Inoculation to raise resistance against misleading food claims.

An experimental study into the role of inoculation, self-affirmation and source credibility to raise resistance against the misleading 'Organic' food claim.

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Abstract

Misconceptions about food and nutrition still remain to be one the principal drivers of obesity and other welfare-related chronic diseases(Pomeranz, 2013). More specifically, Consumers are often misled by on packaging food claims, such as “‘Organic’”, because they estimate their healthfulness to be higher than that is actually the case (Lee, Shimizu, Kniffin, & Wansink, 2013; Prada, Garrido, & Rodrigues, 2017; Schuldt, & Schwarz, 2010), and even tend to eat more of these foods (Chandon & Wansink, 2006; Provencher, Polivy, & Herman, 2009). More specifically, people think that ‘Organic’ food is healthier than non-’Organic’ food, although no convincing results have found that ‘Organic’ foods are healthier in comparison to more conventional options (Smith-Spangler, Brandeau, Hunter, Bavinger, Pearson, Eschbach, & Olkin, 2012). The food claim ‘Organic’ is besides being misleading, also badly regulated by the designated authorities that do not take resolute action to counteract on misconception as a result from misleading food claims. Hence, the current study seeks to investigate the potential of inoculation to make consumers resilient against the misleading food claim “‘Organic’”. This persuasion technique has been used to change attitudes and habits. Also, to reduce potential resistance against the inoculation treatment, and to make it more effective, two additional persuasive techniques, self-affirmation and source credibility, were investigated along-side the inoculation treatment. The study was carried out as an online experiment, and was designed as a 2x2 between-subjects design (Credible source vs. Non-credible source and Self-affirmation vs. No Self-affirmation). Additionally, two control conditions were added (Inoculation without source, and no Inoculation). The effect of the independent variables was measured on the dependent measure estimated healthfulness of food product, and was expected to be mediated by resistance against the inoculation. A sample of hundred-and-fifty-one participants was composed. A self-affirmation treatment, and the presence of a credible source were expected to reduce the resistance against the

inoculation. As a result of this, it was assumed that people would become more likely to be persuaded to change their attitude, and would show increased resistance towards the food claim ‘Organic’. Contrary to the expectations, inoculation did not prove itself to be an effective tool to raise resistance against misleading the food claim ‘Organic’. Moreover, self-affirmation and source credibility did not decrease resistance against the inoculation, and no attitude changes as a result of the different treatments was observed. Nevertheless, a negative relationship between resistance and perceived healthfulness of ‘Organic’ food was observed. The outcomes of this study, implications for stakeholders and suggestions for future research are discussed.

1. Introduction

In the modern food environment, considered one of the drivers of obesity and other welfare-related chronic diseases, consumers are presented with a daily barrage of food-associated information, most of which promote energy-dense foods high in fat and sugar (Kelly, Yang, Chen, Reynolds, & He, 2008; Swinburn, Sacks, Hall, McPherson, Finegood, Moodie, Gortmaker, 2011). At the same time consumers are increasingly interested in living a healthier live, supported by more exercise and healthier food options (Grunert, 2013). The marketing organizations of large food corporations have creatively responded to this trend by labelling their products with generic claims like “‘Organic’”, “natural”, “low-fat”, etc.. Research has demonstrated that these generic claims on food packaging provide misleading assumptions in consumers’ minds; they rate these generically-labelled foods as lower in calories and overestimate their accredited positive characteristics. As a result of this misconception, consumers tend to eat more of these foods (Chandon & Wansink, 2006; Provencher, Polivy, & Herman, 2009).

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In their quest for healthier foods consumers are guided by health and food claims, with an emphasis on the recent emergence of environmentally conscious claims, like ‘Organic’, natural and ecological. There are no clear regulations dictating the characteristics of these claims on food, and more importantly whether or not they are recognized to mislead consumers (Pomeranz, 2013). In the US, the Food and Drug Administration (FDA) is the major regulatory body founded to inform and protect consumers on food and drugs. The FDA aims to apply regulations to ensure claims to be: nutritionally sound, well-designed, and being able to help consumers to make informed and healthy choices, and not to be false or misleading”. Moreover, the FDA emphasizes that claims on packaging and interrelated labelling on shelves, can empower consumers to establish healthier diets, and make well-informed nutritional decisions (Nestle, Ludwig, 2010). Nevertheless, it has failed to enforce regulations in line with American law (21 U.S. Code § 331 - Prohibited acts), with the consequence that food is misbranded with false or misleading claims. In the absence of clear regulation it is important for governments, health and food agencies alike to use alternative methods to arm consumers against misleading claims. A promising method that has been used to change attitudes and habits, by evoking resistance against certain information, is a persuasion technique known as inoculation. According to the inoculation theory of McGuire (1964), people can be inoculated against future attitude attacks in a similar way that people become vaccinated against biomedical attacks on the body of viruses. This study aims to investigate whether inoculation can be used to make people resilient against the potential misleading effect of the food claim “‘Organic’”, which results in the first research question:

> RQ1: “Can inoculation make people resilient against the misleading food claim ‘Organic’, by creating resistance towards this claim?”.

In addition the current study also seeks to investigate other methods that can optimize the effect of the inoculation to generate resistance against misleading food claims. Two promising applications were investigated along-side inoculation: self-affirmation and source credibility. The basic inoculation in the current study will inform people about the (health) risks that are related to the food claim ‘Organic’ and will provide arguments explaining the misleading nature of ‘Organic’ claims. Self-affirmation could lower potential defensiveness on the message (Harris & Epton, 2009; Kunda, 1987; Liberman & Chaiken, 1992). Self-affirmation has been applied to establish healthier behaviour, and clear relationships have been found between self- affirmation manipulations and responses to health risk information (Epton, Herris, Kane, van Koningsbruggen, & Sheeran, 2015).

Message source-credibility can also plays a role in reducing resistance against the adoption of information. Several studies have found evidence that information from a credible source has a beneficial impact on the acceptance of the information (Chaiken & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983). In paragraph 3.8 and 3.9 there will be elaborated further on the theoretical conceptualization and expected impact of self-affirmation and source credibility in relation to inoculation. Also, the relevance for inclusion of both the constructs is further explored and explained. It has not been investigated whether a self-affirmation treatment prior to an inoculation can be applied to reduce resistance against the inoculation message. Also, few studies have focused on the role of source-credibility when it comes to its combination with inoculation (Compton, & Pfau, 2005), and with the aim to confer resilience against the misleading food claim ‘Organic’. Therefore, this study also explores the potential of source-credibility to reduce resistance against the inoculation. This led to the formation of the second and third research question:

RQ2:“To what extent can a self-affirmation treatment, prior to the inoculation, reduce resistance against the inoculation?

RQ3:“To what extent can the presence of a credible source, reduce resistance against the inoculation?

This paper will start with further elaboration on the key topics and constructs that underpin the research framework, which will provide the foundation for the constituted hypotheses. Subsequently, the testing of these hypotheses, the associated measures, materials and selected analyses will be explained. Finally, results of the analyses will be presented, followed by a discussion, conclusions, and implications for future studies.

3.0. Theoretical Framework

3.1. Food claims

Manufacturers use all kind of food claims to make products more attractive to potential customers. Four different types of claims are currently distinguished by the FDA (Food and Drug Administration): Nutrient content claims, health claims, qualified health claims, and structure function claims (Pomeranz, 2013). Nutrient content claims indicate a certain level of a certain nutrient that is required to be disclosed on the packaging, such as “low sodium”. Health claims indicate the association between a substance present in the food and a particular ailment or condition, which should be founded in unambiguous scientific research. For example: “Healthy food-regimes with sufficient folate could reduce the chance of having a baby with a brain or spinal cord deficiency”. Qualified health claims are closely related to health claims, but are already allowed when emerging or restricted research scientific proof supports the correlation between a substance and a reduced risk of an ailment

or physical condition. Such claims can only be made accompanied by a disclaimer that stating the suggestion is based on very limited preliminary research. For example: “Some scientific research supports, but does not prove, that eating a certain amount of fibre everyday may reduce the risk of cardiovascular disease. Lastly, structure/function claims describe how a certain nutrient of ingredient affects or maintains the natural structure or function in the body, such as “Calcium builds strong bones”. In contrast to the other claims structure function claims do not necessarily have to be pre-approved by the authorities (Williams, 2005).

Although the general practices of food labelling seems clearly defined through the overhead guidelines, there is an increasing number of food claims that cannot be assigned to one of these four types, as no specified guidelines for their application and regulation have been drawn up (Pomeranz, 2013). An increasing number of unregulated food claims have emerged on new and improved products that manufacturers develop to appeal to and meet the demands of consumers (Sørensen, 2008). Due to the overload of options that consumers have, food manufacturers, struggle to distinguish themselves from the mass on the shelves, and look for ways to appeal to consumers, often by applying questionable claiming practices (Pomeranz, 2013), as food claim are the key communication channel between the food industry and the consumer (Sørensen, 2008). This has become clearly visible through the increased use of presentation on food packaging of: health claims, quality characteristics, eco-claims, environmental- and animal welfare claims, nutrition facts and other marketing ploys. The nature of the contemporary food environment regularly pans out to the application of misleading food claims on food packaging, which can lead to a distorted picture of a product’s true healthfulness, by giving misinformation (Pomeranz, 2013).

3.2. Food claims and misinformation

According to the American Dietetic Association (ADA), misinformation around food and nutrition can have harmful effects on the health and well-being of consumers (Wansink, 2006). Guidelines to establishing a healthy diet are clearer than ever, and food manufacturers have to disclose nutritional information on the food package. This has led to an environment in which consumers can take responsibility regarding their health, but food manufactures have also seized opportunities to provide misleading food claims on their products. For this reason, people find it increasingly difficult to make the right choices, as it has become unclear how to distinguish nutrition facts from nutrition misinformation (Ayoob, Duyff, & Quagliani, 2002). According to the ADA, misinformation can be communicated with or without malicious intent, and misinterprets food and nutrition science. The ADA defines three types of misinformation: faddism, health fraud, and misdirected claims. Food faddism refers to unrealistic or exaggerated assumption that the consumption or avoidance of a particular food, supplement or combination of these will provide certain health benefits, or may heal health deficiencies (Ayoob, Duyff & Quagliani, 2002). The second type of misinformation - health fraud - takes food faddism to a next level, as it always concerns a deliberate deception, with the aim to profit from it. More specifically, health fraud concerns the promotion of special foods, products, processes or appliances with false or misleading health or therapeutic claims (U.S. Public Health Services, 1988). Lastly, misdirected claims refer to those that may evoke (deliberately or accidentally) unjust conclusions or generalizations about food health advantages. Consumers are misled by these kinds of food claims, because they perceive certain food products to be healthier as that they actually are, while they assess a foods healthfulness based on packaging communication regarding the presence of particular substances, nutrients, or other characteristics (Wansink, 2006). This could provide a food with a “health halo” (Roe, Levy & Derby,1999).

3.3. Food claims and health halos

The so-called “Health-halo effect” occurs when consumers rate a product healthier than is actually justified in the presence of a food claim, which makes people more prone to purchase it. More specifically, the presence of such a food claim induces the consumer to rate a product higher on other health-related attributes, that are actually not directly asserted by the food claim (Roe, Levy & Derby,1999). Roe et al. (1999), investigated the impact of food claims on consumer product search and -evaluation outcomes. When a food product carried a health claim on the packaging, consumers would limit their investigation of a product almost exclusively to the front of the packaging, and disregard the nutrition facts panel. As a result, assumptions about the healthfulness of the product were based on beliefs that this claim induced in the consumers: the health halo-effect. Several studies have confirmed the existence of the halo-effect induced by of food claims like breakfast cereals containing claims as ‘supports your child's immunity’, ‘whole grain’, ‘fibre’, ‘calcium and vitamin D’, ‘Organic’ (Harris, Thompson, Schwartz, & Brownell, 2011), health-indicating claims (Williams, 2005), ecological (Sörqvist, Haga, Langeborg, Holmgren, Wallinder, Nöstl, & Marsh, 2015), ‘Organic’ (Prada, Garrido, & Rodrigues, 2017; Lee, et al., 2013; Schuldt, & Schwarz, 2010), fair-trade (Schuldt, Muller, & Schwarz, 2012), or natural (Berry, Burton, & Howlett, 2017). Although, there is a lot of information available on the packaging of foods, to make healthy foods choices, consumers find it difficult to distinguish between relevant information and misinformation (Ayoob, Duyff & Quagliani, 2002). In conclusion, as a consequence of the halo-effect, mis informative food claims could lead an over-evaluation of the healthiness of food and thereby undermine consumer intentions to make healthy food choices.

3.4. Consequences of misleading food claims

Several studies investigated the effects of misleading food claims, and found that increased food-related health perceptions lead consumers to consume more of a particular food (Her, & Seo, 2017; Provencher, Polivy, Herman, 2009; Wansink, & Chandon, 2006; 2007). One study found a relationship between snacks presented with a “low-fat” food-claim and increased consumption low-fat claim and increased food intake during a single consumption occasion up to 50% (Wansink, & Chandon, 2006). A similar effect occurred in the study by Provencher et al. (2009). One of the general study results indicated that participants would eat 35% more of a snack when it was regarded as healthy instead of unhealthy. In summary, it has been demonstrated that claims on food make consumers rely on this claims instead of other nutritional information. As a consequence of the halo-effect consumers overgeneralize the health claim, presuming the food is globally healthy despite the fact that the claims only assert one particular characteristic of it. Therefore, consumers often put themselves under the assumption that these foods are healthier than that they actually are, and are more prone to eat more of the food, and not without any consequences.

