identifisere deltagerne. Innsamlet data vil bli behandlet i henhold til retningslinjene fra Norsk senter for forskningsdata (NSD).

Dersom du har noen spørsmål, ta gjerne kontakt med Kelsey Tisthammer som er ansvarlig for studiet på e-post: kti003@post.uit.no

Hvis du samtykker og ønsker å delta må du krysse av i boksen under (hvor det står at du forstår innholdet og ønsker å delta.)

Ja, jeg forstår innholdet og målet med studiet og ønsker å delta.

Appendix B: Advertisements (experimental manipulation) used in Experiment 1.

1) If-then plan condition

The advertisement features a central image of a roasted meat dish with a sprig of rosemary. The background is a gradient from light beige to a darker, hazy image of an industrial facility with smokestacks. The text is arranged in several blocks, with a prominent diagonal headline.

CO2 nivået i atmosfæren er nå over 4 deler per 10000

Dette er faktisk en økning på nesten 50% de siste 150 årene!

I løpet av de 134 årene vi har målt temperaturen på jorden, har 9 av de 10 varmeste årene blitt registrert siden år 2000

Hvis jeg ser kjøtt, så skal jeg tenke på miljødelegger!

Politikere har snakket om at de er bekymret i flere tiår nå, men hva om du selv kunne ta ansvar hjemme ved middagsbordet?

Omtrent 18% av klimagassutslippene kommer fra produksjon av kjøtt til mat.

På et globalt nivå vil en overgang til et kosthold med lite kjøtt redusere kostnader relatert til klimaendringer med 50% innen 2050.

Vi er nødt til å ansvar og forplikte oss til å spise mindre kjøtt!

2) Control condition.



CO2 nivået i atmosfæren er nå over 4 deler per 10000

Dette er faktisk en økning på nesten 50% de siste 150 årene!

I løpet av de 134 årene vi har målt temperaturen på jorden, har 9 av de 10 varmeste årene blitt registrert siden år 2000

Kjøtt og miljødelegger henger sammen!

Politikere har snakket om at de er bekymret i flere tiår nå, men hva om du selv kunne ta ansvar hjemme ved middagsbordet?

Omtrent 18% av klimagassutslippene kommer fra produksjon av kjøtt til mat.

På et globalt nivå vil en overgang til et kosthold med lite kjøtt redusere kostnader relatert til klimaendringer med 50% innen 2050.

Vi er nødt til å ansvar og forplikte oss til å spise mindre kjøtt!

Appendix C: Advertisement content questions and manipulation check in Experiment 1

Du vil nå bli bedt om å svare på noen spørsmål om innholdet i reklameplakaten. Vennligst svar så godt du kan.

Av de 10 varmeste årene vi har målt, hvor mange av disse har blitt registrert etter år 2000?

- a) 5 b) 3) c) 9

Omtrent hvor stor andel av drivhusgassutslippene kommer fra kjøttindustrien?

- a) 34% b) 18% c) 7%

Omtrent hvor mye ville en overgang til et kosthold med lite kjøtt redusere kostnader relatert til klimaendringer?

- a) 20% b) 50% c) 75%

Hva skal du tenke på hvis du ser kjøtt?

- a) klimaendringer b) miljødelegelser c) CO2

Appendix D: Distraction task in Experiment 1

Vi er interessert i å vite mer om hvordan reklameplakater med godt formål bør struktureres for å virke effektivt og vil nå stille 3 spørsmål om design av reklameplakater. Vennligst svar så godt du kan.

Vi vil gjerne vite mer om hva du mener gjør en reklameplakat bra. Vennligst bruk 2-3 minutter på å skrive noen setninger om hvordan du mener en reklameplakat burde designes.

Tenk tilbake på en reklameplakat du har likt spesielt godt.

Hva var reklamen for?

Hva var det ved reklameplakaten som gjorde at du likte den?

Appendix E: Explicit attitude measurement (main dependent variable) in Experiment 1 and 2

Takk for dine tilbakemeldinger om reklameplakater! Hoveddelen av undersøkelsen er nå ferdig, men vi trenger litt bakgrunnsinformasjon om deg for å kunne evaluere svarene dine.

Vi begynner med en noen enkle evalueringer av matkategorier:

På en skala fra 1 til 7, i hvor stor grad er du enig i følgende utsagn:

Frukt er fristende

Uenig 1 2 3 4 5 6 7 Enig

Frukt er motbydelig

Uenig 1 2 3 4 5 6 7 Enig

Frukt er fornøyetlig

Uenig 1 2 3 4 5 6 7 Enig

Frukt er vemmelig

Uenig 1 2 3 4 5 6 7 Enig

Frukt er velsmakende

Uenig 1 2 3 4 5 6 7 Enig

Kjøtt er fristende

Uenig 1 2 3 4 5 6 7 Enig

Kjøtt er motbydelig

Uenig 1 2 3 4 5 6 7 Enig

Kjøtt er fornøylig

Uenig 1 2 3 4 5 6 7 Enig

Kjøtt er vemmelig

Uenig 1 2 3 4 5 6 7 Enig

Kjøtt er velsmakende

Uenig 1 2 3 4 5 6 7 Enig

Appendix F: Demographic questionnaire in Experiment 1 and 2 (Diet question moved to “Lifestyle questions” in Experiment 2)

Er du...?

Veganer

Vegetarianer

Pescetarianer

Ingen av delene

Hvor mange dager i gjennomsnitt spiser du kjøtt per uke?

