The Influence of Social Media on Reducing Meat Consumption: Using the Right Source, Message Valence, and Information Presentation to Influence the Reduction of Meat Consumption and Lead to Social Media Engagement

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ABSTRACT

Purpose – The consumer behaviour of individuals is changing due to the increase in environmental awareness, which is largely a result of social media. It is important to influence this behaviour, especially concerning meat consumption. Given that the literature mentions that eating a lot of meat causes various diseases, and Sustainable Development Goals are set to be achieved. Therefore, an individual health benefit was used as a topic in social media posts to influence the intention to reduce meat consumption and lead to social media engagement. The source, message valence, and information presentation of this benefit were analysed to see if these assist in reaching these two intentions.

Methods – This 2 (source: expert vs. ordinary person) x 2 (message valence: positive vs. negative) x 2 (information presentation: simple vs. scientific terms) between-subject experimental design was carried out within the online environment including Dutch omnivores between 18 and 30 years old. This study investigated the best way to present health benefits on social media. The mediator attitude towards the advertisement was used because it determines behaviour. Attitudes towards improving health and affinity with meat products were considered covariates and examined to see if these affected the intentions.

Findings – This study showed no significant difference between source, message valence, and information presentation on the intention to reduce meat consumption and the intention to lead to social media engagement. However, it showed a significant interaction effect of source and message valence on the intention to reduce meat consumption. An expert together with a positive message valence should be used in a post to increase behavioural intention. The mediator attitude towards the ad showed no mediation effects between the independent variables and the two intentions. Also, the covariate health consciousness did not yield any significant results. However, the covariate affinity with meat products did show a significant result on intention to reduce meat consumption, but not on intention to lead to social media engagement. When people are already less attached to meat products, the intention to reduce the consumption of these products is greater.

Conclusion – The findings contribute to the theory of which variables should be used to change a person's behaviour towards meat consumption. With this knowledge, it can be put into practice to help society concerning ethical buying behaviour and health. Therefore, this research contributes to ethical/sustainable consumption, health, support for health organisations and the achievement of the Sustainable Development Goals.

Keywords – Social Media, Source, Message Valence, Information Presentation, Meat Consumption

Paper type – Master thesis

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1. INTRODUCTION

More and more information is appearing which shows that eating meat is not sustainable and is bad for your health. Yet not everyone has started to reduce meat consumption. This could be since meat consumption is popular in the Netherlands, as an average Dutch person eats 76 kg of meat per year (Wageningen University & Research, 2021). Meat is therefore still a key part of many people's diets, and some consumers are hesitant to eat less meat due to uncertainty, scepticism, health, and identity (Collier et al., 2021). Sparkman, Macdonald, Caldwell, Kateman and Boese (2021) experimented and found that three types of approaches led to initial intentions to eat less meat. However, none of the treatments affected the reported meat consumption of the national sample over time. This is because they observed significant heterogeneity of effects: this intervention must focus on the right target group to be effective (effective for younger, more liberal, higher educated, and lower-income individuals). Overall, the authors conclude a promising method for curbing meat consumption among a large number of people. This is to publish appeals describing societal shifts towards eating less (but not eliminating) meat in media, that are received by the right audience (Sparkman et al., 2021).

The motivation for this study was to influence prosocial behaviour by reducing meat consumption, therefore the aspects of health and ethical consumption were important and served as the basis of the present study. This analysis is valuable from an academic standpoint as the United Nations Conference (2012) has set some Sustainable Development Goals (SDGs), which include goals 3, 12, 13, 14, and 15, all relating to health and environmental issues. It is also of importance because recent research notes that the long-term consumption of increasing quantities of red meat, particularly processed meat, is related to an increased risk of total mortality, cardiovascular disease, colorectal cancer, and type 2 diabetes (Battaglia Richi et al., 2015). Worries about animal welfare and health appear sometimes to be stronger drivers for reducing meat consumption than environmental issues (Sanchez-Sabate & Sabate, 2019). Additionally, Maslow (1943) mentions the Hierarchy of Needs theory, which focuses on individual needs and the benefits they perceive. As this shows that in general people are egocentric, it was decided the focus of this research was not on collective needs (environmental, animal). Therefore, this study investigated the best way to present the individual health benefit to influence people’s intention to reduce their meat consumption.

Social media was used to present the health benefit, as it has profoundly altered the way we communicate, collaborate, consume, and create (Aral, Dellarocas & Godes, 2013). Saeed, Farooq, Kersten, and Ben Abdelaziz (2019) mention that social media is used to influence ethical consumption as consumers' opinions, comments and sharing of personal product sustainability-related experiences on social media increase our perceived word of mouth. Word of mouth is seen as more trustworthy than information from traditional mass communication sources (Saeed et al., 2019). Engagement in social media is important because it introduces people’s followers to the phenomenon of reducing meat consumption, which can lead

to more traffic and attention to the post (Richards, 2021). It is for this reason that also the intention to lead to social media engagement is tested.

Lynn, Rosati, Leoni Santos and Endo (2020) note that the general public is seeking more and more information on health, nutrition, and diet on social media. Nevertheless, authoritative sources on public health are getting lost in the discussion on healthy eating by non-health professionals, including those who want to promote their products, services or worldview, and content polluters (Lynn et al., 2020). It is therefore key that a source is used which provides accurate information without seeking commercial gain, but to reduce meat consumption, on social media regarding health benefits.

The latter shows that it was important to analyse the variable source. In addition, other variables such as message valence and information presentation were important to examine to conclude which stimuli could best be used to achieve the highest intentions. Nekmat and Gower (2012) point out that the valence of the message has a significant influence on the effects of information provision. Additionally, since people need to be able to understand the message to engage with it and change behaviour, it is important which terms are used in the post to present information (Blyth, 2013). Hence, the reason to choose the three variables, source, message valence, and information presentation in this study.

There is no literature on the relationship between these three variables on influencing a person's behaviour (concerning this topic), hence this gap was filled with this study. However, the assertion of why these three variables were chosen is related to previous literature. Radighieri and Mulder (2014) found an interaction effect between both the source and the valence of the message. In addition, the study by Artz and Tybout (1999) found a relationship between the source and information presentation. Yet, no interaction effect between message valence and information presentation is found in the literature. Therefore, it is interesting to investigate the connection between these three variables, whether they interact and depend on each other or not, to influence the two intentions of reducing meat consumption and social media engagement.

The motivation for this research is that there has not been any study on influencing ethical food consumption by using the health benefits of reducing meat consumption. This focus is necessary for a study because it indicates how people can be influenced to change their behaviour in terms of reducing meat consumption and lead to social media engagement regarding this topic. Which as mentioned is important to know, because of health and environmental issues. This study therefore analysed how a health benefit can best be presented to the target audience to influence them; this includes the source: expert (authority) or ordinary person, the valence of the message: positive or negative, and the presentation of the information: simple (layman's) or in scientific (jargon) terms. The experiment will address the following research question that is used as a guideline throughout the report: "To what extent do the source, message valence, and information presentation in a social media post influence reducing meat consumption and lead to social

media engagement by using health benefits as a result?". The experiment results can practically be used for everyone who wants to influence people's behaviour regarding meat consumption and social media engagement on the topic.

This report contains several sections to ultimately arrive at an answer to the research question. First, it starts with the theoretical background of the study, which entails literature on the variables and the interaction effects between them. Then, the method of the experiment is explained, including the pilot test, the pre-test, and the actual design of the experiment. After that, the results of the experiment are analysed and explained in detail. Lastly, a discussion section concerning the outcome is written to elaborate on the results.

2. THEORETICAL BACKGROUND

The following section introduces the literature on the variables and the interaction between them that are analysed in the study. It also provides the theoretical background to the mediator and covariates integrated into the research framework. This is done to support the claims made before the experiment was carried out.

2.1 Context variables

2.1.1 Changing behaviours

In the context of public health, behaviour change involves efforts to change people's habits and attitudes to prevent disease (Sam, 2015). Our behaviour is influenced by moral convictions, but the influence is moderated by both emotional drives and cognitive limitations (Triandis, 1971; 1977, as cited in Salonen & Helne, 2012). Salonen and Helne (2012) also mention that behavioural change is more likely when people can be assured that the benefits of their new behaviour exceed the negative consequences and will prevent problems in the future. Hence, these benefits should be clearly stated including reliable facts.

Since this study is about changing the behaviour of individuals concerning meat consumption, it is important to know why people do not reduce their meat consumption and how they can be influenced to do so. Perceived barriers to following a vegetarian diet include the unwillingness to change one's eating habits, the nutritional requirements of meat, the effect of the social environment, the lack of knowledge about vegetarian diets and the limited possibility of eating vegetarian outside the home (Lea & Worsley, 2003; Salonen & Helne, 2012; Cheah, Sadat Shimul, Liang & Phau, 2020). Using social media can help address these points by being transparent and clear about the positive side of reducing meat consumption and shifting towards ethical buying behaviour. Being explicit about the benefits is key, as uncertainty prevents behaviour change (Weinreich, 1999, as cited in Salonen & Helne, 2012). Uncertainty in this case refers to the fact that one is not sure of the result of the behavioural change. Thus, mentioning the health benefits of changing the behaviour by stating the facts that it is good for one's health provides more certainty about the outcome.

Additionally, it is found that social factors also play a role in changing behaviour. These factors include among other norms and roles (Triandis, 1977). According to Triandis (1977), norms determine what should and should not be done, and roles are sets of behaviours considered suitable for persons who hold particular positions in a group. These social groups, such as families and peer groups, usually have a great influence on our behaviour because they define what is considered normal for us. Through social pressure, most of us want to be loyal to these groups (Triandis, 1977). Therefore, social media engagement can be important to change behaviour, as a person's social environment can serve as an influencer.

2.1.2 Expert vs. ordinary person

The first variable to consider is the source, as this is the starting point of a message, this party conveys the message in a certain way. The credibility of the source is important for the acceptance of a post by the recipient, as this term implies that the positive attributes of a communicator can increase the validity of the information in a post (Anderson, 1971; Hovland, Janis, & Kelley, 1953; Ohanian, 1990). It is a significant factor in determining the effectiveness of persuasive communication (Pornpitakpan, 2004). Lee (2011) states that peer influence, related to the expertise of the source (Coulter & Roggeveen, 2012), is a strong predictor of ethical consumption behaviour, which indicates that endorsement is a compelling element in promoting the motivation to purchase.

In addition, Ciadini (1984) states that individuals who have authority, are credible, and knowledgeable as experts in their field have more leverage and persuasion than those who are not. A reason for this, is that authority and credibility are among the most important components of trust (Cialdini, 1984). Trust is important as Cialdini (1984) notes that when someone is trusted that person is more likely to be followed, people want to follow legitimate experts. In this study, an expert is considered a person having a high level of knowledge or skill in a certain topic or activity (Cambridge Dictionary, 2022). An ordinary person is regarded as normal and not considered special or different in any way. As the goal is to persuade people into following certain behaviour, research results recommend using an expert as a source. This review of the literature on the use of an expert or ordinary person as a source forms the basis of the following hypothesis.

- *Hypothesis 1. The use of an expert presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to an ordinary person.*

2.1.3 Positive vs. negative message valence

A message may contain a certain valence that helps to persuade people to change their behaviour, which is why the literature on this variable was reviewed. Valence (or hedonic tone) is the affective quality that refers to the intrinsic attractiveness (positive valence) or aversiveness (negative valence) of an event, object, or situation. The term also characterises and categorises specific emotions; anger and fear (negative), joy (positive) (Dictionary.com, n.d.).

Wansink and Pope (2014) mention that message framing is one of the most studied but least well-understood phenomena in health communication. It is important to know how a particular message frame is received by the audience, in order to present the right message valence to the target audience to achieve the goal. Looking at the literature, it is found that positively framed messages led to a more positive perception of effectiveness than negatively framed messages regarding health information messages (Akl

et al., 2007). The general public is more likely to respond enthusiastically to positive actions they can take to prevent health problems (Wansink & Pope, 2014), such as reducing meat consumption. Additionally, research demonstrates that individuals with heuristic processing (e.g., health-message audiences) respond better to positive, gain-framed messages (van 't Riet, Ruiter, Werrij & de Vries, 2009; Rothman, Martino, Bedell, Detweiler & Salovey, 1999; Meyers-Levy & Maheswaran, 2004; Rothman, Bartels, Wlaschin, & Salovey, 2006; Nan, 2007; Lee & Cho, 2021). Since the target audience of this study is presented with health benefits (a gain) in order to influence them, it is important to consider these conclusions from the literature regarding the fact that messages with a positive valence are in this case best for influencing a positive attitude.

Another factor to bear in mind is when the message on social media is perceived to be persuasive. As scrolling on social media is considered an action where engagement with the topic is low, people tend to avoid processing the content of the message in detail and rather base their attitudes on simple reasoning (Maheswaran & Meyers-Levy, 1990). The researchers note that these individuals found the argument more persuasive when the message frame was positive rather than negative because at low engagement individuals often make and apply the inference that they agree more with matters associated with positive cues than with negative cues. As the experiment is about influencing people through posts on social media, positive message framing is preferred as a cue.

Given that literature shows that people's attitudes are more positive and persuasive when a positive valence of message is used, it could be linked to the Theory of Planned Behaviour. The theory suggests that behaviour is determined by attitudes (Ajzen, 1991). This is linked to the objective of reducing meat consumption and leading to social media engagement, as the intention is to influence this behaviour and lead to these two intentions. Thus, the literature indicates that using a positive message valence in the case of presenting health benefits on social media is best to influence people's behaviour on this topic. Based on this theoretical background, the following hypothesis has been formulated.