Pomeranz (2013) embraces the belief that food claims can be associated with even more far-reaching consequences, and pleads that these undermine public health. More long-term consequences as obesity and chronic diseases can for a part be attributed to our contemporary food environment (Pomeranz, 2013). The so-called ‘epidemic’ of overweight and obesity keeps evolving globally in a relentless pace. Forecasts predict that 42% of the world population will be obese, and 11% will meet the symptoms of severe obesity by 2030 (Finkelstein, Khavjou, Thompson, Trogdon, Pan, Sherry, & Dietz, 2012), and that over the next twenty years obesity prevalence will expand with a 33%, and in the case of in severe obesity with 130%. Despite the fact that obesity can be perceived as an ailment on its own, public health studies have pointed out the significant health risks, like diabetes, cardiovascular

disease, premature death, and cancer, are positively related to overweight and obesity (Kelly, Yang, Chen, Reynolds & He, 2008). Besides the serious health concerns, medical expenses will be skyrocketing in the future. Kelly et.al. (2008), made an attempt in estimating these expenses twenty years from now. They forecasted that the expenses would reach $549.5 billion, in 2030.

3.5. Regulation of misleading food claims

Taking the misleading nature of food claims and the potential consequences of overweight and obesity in mind, one could wonder why consumers are not being protected against these potentially misleading food claims. According to the World Health Organization (2000), governments and regional authorities should be responsible for protecting and promoting the health of their community by ensuring access to a safe, nutritious and affordable food supply. The contemporary food environment struggles with both a lack of regulations that restrict misleading claims, and inadequate enforcement of misleading claims that do violate the regulations (Pomeranz, 2013). The next paragraphs will elaborate further on the current state of affairs regarding the food claim regulations in the United States.

The FDA aims to apply regulations to ensure claims to be: “nutritionally sound, well-designed to help consumers make informed and healthy choices, and not false or “misleading” (U.S. Food & Drug Administration, 2009). Despite the fact that the definition encompasses the definition “misleading”, this concerns an area that the FDA does not generally address. As there are no clear protocols for the containment of misleading claims, the FDA does not take concrete action against claims that are purely considered to be misleading (Pomeranz, 2013). Despite its mission statement, the FDA has failed to enforce regulations in line with American law, which states that food is “misbranded” if it has a false or misleading claims, is not properly named or identified, is missing required disclosures of nutrition information, or if

health and nutrition claims are not made according to specified requirements (21 U.S. Code § 331 - Prohibited acts).

Moreover, the FDA does not use their regulatory authority and adequate resources to address misleading food claim practices as it has opted for a system which is primarily based on voluntary compliance. This means that when a company is accused of communicating misleading claims on their packaging has violated the rules, usually a warning letter is sent to the accused party, but no further regulatory repercussions are taken. Consequently, companies do not feel compelled to change the claims on their packaging, as ignoring the request to change a claim does not lead to high penalties or reputational damage, which has led to an extensive number of legally questionable food claims (Pomeranz, 2013).

3.6. The deception of the food claim ‘Organic’

As a result of evolving consumer demands, food-fads and inconsistent food-regime guidelines, particular assets of food appeal more or less to people. In reaction to popular media discussing health and the environmental consequences of pesticides, genetically-modified entities, and food safety, an interest in ‘Organic’ foods has developed under consumers and marketeers (Hughner, McDonagh, Prothero, Schultz, & Stanton, 2007). The main reason that consumers consider to buy ‘Organic’ foods is because of the health benefits that they associate with the ‘Organic’ claim (Shepherd, Magnusson, & Sjöden, 2005), as ‘Organic’ foods are perceived to be healthy, safe, and of high quality (Stolze, & Lampkin, 2009). Nevertheless, there is little scientific evidence that ‘Organic’ foods are healthier compared to conventional foods, as was concluded from an extensive systematic literature review including 240 studies between 1966 and 2011 (Smith-Spangler et al., 2012).

The food claim ‘Organic’ is a clear example of a potentially misleading food claim, as was confirmed in multiple studies (Lee, et al., 2013; Prada, Garrido, & Rodrigues, 2017;

Schuldt, & Schwarz, 2010), and which is also poorly managed by the government (Friedland, 2005). This can also partly be attributed to the fact that consumers had already assembled an impression about what “‘Organic’” means, before the USDA (United States Department of Agriculture) regulatory defined the term ‘Organic’ in 1990. Consumers had come to think that ‘Organic’ foods were composed of healthy, only natural ingredients, free of pesticides (Friedland, 2005), whereas ‘Organic’ foods farming generally features practices of agriculture that emphasises environmental protection, ecological balance, animal welfare, and the use of sustainable resources (Lampkin, 2003). The specific principles of ‘Organic’ farming varies worldwide, but in the US the USDA states that: “Overall, ‘Organic’ operations must demonstrate that they are protecting natural resources, conserving biodiversity, and using only approved substances.”(USDA, 2018).

Therefore, it is clear that there is a difference between the regulatory definition and the public impression of ‘Organic’ food. This can lead to consumer misunderstandings in a manner that is in conflict with the federal false advertising principle (Friedland, 2005). In line with this principle, ‘Organic’ claims can be regarded as “misbranded” according to the American law, due to their misleading characteristics (21 U.S. Code § 331 - Prohibited acts).

As explained in the previous paragraphs, the current regulatory system does not take responsibility to regulate an increasing number of questionable claims. Food manufacturers are able to continue their misleading food claim practices, and leave consumers at risk for taking unfounded decisions concerning food choice, food intake and their health, driven by the misleading nature of the food claim ‘Organic’.

3.7. Inoculation

As governments are seemingly inadequate to take measures to protect consumers against and guide along misleading food claims, and consumers remain under the assumption

that ‘Organic’ foods are healthier than they actually are, other approaches should be explored to guard consumers. In this investigation inoculation was tested as a method to decrease the susceptibility of consumers to be misled by the food claim ‘Organic’ on food products.

Inoculation, as first introduced by McGuire in the early 1960’s, borrows logic of the theory of actual biomedical inoculation. McGuire (1964) posited that an inoculation treatment could protect people from potential impending attitudinal attacks. Hereby he outlined the similarity between an attitudinal inoculation and a biomedical inoculation (vaccination). Through inoculation (vaccination) one will be able to strengthen resistance towards a prospective physical assault (in the form of a virus). Similar reasoning could also be applied in the case of a prospective mental (attitudinal) attack, in which inoculation builds resistance to an influence that tries to persuade the target from an attitude that is contradictory to one’s own. Fundamental inoculation studies describe the working of inoculation through the mechanisms of threat, refutational pre-emption, and resistance. The threat component of inoculation makes people aware of personal vulnerabilities, from which the structural need derives to bolster their attitudes in a direction that diminishes a feeling of personal intimidation (Mason, & Miller, 2013). The fortification of these personal attitudes can be attributed to Brehm’s concept of reactance (Brehm, 1966). As the psychological theory reasons, people often experience psychological reactance in the form of anger and negative cognitions when they are confronted with threatening information limiting their freedom. This motivates them to react in a way that restores their perceived freedom (Brehm, 1966).

If people perceive threat, for example in the form of a warning of forthcoming persuasive appeal, as well as information that is used to refute the appeal and reinforce certain attitudes, they become able to refute a misleading or persuasive attempt (Pfau, 1996). Take for example the study of Parker, Ivanov and Compton (2012), who investigated the potential of inoculation to protect young adults’ attitudes from pressures to engage in risky behaviours

such as unprotected sex. The inoculation treatment message started with a forewarning of an impending attack on the positive attitude toward condom use currently held by study participants. The subsequent paragraphs of the inoculation text raised and refuted counterarguments regarding condom use. The counter attitudinal arguments for not wearing condoms that were raised, were one by one systematically refuted by presenting well-founded scientific counterarguments (Parker, Ivanov, & Compton, 2012). The second part of the inoculation, also known as refutational pre-emption, provides the threatened individual with cognitive structures, that can be used to defend their personal attitudes, i.e. confer resistance, against counter attitudinal future attacking messages. This can be operated through the presentation of two-sided messages, that stimulate disputations of a potential future attack (Compton, & Pfau, 2005; McGuire, 1964; Miller, 2013). In conclusion, through the generation of threat and supplying refutational pre- emption, resistance against counter-attitudinal information is induced and the desired attitude is bolstered (Mason, & Miller, 2013).

Inoculation has been applied effectively in several adolescent and youth health campaigns, with the aim to change certain attitudes and/or behaviours regarding various health topics. The application of the inoculation has accomplished discouragement of alcohol consumption (Duryea, 1984; Godbold, & Pfau, 2000), the establishment of anti-smoking behaviour (Pfau, Bockern, & Kang, 1992), the reduction of risky sex behaviours, in promoting condom use (Parker, Ivanov, & Compton, 2012), the reduction of risk of skin cancer (Matusitz, & Breen, 2010), and the curbing of non-communicable disease development (Mason, & Miller, 2013). Inoculation has also proven itself to be effective to promote healthy behaviour, by bolstering positive health-related attitudes, which makes individuals reluctant to hold attitudes that negatively affect their personal health (Mason, & Miller, 2013).

These previously cited studies indicate that inoculation is effective to indulge attitudinal changes on various healthcare topics. Therefore, it is expected that an inoculation that induces threat, and embeds refutational pre-emption, can also strengthen the attitude that ‘Organic’ labels are misleading and not healthier in comparison to their more traditional alternatives. Threat in the form of a warning should be applied to indicate that ‘Organic’ claims are misleading, and that this deception could have detrimental health effects. Refutational pre-emption should be used to bolster the attitude that the food claim ‘Organic’ can thus be perceived to be misleading and make people believe that they are more healthful than that they actually are. Hence, it was hypothesized:

> H1: People who receive an inoculation treatment, prior to being exposed to foods with the food claim ‘Organic’, estimate these foods to be less healthful in comparison to people who have not received any inoculation treatment.

3.8. Diminishing resistance against the inoculation through self-affirmation

Despite the fact that threat is a fundamental part of inoculation in motivating people to bolster a certain attitude, there is a risk that people come to react to the information in a more defensive way, by dismissing, denying or avoiding the threat in some way. This rejective adaptation can decrease the probability that people will take the potentially important information to heart. Especially, when health information threathens an important part of one’s self-integrity can lead to resistance (Sherman, & Cohen, 2006). Self-integrity refers to the conviction to be a moral and competent individual. When certain information undermines this perception of oneself as being moral and competent, self-integrity is threatened (Legault, Al-Khindi, & Inzlicht, 2012). For example, a person that sees “being a healthy person” as an important parts of one’s values in life, but this bus person does also smoke. The threatening

information might imply that people who smoke act irresponsible, and unhealthy, through the act of smoking. In this situation the information threatens an important element of one’s self-image. As a result, people want to restore or reassert their integrity, and often do this through resisting the threatening health messages, and will continue to behave riskily or unhealthily (Sherman, & Cohen, 2002).

In order to attain a successful inoculation, one’s self-integrity should be maintained, which reduces the chance that resistance is generated and the desired attitude is rejected. A theory enabling both the restoration of self-integrity and facilitating adaptive behaviour change, is known as self-affirmation (Sherman & Cohen, 2006; Steele, 1988). The self-affirmation theory implies that people respond less resistant against threatening information if their attacked self-integrity was already affirmed maintained through another sources of self-integrity. This could be achieved by bolstering values that are substantial to someone, but that are not related to the threat at hand, and thereby invulnerable to it (Legault, et al., 2012). This could aid to counterbalance the self-threat of a health message (Sherman, Nelson, & Steele, 2000), which can make that one will feel more capable to cope with threats, inclusive of self-threat arising from confronting health information (Sherman, & Cohen, 2002).

Several additional explanations can be put forward that reason why self-affirmed people are more open to attitude change compared to people that are not. One explanation suggests that through self-affirmation, people are less likely to rely on heuristics and fixed thinking patters, and show an improved ability to consider arguments more pragmatically (Correl, Spencer, & Zanna, 2004). A preceding study by Petty and Cacioppo (1986) supports this reasoning, as it describes that the change in attitude cannot be attributed to solely a more positive mood, but is rather based on the ability to process information systematically. This means that self-affirmation increases peoples’ ability to be susceptible to the elemental strength of arguments, instead of the conformity of convictions that are in line with their own

(Correl et al., 2004). In conclusion, the logic of self-affirmation theory implies that people’s overall self-integrity will be obtained, while they can fall back on another source of identity, instead of the one that is threatened. This leads them to a state in which they are open to acknowledge facts without falling back on defensive biases in the form or resistance (Sherman, & Cohen, 2006). With regard to the current study, people that are self-affirmed before they receive the inoculation treatment might feel a lower threshold to alter their attitude, because the treatments prevents their self-integrity, and will have become less prone to rely on simple heuristic evaluations. Consequently, they are more adept to assimilate factual information presented in the refutational pre-emption arguments, and will become less likely to show resistance against threatening health information. To the best knowledge of the researcher, self-affirmation and inoculation have never been combined with the aim to make consumers more resilient from misleading food-claims, by reducing resistance against the inoculation. Therefore, this study examines the potential of self-affirmation to lower potential resistance against the main inoculation, which in his place should foster resistance towards the food claim “‘Organic’”. Hence, it was hypothesized that:

> H2: People who are self-affirmed before the inoculation treatment estimate the healthfulness of ‘Organic’ products to be lower in comparison to people that are not self-affirmed.

3.9. Diminishing resistance against the inoculation through credibility

Besides the potential of self-affirmation prior to the inoculation, this study also aims to explore whether the use of source credibility concerning blogs plays a significant part in reducing potential resistance against the inoculation information. Source credibility refers to the trustworthiness, intelligence, and expertise of the source who is presenting information or

an argument (McGinnies, & Ward, 1980). The role of source credibility has been one of the most studied variables in research in its effects on persuasion, and has showed many implications of its strength (Eagly, & Chaiken, 1993). The source of a particular set of information has the power to influence the strength and impact of the transmission (Trumbo, & McComas, 2003). More specifically, several studies have found evidence that information from a credible source has a beneficial impact on the acceptance of the information (Chaiken & Maheswaran, 1994; Heesacker et al., 1983). In addition to that, a more recent study examined the role of source credibility in inducing resistance to candidate attacks in political campaigns during the midterm 2002 U.S. Congressional election campaign, and found that the credibility of a source positively mediated the treatments effectiveness (An, & Pfau, 2004). When characteristics of a candidate were associated with high expertise and trustworthiness, the treatment was found to be more effective. Therefore, An and Pfau (2004), advise to provide a strong foundation of credibility for the message source.