0 1 2 3 4 5 6 7

Vennligst gi en kort forklaring på hva du tror denne spørreundersøkelsen handlet om. La du merke til noe som er verdt å nevne?

Alder?

Kjønn?

Hva studerer du og hvilket semester er du på? (Skriv «ingen» hvis du ikke er student).

Appendix G: Explicit attitudes towards environmental protection and the stand-alone attitude towards humans impact on the environment in Experiment 1.

Vi vil nå be deg evaluere noen utsagn som omhandler miljøet:

På en skala fra 1 – 7, i hvor stor grad er du enig i følgende utsagn:

Jeg synes det er viktig å ta vare på miljøet.

Uenig 1 2 3 4 5 6 7 Enig

Å ta vare på miljøet er noe som burde være viktig for alle!

Uenig 1 2 3 4 5 6 7 Enig

Jeg personlig er ikke opptatt av miljøet.

Uenig 1 2 3 4 5 6 7 Enig

Jeg tror ikke mennesket har en negativ påvirkning på miljøet.

Uenig 1 2 3 4 5 6 7 Enig

Appendix H: Explicit attitudes towards eating less meat in Experiment 1 and 2**Vi vil nå be deg evaluere noen utsagn som omhandler mat:**

Jeg kunne ikke tenke meg å spise mindre kjøtt.

Uenig 1 2 3 4 5 6 7 Enig

Jeg er opptatt av å spise mindre kjøtt.

Uenig 1 2 3 4 5 6 7 Enig

Jeg synes at alle burde være opptatt av å spise mindre kjøtt!

Uenig 1 2 3 4 5 6 7 Enig

Appendix I: Advertisements (experimental manipulation) used in Experiment 2

1) If-then plan condition



DETTE BØR DU VITE!

Hvert år blir det slaktet ca. 81 millioner dyr til kjøttproduksjon i Norge.

I slakteprosessen blir dyrene først bedøvet.

Griser bedøves enten ved å få satt en tang med elektroder over hodet, eller ved å senkes ned i et gasskammer fylt med CO2.

HVIS JEG SER KJØTT, SÅ SKAL JEG TENKER PÅ MOTBYDELIGE SLAKTERIER

Storfe og sauer bedøves enten med tang med elektroder over hodet, eller med boltspistol som skyter et prosjektil inn i hjernen.

Deretter blir alle heist opp etter bakbeina, halspulsårene skjæres over og de tappes for blod.

2) Control condition



DETTE BØR DU VITE!

Hvert år blir det slaktet ca. 81 millioner dyr til kjøttproduksjon i Norge.

I slakteprosessen blir dyrene først bedøvet.

Griser bedøves enten ved å få satt en tang med elektroder over hodet, eller ved å senkes ned i et gasskammer fylt med CO2.

MOTBYDELIGE SLAKTERIER ER HVOR KJØTTET VÅRT KOMMER FRA!

Storfe og sauer bedøves enten med tang med elektroder over hodet, eller med bolt pistol som skyter et prosjektil inn i hjernen.

Deretter blir alle heist opp etter bakbeina, halspulsårene skjæres over og de tappes for blod.

Appendix J: Lifestyle questions in Experiment 2

Først vil vi gjerne stille deg noen livsstilsspørsmål. Vi ønsker å undersøke om disse svarene kan relateres til forskningen om evaluering av reklame.

Trener du mer enn 1 time per uke?

Ja

Nei

Er du...

Veganer

Vegetarianer

Pescetarianer (spiser ikke kjøtt, spiser fisk)

Ingen av delene

Bruker du sosialemedier (f.eks. Facebook, Instagram) daglig?

Ja

Nei

Appendix K: Advertisement content questions in Experiment 2

Du vil nå bli bedt om å svare på noen spørsmål om innholdet i reklameplakaten. Vennligst svar så godt du kan.

Ca. hvor mange dyr blir slaktet i norsk kjøttproduksjon hvert år?

10 millioner

750 000

81 millioner

Hvilke dyr blir bedøvet?

Gris

Storfe og sau

Gris, storfe og sau

Hvordan blir gris, storfe og sau drept?

De blir skutt

Halspulsårene skjæres over

De blir gasset

Appendix L: Distraction task in Experiment 2

Vi er interessert i å vite mer om hvordan reklameplakater med godt formål bør struktureres for å virke effektivt, og vil nå stille deg to spørsmål om design av reklameplakater. Vennligst svar så godt du kan.

Tenk tilbake på en reklameplakat for et godt formål du har sett. Tema kan for eksempel være: alkohol og bilkjøring, antirøyking eller miljøhensyn.

Vennligst bruk 2-3 minutter til å tenke på en reklameplakat og skriv så ned noen setninger om hvordan denne var strukturert og designet.

Tenk tilbake på en reklameplakat du har likt spesielt godt. Kanskje du har en favoritt? Dette kan være en hvilken som helst reklameplakat uansett tema. Hva var det reklame for? Hva var det ved reklameplakaten som gjorde at du likte den?

Appendix M: Explicit attitudes towards animal welfare.**Vi vil nå be deg evaluere noen utsagn om dyrevelferd.**

På en skala fra 1 til 7, i hvor stor grad er du enig i følgende utsagn:

Jeg synes at dyrevelferd er viktig!

Uenig 1 2 3 4 5 6 7 Enig

Alle burde synes at dyrevelferd er viktig!

Uenig 1 2 3 4 5 6 7 Enig

Jeg er **ikke** opptatt av dyrevelferd.

Uenig 1 2 3 4 5 6 7 Enig