- *Hypothesis 2. The use of a positive message valence while presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to a negative message valence.*

2.1.4 Simple vs. scientific terms

The third and final variable to be analysed is the information presentation of the message. It is important to know whether people are influenced by the use of simple or scientific terms. As it is good to know which terms to use in a message to get people to change their behaviour. Layman's (simple) terms are easy language that everyone can understand (Merriam-Webster, 2021). This simple language can be used to connect with people in general. An example is a government using these simple terms effectively

to sound like regular people, which helped communicate better to the audience (Agur & Frisch, 2019). According to the literature, one should try to avoid difficult words, because the clearer and simpler something is expressed, the smarter the public will perceive you and the more convincing you will be (Kleinreesink, 2021).

Oppenheimer (2006) argues that unnecessary complexity leads to negative evaluations, he states that if you use difficult words, you do not appear to be intelligent. Using short words and sentences and minimal slang or jargon allows the audience to understand you effortlessly. In addition, Saguier (2021) mentions that avoiding unnecessary gibberish can be the peak of elegance as well as functionality, it also keeps the message simple and concise. Knowing the audience is important and excessive language can do more harm than good (Saguier, 2021). Likewise, Arguello et al. (2006) reported that using simple language and shorter text increased response rates in an online community.

Additionally, Goodwin (2012) notes in her book that when asked specifically about qualified health benefits, consumers are frequently confused by the content of the statement. There are concerns about the amount of information, it is said that if there is a lot of information, people tend to skip it. Alternatively, the language used, layman's language versus scientific terms, would cause consumers to avoid foods with health benefits (Goodwin, 2012). The research has indicated that relevance, vocabulary, association with incorrect constructs, the need to target messages to specific audiences and a variety of educational levels are all key to learning about food. There are several important factors in decision-making about science. Goodwin (2012) points out that public opinion can be based as easily on objective science as on negative constructs but is less easily swayed when science is seen as difficult or confusing. Given that people need to read and understand the information to change their behaviour, the literature suggests that simple terms should be used, which substantiates Hypothesis 3.

- *Hypothesis 3. The use of simple terms while presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to using scientific terms.*

2.2 Interaction effects

2.2.1 Source and message valence

When the intention is to influence the reduction of meat consumption and lead to social media engagement, previous findings from the literature suggest that an authority figure and a positive valence of the message should be used in social media posts. Now the literature on the interaction effect of source and message valence also needs to be examined to see which are best to be used together in a message. Radighieri and Mulder (2014) note that in general, experts have a significant influence on the retransmission

of information, but only when the valence of the message is negative. This is because information with a positive valence is more heavily relied upon than information with a negative valence (Bone, 1995). Also, research identified that negative information, because it is surprising (Richins, 1984, as cited in Radighieri & Mulder, 2014), results in more conscious processing (Gilbert & Malone, 1995; Main, Dahl & Darke, 2007, as cited in Radighieri & Mulder, 2014). Therefore, people also consider other information when the information has a negative valence, such as the credibility of the source. As experts are seen as having high credibility, the information they present is perceived as reliable (Dholakia & Sternthal, 1977, as cited in Radighieri & Mulder, 2014). In other words, if one wants to influence people by using negative message valence, one should appeal to an expert.

When valence is positive, the likelihood of retransmitting information from experts is no different from that of non-experts (Radighieri & Mulder, 2014). This is because positive information has been shown to be considered more useful than negative information in forming an opinion (East, Hammond & Lomax, 2008). This also indicates that the source of a message with a positive valence has more impact (or is more diagnostic). However, Van Wallendael and Guignard (1992) note that increased diagnosticity reduces the need for additional information for evaluation. Therefore, when information is positive, the source should have minimal impact on intentions. It is implied that a positive message valence is more likely to be transmitted than a negative one (Radighieri & Mulder, 2014) because information with a positive message valence is found more useful and impactful even without using an expert as a source. Whereas, when using a negative message framing, an expert must be used to have impact. Nevertheless, an expert as a source is seen as credible and knowledgeable, hence the choice to link this to positive message valence in a post in this study.

Investigating the retransmission of information in this experiment is important as it is connected to social media engagement, passing on information to one's environment. In this study, a positive message valence combined with an expert is considered best. When using this, the information is perceived as more credible and convincing, which results in hypothesis 4.

- *Hypothesis 4. The use of an expert as a source and a positive message valence while presenting health benefits in a social media post interact to influence a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement.*

2.2.2 Source and information presentation

The other interaction effect examined is the one between the independent variables source and information presentation. The research of Artz and Tybout (1999) is used as a starting point for Hypothesis 5, as it is a clear study that indicates that congruency of a source and information presentation is important for a message to be persuasive. The authors of the study mention that experts are assumed to know detailed,

quantitative evidence and are consequently assumed to back up their arguments with such information (Artz & Tybout, 1999). In contrast, non-experts do not have such specific information and thus restrict their arguments to their verbal assessments. If sources provide evidence that is not congruent with their expertise, it is expected that consumers will examine the source critically to explain the inconsistency (Artz & Tybout, 1999). A self-interested source, which increases consumer scepticism, can be seen as indicating that the inconsistency is a manipulative strategy. This reduces the persuasiveness of the message compared to when the message and the source are congruent (Artz & Tybout, 1999).

To elaborate on this study, it is expected that when incongruency occurs, the message is considered less persuasive. When an expert is conveying a message, the audience might expect that one should convey a message more scientifically. However, an ordinary person using scientific terms could sound unrealistic when in the first place the individual is not an expert. If someone is already an expert, people regard that person as a credible source of information because of the level of knowledge (Andersen & Clevenger 1963; McGuire 1969). It might not matter whether the expert uses scientific terms or not, since the expertise is already there. With the study of Artz and Tybout (1999) in mind, it is assumed that the two variables source and message valence do interact in the context of this research. The use of an authority figure presenting health benefits in simple (layman's) terms is expected to result in the highest intentions. Although the study by Artz and Tybout (1999) state that experts are seen as knowledgeable and credible sources and are therefore expected to present themselves in such a way using scientific terms, it was decided to use simple terms. As concluded earlier, people need to understand science to be convinced by it, and experts are already seen as credible sources, hence the following hypothesis was formulated.

- *Hypothesis 5. The use of an expert as a source and simple terms as information presentation while presenting health benefits in a social media post interact to influence a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement.*

2.2.4 Mediator

It is also important to consider the mediator that intervenes between the independent variables and the two intentions. This research incorporates the suggestion by Ajzen (1991) that behaviour is determined by attitudes. His Theory of Planned Behaviour assumes that when talking about the effect of attitude on intention, it is referring to the attitude towards the action. However, in this study we consider that attitude towards the advertisement mediates between the independent variables and affects the two intentions. Therefore, it was also decided to consider a component of the advertisement, the credibility of the message. This was decided because current research has shown that the credibility of messages increases sharing, searching, selecting, and evaluation of information (Phua & Tinkham, 2016; Yan, Zhou, Wang & Li, 2019). It turns out that the willingness to look up information is higher when its credibility in the online health

community is higher. Therefore, the perceived credibility of the message increases the selection of information, which implies that information selection will also increase health behavioural intentions. (Xu, Li & Shan, 2021). Accordingly, the credibility of the message, which is part of the advertisement, influences the behavioural intention. That is why a positive attitude towards the advertisement is considered a mediator that increases the effect on the two behavioural intentions, which supports the following hypotheses.

- *Hypothesis 6. The effect of source on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.*
- *Hypothesis 7. The effect of message valence on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.*
- *Hypothesis 8. The effect of information presentation on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.*

2.2.5 Covariates

Covariates should be considered in this experiment as they may influence the results on the intention to reduce meat consumption and lead to social media engagement. The main reason for omnivores to change their consumption habits in terms of eating less meat appeared to be health consciousness (Latvala, Niva, Mäkelä, Heikkilä, Kotro & Forsman-Hugg, 2012, as cited in Kopplin & Rausch, 2021). Hence, this covariate should be considered when the intention is to reduce meat consumption. Concerning the intention to lead to social media engagement, Oh and Syn (2015) mention different motivations for sharing information and social support on social media. This includes among others self-efficacy, this means that people can feel competent in creating, finding, and spreading information to others and can also have a sense of fulfilment when they provide useful information to others (Herzberg, Mausner & Snyderman, 1993). When people are health-conscious themselves, they may find information about health useful to share with those around them and feel competent in doing so. These findings in the literature lead to the following hypothesis.

- *Hypothesis 9. It is expected that the covariate attitude towards improving health has a significant positive effect on a) people's intention to reduce meat consumption, and b) people's intention to engage in social media.*

It is also assumed that the affinity with meat products serves as a covariate regarding the two intentions. Berndsen and Pligt (2004) found that an increased conflicted attitude towards eating meat was associated with reduced meat consumption. These conflicting attitudes towards meat products emerged from meat crises and scandals, such as diseases and bad meat. Moreover, people with such an ambivalent attitude toward meat were planning to further reduce their meat consumption in the future (Berndsen & Pligt, 2004). Furthermore, it is found that learning is an important motivation in social media engagement

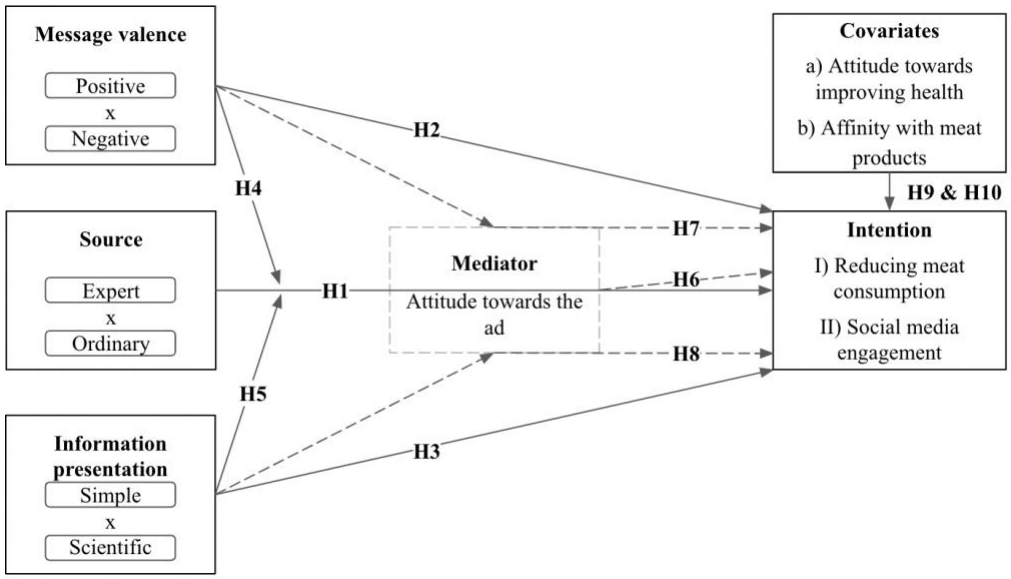
(Oh &. Syn, 2015), as it allows people to participate in various activities on social media (Nam, Ackerman & Adamic, 2009; Nov, 2007; Rafaeli, Ariel & Hayat, 2005). Oh and Syn (2015) mention that social media users want to learn from other people by sharing information and want to be educated with current information on topics they are invested in. Others can learn from the person who does not have much affinity with meat products that there are different ways of not including (a lot of) meat products in your diet. Thus, that person may be motivated to educate others by sharing information and this leads to engagement in social media. A person's affinity with meat products can therefore influence the effect of the two intentions, which results in the following hypotheses.

- *Hypothesis 10. It is expected that the covariate affinity with meat products has a significant positive effect on a) people's intention to reduce meat consumption, and b) people's intention to engage in social media.*

2.2.6 Research framework

To obtain a clear overview of this study, a research framework was set up. The figure below visualises the relationships formulated for the research variables. The independent variables consist of source, message valence, and information presentation, these are expected to affect the two intentions. The independent variable source is assumed to interact with message valence and information presentation. All three variables are predicted to be mediated by attitude towards the advertisement. Furthermore, the two covariates attitude toward improving health and affinity with meat products are expected to affect the intention to reduce meat consumption and lead to social media engagement.

Figure 1. Research framework

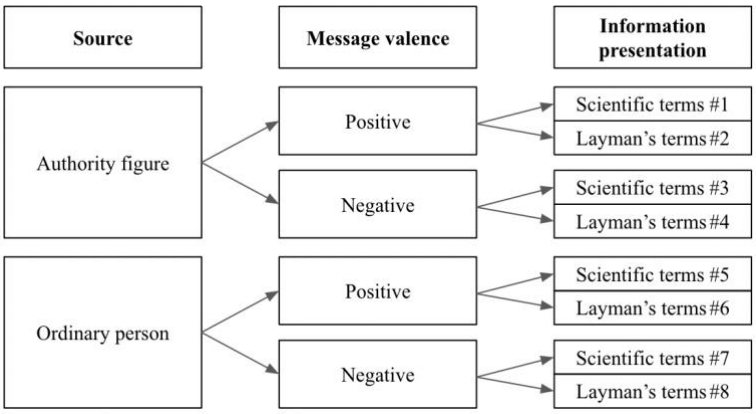


3. METHOD SECTION

3.1 Design

In this research, a 2 (source: expert vs. ordinary person) x 2 (message valence: positive vs. negative) x 2 (information presentation: simple vs. scientific terms) between-subject experimental design was executed, this was done to not influence the participants with other scenarios. The research design was an experiment in which the dependent variables were measured using a questionnaire that included questions on attitude towards improving health, affinity with meat products, the source, message valence, and information presentation of the post, attitude towards the ad, intention to reduce meat consumption, and intention to lead to social media engagement; if it is likeable and shareable content. This design was the most appropriate to address the research question, as it analysed which condition out of the eight had the most influence on the two intentions. Fictitious Instagram posts were set up to show a more realistic scene for the review of the posts. The matrix below in Figure 2 shows the eight different settings.