Given the rapid changes in the communication landscape, driven by participative internet use and social media, contemporary information sources likes blogs have appeared increasingly, communicating on all sorts of topics including health and food (Chou, Hunt, Beckjord, Moser, & Hesse, 2009). Nowadays, in addition to more traditional authorities like doctors and scientists, other sources like bloggers have increasingly captured the interest of people, who are looking for information regarding personal health concerns (Crutzen et.al., 2009). Nearly three quarters of the American population has ever consulted a blog in the quest for health advice (Kareklas, Muehling, & Weber, 2015). Moreover, when it comes to retrieving nutrition information, people are more likely to consult the internet than a doctor or a nutritionist in the first place (American Dietic Association, 2011). It may therefore not be entirely surprising that blogs are a moderately to highly credible message source (Johnson, & Kaye, 2004). Moreover, blogs are perceived to be more credible than old-school offline

journalism (Johnson, & Kaye, 2004), and can be of great relevance to support health promotion (Boulos, Maramba, & Wheeler, 2006; Lu, 2013). The credibility of blogs can for a significant be attributed to their characteristics, as they are perceived to be reliable, for being an independent source, beyond the control of mainstream, corporate media or government (Andrews, 2003; Johnson, & Kaye, 2004). Blogs are thus in general evaluated as credible sources. As the presence of a credible source has a beneficial impact on the acceptance of the information (Chaiken, & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983), it is also expected that it will reduce the resistance against the inoculation information.

Furthermore, also within the medium of a blog a distinction can be made more or less credible blog authors, also referred to as bloggers. When blogger credibility is high, people are less likely to dissect the information, but embrace the arguments as valid, whereas when people who do not perceive the blogger as credible they tend to process messages more systematically so as to ascertain their validity (Chu, & Kamal, 2008). An important element that determines credibility is the bloggers’ perceived authority, or the number or the number of subscribers. This is an indirect measure for the degree that they are “influential”, and have more authority (Jin, & Phua, 2014). Therefore it is assumed that bloggers with high trustworthiness, topical intelligence and expertise, and a large number of followers are perceived to be more credible in comparison to bloggers that have are not trustworthy, have low topical intelligence, and few followers. As high blogger credibility is expected to lower the threshold to accept information it was hypothesized that:

> H3a: People who receive an inoculation treatment accompanied by a credible blogger source will estimate the healthfulness of ‘Organic’ products to be lower in comparison to people who will receive an inoculation treatment without a source or a non-credible source.

H3b: People who receive an inoculation treatment accompanied by no source will estimate the healthfulness of ‘Organic’ products to be lower in comparison to people who will receive an inoculation treatment with a non-credible source.

Due the researcher’s best knowledge, no earlier studies have attempted to investigate whether blogger credibility influences the effectiveness of an inoculation to protect people against misleading food claims, hence, investigating the difference in effect between the two sources could provide valuable insights, and implication for future health and nutrition communication. In addition to that, self-affirmation and source credibility are both expected to cause people to be less prone to resist the factual information proposed in an inoculation. Therefore, it was also predicted that there would be an interaction effect between self-affirmation and source credibility. Accordingly, it was hypothesized that:

H4: People who are self-affirmed before the inoculation treatment, and see an inoculation that is accompanied by a credible source will estimate the healthfulness of ‘Organic’ foods lower than people who are not self-affirmed before the inoculation and see no source or a non-credible source.

Self-affirmation and Source credibility were expected to lower the resistance towards the inoculation. The adoption of the inoculation content is essential to create the attitude change that will make people resilient against the misleading food claim ‘Organic’, resulting in lower estimations of these foods’ healthfulness. Thus, it was also hypothesized that:

H5a: People who are self-affirmed prior to the inoculation treatment will show less resistance towards the inoculation in comparison to people that are not self-affirmed.

H5b: People who see an inoculation accompanied by a credible source treatment will show less resistance towards the inoculation in comparison to people that saw a non-credible source.

H5c: People who are self-affirmed prior to an inoculation treatment, that was accompanied by a credible source showed the least resistance towards the information in the inoculation.

H6a: The effect of inoculation in combination with self-affirmation on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation.

H6b: The effect of inoculation in combination with a credible source on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation.

To give a more structured overview of how the different hypotheses relate to the effects between the independent (Self-affirmation, source-credibility and inoculation), the mediator (resistance), and the dependent (perceived healthfulness or ‘Organic’ foods) variable, the conceptual model in Figure 1 can be consulted.

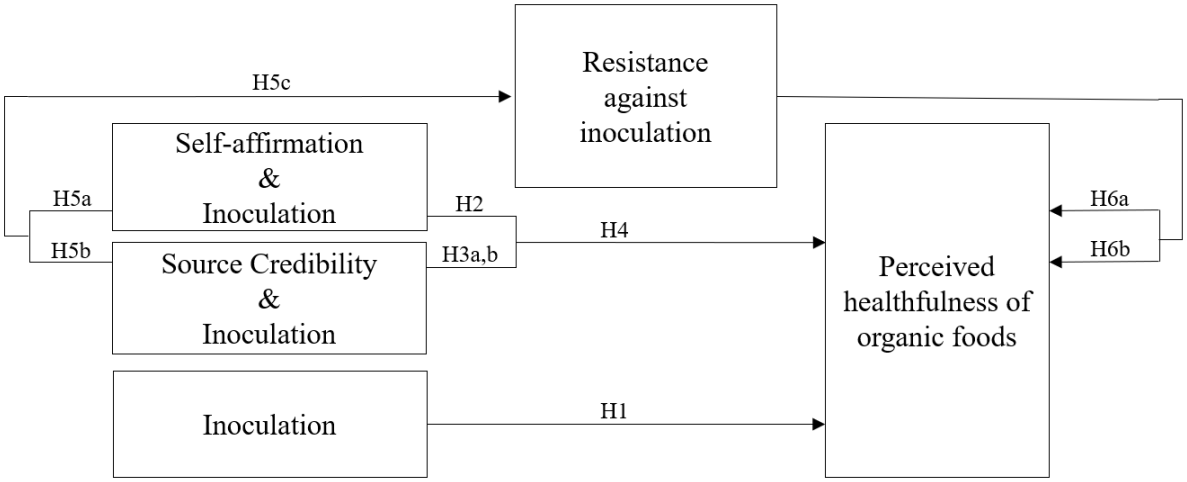

Figure 1: Conceptual model incorporating the hypotheses in relation to the presumed effects of inoculation, self-affirmation and source credibility on perceived healthfulness of ‘Organic’ food, mediated by resistance against the inoculation.

4.0 Method

4.1. Design

An experiment was performed designed as a 2x2 between-subjects design, using two independent variables that were all combined with a traditional inoculation treatment. The first independent variable was self-affirmation (presence versus absence of self-affirmation). The second independent variable was referred to as message source credibility (credible versus non-credible source). To investigate whether the enhanced inoculations would be more effective than solely the application of a traditional inoculation (1), and to find out whether the use of an inoculation would be effective in the first place to protect consumers against the misleading food claim ‘Organic’ (2), two control conditions were also added to the framework. In the first control condition, participants were only exposed to the inoculation, without mentioning of a particular source. In the second one participants were not exposed to any treatment at all, and were only shown foods with ‘Organic’ foods claims. This resulted in a framework of 4 experimental, and two additional control conditions (Figure 2). In addition to that the conceptual model in Figure 3 illustrates the expected relationships between the independent and dependent variables.

Control Conditions	2x2 design	
Condition 1: No inoculation No self-affirmation No source	Condition 3: Inoculation Self-affirmation Non-credible source	Condition 4: Inoculation Self-affirmation Credible source
Condition 2: Inoculation	Condition 5: Inoculation	Condition 6: Inoculation

Inoculation to raise resistance against the misleading food claim ‘Organic’

No self-affirmation No source	No self-affirmation Non-credible source	No self-affirmation Credible source

Figure 2: Matrix of research dimensions indicating experimental conditions 1 to 6

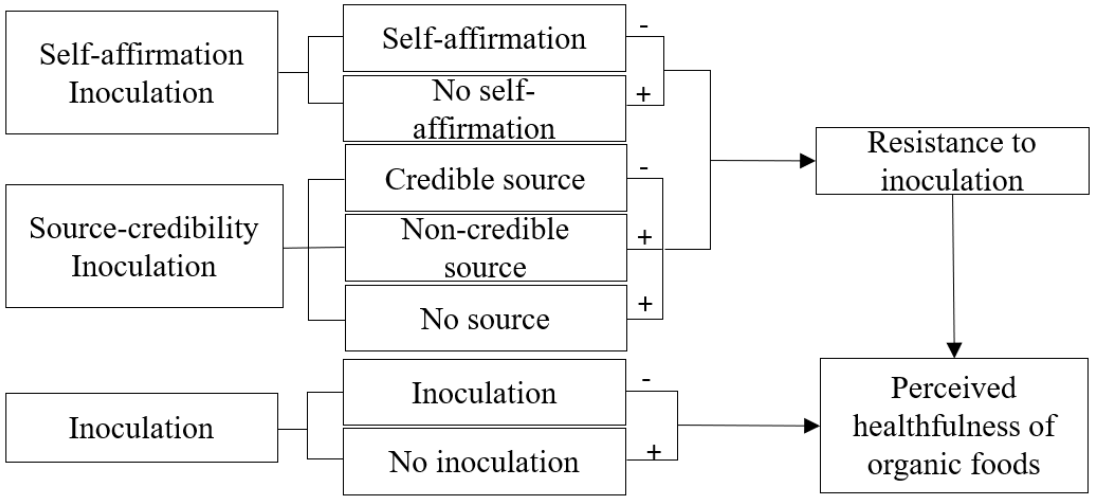

Figure 3: Conceptual model representing the expected relationship between inoculation, self-affirmation, source-credibility, and perceived healthfulness of ‘Organic’ foods, mediated through resistance to the inoculation.

4.2. Participants

All the participants included in the research were collected through Amazon Mechanical Turk. It was chosen to make use of online participant resources, because it enabled to target a specific demarcated population, and lend a quick availability to a large number of participants. The final study sample (n = 151); condition 1 consisted of 26, 2 of 23, 3 of 24, 4 of 24, 5 of 27, and 6 of 27 people. The sample consisted of 91 males, 58 females, and 1 person indicating to have another gender. The participants’ age ranged from 18 to 68 (M = 34.62, SD = 10.91). The participants were provided with a link that directed them to the survey right away. They were rewarded for their participation through the means of a small

financial compensation of 0,60 dollar cents. A final number of 151 participants were recruited, who all completed the survey successfully.

4.3. Materials

Inoculation

A traditional inoculation text was created in the form of a text. In order to compose a strong inoculation, the elements threat (through forewarning) and refutational pre-emption were incorporated in the inoculation text. More detailed, participants that were appointed to a condition that included inoculation, were presented with a short article, divided into 7 paragraphs of ± 500 words (Appendix 2).

The second paragraph consisted of a forewarning message, in order to induce threat to their freedom. One of the elements that underlies a successful inoculation, is that the receiver must feel that an existing belief is threatened in order to strengthen its’ attitude (McGuire, 1962). A warning message, that created a significant amount of threat derived from a study by Mason and Miller (2013), was used and slightly edited for a better fit on the topic of the current study. Participants were warned they are increasingly exposed to persuasive commercial appeals from food advertisers that could cause them to question their perceptions of what constitutes a healthy food choice. Secondly, the negative consequences thereof were described. The warning message stated:

> *“In the contemporary food environment consumers are increasingly exposed to commercial appeals from food advertisers in the form of food claims, like “‘Organic’”, which could cause them to question their perception of what constitutes a healthy food choice. As a direct effect of this, an increasing number of consumers unjustly consider certain food products to be healthy or at least healthier than they actually are. This misjudgment of food products drives detrimental health-effects as obesity and other non-communicable diseases as a long-term consequence.”*

Inoculation to raise resistance against the misleading food claim ‘Organic’

The next 3 paragraphs of the inoculation text message raised common (false) assumptions about the food claim ‘Organic’, and refuted these systematically with counterarguments, using clear and objective arguments. The final paragraph of the text consisted of a conclusion statement that summarized the preceding paragraphs and advised participants on how to make considerate and healthy food choices in the presence of the food claim ‘Organic’. The paragraph stated:

“In conclusion, in the absence of regulatory guidance, consumers should become more aware of the presence of potentially misleading food claims, like Organic, and evaluate them more carefully. They should not base their assumptions on the direct associations with the food claim, but on the estimated nutritional values of the food itself.”

Source credibility

In the first paragraph, to investigate a possible effect of source credibility, the characteristics of the source, in this case the composer of the article, was manipulated. Either a credible source (successful blogger: with a lot of online followers and high expertise on the topic), non-credible source (amateur blogger: very few subscribers and little expertise on the topic) or no source (no writer) was indicated. The blogger sources were fictional characters, similarly named for both conditions. In order not to create a bias regarding gender, a unisex surname was chosen: Chris (Van Vleet, & Atwater, 1997). Expecting no significant influence of the last name, this was randomly selected by the researcher. The blogger sources were named: Chris Smith. The source wat introduced in the first paragraph of the inoculation text, and was adjusted for the experimental conditions: credible source, non-credible source, and no source.

In the case of a credible source the paragraph stated:

“*Organic food labels actually misguide consumers who aim to make healthy food choices”, claims Chris Smith. Chris, a successful blogger, writes critical weekly essays, for an audience of over a million subscribers, to inform the critical contemporary food-consumer in their quest for a healthier lifestyle. In this week’s essay Chris casts a critical eye on Organic food labels.”*

In the case of a non-credible source the paragraph stated:

“*Organic food labels do actually misguide consumers who aim to make healthy food choices”, claims Chris Smith. Chris, a beginning blogger, writes entertaining weekly essays, for an audience of nearly fifty subscribers, to inspire the contemporary food-consumer in their quest for a healthier lifestyle. In this week’s essay Chris casts an eye on ‘Organic’ food labels.”*

In the case of no source the paragraph stated:

“*In This week’s essay we will cast an eye on Organic food labels, and explain why these ‘Organic’ food labels indeed misguide consumers who aim to make healthy food choices.”*

Self-affirmation

To investigate whether self-affirmation could enhance the effect of an inoculation, by reducing possible resistance towards it, a self-affirmation treatment was created. Self-affirmation was manipulated with the aim to make participants affirmed of their personal values that are unrelated to the values that are threatened in the inoculation. This should make them: feel more prone to adopt the information in the inoculation text, more capable to change

their attitude, and less likely to derogate the message or source while experiencing a state of threat. The manipulation of self-affirmation was applied with the use of value scales, which is one of the most common methods used to establish self-affirmation in an online survey setting of an experiment, as shown in multiple preceding studies (van Koningsbruggen, & Das, 2009; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Sherman, et al., 2000).

These core values and the scales to affirm them were originally defined in “The Study of values” (Allport, Vernon, & Lindzey, 1970), but the current study applied more modern value-scales that were retrieved from an updated version of the study, that suited better to the 21st century (Kopelman, Rovenpor, & Guan, 2003). First, participants were presented with 6 core values accompanied by a brief explanation of each of these. They were requested to indicate which of the value orientations was the closest to their personality and in their opinion the most valuable when approaching (complex) questions and issues in life? The following values were proposed: theoretical, economic, aesthetic, social, political, or religious. Based on their selection, participants were presented with 10 multiple-choice questions, with 4 attainable answers, in which a complex situation was sketched or a critical question was proposed. Participants were requested to select the answer or attitude that was closest their personality and personal values, as indicated in the previous question. For all questions, one answer mirrored the scale’s principal value orientation and the other answers related to one of the remaining values that was not beforehand indicated by the participant to be of the highest value to them. With the use of the value scales, participants had the opportunity to affirm their most important value at least 10 times, proclaiming both the importance of that value and their self-concept.

Food claims

Regardless of the experimental condition, participants had to evaluate a selection of 3 different versions of similar foods, and this for 5 foods: pasta sauce, chips, oatmeal, mayonnaise, and canned sweet peas (a total of fifteen foods). It was deliberately chosen for a broad selection of different foods, in order to let the study results represent food in general, instead of focusing on one product or food group. The selected foods had to be recognized by all participants, and should be available in mainstream supermarkets. Images of existing products were manipulated in order to conceal the brand communication and prevent bias about the product (Appendix 3). The food-packaging of the comparable foods were very similar, besides the fact that one product was indicated to be ‘Organic’, and was certified with the USDA ‘Organic’ Claim. In the USA, the USDA has regulatory oversight and is responsible to maintain ‘Organic’ standards, and the authority to take appropriate legal action to enforce the ‘Organic’ standards, and thus protect the integrity of the USDA ‘Organic’ standards in the USA (USDA National ‘Organic’ Program, 2016). The remaining two food products contained arbitrary food claims, and were used as fillers to conceal to a certain extent that the study exclusively aimed at investigating ‘Organic’ products.

4.4. Procedure

To test the proposed hypotheses, a quantitative data collection procedure in the form of an online survey was created with the use of the free Qualtrics software (Qualtrics, 2018). The survey consisted of several blocks: the self-affirmation treatment, the inoculation treatment (with source/without source/credible source indication), the experimental stimuli with corresponding questions, and additional survey questions to measure threat and resistance against the inoculation. It depended on the condition participants were assigned to (1 to 6), to what blocks they were exposed to. Despite the fact that the survey differed through

the different conditions on the elements that were used, the main materials and the general experimental setting are described further in the materials section below. An overview of the final survey can be found in Appendix 1.

Participants who signed up to take part in the survey through the platform of Amazon Mechanical Turk, were provided with a link, and were directed to the survey on the Qualtrics website (Qualtrics, 2018). After completing the survey on Qualtrics they were provided with a unique validation code that had to be copied in a textbox on the same page that initially linked them to the Qualtrics page. Participants were alerted to keep this window opened until they pasted the code, and it would be validated. This ensured the researcher that only participants would be paid that finalized the complete survey.

First, participants were introduced to the study topic, the time it would take to complete the survey, and the steps they had to take in order to finalize their task successfully. Furthermore, additional information was supplied guaranteeing the safety and anonymity during their participation throughout the whole study. Participants provided consent to collaborate in the study by checking the “I agree” option. If they would select the “I disagree” option they would be excluded from the research. Second, participants were asked to provide some demographic information. Several questions regarding age, gender, and education level were presented. This element had to be concluded in order to move on to the main part of the survey. Hereafter, participants were randomly assigned to 1 of the 6 experimental conditions. The visualisation of the full survey and its’ flow for every condition can be found in Appendix 1.

In condition 1, participants were directly exposed to the experimental stimuli (food products), to evaluate their healthfulness. In all conditions, the food products were presented in a random order, and participants were asked to evaluate the products as if presented to you in a supermarket setting and to a relate to a situation in which you would consider to buy

them. After that, participants were: thanked for their participation, debriefed regarding the purpose of the study, and supplied with a personal validation code. This concluded the final part of the experiment for condition 1.

In condition 2, 3, and 4, participants were exposed to the inoculation message. In condition 2 this text contained no source, in condition 3 and 5 a non-credible source, and in condition 4 and 6 a credible source. In condition 3 and 4, participants had to perform an additional self-affirmation task, before being directed to the inoculation treatment. Participants were asked to take the time and to read the text carefully. Also, they were informed that there was a timer measuring the time on the current page that was set to at least 2 minutes. If they would head to the next page before the time had passed, they would become excluded from the research. This timer was not actually operationalized, but it inclined participants to take more time to read the inoculation text carefully.

Then, participants were exposed to the experimental stimuli (food products), to evaluate their healthfulness, followed by several questions to measure the perceived resistance against the inoculation. Finally, participants were: thanked for their participation, debriefed regarding the purpose of the study, and supplied with a validation code. This concluded the final part of the experiment for condition two to six.

4.5 Measures

The overall perceived healthfulness of a food was evaluated over five different measures, in which participants were requested to estimate: sugar, fat, calories, nutritional value, and fibre of the fifteen food products. The procedure for the evaluation of foods follow on previous research by Lee et. al. (2013). Lee et. al. investigated the health, as well as the taste perception, and calorie density of ‘Organic’ whole-foods, and processed foods. To measure its constructs, the study used a 7-point Likert-scale that requested participants to

indicate whether the depicted ‘Organic’ food would contain more or less of a certain nutrient (Lee et. al., 2013). Research by Bucher, Müller, and Siegrist (2015) revealed that fibre content and high nutritional value were positively associated with health, whereas sugar, calories, and fat were negatively related to health. Therefore, these measures were included as measures of health. The overall perceived healthfulness of a food in the current study was evaluated over 5 different measures: fibre, nutritional value, sugar, fat, and calories, and these were assessed with the use of a 7-point Likert-scale (1 = very low in X to 7 = very high in X). It was decided on purpose not to inquire about the perceived healthfulness of a food in general, to conceal the general purpose of the study to a certain extent.

Furthermore, to measure the resistance against the inoculation a slightly adapted resistance scale proposed by Fransen, ter Hoeven and Verlegh. The original scale of Fransen et al. (2013) consisted of 28 items, but only five of these items were found to be relevant to this study. Once again, participants were asked to indicate on a 7-point Likert-scale (1 = strongly disagree, 7= strongly agree) to what extent they would agree with several statements regarding the text (inoculation) they had just read. The statements were: “I think about things that are unrelated to the message.” “I thought favourably about the message.” “I ignored the information in the message that challenged my opinion.” “I thought critically about the information in the message.” “I stood strong and refused to change my opinion after reading the message.”

4.6. Plan for data analyses

To measure the constructs “perceived healthfulness”, and “resistance” multiple items? were used. A high score on the first three items (sugar, calories and fat) of perceived healthfulness indicated that the product was unhealthy, whereas a high score on the 2 last items (fibre and nutritional value) indicated that the product was healthy. Subsequently,

before the variables were combined, the values of scale 1 to 3 had to be reversed, and were recoded for all of the products. For resistance, one item had to be recoded as it regarded a positive statement (I thought favourably about the text), whereas the other constructs regarded negative statements.

First, to test the proposed hypotheses, multiple analyses were performed. First, to investigate whether people who received a basic inoculation treatment, estimate ‘Organic’ products to be less healthful in comparison to people who have not received any inoculation treatment at all (H1), an independent T-test was performed.

Second, to test whether people who were self-affirmed before the inoculation treatment estimate the healthfulness of ‘Organic’ products to be lower in comparison to people that are not self-affirmed before the inoculation treatment (H2), and to investigate whether people who are self-affirmed before the inoculation treatment and see an inoculation that is accompanied by a credible source estimate the healthfulness of ‘Organic’ foods lower than people who are not self-affirmed before the inoculation and see no source or a non-credible source (H4), a two-way ANOVA was performed with Source Credibility and Self-affirmation as the independent variables.

Third, to assess whether people who received an inoculation treatment with a credible source estimate ‘Organic’ food to be less healthful in comparison to people who received an inoculation treatment accompanied either by no source or a non-credible source (H3a), and to investigate whether people who received an inoculation treatment accompanied by no source estimate ‘Organic’ food to be less healthful in comparison to people who received an inoculation treatment accompanied by a non-credible source (H3b), a one-way ANOVA with 2 contrasts was performed.

Fourth, to test whether people who were self-affirmed before the inoculation treatment (H5a), or people who received an inoculation treatment accompanied by a credible source

(H5b) would show less resistance against the inoculation treatment in comparison to people who were not self-affirmed and/or saw non-credible source, a two-way ANOVA was performed. Additionally, the analyses was as also used to examine whether people who were self-affirmed before the inoculation treatment and saw a credible source would show the least resistance (H5c).

Fifth and final, it was assumed that the possible observed effects of self-affirmation (H6a), and source-credibility (H6b), on perceived healthfulness of ‘Organic’ foods could be explained (mediated) by the underlying concept of resistance. Therefore, a Hayes mediation analysis with PROCESS was executed.

5 Results

In the following analyses it is referred regularly to comparisons that were made between the different experimental conditions referred to as condition 1 to 6, including 4 main conditions from the 2x2 between-subjects design (condition 3,4,5,6) and two control conditions (condition 1,2). For a clear overview of what every condition entailed, Figure 2 can be consulted. Simple observations of the group means and standard deviations showed that there were very small differences between the means of the participants in the different experimental groups on perceived healthfulness of ‘Organic’ food; Condition: 1: *M*= 4.76, *SD*=.77, 2: *M*= 4.90, *SD*=.74, 3: *M*= 4.58, *SD*=.60, 4: *M*= 4.83, *SD*=.89, 5: *M*= 4.81, *SD*=.76, and 6: *M*= 4.86, *SD*=.71. The standard error bars overlap for every condition, suggesting there are no significant differences between the experimental conditions on the dependent variable (Figure 4). Only condition 2 seems to have a somewhat elevated mean score, whereas condition 3 scored notably lower on estimated healthfulness of ‘Organic’ products, in comparison to the means obtained for the other groups. Nevertheless, to test the hypotheses of the study, more thorough analysis of the data was required.

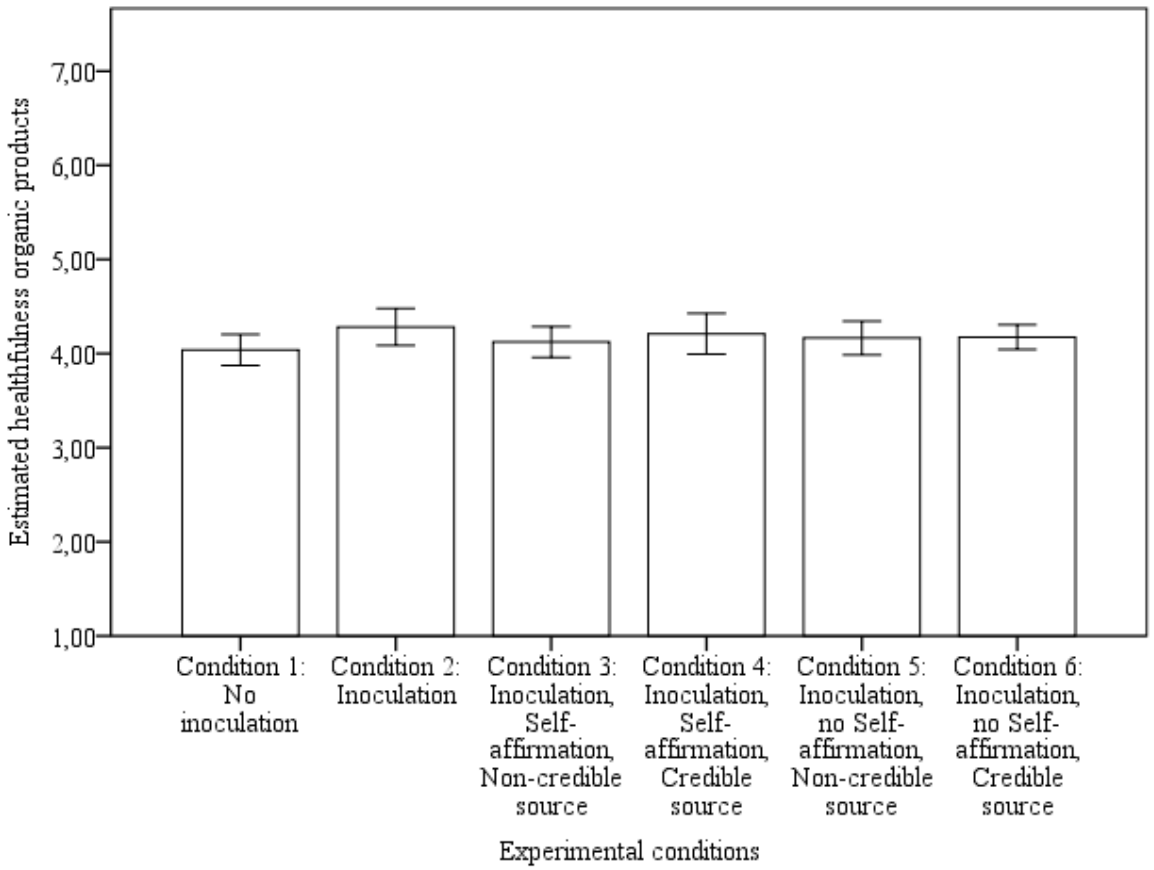

Figure 4. Mean differences between experimental conditions on estimated healthfulness of ‘Organic’ foods.