Figure 2. Instrument design matrix



3.2 Procedure

3.2.1 Pilot test

Before the experiment was conducted, one pilot test to select the best way to manipulate the independent variable source was sent out. This was done to conclude that there is a clear difference between the two aspects within the variable, 8 individuals participated. The test included a ranking to see to which extent the participants think the person is authoritative or not. It presented three experts: a doctor, a health scientist, and a nutritionist. Additionally, three ordinary people were included; a person who eats vegan, a non-professional athlete, and a health-conscious individual e.g., someone who wants to reduce meat consumption. The conclusion as to who is considered the most authoritarian and the most ordinary is drawn based on the number of participants that ranked the person first. The results indicated that the nutritionist

is perceived to have the most expertise as a source of health information/benefits, as four out of the eight participants ranked that figure to be first. A health-conscious individual was perceived to be the most ordinary, seven participants ranked that person first.

3.2.2 Pre-test

After the information regarding the source was gathered a pre-test was set up with the eight conditions that can be seen in Figure 2. The study was submitted to the Ethics Committee for acceptance (Appendix A. Approval Ethics Committee). This pre-test involved 16 Dutch participants between 18-30 years old, and each condition was sent to two people. This was done to analyse if the posts were set up correctly. The test that was sent out can be found in Appendix B. Pre-testAppendix B. Pre-test. After each page, the participant was asked if they had any feedback on the questions, some feedback was used to improve the posts and set up of the actual experiment (Appendix C. Pre-test feedback).

Table 1. Group statistics pre-test

Group Statistics

	Expert vs Ordinary	N	Mean	Std. Deviation	Std. Error Mean
Source	Expert	8	3.208	.942	.333
	Ordinary	8	2.833	1.321	.467
Message valence	Positive	8	4.125	.916	.324
	Negative	8	2.813	1.100	.389
Information presentation	Simple	8	4.542	.562	.196
	Scientific	8	3.333	1.168	.413

To establish if the independent variables were perceived correctly, manipulation check questions were set up in the test and an independent T-test was executed. The outcome showed a small difference in the result for expert (M=3.20, SD=.94) and ordinary person (M=2.83, SD=1.32) as can be seen in the group statistics below. However, there was no significant result $t(14) = .654$, $p = .525$ (Table 2). This showed that the post that was meant to show an expert was not entirely perceived as a person with expertise. The same applied vice versa, the person who was meant to be ordinary was not quite seen as an ordinary person.

Regarding the message valence, there was a clear difference in the result of positive (M=4.13, SD=.92) and negative (M=2.81, SD=1.10) found and a significant result $t(14) = .2.6, p = < .05$. Nevertheless, the post that was intended to be negative was not perceived to be as negative as supposed to be. With this in mind, the actual experiment was adjusted and included a caption that had a negative valence, which was meant to help perceive the overall post as being more negative.

Table 2. Independent samples test pre-test

Independent Samples Test

						Significance				95% Confidence Interval of the Difference	
		F	*Sig.*	*t*	*df*	One-Sided p	Two-Sided p	Mean Diff.	Std. Error Diff.	Lower	Upper
Source*	Equal variances assumed	1.078	.317	.654	14	.262	.524	.375	.574	-.855	1.605
	Equal variances not assumed			.654	12.653	.263	.525	.375	.574	-.868	1.618
Message valence**	Equal variances assumed	.100	.757	2.593	14	.011	.021	1.313	.506	.227	2.398
	Equal variances not assumed			2.593	13.557	.011	.022	1.313	.506	.224	2.401
Information presentation ***	Equal variances assumed	3.270	.092	2.636	14	.010	.020	1.208	.458	.225	2.191
	Equal variances not assumed			2.636	10.071	.012	.025	1.208	.458	.188	2.229

*Source: Levene's test is **not** significant (p > .05), suggesting an assumption of equal variances.

** Message valence: Levene's test is significant (p < .05), suggesting a violation of the assumption of equal variances.

***Information presentation: Levene's test is significant (p < .05), suggesting a violation of the assumption of equal variances.

For information presentation, there could also be seen a difference in simple (M=4.54, SD=.56) and scientific (M=3.33, SD=1.17) terms and a significant outcome $t(10) = .2.6$, $p = < .05$. However, the scientific terms were not understood as scientifically as they should be, which can be seen according to the mean difference. This could be due to the lack of terms used in the post, only one scientific term ("cardiovascular") was included.

As the manipulation check results suggested that the expert and ordinary person were both seen as an expert, it was decided that in the actual experiment a few things needed to be changed. The post including the expert was given more expertise by adding an organisation ("GGD") the nutritionist works at. Also, for the ordinary person, the occupation of the person was changed from "health-conscious dad" to "choice-conscious businessman". This change was made as a dad can be viewed as being more health aware, as he is caring, and thus can be seen as having expertise. The third change that was used in the actual survey is changing the third manipulation check question from "the message comes from a reliable source" to "the message comes from a nutritionist". These three changes were expected to ensure that the result of the independent variable source turned out to be significant.

3.3.3 Main study

The definitive questionnaire that was used to retrieve the data was set up after the pre-test was conducted. Starting at the beginning of the questionnaire the introduction of the study and the necessary ethical statements were shown to the participant. If the participant agreed to the terms and conditions, a question about whether they are on social media was asked. This was done to only have participants that make use of social media, as it is about influencing that group of people. If the person answered "no" the survey ended. Afterwards, a question was asked if the person eats vegan, vegetarian or neither. This was done as only people who are omnivores (eating both plants and animals) were the target group of this experiment. If the person was indeed on social media and an omnivore, the demographics page was shown. This page was set up as a general page to analyse the different demographics of the participants. Hereafter, the attitude towards the improvement of health and affinity with meat products of the participant was measured, this was done to later conclude if these covariates played a role in the result. After these questions were asked, a stimulus was shown, which was one of the Instagram posts that can be seen in Figure 3. Every participant in this experiment was randomly assigned to one of the stimuli. There was no set time frame and participants were directed to proceed once they had read the message thoroughly. Apart from the stimuli, all messages consisted of identical information about the health benefits of reducing meat consumption. The Hierarchy of Needs theory by Maslow (1943) served as the basis for the decision to use health benefits in the mock-up posts. In general, people are egocentric, which is supported by this theory. Regarding the two intentions measured during the experiment, it is important to reduce one's meat

consumption, as too much meat is not healthy. Additionally, traffic and attention to the post are preferred ways of spreading the message, which is why engagement with social media is important (Richards, 2021). What the final experiment filled in by all participants looked like can be found in Appendix D. Experiment.

3.3 Participants

The participants of this research were Dutch omnivores on social media with an age between 18 and 30 years old. This is the target group as it is considered that individuals under the age of 18 do not yet have full control over their diet, as they are yet to rely on their caregiver(s) (Bruynzeel, 2019). Moreover, this group is partly the future generation that will have to deal with the results of today's changes. Additionally, James (1890) mentions one of the most quoted lines "In most of us, by the age of thirty, the character has set like plaster, and will never soften again". Hence, the reason to choose this age group, it is most likely open to change behaviour. A minimum of 30 individuals per condition were used to have a normal distribution among all conditions (Chang, Huang, & Wu, 2006), in total at least 240 participants.

The researcher conducting the experiment sent out the questionnaire and posted it on social media platforms for completion. To ensure better results and thus a more complete study, only data from completed questionnaires and participants with the defined demographics were used. The experiment was randomly assigned to the participants with the instruction to pay attention to the questions that follow from that stimulus.

Table 3. Demographics overview

Demographics overview		**n**	**%**
Gender	Male	68	26.6
	Female	188	73.4
	Total	256	100
Education level	Primary education	0	0
	Primary/preparatory vocational education (lbo/vmbo)	6	2.3
	Higher general secondary education (havo)	48	18.8
	Preparing for scientific education (vwo)	18	7.0
	Senior secondary vocational education (mbo)	68	26.6
	Higher vocational education (hbo)	93	36.3
	Academic education (wo)	23	9.0
	Total	256	100

The actual experiment that was carried out had a total of 318 respondents. However, 62 of those responses were not valid as these were either not filled in entirely or the participant was not part of the target group. The participants were either vegan (*n*=2), vegetarian (*n*=17), too old (*n*=8), not Dutch (*n*=2), did not use social media (*n*=2) and in 31 cases the questionnaire was not completed. These cases were mostly recorded as a response as people clicked on the link of the survey and did not fill it in or stopped filling it in. The demographics of the participants can be seen in Table 3 above. The results indicate that the level of education of the participants was high, as the biggest group has finished a higher vocational education (36.3%).

The characteristics of the participants per condition can be found in Table 4. This shows that the average age of the participants was around 22. This could be since the author is 21 years old, and her environment consists largely of her age. Also, there were a lot more female participants (*n*=188) in comparison with male participants (*n*=68), almost three times as many. The average of respondents per condition was 32. There is no fixed number for all conditions, as mentioned, some data of some individuals could not be used. Table 4 shows the number of respondents per Instagram mock-up post.

Table 4. Characteristics of the participants

Frame				**Gender**		**Age**
Source	*Message valence*	*Information presentation*	*N*	*Male*	*Female*	*Mean*[a]
Expert	Positive	Simple	33	5	28	21.78
		Scientific	32	9	23	22.66
	Negative	Simple	32	10	22	23.10
		Scientific	27	8	19	22.67
Ordinary	Positive	Simple	37	9	28	22.38
		Scientific	32	7	25	21.69
	Negative	Simple	33	10	23	22.00
		Scientific	30	10	20	22.77
Total			**256**	**68**	**188**	**~22**

a Measured in years

The table below shows a short overview of the covariates group statistics, this shows that the participants are very health conscious (M=3.58, SD=.822). Additionally, it shows that the affinity with meat products is above average (M=2.59, SD=.993), which indicates that the participants are not that attached to meat products, but this is very little above the average.

Table 5. Descriptive statistics covariates

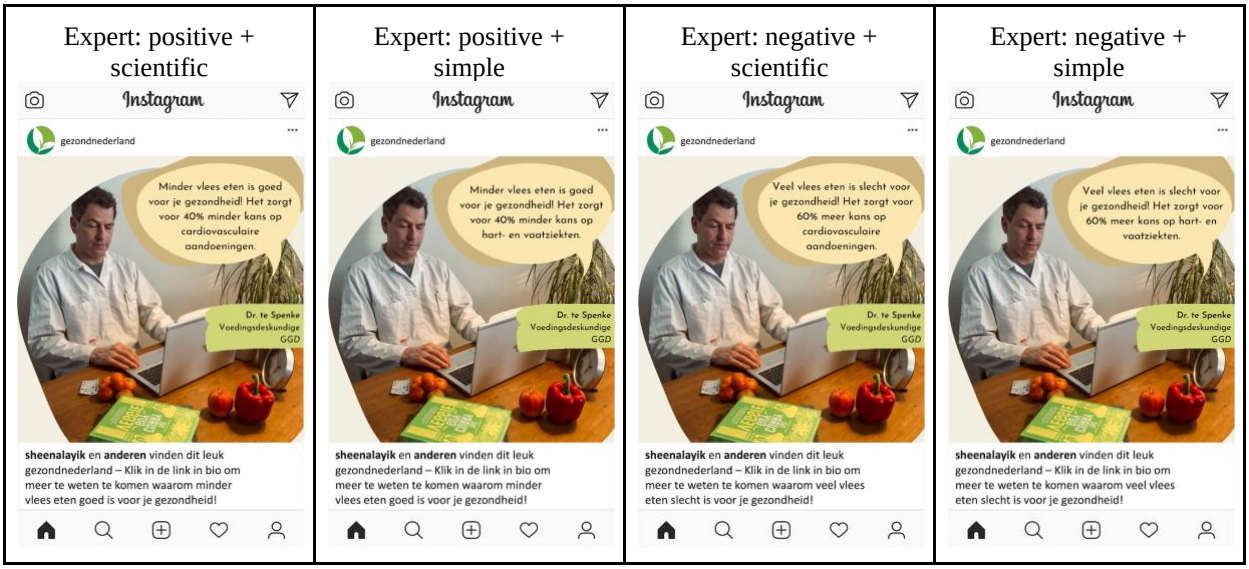
Covariates	Mean	Std. Deviation
Attitude towards improving health*	3.58	.822
Affinity with meat products*	2.59	.993