5.1. Inoculation

To investigate whether people who received a basic inoculation treatment (condition 2; Figure 4), estimate ‘Organic’ products to be less healthful in comparison to people who have not received any inoculation treatment at all (condition 1), an independent T-test was performed (H1a,b). The data for both conditions was normally distributed, and the variances of the two groups were homogeneous, $F(1,47) = .14$, $p = .715$. Although there was no significant difference between the two groups, it was very close to being statistically significant, $t(47) = -1.98$, $p = .054$, which indicates a marginally significant difference between the two experimental groups. In contradiction with hypothesis 1, people who received an inoculation treatment estimated the healthfulness of ‘Organic’ products higher ($M = 4.90$, *SD*

= .74) than people who did not receive an inoculation treatment (*M* = 4.76, *SD* = .77). Thus, hypothesis 1 was not supported by the data, which means that people who were given the inoculation treatment did not estimate ‘Organic’ products to be less healthful compared to people who received no treatment at all. However, taking in mind that the difference between the groups is not far from being a significant, one can cautiously presume the presence of a trend, that indicates that people who received no inoculation treatment estimate the healthfulness of food to be lower in comparison to people who did receive an inoculation treatment.

5.2. Self-affirmation & interaction

To test whether people who were self-affirmed before the inoculation treatment (*M* = 4.17, *SD* = .45) estimate the healthfulness of ‘Organic’ products lower in comparison to people that are not self-affirmed before the inoculation treatment (*M* = 4.17, *SD* = .39) (H2), and to investigate whether people who are self-affirmed before the inoculation treatment and see an inoculation that is accompanied by a credible source estimate the healthfulness of ‘Organic’ foods to lowest (*M* = 4.21, *SD* = .51) (H4), a two-way ANOVA was performed with Source Credibility and Self-affirmation as the independent variables. The dependent variable was normally distributed for both independent variables self-affirmation and source credibility. Also, the assumption of homogeneity of variances was met $F(3,98) = 1.35$, $p = .264$. The two-way ANOVA showed no significant main effect of self-affirmation, $F(1,97) = .00$, $p = .989$. Thus hypothesis 2, stating that people who are self-affirmed before the inoculation treatment estimate the healthfulness of ‘Organic’ products to be lower in comparison to people that are not self-affirmed, was not supported by the data. Also, no main effect of source credibility was observed $F(1,97) = .20$, $p = .656$. Finally, there was also no significant interaction effect for self-affirmation and source credibility, $F(1,97) = 0.26$, p =

.609. Thus hypothesis 4 stating that People who are self-affirmed before the inoculation treatment, and see an inoculation that is accompanied by a credible source will estimate the healthfulness of ‘Organic’ foods lower than people who are not self-affirmed before the inoculation and see no source or a non-credible source. was not supported by the data.

5.3. Source credibility

Furthermore, to assess whether people who received an inoculation treatment with a credible blogger (condition 6: $M = 4.86$, $SD = .71$) estimate ‘Organic’ food to be less healthful in comparison to people who received an inoculation treatment accompanied either by no source (condition 2) or a non-credible blogger (condition 5) (H3a), and to investigate whether people who received an inoculation treatment accompanied by no source (condition 2: $M = 4.90$, SD = .74) estimate ‘Organic’ food to be less healthful in comparison to people who received an inoculation treatment accompanied by a non-credible blogger (condition 5: $M = 4.81$, SD = .76) (H3b), a one-way ANOVA with 2 additional contrasts was performed. The data for all the three conditions was normally distributed, and the variances of the three groups were homogeneous, $F(2,74) = .78$, $p = .461$.The overall ANOVA was not significant $F(74) = .59$, $p = .559$. Consequently, planned contrasts also did not reveal differences between the experimental groups. Contrast 1 (condition 6 vs 2 & 5): $t(74) = .50$, $p = .622$, Contrast 2 (condition 2 vs 5): $t(74) = -.99$, $p = .328$. Therefore, it can be concluded that no support has been found for hypotheses 3a and 3b.

5.4. Self-affirmation & source-credibility on resistance

Next, to test whether people who are self-affirmed ($M = 3.57$, $SD = .99$) prior to the inoculation treatment will show less resistance towards the inoculation in comparison to people that are not self-affirmed ($M = 3.76$, $SD = 1.06$) (H5a), and whether people who saw

an inoculation accompanied by a credible source (*M* = 3.66, *SD* = 1.01) will show less resistance towards the inoculation in comparison to people that saw a non-credible source (*M* = 3.68, *SD* = 1.06) (H5b), and finally to investigate whether people who are self-affirmed prior to an inoculation treatment, that was accompanied by a credible source showed the least resistance towards the information in the inoculation (H5c), a two-way ANOVA was performed with Source Credibility and Self-affirmation as the independent variables and resistance as the dependent variable. The dependent variable was normally distributed for both self-affirmation and source credibility. Also, the assumption of homogeneity of variances was met $F(3,98) = .52$, $p = .668$. The two-way ANOVA showed no significant main effect of self-affirmation, $F(1,97) = .83$, $p = .830$. Thus hypothesis 5a, stating that people who are self-affirmed will show less resistance towards the inoculation in comparison to people that are not self-affirmed, was not supported by the data. Also, no main effect of source credibility was observed $F(1,97) = .02$, $p = .902$. Thus, hypothesis 5b, stating that people who saw an inoculation accompanied by a credible source will show less resistance towards the inoculation in comparison to people that saw a non-credible source, was not supported. Finally, there was also no significant interaction effect for self-affirmation and source credibility, $F(1,97) = 0.03$, $p = .874$. Thus, hypothesis 5c stating that people who are self-affirmed prior to an inoculation treatment, that was accompanied by a credible source showed the least resistance towards the information in the inoculation, was also not supported.

5.5. Mediation of resistance

It was assumed that the possible observed effects of self-affirmation and source-credibility on perceived healthfulness of ‘Organic’ foods could be explained (mediated) by an underlying concept of resistance. Therefore, two Hayes mediation analyses with PROCESS were executed (independent analyses for self-affirmation and source-credibility).

In Step 1 of the mediation model, the regression of self-affirmation on perceived healthfulness of ‘Organic’ food, ignoring the mediator, was not significant, b = .00, t(100) = .04, p = 965. Step 2 showed that the regression of self-affirmation on the mediator, resistance, was also not significant, b = .19, t(100) = .92, p = .360. Step 3 of the mediation process showed that the mediator (resistance), controlling for self-affirmation, was significant, b = -.11, t(99) = -2.68, p = < .05. Step 4 of the analyses revealed that self-affirmation, mediated through resistance, was not a significant predictor of perceived healthfulness of ‘Organic’ food, b = .02, t(99) = .29, p =.771. Therefore, hypothesis 6a stating that the effect of self-affirmation on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation, was not supported.

In Step 1 of the mediation model, the regression of source-credibility on perceived healthfulness of ‘Organic’ food, ignoring the mediator, was not significant, b = .05, t(100) = -.54, p = .587. Step 2 showed that the regression of source-credibility on the mediator, resistance, was also not significant, b = .02, t(100) = .12, p = .909. Step 3 of the mediation process showed that the mediator (resistance), controlling for source-credibility was significant, b = -.11, t(99) = -2.67, p =< .05. Step 4 of the analyses revealed that source-credibility, mediated through resistance, was not a significant predictor of perceived healthfulness of ‘Organic’ food, b = -.04, t(99) = -.53, p =.598. Therefore, hypothesis 6b stating that a credible source on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation, was not supported by the data.

In conclusion, resistance to the Inoculation had no sequential mediation effect on the relationship between the inoculations (self-affirmation & no self-affirmation, credible source & non-credible source) and perceived healthfulness of ‘Organic’ food. Furthermore,

resistance to the Inoculation did have an effect on perceived healthfulness, both for self-affirmation and source-credibility (Figure 5 and 6).

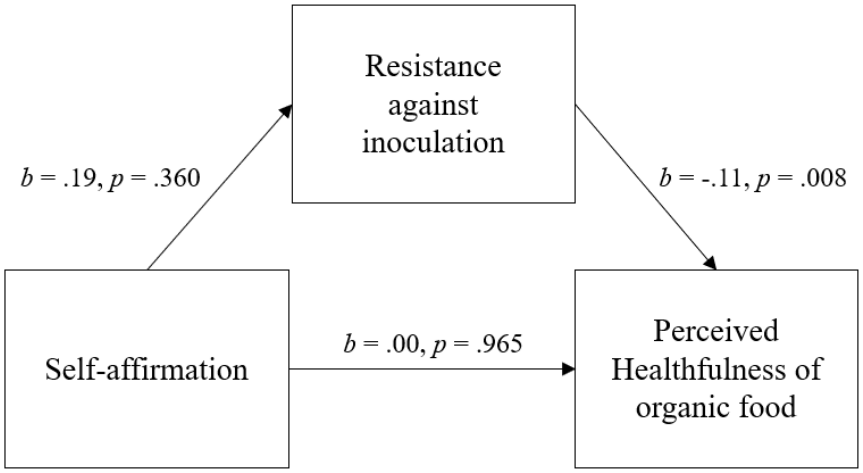

*Figure 5.*Total, direct, and indirect effects of the conceptual model for self-affirmation.

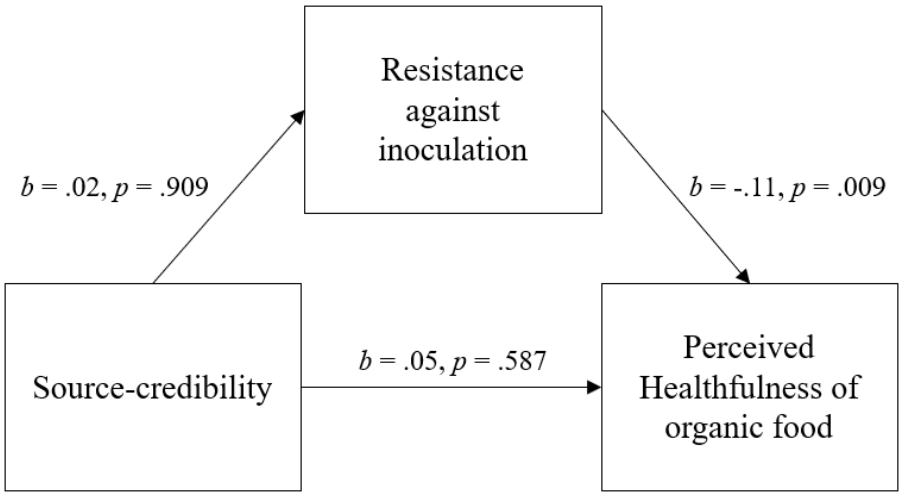

*Figure 6.*Total, direct, and indirect effects of the conceptual model for source-credibility.

In conclusion, none of the hypotheses were supported by the data. Figure 7 shows an overview of the proposed hypothesis, and whether they were supported by the data or not. A check mark indicates that the hypothesis was supported, and a cross that it was not.

H1: People who receive an inoculation treatment, prior to being exposed to foods with the food claim ‘Organic’, estimate these foods to be less healthful in comparison to people who have not received any inoculation treatment.	×
H2: People who are self-affirmed before the inoculation treatment estimate the healthfulness of ‘Organic’ products to be lower in comparison to people that are not self-affirmed.	×
H3a: People who receive an inoculation treatment accompanied by a credible blogger source will estimate the healthfulness of ‘Organic’ products to be lower in comparison to people who will receive an inoculation treatment without a source or a non-credible source.	×
H3b: People who receive an inoculation treatment accompanied by no source will estimate the healthfulness of ‘Organic’ products to be lower in comparison to people who will receive an inoculation treatment with a non-credible source.	×
H4: People who are self-affirmed before the inoculation treatment, and see an inoculation that is accompanied by a credible source will estimate the healthfulness of ‘Organic’ foods lower than people who are not self-affirmed before the inoculation and see no source or a non-credible source.	×
H5a: People who are self-affirmed prior to the inoculation treatment will show less resistance towards the inoculation in comparison to people that are not self-affirmed.	×
H5b: People who see an inoculation accompanied by a credible source treatment will show less resistance towards the inoculation in comparison to people that saw a non-credible source.	×
H5c: People who are self-affirmed prior to an inoculation treatment, that was accompanied by a credible source showed the least resistance towards the information in the inoculation.	×
H6a: The effect of inoculation in combination with self-affirmation on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation.	×
H6b: The effect of inoculation in combination with a credible source on the estimation of healthfulness of ‘Organic’ foods products, can be explained (mediated) through the resistance to the inoculation.	×

Figure 7. Overview of proposed hypothesis, and whether these hypotheses were supported by the data.

6 Discussion

The overarching aim of the current study was to explore whether inoculation would be an effective tool to protect consumers from misleading information; the food claim ‘Organic’. The traditional components of an inoculation, threat and refutational pre-emption, were applied in an inoculation text. Threat was induced by forewarning people that because of the presence of the food claim ‘Organic’, consumers unjustly consider certain food products to be healthy or at least healthier than they actually are, and that this misjudgment of food products could result in detrimental health-effects as obesity and other non-communicable diseases as a long-term consequence. Then, several weakened arguments addressing why people generally believe that ‘Organic’ foods are perceived to be healthier in comparison to their traditional counterparts were presented, and directly refuted with strong and objective counterarguments.

Threatening information can harm one’s perception of personal worth and well-being, which motivates people to restore an image of self-integrity. To regain a sense of self-integrity people often react defensive as a primary response, which will lead them to resist the threatening health information (Sherman et al., 2006). Hence, the current study also sought for ways that could diminish defensive behavior, reduce the resistance against the potentially threatening information in the inoculation, and thus optimize the effectivity of the inoculation.

Self-affirmation emerged as a promising technique to reduce resistance against an inoculation. Affirming people’s values in the event of threat, fulfills the need to protect self-integrity, and can enable people to deal with threatening information, instead of showing defensive behavior. Additionally, the theory of self-affirmation proposes that by affirming an individuals’ personal values, will make them less likely less likely to derogate threatening information, as they perceive themselves more capable to change their attitude or behaviour. (Sherman et al., 2006).

In addition, several studies have found evidence that information from a credible source can have a beneficial impact on the acceptance of information (Chaiken & Maheswaran, 1994; Heesacker, et al., 1983). Therefore it was also expected that source credibility could positively contribute to decrease resistance against the inoculation and improve its effectivity. Hence, to with the inoculation text, either a credible or non-credible source was added. Hereby, taking the contemporary media landscape in consideration, it was chosen to use a high expertise blogger with a large number of followers and an amateur blogger with low topical expertise and only few followers as sources.

6.1. Inoculation

As a result of the inoculation treatment, it was assumed that people would adopt the attitude that was presented in the inoculation text, which in short stated that the food claim ‘Organic’ are misleading, because ‘Organic’ foods are generally not healthier than non-’Organic’ foods, and consumers should thus not base their assumptions on the direct associations with the food claim, but on the estimated nutritional values of the food itself. As a result of a successful inoculation, which would ideally lead to the adoption of the proposed attitude, there was expected that people would take in a more critical viewpoint towards ‘Organic’ foods, and would estimate them to be less healthful in comparison to people that were not inoculated. Also, when an inoculation treatment was applied in combination with self-affirmation or/and a credible source, the estimated healthfulness of ‘Organic’ products was expected to be even lower.

Contrary to expectations, this study did not find difference on estimated healthfulness of ‘Organic’ foods between people that were inoculated and people who were not. However, the statistical analyses revealed that the two groups were not far away from being different from each other. Surprisingly, this effect was in the opposite direction to what was

hypothesized. People who received an inoculation treatment estimated the healthfulness of ‘Organic’ products higher than people who did not receive an inoculation treatment. Taking into account the average resistance score in the basic inoculation condition was considerable, this could indicate that people might have felt resistance against the inoculation.

Even though it was expected that resistance would explain the potential effects of self-affirmation and source-credibility on perceived healthfulness, the unanticipated outcome of the analyses suggested this was actually not the case. Moreover, they revealed that if resistance against the inoculation would become lower, the perceived healthfulness of ‘Organic’ foods would become higher, and the other way around. This was not consistent with the belief that resistance against the inoculation would make people less prone to adopt the information in the inoculation. The subsequent paragraph will attempt to explain the unexpected results.

It has been reported that people who resist a persuasion attempt, will become more certain of their personal attitude that was already formed before the persuasion (Tormala & Petty, 2002). Nevertheless, another study has also found proof for the opposite effect. Tormala, Clarkson and Petty (2006), found that people who resisted a persuasion attempt had become more unsure about their initial attitude after resisting it. This observation could perhaps also explain why the people in this study showed higher resistance against the inoculation and were more likely to estimate the healthfulness of ‘Organic’ products lower. Presumably, the people who were very resistant felt highly threatened by the inoculation, whereas ‘Organic’ foods might have been of significant importance to them, and thus were highly involved on the inoculation topic. ‘Organic’ foods represent more than just a choice of food for buyers of it, as it represents an alternative lifestyle, built on an ideology of ecological harmony, sustainability, environmentalism, and vegetarianism (Hughner, et al., 2007).

In questioning the value of ‘Organic’ foods, the overarching lifestyle ideals that can represent a large part of one’s identity and worldview are thus indirectly also under attack. As a consequence, these people might have resisted the inoculation to restore their self-integrity. On the other hand, they might have felt that there was some truth in the inoculation that was hard for them to ignore. Tormala et. al. (2006) propose that when people feel like they have only weak arguments against the persuasion information, their attitude certainty will decrease. Moreover, they become less likely to behave in correspondence with their formerly held attitude, and this will lead to an increased susceptibility to persuasive assaults. From this reasoning, one can reason that although an inoculation message might have been resisted, a decrease in peoples’ attitude certainty could create a successful inoculation effect after-all. People that read the inoculation text might have indicated to resist the information proposed to them. However, they might not have felt that they had used proper reasoning to do so, and this weakened their held attitude towards ‘Organic’ food. As a result of this people with higher resistance, might have been influenced after all by the inoculation, and evaluated the ‘Organic’ products to be less healthful. This line of reasoning might sound as a plausible explanation, but these assumptions should be interpreted with caution as little research has been done that would support the interpretation of the findings.

Furthermore, it does not explain why people with a lower resistance score generally estimated ‘Organic’ products to be more healthful. This observation could potentially be explained by assuming that people who did not show much resistance against the inoculation were not that involved on the topic of ‘Organic’ food. When there is low involvement because certain information holds few consequences, people are often not prone to consider the arguments for an idea or cause thoroughly, as this will evade a lot of cognitive effort (Petty, & Cacioppo, 1981). Additionally, Markus (1977), adds to this that if a certain topic is important to someone, they are also better able to consider related information, as it is likely that the

person has already put quit some thought in it. The person holds already pre-existing information, which makes it cognitively easier from him/her to evaluate arguments when new information is presented. In a state of low-involvement this can become more difficult (Petty, & Cacioppo, 1981). In view of the current study this could mean that people with lower resistance scores were not that involved in the topic of ‘Organic’ food, and they might not have estimated the information that was presented in the inoculation as of high relevance to them. This could be the case if the information did not hold important consequences for them, for example, if they were not interested in (buying) ‘Organic’ foods or healthy eating in general. As a result, they might not have read and considered the inoculation information carefully, and also they did not have much a lot of pre-existing knowledge on the topic, which made it more difficult for them to process the arguments raised in the inoculation. Consequently, although there was low resistance, the inoculation might not have been effective, as the information was not considered properly. In general, people estimate ‘Organic’ foods more healthful as that they actually are (Lee, et al, 2013; Prada, et al., 2017; Schuldt, & Schwarz, 2010), and because the inoculation information was not transferred properly, people remained under the assumption that ‘Organic’ food is healthier in comparison to more traditional food options.

6.2. Self-affirmation & Source credibility.

As a result of the enhanced inoculation, it was assumed that people’s resistance against the inoculation would decrease, and participants would be more likely adopt the attitude that was presented in the inoculation text. Contrary to the expectations, when respondents were self-affirmed prior to the inoculation, saw a credible source, or both, did not strengthen the effectiveness of the inoculation. Also, the study findings did not suggest any differences on resistance against the inoculation between the experimental groups.

In contrast with prior literature on self-affirmation (Correl, et al., 2004; Sherman, & Cohen, 2006), the current study found no substantiation that self-affirmation could make people more prone to adopt the inoculation information. It seems possible that these results are partly due to a limitation in the design of the study. Participants filled out the survey online, which made it challenging to control whether the self-affirmation task was interpreted carefully and was well-executed. If participants did not take the assignment seriously, this could have had negative consequences for the effectivity of the manipulation (Galinsky, Stone, & Cooper, 2000). Also, when the topic of the subsequent persuasion would be of high importance, this could have led to a severe threat of the established self-concept, which could have a negative impact on the effectivity of the self-affirmation treatment (Cohen, Aronson, & Steel, 2000; Correll et al., 2004). In addition to the importance of the topic, self-affirmation might only have a limited effect when people already formed deep-rooted defence mechanisms to arm themselves against counter attitudinal assaults (McQueen, & Klein, 2006). With regard to future studies there is abundant room for improvements to determine strategies and applications of self-affirmation that could reduce resistance against an inoculation. It could for example be interesting to investigate whether there are differences in the effectivity of self-affirmation treatments when the importance of an issue or threat is varying between experimental groups. Also, the application of self-affirmation in an online setting should be improved to ensure the quality of the manipulation. For future studies on the topic, it is of main importance to find out whether people who receive a self -affirmation treatment actually become self-affirmed. Additional control questions should be incorporated in future studies. Nevertheless, to the best knowledge of the researcher no validated questions have been established that can determine whether one is self-affirmed or not. Future studies should define and validate criteria (mediators) that determine whether self-affirmation has been induced successfully. An experiment could be executed in which one group of people

performs a self-affirmation task, and another group performs a control task. After that, the defined criteria that could underlie the effect of self-affirmation should be proposed to both groups, and participants should indicate to what extent they can relate to it. Differences in the evaluation of these criteria, between the self-affirmed group and the control group, could be investigated. In this way criteria that underlie a successful self-affirmation can be distinguished and validated.

Also, in contrast with the literature on source-credibility (An, & Pfau, 2004; Chaiken & Maheswaran, 1994; Heesacker et.al., 1983), the current study found no substantiation that source credibility could make people less resistant against the inoculation. The reason for this is not entirely clear, but it is possible that other disregarded factors have undermined it’s effectivity in relation to attitude formation. One study investigated the impact of source credibility on persuasion, and found that recipients would more often rely on the credibility of the source when they did not have prior attitudes or knowledge to fall back on regarding the topic of persuasion, and also when the message was only presented one time (Kumkale, Albarracin, & Seignourel, 2010). Possibly, due to the fact that the inoculation already contained of a lot of information on which an opinion could be based, participants did not rely heavily on the information about the source. Also, it is not unimaginable that participants already had prior beliefs about ‘Organic’ products, which may have initially resulted in resistance towards the message, and finally to the source. In this situation, future research could investigate other approaches to persuade people to undergo attitude change, while source credibility may not suffice if prior attitudes already have been established. Additionally, in the current study there was deliberately chosen to mention the source at the beginning of the text, before the forewarning, to make sure that people would read it. As a result, participants did not generate threat before the source and its attitude on the topic of the food claim ‘Organic’ were communicated, whereas the forewarning was incorporated in the

second paragraph of the text. It is unclear whether this has influenced the effectiveness of the inoculation, but future studies could consider to introduce the source further along the text or in a separate column in the form of a author biography. To check whether the source has actually been noticed, an additional control questions regarding the characteristics of the source could in this case be added.

6.3. Limitations

The current study had several limitations that will be elaborated on briefly. First, the study was executed as on online survey experiment. Although, participants received some financial compensation for their participation, it could not be guaranteed that they were committed to execute the survey seriously. It is thus unclear whether the self-affirmation task was performed the correct way, and whether the inoculation message was read with proper consideration, all the way to the end. This could have had considerable effects on the outcome of the study. Even though participants spent thirteen minutes (on average) on completing the survey, the indicated risk should be mentioned. As discussed above, Future studies should define and validate criteria (mediators) that determine whether self-affirmation has been induced successfully, prior to being exposed to a form of persuasion, and to test whether the inoculation message was observed carefully.

Second, based on prior literature it was assumed that people estimate ‘Organic’ foods to be more healthful than that they actually are, and that this attitude would change after the application inoculation treatment. Despite the fact that no differences were found between the inoculated and the non-inoculated participants, the estimated healthfulness of ‘Organic’ foods has never been used before as a dependent measure to determine attitude change. The incorporation of additional measurements prior and after the inoculation on attitude towards ‘Organic’ foods, could have substantiated and increased the reliability of the findings.

Third, to conceal the purpose of the study to a certain extent, participants were not directly asked to indicate the estimated healthfulness of the ‘Organic’ food products they saw. To create the variable healthfulness different indicators of a foods’ healthfulness were combined (fat, sugar, fibre, calories, and nutritional value). Although, the extent to which these elements are present defines whether a food is healthful or not, it could have been valuable to also ask for the estimated healthfulness in general, in order to test the validity of the combined measure. Future studies could also consider to plainly ask participant to indicate the perceived healthfulness of a food instead of using the different measures, although it might reveal the purpose of the study.

Fourth, this study aimed to imitate the process of product evaluation, as also being performed by consumers in a real supermarket. This means that ‘Organic’ products on-shelf are alternated with non-’Organic’ products with possibly other food claims. Hence, several fillers were added to the corpus of experimental stimuli. Although, the foods were presented in a random order, there is a small chance that participants compared foods within the same product-group. Nevertheless, this resembled a traditional supermarket setting the most accurate.

6.4. Conclusion & implications for future studies

Primarily, this study aimed to investigate whether inoculation could persuade people to change their attitude towards the food claim ‘Organic’. It was expected that people who were inoculated would estimate the healthfulness of ‘Organic’ foods to be lower. Secondary, the role of self-affirmation and source credibility in lowering the resistance against the inoculation was investigated. Contrary to the expectations, no effects of inoculation, self-affirmation, source credibility or a combination between these constructs, were found. Several main limitations to the design of the study can help to clarify these results. First of all, the

online experimental setting limited the control of the researcher to ensure that all the elements of the survey were executed properly. More specifically, it was unclear whether the self-affirmation task was executed properly, and that people were actually self-affirmed afterwards. Also, it was unclear whether the inoculation text was read with care and consideration. A final limitation of the study was the composition of the dependent measure: perceived healthfulness of food. Better insights on the effects of inoculation, self-affirmation, and source credibility could have been obtained by asking direct questions concerning participants’ resistance against misleading food-labels and the healthfulness of ‘Organic’ foods, before and directly after the treatments.

Despite the limitations of this study, the unexpected outcomes are challenging to explain. It was expected that resistance against the inoculation would explain the potential effect on the perceived healthfulness of ‘Organic’ foods, but this was not the case. However, the analyses indicated that there was an actual relationship between resistance and perceived healthfulness of ‘Organic’ food. Also, contrary to the expectations, this was a negative relationship, which means that when resistance would decrease, the perceived healthfulness of ‘Organic’ foods would increase, and the other way around. An explanation was proposed that considered participants’ level of involvement with ‘Organic’ food and/or healthy eating as a possible influence to explain the negative relationship between resistance and inoculation. However, assumptions were made on the basis of limited research, and should thus be interpreted with caution. Researchers could consider to control for the potential effect of topic involvement in future studies on inoculation.

6.5 Practical implications

The current study adds to the growing body of knowledge on inoculation in relation to resistance, persuasion and health-related attitude change. In addition to scientists, that might

consider to conduct future studies on these topics, the findings of this study also have implications for communication departments of health authorities and governments. Finally, attempts to make people more resilient against the misleading food claim ‘Organic’ failed in the context of the current study. Therefore, this study wants to emphasize once again, the complexity of the deception of misleading food claims, and hopes to encourage the USDA and the FDA to comply with stricter and more transparent regulations in the future, since peoples’ health may depend on it.