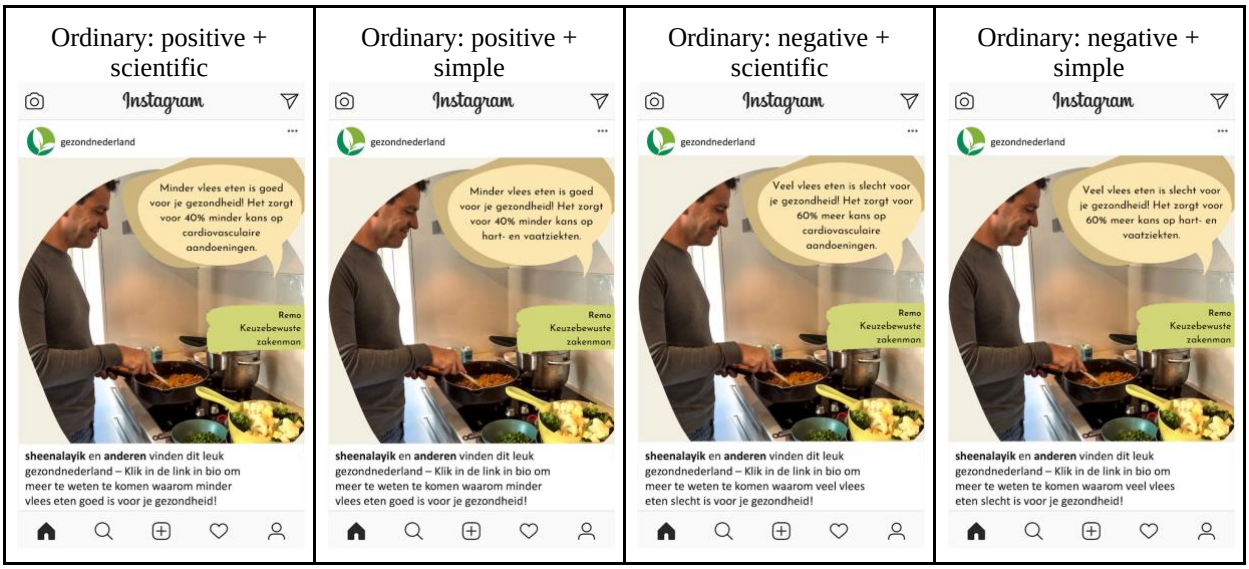
**Measured on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree)*

3.4 Research materials

The manipulations that were used in this study are the source, message valence and information presentation. The source referred to an authoritative figure, such as a doctor, and an ordinary person, such as a health-conscious person. A positive message valence indicates a sentence like "Reduce meat because that is *good* for your health!" and a negative sentence refers to something such as "Stop eating meat because that is *bad* for your health!". Scientific terms (jargon) are the part of the language used by scientists in the context of their professional activities e.g., "The consumption of increasing amounts of processed meat is associated with a high risk of *cardiovascular* disease. Terms are layman's when these are simple words that anyone can understand, e.g., "Eating a lot of processed meat is related to an increase in a disease that affects the *heart or blood vessels*". The data of this experiment was collected through an online self-administered questionnaire using the program Qualtrics. This gathered data was imported into the statistics software SPSS to test the significance of the results. The fictitious Instagram posts were made with the digital tools Canva and PowerPoint, the eight materials that served as stimuli can be seen in the figure below.

Figure 3. Mock-up Instagram posts





3.5 Measurement

The questionnaire statements were set up according to different literature. Ethical statements and demographic questions that are usually used in questionnaires were applied (age, gender, nationality, education). Attitude toward the ad was set up according to the statements of Cotte, Coulter and Moore (2005). The attitude towards the improvement of health, affinity with meat products, questions related to the stimuli regarding the source, valence, information presentation, attitude towards the post, emotional response, intention to reduce meat consumption, and intention to lead to social media engagement all included a 5-point Likert scale structure. As this is appropriate when measuring attitudes on an ordinal scale (Likert, 1932).

3.6 Reliability and validity of the constructs

The reliability of the constructs was measured with the Cronbach's alpha, this can be seen in Tables 6 and 7 below. It was consequently used to measure the internal consistency within a construct. This ensured that all the constructs measured the same characteristics. Emotional response, which was initially considered a mediator in the experiment, was removed in the analysis because it made the factors inconsistent. Therefore, it was discarded from the study as a mediator. After deleting this variable, a rotated component matrix was executed with all covariates and dependent variables. This was to analyse the validity, as it identified if every construct was measured on the same component and if they would measure overlapping components.

Table 6. Factor analysis and Cronbach's alpha covariates

Constructs	α	Items	Factor	
			1	2
Attitude towards improving health*	.92	1. I am conscious of my diet.	.823	
		2. Healthy eating is important to me.	.815	
		3. I am consciously living a healthy lifestyle.	.880	
		4. I maintain a healthy lifestyle.	.827	
		5. I try to make healthy choices.	.869	
		6. I think a lot about how to live as healthily as possible.	.803	
Affinity with meat products*	.88	1. Meat is not part of my daily diet.		.767
		2. I also sometimes choose a recipe without meat in it.		.762
		3. I do not consider meat important in my dishes.		.851
		4. I do not consider meat important for my body.		.783
		5. I do not eat much meat.		.835
		6. I can do without meat.		780

**Measured on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree)*

All constructs did initially meet the threshold of α 0.70 (Cortina, 1993). Since there are less than 10 items per construct, the threshold α 0.50 must be adhered to, which is the case as shown in both tables below. The tables are split up in factor analysis for covariates and one including the dependent variables. The table above shows the analysis for the covariates and below the factor analysis of the dependent variables can be found.

Table 7. Factor analysis and Cronbach's alpha dependent variables

Constructs	α	Items	Factor		
			1	2	3
Attitude towards the post*	.85	1. The Instagram post gives food for thought.	.619		
		2. The Instagram post is convincing.	.675		
		3. The Instagram post is catchy.	.858		
		4. The Instagram post is attractive.	.833		
		5. The Instagram post is interesting.	.743		
Intention to reduce meat consumption*	.88	After seeing the Instagram post, I'm ready to...			
		1. Reduce my meat consumption.		.852	
		2. Tend to avoid meat.		.799	

		3. Choose a recipe with less/no meat more often.	.811
Intention to lead to social media engagement*	.81	After seeing the Instagram post, I'm ready to... 1. Like the post.	.570
		2. Share the message with those close to me via Instagram dm (direct message) or via any other sharing route.	.869
		3. Share the post on my social media profile (e.g., Instagram story).	.891

**Measured on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree)*

4. RESULTS

4.1 Manipulation check

Like the pre-test, the manipulation check questions were tested with an independent T-test. The group statistics showed a difference in the result for expert (M=3.53, SD=.895) and ordinary person (M=2.19, SD=.468), this indicates that the expert was seen as a person having expertise and the ordinary person was perceived as being ordinary $t(183) = 14.9$, $p = < .05$. Thus, the source type was correctly observed by the participants. There was also a difference in the result of positive (M=3.56, SD=.877) and negative (M=2.13, SD=.677) message valence found $t(248) = 14.7$, $p = < .05$. This as well means that the terms used in the post were interpreted as they were meant to be. For information presentation, there could be seen a clear difference in simple (M=4.34, SD=.739) and scientific (M=2.10, SD=.703) terms as well $t(254) = 24.8$, $p = < .05$.

Table 8. Group statistics experiment

Group Statistics

	Expert vs Ordinary	N	Mean	Std. Deviation	Std. Error Mean
Source	Expert	124	**3.532**	.895	.080
	Ordinary	132	2.194	.468	.041
Message valence	Positive	134	**3.563**	.877	.076
	Negative	122	2.131	.677	.061
Information presentation	Simple	135	**4.336**	.739	.064
	Scientific	121	2.099	.703	.064

The changes made after the pre-test ensured a significant outcome for all independent variables. Knowing that the stimuli were correctly perceived ensures that the result of the experiment is legitimate, as the independent variables source, message valence, and information presentation were perceived by the participants as intended.

Table 9. Independent samples test experiment

Independent Samples Test

						Significance				95% Confidence Interval of the Difference	
		F	*Sig.*	*t*	*df*	One-Sided p	Two-Sided p	Mean Diff.	Std. Error Diff.	Lower	Upper
Source*	Equal variances assumed	38.628	<.001	15.122	254	<.001	<.001	1.338	.088	1.164	1.512
	Equal variances not assumed			14.854	182.992	<.001	<.001	1.338	.090	1.160	1.516
Message valence **	Equal variances assumed	8.038	.005	14.530	254	<.001	<.001	1.432	.099	1.238	1.626
	Equal variances not assumed			14.704	247.517	<.001	<.001	1.432	.097	1.240	1.624
Info. presen-tation***	Equal variances assumed	.053	.818	24.739	254	<.001	<.001	2.237	.090	2.059	2.415
	Equal variances not assumed			24.808	253	<.001	<.001	2.237	.090	2.059	2.415

*Source: Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances.

** Message valence: Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances.

***Information presentation: Levene's test is **not** significant ($p > .05$), suggesting a violation of the assumption of equal variances.

4.2 Main effects

A two-way between-groups multivariate analysis of covariance (MANCOVA) was carried out to study the effect of three independent variables: source, message valence, and information presentation. In addition, the effects of the two covariates were included in the model: attitude towards improving health and affinity with meat products.

Table 10. MANCOVA

Multivariate test of covariance (MANCOVA)	F-value	df	Wilk's Lambda	p-value	Partial eta -squared (ηp2)
Source (IV)	.553	3, 244	.99	.646	.007
Message valence (IV)	2.315	3, 244	.97	.076	.028
Information presentation (IV)	1.985	3, 244	.98	.117	.024
Attitude towards improving health (CO)	1.404	3, 244	.98	.242	.017
Affinity with meat products (CO)	16.145	3, 244	.83	<.001*	.166
Source * Message valence	5.845	3, 244	.93	<.001*	.067
Source * Information presentation	2.644	3, 244	.97	.050	.031
Source * Message valence * Information presentation	1.671	3, 244	.98	.174	.020

Note: IV = independent variable, CO = covariate
**Significant at an Alpha level <.05*

4.2.1 Main effect of source on dependent variables

The independent variable source showed no significant differences between the two groups (expert vs. ordinary) as can be seen in the table above: $F(3, 244)=.553$, $p=.646$; Wilks' Lambda=.99. Additionally, Table 11 revealed that source reached no statistical significance, on intention to reduce meat consumption: $F(1, 256)=.269$, p=.736, and intention to lead to social media engagement: $F(1, 256)=.867$, p=.353. Therefore, Hypothesis 1 is not supported.

The inspection of the mean scores in Table 12 showed that an expert resulted in lower levels of intention to reduce meat (M=2.311, SD=1.061) than the ordinary person (M=2.323, SD=.996). This was the same for the intention to lead to social media engagement, the mean scores showed lower for the expert (M=1.790, SD=864) than for the ordinary person (M=1.876, SD=.870). Even though it could already be concluded that there was no significance in the differences between the source groups, looking at the mean scores also rejects Hypothesis 1. Meaning that even when there would be a significant result, the mean showed that an ordinary figure had more impact on the two intentions than an expert.

Table 11. MANCOVA Results

MANCOVA Results		F-value	df	p-value	Partial eta - squared (ηp2)
Source (IV)	Intention to reduce meat consumption	.269	1, 256	.605	.001
	Intention to lead to social media engagement	.867	1, 256	.353	.004
Message valence (IV)	Intention to reduce meat consumption	.114	1, 256	.736	.000
	Intention to lead to social media engagement	1.941	1, 256	.165	.008
Information presentation (IV)	Intention to reduce meat consumption	.991	1, 256	.320	.004
	Intention to lead to social media engagement	1.467	1, 256	.227	,006
Attitude towards improving health (CO)	Intention to reduce meat consumption	1.969	1, 256	.162	.008
	Intention to lead to social media engagement	.422	1, 256	.517	.002*
Affinity with meat products (CO)	Intention to reduce meat consumption	41.142	1, 256	<.001*	.143
	Intention to lead to social media engagement	2.911	1, 256	.089	.012

**Significant at an Alpha level <.05*

4.2.2 Main effect of message valence on dependent variables

The statistical analysis of message valence also showed no significant difference between the two groups (positive vs. negative valence): $F(3, 244)=2.315$, $p=.076$; Wilks' Lambda=.97 (Table 10). Also, message valence reached no statistical significance on intention to reduce meat consumption: $F(1, 256)=.114$, p=.736, and intention to lead to social media engagement: $F(1, 256)=1.941$, p=.165.

Additionally, the inspection of the mean scores in the table below showed lower levels of intention to reduce meat for the positive valence group (M=2.298, SD=.085) than for the negative valence group (M=2.336, SD=.083). This was the same for the intention to lead to social media engagement, the mean scores showed higher for the negative valence group (M=1.877, SD=.076) than for the positive valence group (M=1.789, SD=.0.78). To conclude, these results imply that Hypothesis 2 was statistically not supported.

Table 12. Mean scores MANCOVA – independent variables: source, message valence, information presentation

Independent variable	Condition	Intention to reduce meat consumption			Intention to lead to social media engagement		
		n	M	SD	n	M	SD
Source	Expert	124	2.311	1.061	124	1.790	.864
	Ordinary	132	**2.323**	.996	132	**1.876**	.870
Message valence	Positive	134	2.298	.085	134	1.789	.078
	Negative	122	**2.336**	.083	122	**1.877**	.076
Information presentation	Simple	135	**2.370**	1.063	135	**1.891**	.919
	Scientific	121	2.259	.983	121	1.771	.810

Note: n = sample size, M = mean, SD = Standard deviation
Covariates: (1) attitude towards improving health and (2) affinity with meat products

4.2.3 Main effect of information presentation on dependent variables

The analysis of information presented in Table 10 revealed no significant difference between the two groups (simple vs. scientific): $F(3, 244)=1.985$, $p=.117$; Wilks' Lambda=.98. Additionally, information presentation reached no statistical significance, on intention to reduce meat consumption: $F(1, 256)=.991$, p=.320, and intention to lead to social media engagement: $F(1, 256)=1.467$, p=.227.