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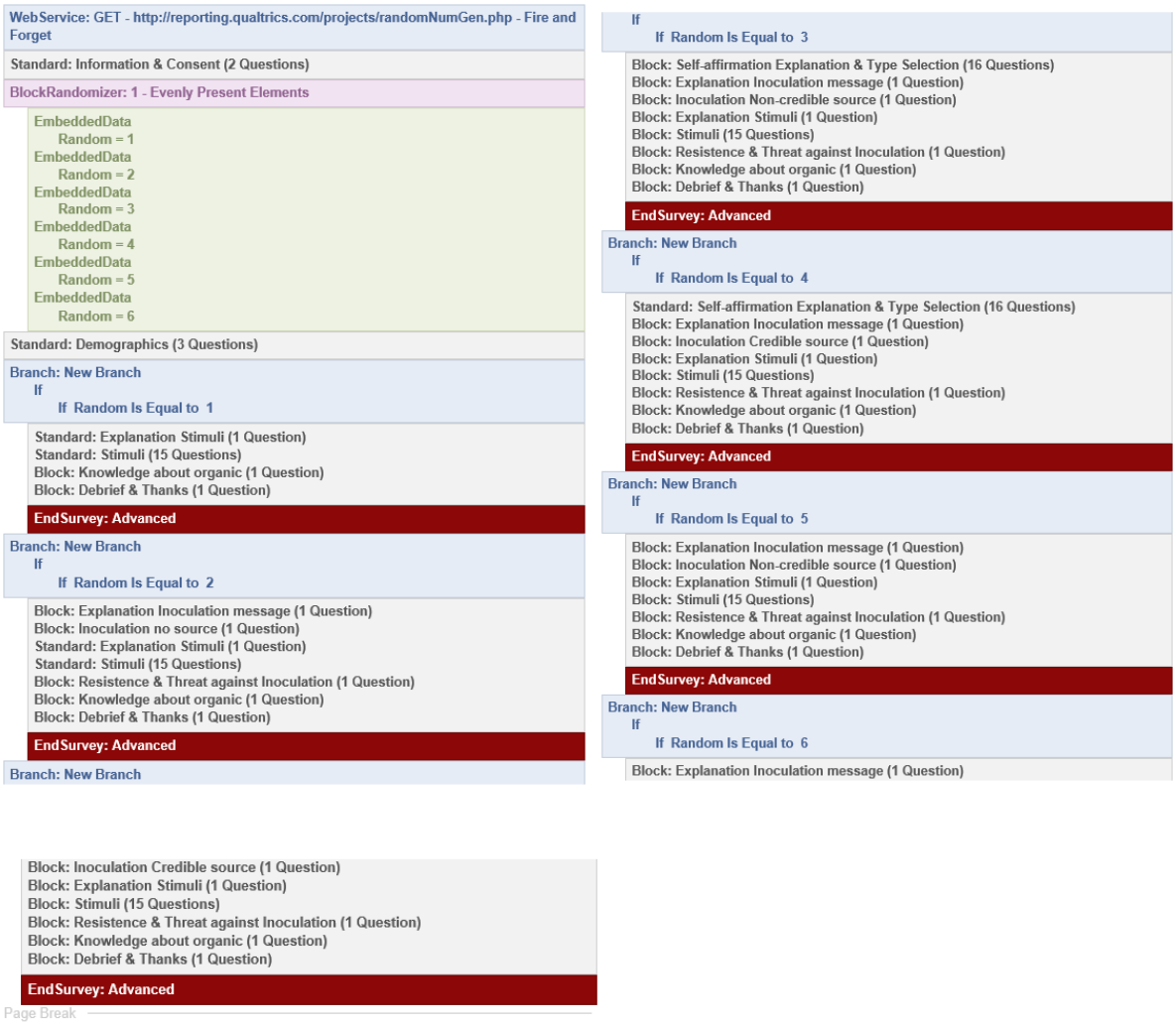
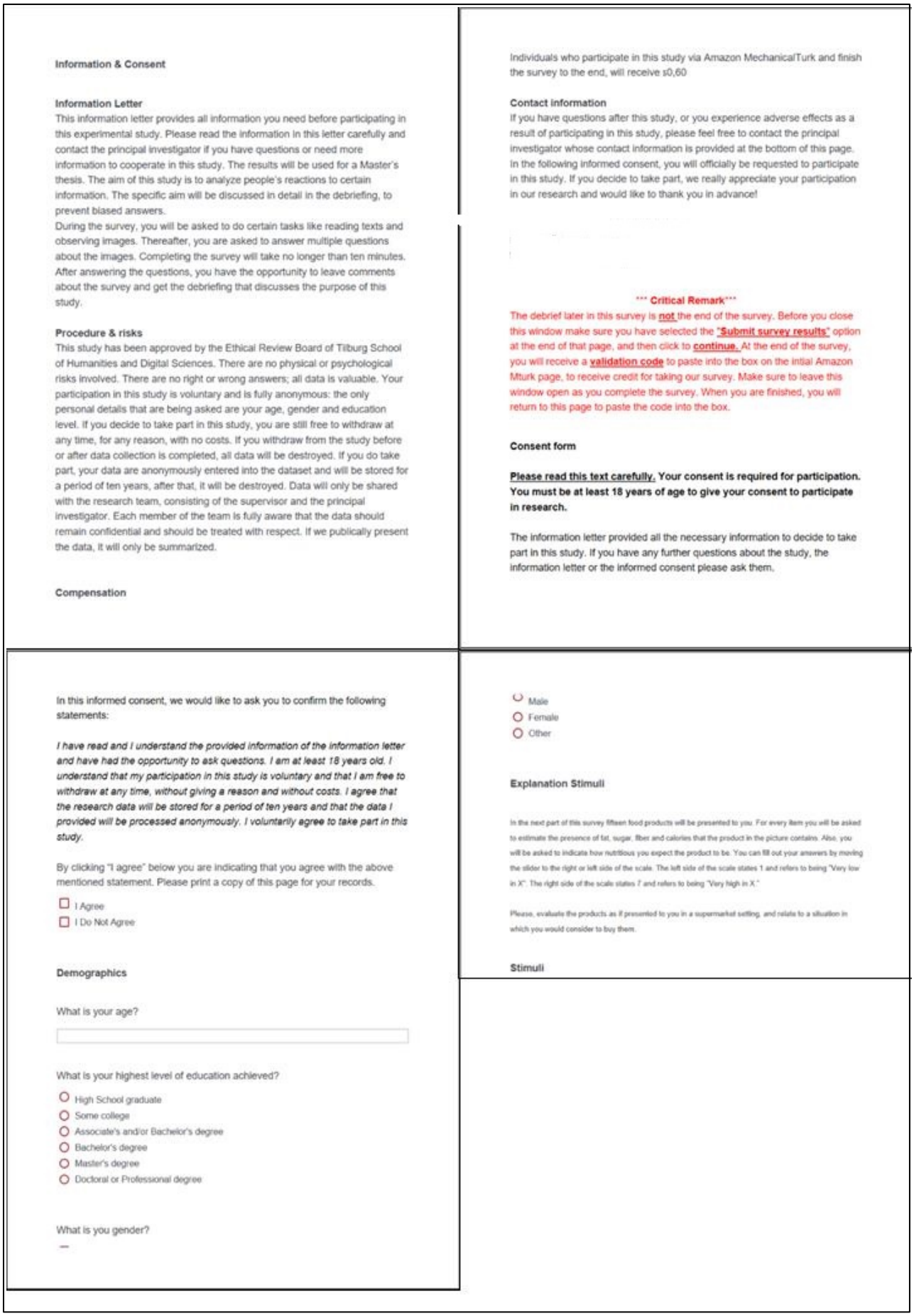
Appendix

Appendix 1

Link to survey: https://qsharingeu.eu.qualtrics.com/jfe/form/SV_0p2dYL08tWcjNAh



Appendix 1.1: Survey Flow



Information & Consent

Information Letter
This information letter provides all information you need before participating in this experimental study. Please read the information in this letter carefully and contact the principal investigator if you have questions or need more information to cooperate in this study. The results will be used for a Master's thesis. The aim of this study is to analyze people's reactions to certain information. The specific aim will be discussed in detail in the debriefing, to prevent biased answers.
During the survey, you will be asked to do certain tasks like reading texts and observing images. Thereafter, you are asked to answer multiple questions about the images. Completing the survey will take no longer than ten minutes. After answering the questions, you have the opportunity to leave comments about the survey and get the debriefing that discusses the purpose of this study.

Procedure & risks
This study has been approved by the Ethical Review Board of Tilburg School of Humanities and Digital Sciences. There are no physical or psychological risks involved. There are no right or wrong answers; all data is valuable. Your participation in this study is voluntary and is fully anonymous: the only personal details that are being asked are your age, gender and education level. If you decide to take part in this study, you are still free to withdraw at any time, for any reason, with no costs. If you withdraw from the study before or after data collection is completed, all data will be destroyed. If you do take part, your data are anonymously entered into the dataset and will be stored for a period of ten years, after that, it will be destroyed. Data will only be shared with the research team, consisting of the supervisor and the principal investigator. Each member of the team is fully aware that the data should remain confidential and should be treated with respect. If we publically present the data, it will only be summarized.

Compensation

Individuals who participate in this study via Amazon MechanicalTurk and finish the survey to the end, will receive $0,60

Contact information
If you have questions after this study, or you experience adverse effects as a result of participating in this study, please feel free to contact the principal investigator whose contact information is provided at the bottom of this page. In the following informed consent, you will officially be requested to participate in this study. If you decide to take part, we really appreciate your participation in our research and would like to thank you in advance!

***** Critical Remark*****
The debrief later in this survey is **not** the end of the survey. Before you close this window make sure you have selected the **"Submit survey results"** option at the end of that page, and then click to **continue.** At the end of the survey, you will receive a **validation code** to paste into the box on the initial Amazon Mturk page, to receive credit for taking our survey. Make sure to leave this window open as you complete the survey. When you are finished, you will return to this page to paste the code into the box.

Consent form

Please read this text carefully. Your consent is required for participation. You must be at least 18 years of age to give your consent to participate in research.

The information letter provided all the necessary information to decide to take part in this study. If you have any further questions about the study, the information letter or the informed consent please ask them.

In this informed consent, we would like to ask you to confirm the following statements:

I have read and I understand the provided information of the information letter and have had the opportunity to ask questions. I am at least 18 years old. I understand that my participation in this study is voluntary and that I am free to withdraw at any time, without giving a reason and without costs. I agree that the research data will be stored for a period of ten years and that the data I provided will be processed anonymously. I voluntarily agree to take part in this study.

By clicking "I agree" below you are indicating that you agree with the above mentioned statement. Please print a copy of this page for your records.

☐ I Agree
☐ I Do Not Agree

Demographics

What is your age?

What is your highest level of education achieved?

○ High School graduate
○ Some college
○ Associate's and/or Bachelor's degree
○ Bachelor's degree
○ Master's degree
○ Doctoral or Professional degree

What is you gender?

○ Male
○ Female
○ Other

Explanation Stimuli

In the next part of this survey fifteen food products will be presented to you. For every item you will be asked to estimate the presence of fat, sugar, fiber and calories that the product in the picture contains. Also, you will be asked to indicate how nutritious you expect the product to be. You can fill out your answers by moving the slider to the right or left side of the scale. The left side of the scale states 1 and refers to being "Very low in X". The right side of the scale states 7 and refers to being "Very high in X."

Please, evaluate the products as if presented to you in a supermarket setting, and relate to a situation in which you would consider to buy them.

Stimuli

Pasta Sauce

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nutritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							

	Very Low 1	2	3	4	5	6	Very High 7
Nutritive value							

Pasta Sauce

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							

	Very Low 1	2	3	4	5	6	Very High 7
Calories							
Fiber							
Nutritive value							

Pasta Sauce

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X

	Very Low 1	2	3	4	5	6	Very High 7

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							
Nutritive value							

Wavy Chips

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X

	Very Low 1	2	3	4	5	6	Very High 7

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Wavy Chips

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Wavy Chips

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Oatmeal

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Oatmeal

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							
Nutritive value							

Oatmeal

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							
Nutritive value							

Sweet Peas

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							
Nutritive value							

Sweet Peas

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

	Very Low 1	2	3	4	5	6	Very High 7
Sugar							
Fat							
Calories							
Fiber							
Nutritive value							

Sweet Peas

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Mayonnaise

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Mayonnaise

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Mayonnaise

Please, indicate the estimated presence of fat, sugar, fiber and calories that the product in the picture contains, and also indicate how nitritious you expect the product to be.

While using the slider in the scales please note: 1 = Very low in X, 7 = Very high in X.

Very Low Very High
1 2 3 4 5 6 7
Sugar
Fat
Calories
Fiber
Nutritive value

Knowledge about organic

How do you rate your knowledge on Organic food products?

Not knowledgeable Very knowledgeable
1 2 3 4 5 6 7
Knowledge of Organic food products

Debrief & Thanks

Debrief of the survey

Critical Note

This debrief is not the end of the survey. Before you close this window make sure you have selected the "Submit survey results" option at the end of that page, and then click to continue to be guided to the end of this survey. At the end of the survey, you will receive a code to paste into the box on the intial Amazon Mturk page to receive credit for taking our survey. Make sure to leave this window open as you complete the survey. When you are finished, you will return to the Amazon Mturk page to paste the code into the box.

Dear participant,

Thank you for agreeing to participate in this study. The general purpose of this research was to test the effectiveness of different types of warnings to protect people from misleading information. We have tested

the effectiveness of these warnings by giving participants (in the concerning conditions) a textual warning, before exposing them to misleading food labels. The goal of the warning was to trigger the participants' resistance towards the misleading information. In addition to that, there was also looked for ways to strengthen the effect of the warning in some of the experimental conditions by applying a self-affirmation pre-treatment (affirming personal values), or by adding a credible source (a successful blogger) to the warning text. Besides the demographic questions that were applicable for all respondents, a select group was only exposed to the experimental stimuli, which concerned the food-products, including some corresponding questions. Others also had to perform an additional self-affirmation task and/or answer questions about a supplied warning text.