The table above shows the inspection of the mean scores. As expected during the theoretical research, the findings showed that the use of simple terms scored higher (M=2.370, SD=1.063) than scientific terms (M=2.259, SD=.983). This is the same for the intention to lead to social media engagement, the mean scores showed higher for the negative valence group (M=1.891, SD=.919) than for the positive valence group (M=1.771, SD=.810). Even though there was a higher mean when using simple terms in a post, there was no significance between the two types of terms and the two intentions. Hence, Hypothesis 3 was rejected.

4.2.4 Main effect covariates

Looking at Table 10, a MANCOVA had been carried out for the two covariates. Resulting in the conclusion that attitude toward improving health showed no statistically significant difference: $F(3, 244)=1.404$, $p=.242$; Wilks' Lambda=.98. Therefore, Hypothesis 9 was not supported at all. In contrast with the other covariate affinity with meat products which showed a significant difference: $F(3, 244)=5.845$, $p=.000$; Wilks' Lambda=.93.

Observing the effect of affinity with meat products on the dependent variables separately, only the intention to reduce meat consumption, by using an alpha level of .05, showed a significant result as can be

seen in Table 11: $F(1, 256)=41.142$, p=.000. Concluding that hypothesis 10a) was the only one that was supported among the covariate's hypotheses.

4.3 Interaction effects

4.3.1 Interaction effect source and message valence

The interaction between source and message valence reached a significant interaction effect using an alpha level of .05: $F(3, 244)=5.845$, p=.000; Wilks' Lambda=.93 as can be seen in Table 10. Looking at Table 13, it can be seen that an expert in combination with a positive message valence had the biggest effect on the intention to reduce meat (M=2.528, SD=1.070). Also, it had the biggest effect on the intention to lead to social media engagement when only looking at an expert as a source. Nevertheless, it did not have the highest result when looking at source interacting with message valence overall. An ordinary person combined with a negative message valence led to the highest intention to engage on social media (M=2.090, SD=.953). This concludes that Hypothesis 4a) was statistically supported, but 4b) was not.

4.3.2 Interaction effect source information presentation

Source and information presentation did not significantly interact: $F(3, 244)=2.644$, p=.050; Wilks' Lambda=.97. The table below shows that an expert combined with simple terms was best to use when the intention was to reduce meat (M=2.436, SD=1.074). If the aim was to lead to social media engagement, an ordinary person using simple terms should be used (M=1.986, SD=.907). When the intention was to achieve social media engagement with the help of an expert, a combination of scientific terms should be used (M=1.791, SD=.797), but this was a very small difference when an expert was used in combination with simple terms (M=1.790, SD=.927). If an ordinary person was used as a source, simple terms should be used for both intentions. However, since there was no significant relationship between the two independent variables, there was no interaction effect, Hypothesis 5 was consequently not supported.

Table 13. Mean scores MANCOVA – combined effect of independent variables: source*valence, source*presentation

Source	**Message valence**	**Intention to reduce meat consumption**			**Intention to lead to social media engagement**		
		n	M	SD	n	M	SD
Expert	Positive	65	**2.528**	1.070	65	**1.851**	.780
	Negative	59	2.073	1.006	59	1.723	.951
Ordinary	Positive	69	2.208	.938	69	1.681	.742
	Negative	63	**2.450**	1.050	63	**2.090**	.953

Source	Information presentation	Intention to reduce meat consumption			Intention to lead to social media engagement		
		n	M	SD	n	M	SD
Expert	Simple	65	**2.436**	1.074	65	1.790	.927
	Scientific	59	2.175	1.038	59	**1.791**	.797
Ordinary	Simple	70	**2.310**	1.058	70	**1.986**	.907
	Scientific	62	2.339	.930	62	1.753	.816

Note: n = sample size, M = mean, SD = Standard deviation
Covariates: (1) attitude towards improving health and (2) affinity with meat products

4.3.3 Interaction effect source, message valence and information presentation

There was no significant result in the interaction between the three independent variables: $F(3, 244)=1.671$, $p=.174$; Wilks' Lambda=.98. The biggest effect on the intention to reduce meat consumption, expected at the start of this study, was a post including an expert using a positive message valence and simple terms, which was also the result of this experiment (M=2.656, SD=1.065). However, the intention to lead to social media engagement was best achieved when an ordinary person was used in an Instagram post with a negative message valence and simple wording (M=2.313, SD=.913). Nevertheless, since no interaction effect was found, the conclusion was not significant. Hence, it can be concluded that the three variables in this experiment did not interact.

Table 14. Mean scores MANCOVA – combined effect of independent variables: source*valence*presentation

Source	Message valence	Information presentation	Intention to reduce meat consumption			Intention to lead to social media engagement		
			n	M	SD	n	M	SD
Expert	Positive	Simple	33	**2.656**	1.065	33	1.758	.713
		Scientific	32	2.396	1.075	32	1.948	.842
	Negative	Simple	32	2.208	1.050	32	1.823	1.117
		Scientific	27	1.914	.945	27	1.605	.710
Ordinary	Positive	Simple	37	2.312	.954	37	1.694	.807
		Scientific	32	2.240	.932	32	1.667	.672
	Negative	Simple	33	2.454	1.160	33	**2.313**	.913
		Scientific	30	2.444	.932	30	1.844	.950

Note: n = sample size, M = mean, SD = Standard deviation
Covariates: (1) attitude towards improving health and (2) affinity with meat products

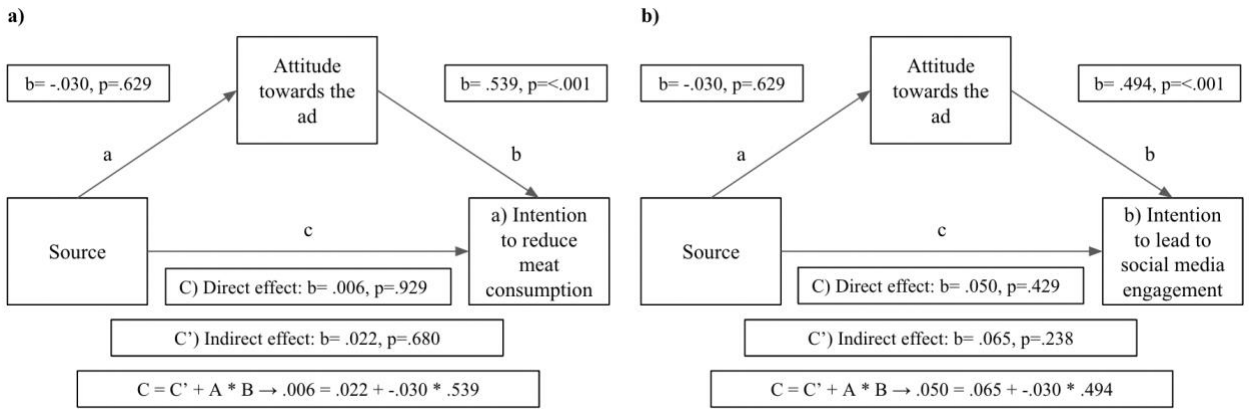
4.4 Mediation analysis

A mediation analysis by Baron and Kenny (1986) was conducted to ensure that the mediation variables worked as intended and were suitable for the MANCOVA analysis. They argue that a variable acts as a mediator if it meets the following conditions: a) variances in levels of the independent variable are significant for variances in the supposed mediator (i.e. path a), b) variances in the mediator are significant for variances in the dependent variable (i.e. path b), and c) when paths a and b are controlled for, a former significant relationship between the independent and dependent variables is no longer significant, with the strongest evidence of mediation appearing when path c is zero.

4.4.1 Mediation analysis source

Looking at the figure below, there was no significant effect of source on attitude towards the ad (path a) when looking at the effect size and p-value *b*= -0.30, *p*= .629. However, Figure 4a) indicated an observable effect of attitude towards the ad on intention to reduce meat consumption (path b) when looking at the effect size and p-value *b*= .539, *p* < .000. Also, the direct effect of source on intention to reduce meat consumption did not show a significant result *b*= .006, p= .929. Therefore, the mediating analysis did not show a mediation effect of attitude towards the ad between source and intention to reduce meat consumption *b*= .022, *p*= .680.

Figure 4. Mediation analysis source



Looking at Figure 4b), it was analysed if there was an effect of attitude towards the ad on intention to lead to social media engagement. There was a significant effect (path b) considering the effect size and p-value *b*= .494, *p*= < .000. However, there was no direct effect of source on intention to lead to social media engagement *b*= .050, *p*= .429. Hence, there was no indirect effect *b*= .065, *p*= .238. This observation

indicated that there was no mediation effect of attitude towards the ad between source and intention to lead to social media engagement, hence Hypothesis 6 was not supported.

4.4.2 Mediation analysis message valence

The mediation analysis in the figure below showed no significant effect between message valence and attitude towards the ad *b*= -.072, *p*= .253. Considering the mediator and dependent variable intention to reduce meat consumption in Figure 5a), a significant effect was observed *b*= .537, *p*= < .000. Nevertheless, there was no direct effect between the independent and dependent variable *b*= -.047, *p*= .458, which means no mediation effect was found *b*= -.008, *p*= .880.

Figure 5. Mediation analysis message valence

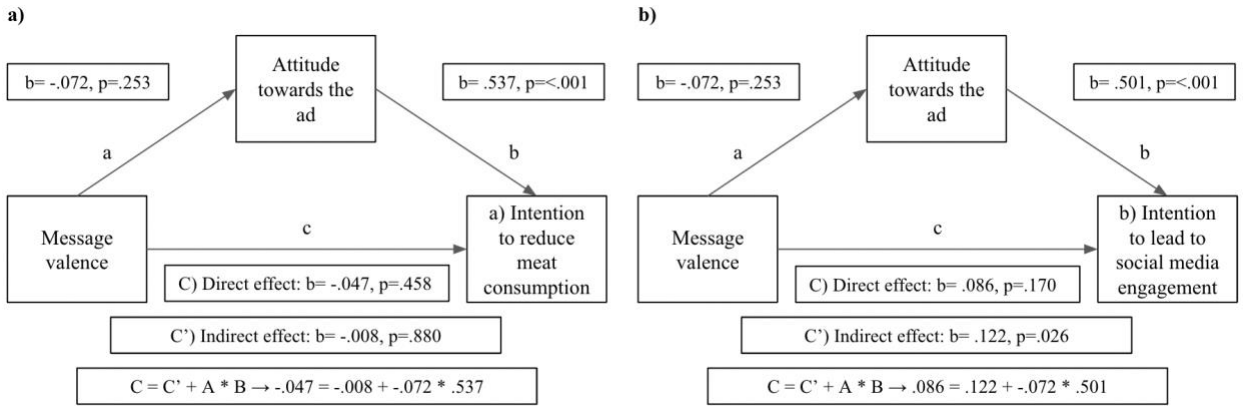
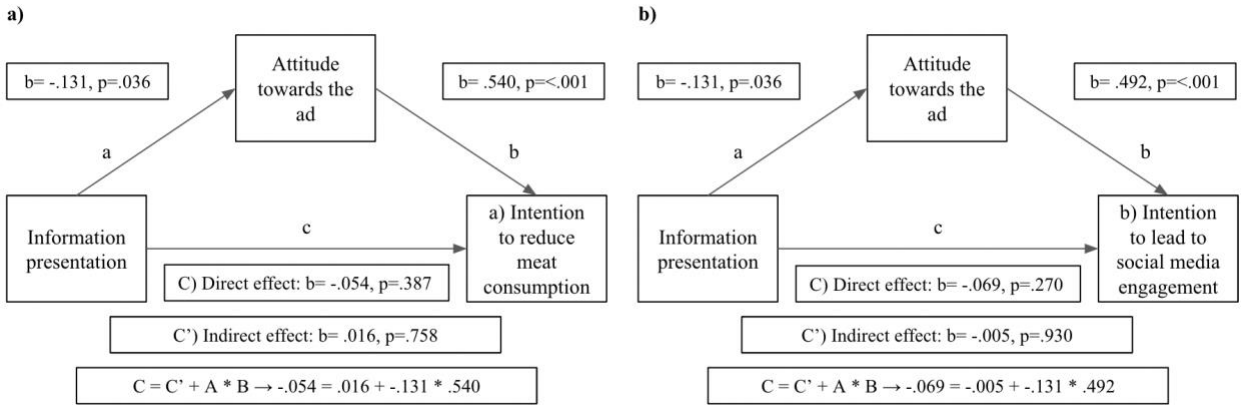


Figure 5b) showed a significant effect between attitude towards the ad and intention to lead to social media engagement *b*= .501, *p*= < .000. However, no significant effect was detected between message valence and the dependent variable *b*= .086, *p*= .170. Therefore, no mediation effect was found *b*= .122, *p*= .026. Accordingly, Hypothesis 7 was rejected.

4.4.3 Mediation analysis information presentation

The analysis below in Figure 6a) identified no significant effect between the independent variable information presentation and the mediator attitude towards the ad *b*= -.131, *p*= .036. However, there was a significant effect between the mediator and the intention to reduce meat consumption *b*= .540, < .000. The same goes for attitude towards the ad and the other intention *b*= .492, < .000, shown in Figure 6b). Nonetheless, information presentation and both intentions showed no effect as can be seen in Figure 6. Concluding that Hypothesis 8 was completely rejected.

Figure 6. Mediation analysis information presentation



The general conclusion according to Baron and Kenny (1986) is that the attitude towards the advertisement was not influenced by the independent variables source, message valence, and information presentation (path a). Additionally, no direct- and indirect effect between the independent variables and intentions was found (path c).

4.6 Overview hypotheses

The table below gives an overview of all the hypotheses that were formulated in the theoretical literature section. After all the analyses were carried out, it could be concluded whether the hypotheses were supported or not.