If you have been exposed to the warning text, we want to stress that the warning text contains some false information, and should not be interpreted as the truth. This text was created by the researchers for research purposes only, and is not real. The results of this study will yield more insight into the effectiveness of different types of warnings to protect people from misleading or false information.

All the information we collected in today's study will be anonymous and confidential, and there will be no way of identifying your responses in the data archive. We are not interested in individual's responses; we want to look at the general patterns that emerge when the data are aggregated together.

Now you are fully informed about the rationale behind our experiment, you are still free to withdraw, for any reason, with no costs. If you would like to withdraw from this study, your data will be destroyed. Please let us know by contacting the principal investigator. Again, thank you very much for your participation, and please do not share any of this information with others. The researchers want to guarantee that all future participants will be unaware of the true purpose of the experiment. Please feel free to ask any further questions about the study, or updates about the results of the study.
Kind regards,

F. Vermeij
Tilburg University of Applied Sciences

○ Submit survey results

Explanation Inoculation message

You are about to be see a short text about food labels. Please, make sure you will take sufficient time to carefully read the text from the beginning to the end.There is no need to remember the paragraphs in detail, but after reading the text, several associated questions will be proposed.

""" Critical remark """

The researchers want to make sure that respondents pay sincere attention to the text to secure the quality of this study. Therefore, a timer was built into the next page, to measure the time spend on this page. If this is less than the required 120 seconds, the research results of these respondents will be unusable for data analysis, and will have to be excluded from the research.

Please, make sure to stay on the next page for at least **120 seconds**

Please, continue to the text.

Inoculation no source

Resistence & Threat against Inoculation

Please, indicate to what extent you agree with the following statements in relation to the text you just read before seeing the products.

	Strongly disagree 1	Disagree 2	More or less disagree 3	Somewhat undecided 4	More or less agree 5	Agree 6	Strongly agree 7
The text threatened my freedom to choose							
The text tried to make a decision for me							
The text tried to manipulate me							
The text tried to pressure me							
I think about things that are unrelated to the text							
I thought favorably about the text							
I ignored the information in the text that challenged my opinion							
I thought critically about the information in the text							
I stood strong and refused to change my opinion after reading the text							

Self-affirmation Explanation & Type Selection

Explanation personal values

In this next part of the survey, we would like to learn a little more about your personal values. First, 6 different personality types will be presented to you, and you will be asked to select the personality type that resonates the most with you and your personal values. Please, select the option of your preference.

Next, several situations or questions, followed by four attitudes or answers will be presented. Please, select the answer or attitude that is closest to your personality and personal values, as indicated in the previous question.

Which one of the value orientations listed below is the closest to your personality and is in your opinion the most valuable in the approach of (complex) questions and issues in life?

- ○ The Theoretical type; values discovery of truth: A passion to discover, systemize and analyze; a search for knowledge.
- ○ The Economic type; values what is useful: A passion to gain a return on all investments involving time, money and resources.
- ○ The Aesthetic type; values form and harmony: A passion to experience impressions of the world and achieve form and harmony in life; self-actualization.
- ○ The Social type; values love of people: A passion to invest myself, my time, and my resources into helping others achieve their potential.
- ○ The Political type; values power: A passion to achieve position and to use that position to affect and influence others.
- ○ The Religious type; values unity: A passion to seek out and pursue the highest meaning in life, in the divine or the ideal, and achieve a system for living.

Do you think that a good government should aim chiefly at —

- ○ a. More aid for the poor, sick, and old
- ○ b. The development of manufacturing and trade
- ○ c. Introducing more ethical principles into its policies and diplomacy
- ○ d. Establishing a position of prestige and respect among nations

In your opinion, can a man who works in business for his living all the week best spend Sunday in —

- a. trying to educate himself/herself by reading serious books
- b. trying to win at competitive sports
- c. going to an orchestral concert
- d. hearing a really good sermon

If you could influence the educational policies of the public schools of some city, would you undertake –

- a. To promote the study and participation in music and the fine arts
- b. To stimulate the study of social problems
- c. To provide additional laboratory facilities
- d. To increase the practical value of courses

Do you prefer to develop friendships with people who –

- a. Are efficient, industrious and of a practical turn of mind
- b. Are seriously interested in thinking out their attitude toward life as a whole
- c. Possess qualities of leadership and organizing ability
- d. Show artistic and emotional sensitivity

If you lived in a small town and had more than enough income for your needs, would you prefer to –

- a. Apply it productively to assist commercial and industrial development
- b. Help to advance the activities of local religious groups
- c. Give it for the development of scientific research in your locality
- d. Give it to The Family Welfare Society

When you go to the theatre, do you, as a rule, enjoy most –

- a. Plays that treat the lives of great individuals
- b. Ballet, operas, or similar artistic performances
- c. Plays that have a theme of human suffering and love
- d. Dramas that highlight the dilemmas and paradoxes of life

Assuming that you possess the necessary ability, and the salary for each of the following occupations is the same, would you prefer to be a –

- a. Mathematician
- b. Sales manager
- c. Member of the clergy (priest/minister/rabbi, etc.)
- d. Politician

If you had sufficient leisure and money, would prefer to –

- a. Make a collection of fine sculptures or paintings
- b. Establish a center for the care and training of the disabled
- c. Aim at a senatorship, or a seat in the Cabinet
- d. Establish a business or financial enterprise of your own

At an evening discussion with close friends, are you more interested when the conversation concerns –

- a. The meaning of life
- b. Developments in science
- c. Literature
- d. Poverty and social amelioration

Which of the following would you prefer to do during part of your next summer vacation (if your ability and other conditions would permit) –

- a. Write and publish an original biological essay or article
- b. Stay in some secluded part of the country where you can appreciate fine scenery
- c. Enter a local tennis of other athletic tournament
- d. Get experience I some new line of business

Do great exploits and adventures of discovery such as Columbus's, Magellan's, and Earhart's seem to you significant because –

- a. They demonstrate the ability of human beings to overcome the difficult forces of nature
- b. They add to our knowledge of geography, meteorology, oceanography, etc.
- c. They weld human interests and international feelings throughout the world
- d. They contribute each in a small way to an ultimate understanding of the universe

Should one guide one's conduct according to, or develop one's chief loyalties toward –

- a. One's religious faith
- b. Ideals of beauty
- c. One's occupational organization and associates
- d. Ideals of charity

To what extent do the following famous persons interest you –

- a. Mother Theresa
- b. General Colin Powell
- c. Bill Gates
- d. Marie Curie

In choosing spouse/life-time companion would you prefer someone who –

- a. Is successful in his/her profession, commanding admiration from others
- b. Likes to help people
- c. Is fundamentally spiritual in his/her attitudes toward life
- d. Is gifted along artistic lines

Viewing Leonardo d Vinci's picture "The Last Supper," would you tend to think of it –

- a. As expressing the highest spiritual aspirations and emotions
- b. As one of the most priceless and irreplaceable pictures ever painted
- c. In relation to Leonardo's versatility and its place in history
- d. The quintessence of harmony and design

Inoculation Non-credible source

Appendix 2

"Organic" food labels: guiding or misguiding?

The quest for a healthy life-style.

Do organic food labels guide or misguide consumers, in making healthy food choices? Organic food labels actually misguide consumers who aim to make healthy food choices", claims Chris Smith. Chris, a successful blogger, writes critical weekly essays, for an audience of over a million subscribers, to inform the critical contemporary food-consumer in their quest for a healthier lifestyle. In this week's essay Chris casts a critical eye on organic food labels.

In the contemporary food environment consumers are increasingly exposed to commercial appeals from food advertisers in the form of food labels, like "organic", which could cause them to question their perception of what constitutes a healthy food choice. As a direct effect of this, an increasing number of consumers unjustly considers certain food products to be healthy or at least healthier than they actually are. This misjudgment of food products drives detrimental health-effects as obesity and other non-communicable diseases as a long-term consequence.

During the process of grocery shopping, consumers assume that they make well-considered choices regarding their food purchases when it comes to assessing the perceived healthiness of a food product. Nevertheless, several investigations have pointed out that consumers often ignore nutritional tables in the presence of a front-of-package food label, like "organic", and base their evaluations towards the health of the product on the associations they have with its label. Consumers rate these organic foods with lower calories, overestimate their accredited positive characteristics, and as a result of this misconception, consumers tend to eat more of these foods. Nevertheless, there is not sufficient evidence to argue that organic food is healthier than conventionally grown food

Furthermore, it is widely assumed that overall food labels gives the consumer a better idea about what the nutritional composition of the product is.

However, many food labels do not supply any information about the nutritional components inside a product, but solely indicate the way in which the product was produced. The food-label "organic" outlines a good example of such a label, while it only indicates that a product is cultivated in compliance with the standards of organic farming. In general, organic farming applies procedures that aim to cycle resources, foster ecological balance, and preserve biodiversity.

This could make one wonder, because food-labels are not allowed to be misleading, bringing consumers into believing that foods carrying these labels are healthier than that they actually are. Consumers believe that the government protects them, but the authorities actually fail to do so. The practice of misleading food-labels concerns a regulation area that the government does not generally address. Moreover, if sufficient evidence can be collected to demonstrate that a firm has applied a misleading label on purpose, it crosses the law. Nevertheless, these firms are seldomly prosecuted, and often get away with nothing but a warning letter.

In conclusion, in the absence of regulatory guidance, consumers should become more aware of the presence of potentially misleading food labels, like organic, and evaluate them more carefully. They should not base their assumptions on the direct associations with the food-label, but on the estimated nutritional values of the food itself.

Appendix 2.1: Inoculation text accompanied by a credible source

“Organic” food labels: guiding or misguiding?

The quest for a healthy life-style.

Do organic food labels guide or misguide consumers, in making healthy food choices? Organic food labels do actually misguide consumers who aim to make healthy food choices”, claims Chris Smith. Chris, a beginning blogger, writes entertaining weekly essays, for an audience of nearly fifty subscribers, to inspire the contemporary food-consumer in their quest for a healthier lifestyle. In this week’s essay Chris casts an eye on organic food labels.

In the contemporary food environment consumers are increasingly exposed to commercial appeals from food advertisers in the form of food labels, like “organic”, which could cause them to question their perception of what constitutes a healthy food choice. As a direct effect of this, an increasing number of consumers unjustly considers certain food products to be healthy or at least healthier than they actually are. This misjudgment of food products drives detrimental health-effects as obesity and other non-communicable diseases as a long-term consequence.

During the process of grocery shopping, consumers assume that they make well-considered choices regarding their food purchases when it comes to assessing the perceived healthiness of a food product. Nevertheless, several investigations have pointed out that consumers often ignore nutritional tables in the presence of a front-of-package food label, like “organic”, and base their evaluations towards the health of the product on the associations they have with its label. Consumers rate these organic foods with lower calories, overestimate their accredited positive characteristics, and as a result of this misconception, consumers tend to eat more of these foods. Nevertheless, there is not sufficient evidence to argue that organic food is healthier than conventionally grown food

Furthermore, it is widely assumed that overall food labels gives the consumer a better idea about what the nutritional composition of the product is.

However, many food labels do not supply any information about the nutritional components inside a product, but solely indicate the way in which the product was produced. The food-label “organic” outlines a good example of such a label, while it only indicates that a product is cultivated in compliance with the standards of organic farming. In general, organic farming applies procedures that aim to cycle resources, foster ecological balance, and preserve biodiversity.

This could make one wonder, because food-labels are not allowed to be misleading, bringing consumers into believing that foods carrying these labels are healthier than that they actually are. Consumers believe that the government protects them, but the authorities actually fail to do so. The practice of misleading food-labels concerns a regulation area that the government does not generally address. Moreover, if sufficient evidence can be collected to demonstrate that a firm has applied a misleading label on purpose, it crosses the law. Nevertheless, these firms are seldomly prosecuted, and often get away with nothing but a warning letter.

In conclusion, in the absence of regulatory guidance, consumers should become more aware of the presence of potentially misleading food labels, like organic, and evaluate them more carefully. They should not base their assumptions on the direct associations with the food-label, but on the estimated nutritional values of the food itself.

Appendix 2.2: Inoculation text accompanied by a non-credible source

“Organic” food labels: guiding or misguiding?

The quest for a healthy life-style.

Do organic food labels guide or misguide consumers, in making healthy food choices? In This week’s essay we will cast an eye on organic food labels, and explain why these organic food labels indeed misguide consumers who aim to make healthy food choices.

In the contemporary food environment consumers are increasingly exposed to commercial appeals from food advertisers in the form of food labels, like “organic”, which could cause them to question their perception of what constitutes a healthy food choice. As a direct effect of this, an increasing number of consumers unjustly considers certain food products to be healthy or at least healthier than they actually are. This misjudgment of food products drives detrimental health-effects as obesity and other non-communicable diseases as a long-term consequence.

During the process of grocery shopping, consumers assume that they make well-considered choices regarding their food purchases when it comes to assessing the perceived healthiness of a food product. Nevertheless, several investigations have pointed out that consumers often ignore nutritional tables in the presence of a front-of-package food label, like “organic”, and base their evaluations towards the health of the product on the associations they have with its label. Consumers rate these organic foods with lower calories, overestimate their accredited positive characteristics, and as a result of this misconception, consumers tend to eat more of these foods. Nevertheless, there is not sufficient evidence to argue that organic food is healthier than conventionally grown food

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Appendix 2.3: Inoculation text accompanied by a no source

Appendix 3


Bring Tuscany To Your Table
TOMATO & BASIL
TOMATES ET BASILIC
Organic
TOMATO & BASIL
Restaurant-Quality
Now with
MORE
BASIL
TOMATO & BASIL
REAL
MAYONNAISE
600g
Organic
MAYONNAISE
MADE WITH ORGANIC
CAGE FREE EGGS
EXTRA
CREAMY
MAYONNAISE
24 FL OZ
(709mL)
wavy
ORIGINAL
Simply
wavy
ORGANIC
Sea Salted
POTATO CHIPS
Wavy
Original

*Appendix 3:*Experimental stimuli; tomato-sauce, mayonnaise, natural chips, oatmeal, and canned sweet peas.