Table 15. Overview hypotheses

#	Hypotheses	Result
1	The use of an expert presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to an ordinary person.	Not supported
2	The use of a positive message valence while presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to a negative message valence.	Not supported
3	The use of simple terms while presenting health benefits in a social media post has a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement as opposed to using scientific terms.	Not supported
4	The use of an expert as a source and a positive message valence while presenting health benefits in a social media post interact to influence a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement.	a) Supported b) Not supported
5	The use of an expert as a source and simple terms as information presentation while presenting health benefits in a social media post interact to influence a significant positive effect on people's a) intention to reduce meat consumption, and b) intention to lead to social media engagement.	Not supported

6	The effect of source on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.	Not supported
7	The effect of message valence on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.	Not supported
8	The effect of information presentation on a) intention to reduce meat consumption, and b) intention to lead to social media engagement is expected to be mediated by attitude towards the ad.	Not supported
9	It is expected that the covariate attitude towards improving health has a significant positive effect on a) people's intention to reduce meat consumption, and b) people's intention to engage in social media.	Not supported
10	It is expected that the covariate affinity with meat products has a significant positive effect on a) people's intention to reduce meat consumption, and b) people's intention to engage in social media.	a) Supported b) Not supported

5. DISCUSSION

This study aimed to investigate the effects of a social media post on the intention to reduce meat consumption and lead to social media engagement in an experimental setting. The experiment consisted of the following variables: source (expert vs. ordinary), message valence (positive vs. negative), and information presentation (simple vs. scientific). Consequently, eight different conditions were designed to determine the effect on the intention to reduce meat consumption and the intention to lead to social media engagement. The effect of the mediator attitude towards the ad (Instagram post) was also examined. In addition, the covariates attitude towards improving health and affinity with meat products were analysed to see if these influenced the result. This chapter reviews the overall results, followed by implications, future research, and the conclusion.

5.1 Key findings

5.1.1 Discussion of main effects

The outcome of the data analysis revealed no significant main effect of source on the two intentions. However, there was a difference that showed an ordinary figure leads to a greater intention to reduce meat consumption and leads to social media engagement as opposed to an authority figure. A possible explanation for this result is that people may prefer to engage with someone they can identify with rather than an expert. According to Cialdini (1987), numerous studies have shown that the most influential endorsers turn out to be ordinary people. This is as his social proof principle states that if you see something that someone in a similar position to yourself has said, you will probably pay more attention to it than if they were a celebrity or high-profile spokesperson. This contrasts with the principle of authority by Cialdini (1984), which states that people inherently like to follow the lead of credible experts. Hence, in the case of aiming to influence the intention to reduce meat consumption and lead to social media engagement, the social proof principle appears to be stronger than the authority principle to persuade people.

Moreover, no significant differences were found for message valence on the two intentions. This can be interpreted as implying that the valence of the message is not important for the target group of this experiment. Therefore, it does not matter how the message is framed. The intention is however slightly higher when the framing is negative, this contradicts the theoretical background of this paper. Smith (1996) found that educated consumers are more influenced by negatively framed advertising, this could explain the result as the participants are considered highly educated. Additionally, negative frames are posited to be more persuasive to highly involved consumers (Martin & Marshall, 1999). The theoretical framework assumed low engagement because that is what scrolling on social media was considered. However, because the participants are health conscious, it may be that they are highly engaged with the topic and therefore

the valence of negative messages is more influential. Wansink and Pope (2014) also mention that when healthy eating is seen as a choice, research has shown that positive messages are more successful. However, when it is seen as a duty, negative messaging was found to be more effective. This could explain the outcome, as the messaging tells people that they must cut down on meat to be healthy, it sounds more like a duty than a choice. In addition, it may be that a negative valence leads to a higher social media engagement intention because people like to share negative stories with their environment. People do not like it when it confronts them, but when they think of the negative stories, they are more inclined to share it with their network. This is because the person thinks they will not be influenced, but others (the third persons) may be persuaded, also known as the third-person effect (Davidson, 1983). Perloff (1993) reports that the impact seems to occur especially when the message includes recommendations that are not perceived as being beneficial to the individual, when people consider the topic to be of personal relevance, and when they have the impression that the source has a negative bias. Even though this experiment emphasises health benefits, the participants in this study are, as previously concluded, very health conscious. Therefore, they may not consider it beneficial for themselves, but they do value the topic (personal relevance), hence they rather see it as something to share with the people around them.

The third independent variable information presentation also did not show a significant difference between the two intentions. However, it did show that simple terms resulted in greater intentions than scientific terms. This is in line with previous research by Arguello et al. (2006) and Goodwin (2012), who stated that the use of simple language leads to more responses online and a higher influence. If people understand what the message means, they are more likely to adjust their behaviour than if they do not. Just as Goodwin (2012) argued, public opinion is less easy to influence when science is perceived as difficult or confusing. Easier words make it simpler and less confusing (Oppenheimer, 2006) and can therefore influence the public more easily.

5.1.2 Discussion of interaction effects

The interaction between source and message valence was significant. The result showed that the combination of an authority figure with a positive valence of the message is best used only when the intention is to reduce meat consumption, so only Hypothesis 4a) was supported by this result. This is in line with the study by Kim and Kim (2013), which found that messages from a credible source (expert) that were positively framed led to the most positive attitudes towards the messages themselves. As mentioned, behaviour is determined by attitudes (Ajzen, 1991). Hence, by using the combination of these two variables, the behaviour of reducing meat consumption can be influenced. When the intention is to lead to social media engagement, the outcome is highest when an ordinary person is used in combination with a negative message valence. It could be that people like to share a post including an ordinary person sooner as they

feel more connected to that person as stated before regarding the social proof principle of Cialdini (1987). This result contradicts the conclusion of Radighieri and Mulder (2014) who stated that when valence is positive, the probability of information being retransmitted from experts is no different than from non-experts. Also, the conclusion that a positive message valence is more likely to be passed on than a negative one, as in this case, it is the other way around. Moreover, the authors mentioned that if one wants to influence people by using a negative valence of the message, one has to use an expert (Radighieri & Mulder, 2014), which also contradicts the outcome of this experiment. This result can be traced back to the third-person effect as mentioned in the section before.

There was no significant interaction effect between source and information presentation. This is in contrast with the conclusion of Artz and Tybout (1999) regarding the source having to be related to the presentation of information. The authors argue that this should be congruent because it would be strange for an ordinary person to use scientific terms. However, the conclusion of this experiment shows that these variables do not interact and thus do not necessarily have to be congruent. An explanation for this result could be that the posts did not include a lot of scientific terms, only cardiovascular disease is considered jargon. Hence, it does not matter if an ordinary person uses one scientific term, but it could matter if it is a whole text including jargon. The results indicated that an expert combined with simple terms was best to use when the intention was to reduce meat. This finding could be supported by the claim that experts are seen as credible sources (Andersen & Clevenger 1963; McGuire 1969) and simple terms must be used for the public to be influenced, as science will be perceived as less difficult and confusing (Goodwin, 2012). Hence, the reason people are sooner to be influenced to change behaviour. However, if the aim was to lead to social media engagement, the findings suggest that an ordinary person using simple terms should be used. Looking at the results of this experiment, the conclusion is that one should generally use an ordinary person when the aim is to lead to social media engagement regarding this topic. This result is supported by the literature on the social proof principle of persuasion by Cialdini (1987) mentioned before when supporting the claims of this study. As it is through social comparison with referent others (ordinary people), people validate the correctness of their opinions and decisions (Festinger, 1954, as cited in Cialdini, Wosinska, Barrett, Butner & Gornik-Durose, 1999). As a result, people tend to behave as their friends and peers have behaved (Cialdini et al., 1999). This principle was found to lead to a variety of actions, in the case of this study, a higher intention for social media engagement on the topic of reducing meat consumption.

5.1.3 Discussion of covariates and mediation effects

Considering the impact of the covariate health consciousness on the two interventions, it can be said that it did not influence the outcome as there was no significant result. Since the participants are already

very health-conscious, they may already know a lot about the subject. Therefore, it might be irrelevant to present them with a message, in whatever way, as they are already aware of the benefits. This implies that the source, message valence and information presentation have no impact on health-conscious people and therefore do not lead to reduce meat consumption and lead to social media engagement.

Looking at affinity with meat products as a covariate, there was a significant result on the intention to reduce meat consumption but not on the intention to lead to social media engagement. This could be explained because the participants are not that attached to meat products. Nonetheless, it is just above average so this cannot be concluded with confidence. However, it can explain the significant result between the covariate and intention to reduce meat consumption. The reason why there is no significant relationship between the covariate and the intention to lead to social media engagement can be understood by the fact that for instance, people do not share things easily. For a majority (68%), sharing on social media has become an effective method of telling people who they are. Only sharing content that is consistent with personal beliefs is a (mostly) non-contradicting way to let people know what their interests are, how people think about different issues and what their opinions are (Sarda-Joshi, 2015). Since it is not very certain to say that the participants do not have much affinity with meat products, it could be that this group does not have a very strong attitude towards the subject. It is therefore not a strong part of their personal beliefs, which leads to them not sharing anything about it on social media.

All mediation analyses showed no significant effects, only attitude towards the ad on both intentions showed significant results (path b). Hence, the theory of planned behaviour (Ajzen, 1991), which suggests that behaviour is determined by attitudes is in line with this result. A possible reason for the outcome that there were no significant mediation effects is that there were no significant effects of the independent variables on the two intentions.

5.2 Theoretical implications

This research aimed to make several theoretical contributions, unfortunately, there were not many significant results. As far as it is known, this study is one of the first to focus on the variables source, message valence and information presentation and measured the effect of health awareness and affinity with meat products on the intention to reduce meat consumption and lead to social media engagement. Literature on how to lead to social media engagement regarding the topic of reducing meat consumption is still limited, as there was no significant result concerning this goal. However, this study contributes to the theoretical discussion on identifying predictors of persuasion in the context of using health benefits on social media to influence people's behaviour. New insights have emerged on what variables should be used in a message to achieve a higher intention of reducing meat consumption. While previous research has dealt

with the influence of the variables source (e.g., Cialdini, 1984), message valence (e.g., Akl et al., 2007), and information presentation (e.g., Goodwin, 2012) separately, and the interaction effect of source and message valence (e.g., Radighieri & Mulder, 2014), and source and information presentation (e.g., Artz & Tybout, 1999) on different subjects. Did this study look at the influence of all variables separately and as an interaction effect, through the use of the individual benefit of health in posts on social media, to reduce the intention of reducing mead consumption and lead to social media engagement. It is of added value to the literature on influencing people's behaviour towards health and ethical consumption, as the result indicated that there is an interaction effect between the variables source and message valence. For this reason, it can be assumed that individuals are influenced by an expert and positive message valence to reduce meat consumption. Additionally, as Berndsen and Pligt (2004) noted, an increased conflicted attitude towards eating meat (less affinity with meat) was associated with reduced meat consumption. This covariate of affinity with meat was tested and indeed, less affinity with meat products resulted in a higher intention to reduce meat consumption. From this, it can be concluded that one should consider the previous literature and the corresponding theoretical implication of this study regarding affinity to meat products when aiming to influence people's intention to reduce meat consumption.

5.3 Practical implications

From a practical perspective, the effects of persuasive messages on individuals' intention to reduce meat consumption are given. This study shows that any party wishing to influence people via social media with the use of health benefits must appeal to an expert and positive message valence in a post. Posting appeals describing societal moves toward eating less (but not eliminating) meat using these variables in the media, is a promising approach to restraining meat consumption among a large number of people (Sparkman et al., 2021). Further, the results may help health-related organizations, as it is proven that eating a lot of processed (especially red) meat leads to an increased risk of several diseases (Battaglia Richi et al., 2015). If people change their behaviour and consume less meat, it may result in these organisations having less of a burden in combating these diseases. Moreover, this study helps to achieve the Sustainable Development Goals (SDGs) set by the United Nations Conference (2012) in the areas of health and the environment. Encouraging people to buy ethically affects the general areas of good health and well-being, responsible consumption, the climate, and life underwater and on land. All of which are important for peace and prosperity for people and the planet, now and into the future (United Nations, 2015).

5.3 Limitations & future research

As concluded previously, the participants of this experiment are health conscious. However, it was never stated if they already knew the certain health benefits that were presented. Therefore, it cannot be said with confidence whether it would have mattered if it was new content or not. The conclusion is only based on that the participants are very health conscious. Regarding future research, it is interesting to see if the effect would be salient if the participants were not conscious of their health. As now people are very health-conscious, hence the framing has no effect at all. The way of framing is irrelevant as the participants probably already know the health benefits. Therefore, one should first ask whether the person is already aware of the information presented or not. Additionally, the individuals did not have a strong affinity with meat products, it would be interesting to see if the results differ for a target group that has a lot of affinity with meat. Thus, the participants in a future experiment should include people who have a high affinity with meat products, this should be asked before the experiment is conducted with that group.

Moreover, the experiment focused on Dutch persons between 18 and 30 years old. To draw a more comprehensive conclusion, this study could be extended to include more generations. Another limitation is that this study only focused on Dutch participants; for other countries and cultures, different results can be expected. Furthermore, the candidates of this experiment had a fairly high level of education, it could be interesting to analyse if the conclusion would differ if the participants had a lower level of education. As this group may not be as aware of these health benefits as the target group of this experiment. Future research could therefore include a larger experiment with more participants from different generations, countries, and educational levels.

It is also interesting to investigate how the intention to lead to social media engagement with this topic can be influenced, as there was no significant result on this aim within this experiment. Future research could therefore ask the participants what a post should contain for them to engage with it on social media. Another limitation concerning the material is the lack of scientific terms in the posts. Although the manipulation check yielded a significant result, the post that was supposed to be scientifically contained only one scientific term ("cardiovascular"). This may even be seen as not a strong scientific term since it is not very uncommon. Therefore, future research could better investigate which terms are truly scientific and not so easily mentioned in the parlance. This is to see whether it really makes a difference whether a person understands the post or not and what this does to the persuasion of the post on the intentions.

5.4 Conclusion

This study showed no significant difference between source, message valence, and information presentation on intention to reduce meat consumption and intention to lead to social media engagement.

However, it showed a significant interaction effect of source and message valence on the intention to reduce meat consumption. Additionally, attitude towards the ad showed no mediation effects between the independent variables and the two intentions. The covariate attitude towards improving health showed no statistically significant difference between the two intentions. Nevertheless, the covariate affinity with meat products showed a significant difference on intention to reduce meat consumption, but not on intention to lead to social media engagement.

To summarize, this study revealed that when the aim is to reduce meat consumption, the interaction of source and message valence is significant. The hypothesis to use an expert and a positive message valence together in a post to result in the highest intention to reduce meat consumption is supported. Also, the person's affinity with meat products should be considered when the intention is to reduce meat consumption. When people are already not that attached to meat products, the intention to reduce the consumption of the products is higher. The conclusion of this experiment gives theoretical and practical implications to anyone party that wants to use social media posts to influence reducing meat consumption. It is assumed that individuals are influenced by an expert and a positive message valence to reduce meat consumption, which contributes to the theory on which variables should be used to be persuasive in this regard. With this knowledge, it can be put into practice to contribute to society concerning ethical buying behaviour and health. Hence, this research contributes to helping the health of the population, health organisations, and to the realisation of the Sustainable Development Goals.

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Appendices

Appendix A. Approval Ethics Committee

UNIVERSITY OF TWENTE.

FACULTY BMS

220364 REQUEST FOR ETHICAL REVIEW

Request nr: 220364
Researcher: Layik, S.
Supervisor: Beldad, A.D.
Reviewer: Galetzka, M.
Status: Approved by commission
Version: 2

1. START

A. TITLE AND CONTEXT OF THE RESEARCH PROJECT

1. What is the title of the research project? (max. 100 characters)

The Influence of Social Media on Reducing Meat Consumption

2. In which context will you conduct this research?

Master's Thesis

3. Date of the application

28-03-2022

5. Is this research project closely connected to a research project previously assessed by the BMS Ethics Committee?

No/Unknown

B. CONTACT INFORMATION

6. Contact information for the lead researcher

6a. Initials: S.

6b. Surname: Layik

6c. Education/Department (if applicable): M-COM

6d. Staff or Student number: 2713209

6e. Email address: s.layik@student.utwente.nl

6f. Telephone number (during the research project): [redacted]

6g. If additional researchers (students and/or staff) will be involved in carrying out this research, please name them:

6h. Have you completed a PhD degree?

No

7. Contact information for the BMS Supervisor

7a. Initials: A.D.

7b. Surname: Beldad

7c. Department: BMS-CS

7d. Email address: a.d.beldad@utwente.nl

7e. Telephone number (during the research project): [redacted]

8. Is one of the ethics committee reviewers involved in your research? Note: not everyone is a reviewer.

No

C. RESEARCH PROJECT DESCRIPTION

9a. Please provide a brief description (150 words max.) of the background and aim(s) of your research project in non-expert language.

"Using the right source, message valence, and information presentation for communicating health benefits on social media to influence the reduction of meat consumption and lead to social media engagement." This study is of importance as the literature indicates that eating a lot of meat leads to a higher risk of different diseases. Also, as it is more sustainable to eat less meat and the United Nations Conference has set some Sustainable Development Goals to achieve which include health and environmental issues. Social media engagement is key to spreading awareness of this issue. Therefore, studying how a post/message should be set up to influence the behaviour of reducing meat consumption is of importance. A 2 (source: authority figure vs. ordinary person) x 2 (message valence: positive vs. negative) x 2 (information presentation: scientific vs. layman's terms) between-subject experimental design will be executed. First, a pre-test will be conducted to see if the eight conditions (mock-up Instagram posts) are set up correctly. Hereafter, the experiment will be conducted to see which Instagram post has the highest influence to reduce meat consumption.

9b. Approximate starting date/end date of data collection:

Starting date: 2022-03-29

End date: 2022-04-29

9c. If applicable: indicate which external organization(s) has/have commissioned and/or provided funding for your research.

Commissioning organization(s):

Not applicable

Funding organization(s):

Not applicable

2. TYPE OF STUDY

Please select the type of study you plan to conduct:

I will be collecting new data from individuals acting as respondents, interviewees, participants or informants.

4. RESEARCH INVOLVING THE COLLECTION OF NEW DATA

A: RESEARCH POPULATION

20. Please provide a brief description of the intended research population(s):

Respondents of the experiment carried out in a survey.

21. How many individuals will be involved in your research?

265

22. Which characteristics must participants/sources possess in order to be included in your research?

Dutch people with an age between 18 and 30. They have to be omnivores and on social media.

23. Does this research specifically target minors (<16 years), people with cognitive impairments, people under institutional care (e.g. hospitals, nursing homes, prisons), specific ethnic groups, people in another country or any other special group that may be more vulnerable than the general population?

No

24. Are you planning to recruit participants for your research through the BMS test subject pool, SONA

No

B. METHODS OF DATA COLLECTION

25. What is the best description of your research?

Online) survey research

26. Please prove a brief yet sufficiently detailed overview of activities, as you would in the Procedure section of your thesis or paper. Among other things, please provide information about the information given to your research population, the manipulations (if applicable), the

measures you use (at construct level), etc. in a way that is understandable for a relative layperson.

The participant gets to see one condition/mock-up Instagram post (out of the eight) and questions will be asked regarding demographics, health consciousness, affinity with meat products, the source-, message valence-, and information presentation of the post, attitude

towards the post, emotional response, intention towards reducing meat and intention towards social media engagement. A five-point Likert scale will be used for all these questions stating from totally disagree to totally agree.

How much time will each participant spend (mention the number of sessions/meetings in which they will participate and the time per session/meeting)?

It takes approximately 5 minutes to fill in the experiment survey.

C. BURDEN AND RISK OF PARTICIPATION

27. Please provide a brief description of these burdens and/or risks and how you plan to minimize them:

In the introduction of the survey, the following will be stated: "Your participation in this study is entirely voluntary. There are no foreseeable risks associated with this study. However, if you feel uncomfortable answering any question, you may withdraw from the study at any time. The information is anonymous and will remain confidential.". Also, the participant can opt-out at any given moment.

28. Can the participants benefit from the research and/or their participation in any way?

Yes

Please Explain:

They may learn that eating an excessive amount of meat can reduce an increase in heart- and blood vessels diseases. Also, the mock-up Instagram post includes the sentence "Every day, 101 people die of heart or blood vessel disease. - Hartstichting", which can also be new information for them.

29. Will the study expose the researcher to any risks (e.g. when collecting data in potentially dangerous environments or through dangerous activities, when dealing with sensitive or distressing topics, or when working in a setting that may pose ‘lone worker’ risks)?

No

INFORMED CONSENT

30. Will you inform potential research participants (and/or their legal representative(s), in case of non-competent participants) about the aims, activities, burdens and risks of the research before they decide whether to take part in the research?

Yes

Briefly clarify how:

This will be stated in the introduction: "Your participation in this study is entirely voluntary. There are no foreseeable risks associated with this study. However, if you feel uncomfortable answering any question, you may withdraw from the study at any time. The information is anonymous and will remain confidential."

32. How will you obtain the voluntary, informed consent of the research participants (or their legal representatives in case of non-competent participants)?

Active online consent

33. Will you clearly inform research participants that they can withdraw from the research at any time without explanation/justification?

Yes

34. Are the research participants somehow dependent on or in a subordinate position to the researcher(s) (e.g. students or relatives)?

No

35. Will participants receive any rewards, incentives or payments for participating in the research?

No

36. In the interest of transparency, it is a good practice to inform participants about what will happen after their participation is completed. How will you inform participants about what will happen after their participation is concluded?

Participants who indicate they are interested will receive a summary of the research results.

E. CONFIDENTIALITY AND ANONYMITY

37. Does the data collected contain personal identifiable information that can be traced back to specific individuals/organizations?

No

39. Will you make use of audio or video recording?

No

5. DATA MANAGEMENT

I have read the UT Data policy.

I am aware of my responsibilities for the proper handling of data, regarding working with personal data, storage of data, sharing and presentation/publication of data.

6. OTHER POTENTIAL ETHICAL ISSUES/CONFLICTS OF INTEREST

40. Do you anticipate any other ethical issues/conflicts of interest in your research project that have not been previously noted in this application? Please state any issues and explain how you propose to deal with them. Additionally, if known indicate the purpose your results have (i.e. the results are used for e.g. policy, management, strategic or societal purposes).

The results are used for strategic and societal purposes. Companies can make use of it to influence people on reducing meat consumption, e.g., when wanting to sell a cookbook with recipes that replace meat for a substitution. It is also for society itself convenient as it affects people's health and the environment in a good way.

7. ATTACHMENTS

-

8. COMMENTS

9. CONCLUSION

Status: Approved by commission

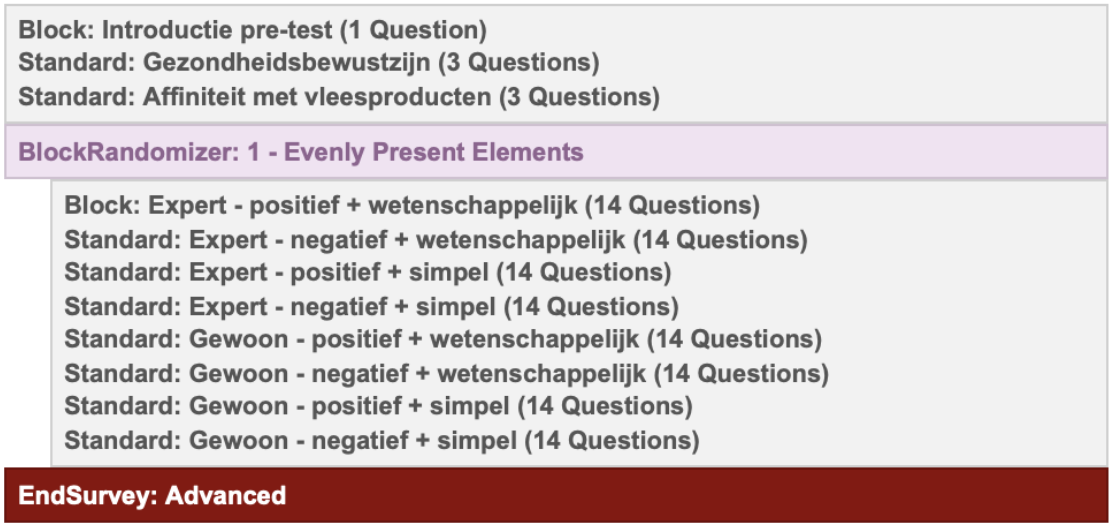
The BMS ethical committee / Domain Humanities & Social Sciences has assessed the ethical aspects of your research project. On the basis of the information you provided, the committee does not have any ethical concerns regarding this research project. It is your responsibility to ensure that the research is carried out in line with the information provided in the application you submitted for ethical review. If you make changes to the proposal that affect the approach to research on humans, you must resubmit the changed project or grant an agreement to the ethical committee with these changes highlighted.

Moreover, novel ethical issues may emerge while carrying out your research. It is important that you re-consider and discuss the ethical aspects and implications of your research regularly, and that you proceed as a responsible scientist.

Finally, your research is subject to regulations such as the EU General Data Protection Regulation (GDPR), the Code of Conduct for the use of personal data in Scientific Research by VSNU (the Association of Universities in the Netherlands), further codes of conduct that are applicable in your field, and the obligation to report a security incident (data breach or otherwise) at the UT.

Appendix B. Pre-test

Enqueteflow



Beïnvloeding van de vermindering van vleesconsumptie

Beste deelnemer,

Hartelijk dank voor uw deelname aan deze enquête, uw feedback wordt zeer op prijs gesteld. Dit onderzoek is uitgevoerd door Sheena Layik van de faculteit Behavioural Management and Social Sciences aan de Universiteit Twente.

Het doel van deze enquête is om te controleren of de Instagram-post goed is ontworpen en of de vragen duidelijk geformuleerd zijn. Het invullen van de pre-test duurt ongeveer 5 minuten.

Uw deelname aan dit onderzoek is geheel vrijwillig. Er zijn geen voorzienbare risico's verbonden aan dit onderzoek. Als u zich echter ongemakkelijk voelt bij het beantwoorden van een vraag, kunt u zich op elk moment uit het onderzoek terugtrekken. De informatie is anoniem en zal vertrouwelijk blijven.

Als u op enig moment vragen heeft over de vragenlijst of de procedures, kunt u contact opnemen met s.layik@student.utwente.nl.

Voordat u aan de vragenlijst kunt beginnen, moet u akkoord gaan met de algemene voorwaarden.

○ Ik ga akkoord met de algemene voorwaarden

Gezondheidsbewustzijn
*Gedefinieerd als de bereidheid om de gezondheid te verbeteren.

Met betrekking tot uw gezondheid, geef aan in welke mate u het eens bent met de volgende beweringen.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Ik ben bewust met mijn voeding bezig.	○	○	○	○	○
Gezond eten is belangrijk voor mij.	○	○	○	○	○
Ik ben bewust met een gezonde levensstijl bezig.	○	○	○	○	○
Ik houd mij aan een gezonde levensstijl.	○	○	○	○	○
Ik probeer gezonde keuzes te maken.	○	○	○	○	○
Ik denk veel na over hoe ik zo gezond mogelijk leef.	○	○	○	○	○

Heeft u feedback over de vragen op deze pagina, zo ja, kunt u dat toelichten?

_____

Affiniteit met vleesproducten
*Gedefinieerd als de essentie van vleesproducten in uw dieet.

Met betrekking tot uw affiniteit met vleesproducten, geef aan in welke mate u het eens bent met de volgende beweringen.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Vlees maakt deel uit van mijn dagelijkse voeding.	○	○	○	○	○
Ik kies vaak voor een recept waar vlees in zit.	○	○	○	○	○
Ik vind vlees belangrijk in mijn gerechten.	○	○	○	○	○
Ik vind vlees belangrijk voor mijn lichaam.	○	○	○	○	○
Ik eet vaak vlees.	○	○	○	○	○
Ik kan niet zonder vlees.	○	○	○	○	○

Heeft u feedback over de vragen op deze pagina, zo ja, kunt u dat toelichten?

_____

Instagram post

*One of the following mock-up Instagram posts was shown to each participant.

Expert: positive + scientific	Expert: positive + simple	Expert: negative + scientific	Expert: negative + simple
			
Ordinary: positive + scientific	Ordinary: positive + simple	Ordinary: negative + scientific	Ordinary: negative + simple
			

Heeft u feedback over de post, zo ja, kunt u dat toelichten?

Manipulation check questions

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **bron**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht komt van een expert.	○	○	○	○	○
Het bericht komt van een persoon met een uitgebreide kennis over voedselgerelateerde onderwerpen.	○	○	○	○	○
Het bericht komt van een betrouwbare bron.	○	○	○	○	○

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **valentie**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht heeft een positieve toon.	○	○	○	○	○
Het bericht benadrukt positieve gevolgen.	○	○	○	○	○

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **informatie presentatie**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht bevat eenvoudige woorden.	○	○	○	○	○
Het bericht bevat dagelijks taalgebruik.	○	○	○	○	○
Het bericht bevat **geen** jargon (groepstaal die voor buitenstaanders moeilijk te begrijpen is: e.g., medische vaktaal; wanneer tandartsen met elkaar overleggen over jouw gebit).	○	○	○	○	○

Attitude towards the post

Geef hieronder aan welke van de volgende beweringen uw mening het best weergeeft.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
De Instagram post geeft stof tot nadenken.	○	○	○	○	○
De Instagram post is overtuigend.	○	○	○	○	○
De Instagram post is pakkend.	○	○	○	○	○
De Instagram post is aantrekkelijk.	○	○	○	○	○
De Instagram post is interessant.	○	○	○	○	○

Emotional response

De Instagram post geeft mij een:

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Opgewekt gevoel	○	○	○	○	○
Optimistisch gevoel	○	○	○	○	○
Prettig gevoel	○	○	○	○	○

Intention towards reducing meat consumption

Na het zien van de Instagram post, ben ik bereid om…

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Mijn vlees consumptie te verminderen.	○	○	○	○	○
Geneigd om vlees te vermijden.	○	○	○	○	○
Vaker te kiezen voor een recept met minder/geen vlees.	○	○	○	○	○

Intention towards social media engagement

Na het zien van de Instagram post, ben ik bereid om…

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht te liken.	○	○	○	○	○
Het bericht te delen met mijn omgeving via Instagram dm (direct message) of via een andere deelroute.	○	○	○	○	○
Het bericht te delen op mijn social media profiel (e.g., Instagram verhaal).	○	○	○	○	○

Heeft u feedback over de vragen op deze pagina, zo ja, kunt u dat toelichten?

_____

Appendix C. Pre-test feedback

Subject	Feedback
Health conscious-ness and affinity with meat	Ik eet geen vlees meer sinds bijna 3 jaar
	"Misschien een interessante opmerking; Ik eet vaker vlees dan dat ik daadwerkelijk zou willen. Ik woon nog thuis en heb ik eet dus mee met wat er thuis gemaakt wordt. Mijn vader vindt vlees voornamelijk erg belangrijk in een gerecht, dus eet ik dit mee. Als ik echt ergens mag kiezen wat ik eet, kijk ik niet perse naar vlees/vis, maar meer naar het hele gerecht en soms is dat dan vegetarisch."
	Misschien handiger om belangrijkheid te kunnen kiezen in cijfers bijv 1 onbelangrijk en 10 heel belangrijk
	Ik eet voornamelijk vlees omdat dat het gemakkelijk is en veel eiwitten bevat
Expert - positive + scientific	-
Expert - negative + scientific	Ik zou onder de foto een uitleg plaatsen omdat mensen snel heel negatief zijn over een dieet zonder vlees. Om veel vragen te voorkomen leg het alvast in grote lijnen uit wat je bedoeld met de tekst op de foto.
	Ik geloof niet zo in westerse gezondheid bronnen
	De reden va het niet delen is de bron
Expert - positive + simple	Geen leuke foto
Expert - negative + simple	Het is een pakkende post. Door het statement in de tekstwolk raak je nieuwsgierig en geprikkeld en zou ikzelf op de link klikken om het hele verhaal te weten te komen
	Goede foto
	De instagram post is niet wat je van deze tijd verwacht. Met de nieuwe edits van tegenwoordig loopt deze misschien een beetje achter en komt het daardoor minder professioneel over
	Vragen lijken op elkaar
	Ik zou mijn vleesconsumptie verminderen door de boodschap die erin staat. Of het gebeurd doordat het echt een pakkende post is durf ik niet te zeggen

Ordinary - positive + scientific	"Misschien klinkt gezondheidsbewuste niet heel lekker, eerder keuzebewust? En misschien weten sommige mensen niet wat cardiovasculaire aandoeningen inhoud. Verder spreekt de afbeelding me erg aan! :)"
Ordinary - negative + scientific	-
Ordinary - positive + simple	De tekst lijkt mij het belangrijkste onderdeel van de post. Die valt nu niet direct op. Je kijkt eerst naar de achtergrond.
	Chefkok, ziet er gezond uit!
	Die paar woorden die in de instagram post staan vermeld, zijn niet zo lastig te begrijpen
	Er is te weinig tekst om te beoordelen of ik de informatie betrouwbaar vind. Stel dat er nog uitgebreid staat beschreven waarom minder vlees zo 'gezond' is in de beschrijving van de post. Dan zou het evt. wat interessanter zijn.
	Ik deel niet zo snel posts.
Ordinary - negative + simple	-

Appendix D. Experiment

Beïnvloeding van de vermindering van vleesconsumptie

Beste deelnemer,

Hartelijk dank voor uw deelname aan deze enquête, uw feedback wordt zeer op prijs gesteld. Dit onderzoek is uitgevoerd door Sheena Layik van de faculteit Behavioural Management and Social Sciences aan de Universiteit Twente.

Het doel van dit experiment is om te zien welke variabelen in een post bijdragen tot het beïnvloeden van het minderen van vleesconsumptie. Het invullen van de vragenlijst duurt ongeveer 5 minuten.

Uw deelname aan dit onderzoek is geheel vrijwillig. Er zijn geen voorzienbare risico's verbonden aan dit onderzoek. Als u zich echter ongemakkelijk voelt bij het beantwoorden van een vraag, kunt u zich op elk moment uit het onderzoek terugtrekken. De informatie is anoniem en zal vertrouwelijk blijven.

Als u op enig moment vragen heeft over de vragenlijst of de procedures, kunt u contact opnemen met s.layik@student.utwente.nl.

Voordat u aan de vragenlijst kunt beginnen, moet u akkoord gaan met de algemene voorwaarden.

○ Ik ga akkoord met de algemene voorwaarden

Q1 Social media Gebruikt u social media?

○ Ja

○ Nee

Ga naar: Einde enquête Als Gebruikt u social media? = Nee

Q2 Dieet Eet u veganistisch, vegetarisch of geen van beide?

- ○ Veganistisch (alleen plantaardig)
- ○ Vegetarisch (geen vlees en vis)
- ○ Geen van beide

Ga naar: Einde enquête Als Eet u veganistisch, vegetarisch of geen van beide? = Veganistisch (alleen plantaardig)

Ga naar: Einde enquête Als Eet u veganistisch, vegetarisch of geen van beide? = Vegetarisch (geen vlees en vis)

Demografische gegevens

Q3 Leeftijd Wat is uw leeftijd?

- ○ Leeftijd _____

Q4 Geslacht Wat is uw geslacht?

- ○ Man
- ○ Vrouw
- ○ Niet-binair/derde geslacht
- ○ Ik zeg dat liever niet

Q5 Nationaliteit Wat is uw nationaliteit?

- ○ Nederlands
- ○ Anders, namelijk: _____

Q6 Opleiding Wat is uw hoogst afgeronde opleiding?

- ○ Basisonderwijs
- ○ Lager / voorbereidend beroepsonderwijs (lbo / vmbo)
- ○ Hoger algemeen voortgezet onderwijs (havo)
- ○ Voorbereiden wetenschappelijk onderwijs (vwo)
- ○ Middelbaar beroepsonderwijs (mbo)
- ○ Hoger beroepsonderwijs (hbo)
- ○ Wetenschappelijk onderwijs (wo)

Q7 Bewustzijn

Gezondheidsbewustzijn

*Gedefinieerd als de bereidheid om de gezondheid te verbeteren.

Met betrekking tot uw gezondheid, geef aan in welke mate u het eens bent met de volgende beweringen.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Ik ben bewust met mijn voeding bezig.	○	○	○	○	○
Gezond eten is belangrijk voor mij.	○	○	○	○	○
Ik ben bewust met een gezonde levensstijl bezig.	○	○	○	○	○
Ik houd mij aan een gezonde levensstijl.	○	○	○	○	○
Ik probeer gezonde keuzes te maken.	○	○	○	○	○
Ik denk veel na over hoe ik zo gezond mogelijk leef.	○	○	○	○	○

Q8 Affiniteit

Affiniteit met vleesproducten

*Gedefinieerd als de essentie van vleesproducten in uw dieet.

Met betrekking tot uw affiniteit met vleesproducten, geef aan in welke mate u het eens bent met de volgende beweringen.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Vlees maakt **geen** deel uit van mijn dagelijkse voeding.	○	○	○	○	○
Ik kies ook wel eens voor een recept waar **geen** vlees in zit.	○	○	○	○	○
Ik vind vlees **niet** belangrijk in mijn gerechten.	○	○	○	○	○
Ik vind vlees **niet** belangrijk voor mijn lichaam.	○	○	○	○	○
Ik eet weinig vlees.	○	○	○	○	○
Ik kan zonder vlees.	○	○	○	○	○

Instagram post

*One of the following Instagram posts was shown to each participant.

Expert: positive + scientific

Expert: positive + simple

Expert: negative + scientific

Expert: negative + simple

Ordinary: positive + scientific

Ordinary: positive + simple

Ordinary: negative + scientific

Ordinary: negative + simple

Q9 Bron

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **bron**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht komt van een expert.	○	○	○	○	○
Het bericht komt van een persoon met een uitgebreide kennis over voedselgerelateerde onderwerpen.	○	○	○	○	○
Het bericht komt van een voedingsdeskundige.	○	○	○	○	○

Q10 Valentie

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **valentie**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht heeft een positieve toon.	○	○	○	○	○
Het bericht benadrukt positieve gevolgen.	○	○	○	○	○

Q11 Info presentatie

Met betrekking tot de Instagram post, geef aan in welke mate u het eens bent met de volgende beweringen over de **informatie presentatie**.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht bevat eenvoudige woorden.	○	○	○	○	○
Het bericht bevat dagelijks taalgebruik.	○	○	○	○	○
Het bericht bevat **geen** jargon (groepstaal die voor buitenstaanders moeilijk te begrijpen is: e.g., medische vaktaal; wanneer tandartsen met elkaar overleggen over jouw gebit).	○	○	○	○	○

Q12 Houding post

Geef hieronder aan welke van de volgende beweringen uw mening het best weergeeft.

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
De Instagram post geeft stof tot nadenken.	○	○	○	○	○
De Instagram post is overtuigend.	○	○	○	○	○
De Instagram post is pakkend.	○	○	○	○	○
De Instagram post is aantrekkelijk.	○	○	○	○	○
De Instagram post is interessant.	○	○	○	○	○

Q13 Emotie reactie

De Instagram post geeft mij een:

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Opgewekt gevoel	○	○	○	○	○
Optimistisch gevoel	○	○	○	○	○
Prettig gevoel	○	○	○	○	○

Q14 Intentie: vlees

Na het zien van de Instagram post, ben ik bereid om...

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Mijn vlees consumptie te verminderen.	○	○	○	○	○
Geneigd om vlees te vermijden.	○	○	○	○	○
Vaker te kiezen voor een recept met minder/geen vlees.	○	○	○	○	○

Q15 Intentie: social
Na het zien van de Instagram post, ben ik bereid om...

	Helemaal mee oneens	Enigszins mee oneens	Noch eens noch oneens	Enigszins mee eens	Helemaal mee eens
Het bericht te liken.	○	○	○	○	○
Het bericht te delen met mijn omgeving via Instagram dm (direct message) of via een andere deelroute.	○	○	○	○	○
Het bericht te delen op mijn social media profiel (e.g., Instagram verhaal).	○	○	○	○	○