

Master Thesis

Mind your meat: How meat-related cognitive dissonance
influences the intention to purchase organic meat



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Wico van Spanje (1036469)

Supervisor: prof.dr. G. Antonides

ABSTRACT

Sustainability problems arising from food systems are increasing and it is undeniable that meat production and consumption play a crucial role in this trend. To reduce this problem, consumers should be considered as a potential agent of change, which requires understanding of the psychology of meat consumption. To understand the psychology of meat consumption, the theory of cognitive dissonance has been used often. This theory has been extended by Rothgerber (2020) who developed the *meat-related cognitive dissonance framework* stating that concerns about animal welfare, the environment, and personal health are the producers of meat-related cognitive dissonance.

This study examines if taking away the consumer's concerns about animal welfare, the environment, and personal health can move consumers into making more sustainable food choices. The consumers were manipulated by an informative advertisement that decreased their concerns about these MRCD producing aspects. The survey data were taken from 254 Dutch supermarket visitors. The results showed that the manipulation positively affected the purchase intention for organic chicken meat. Furthermore, animal welfare, the environment, and personal health mediated this relationship. As this study is the first empirical study that combined the MRCD producing aspects with the concept of purchase intention in an online experiment, the results contribute to literature in both fields. In addition, the results may help and motivate marketers to further understand the psychology behind meat consumption and how consumers can be moved into making more sustainable meat choices.

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1. Introduction

Sustainability problems arising from food systems are increasing. Industrialization, globalization, the impact of climate change on agriculture, heavily processed products, and the lack of food security are amongst a few of these factors that are of concern. By 2050, overall food consumption is expected to rise over 50% and animal-based food nearly 70% (Searchinger et al., 2019). This trend results in more pressure on essential resources, human health, and animal welfare in Western countries (Aiking et al., 2006; Smil, 2001). To ensure a sustainable food future and decrease in these sustainability issues, change in the way food is produced and consumed is required. The most effective solutions to do this are to reduce conventional meat and dairy consumption, choose organic fruits and vegetables over conventional ones, and avoid goods transported by air (Reisch et al. 2013).

It is a given that conventional meat production brings ecological risks and negatively affects future global warming and the environment (Godfray et al., 2018). That is why ecological effects and energy-intensity of conventional meat production have been acknowledged by scholars for over 20 years (Verain et al., 2015). However, the Dutch population started to eat more meat for the second year in a row with an average meat consumption of 77.8 kg (meat with bones) per capita (Dagevos et al., 2020). Creating a sustainable food system therefore means looking at both the production and the consumption side of meat, which means meat consumers need to be moved into making more sustainable meat choices. This could either mean (1) avoidance of meat; (2) favoring meat alternatives over meat; (3) favoring organic meat over conventional meat; (4) reduced meat portions or (5) lower frequency of meat consumption.

To achieve an increase in one of these alternatives, consumers should be looked at as potential change agents. Just relying on technological innovations on the production side will not be sufficient (Verain et al., 2015). This, however, is not easily realized. A first reason why that is difficult is a social-cultural factor. The western meat consumption pattern is influenced by all kinds of social-cultural factors: it is a consumption habit, tradition in many kitchens, and cultural repertoire (Godfray et al. 2018; Oleschuk et al., 2019). The second reason happens in the meat consumer's mind. These are the well-developed justification and rationalization strategies used to not change behavior. Meat consumers justify and rationalize meat consumption, for example by the 4Ns of meat justification: meat is *natural* and as humans we are on top of the natural food chain; eating meat is *normal* as eating animals is the norm in a large part of society; meat is *necessary* due to its nutritional benefits; meat is *nice* because it is tasty (Joy, 2010; Piazza et al., 2015). Rationalization strategies such as failing to

recognize that animals are killed to produce meat and suppressing one's moral concerns for animals when eating meat are also commonly used (Loughnan et al., 2010). A third reason is the influence of the meat supply chain. Marketing techniques are used by meat producers and other stakeholders in the meat supply chain to influence the consumer's mind. Meat is separated from its animal origin by de-animalization. For example by presenting meat as ready-to-cook, by removing the head, feet, skin, and eyes. By using linguistic differentiations like *beef* based instead of *cow*, meat is separated from its animal origin and the mental disconnection between a living animal and meat is strengthened (Plous, 1993).

To tackle the challenges mentioned above and perceive consumers as change agents, it is helpful to gain better understanding of the psychology of meat consumers and the reasoning and justifications meat consumers use. To improve understanding of this, the *meat-related cognitive dissonance framework* was recently introduced (Rothgerber, 2020). Meat-related cognitive dissonance (MRCD) can be described as the phenomenon one experiences when having concerns about animal welfare, the environment and personal health, whilst having the status as meat eater. The framework explains how individuals try to prevent MRCD from happening or how to reduce MRCD once it occurs. This framework builds on the so-called meat paradox and the cognitive dissonance theory of Festinger (1957). The meat paradox (Loughnan et al., 2012) describes the phenomenon that individuals love and care for animals on the one side, yet also love to eat animals. While the meat paradox limits itself to concerns for animal welfare only, the MRCD framework addresses the concerns for animal welfare, as well as the concerns for the environment and personal health. Yet, both phenomena stress the discrepancy and tension between attitudes and behavior. The cognitive dissonance theory of Festinger (1957) analyzes what happens if there is tension between attitudes and actual behavior and how individuals try to avoid and reduce that tension. That is why, throughout time, cognitive dissonance theory has been used to understand the psychology of eating meat.

The concerns one might hold over animal welfare, the environment, and personal health could be reduced by favoring organic meat over conventional meat. The production of organic meat is generally better for animal welfare (animals can behave more naturally by staying outdoors in nature throughout the year), the environment (by using ecological resources as natural grasslands and no artificial fertilizers and pesticides), and personal health (by not using added preservatives and additives). Revenue of organic meat sales in supermarkets in the Netherlands increased from 93 million euros to 151 million euros, from 2014 to 2019 (Statista, 2020). The fact that popularity of organic meat is increasing is therefore a step in the right direction, yet it could be further enhanced.

The aim of this study is to examine:

1. if purchase intention for organic meat can be influenced via informative advertisements, by building on the meat-related cognitive dissonance framework, and
2. if the informative advertisement influences the consumer's meat-related cognitive dissonance.

Meat-related cognitive dissonance is a relatively new phenomenon and some constructs have yet to be empirically investigated. Although it has been speculated that animal welfare has the strongest effect and personal health the least effect on MRCD, this has not yet been proven empirically, which means there is a gap in scientific knowledge. In response to these limitations, this study will use an informative advertisement manipulation to address the benefits of organic meat related to animal welfare, the environment, and personal health to see if that leads to an increased purchase intention for organic meat. Hence, the MRCD aspects may be considered as mediating the relationship between exposure to advertisements and intention to purchase organic meat. By doing so, this study builds on the meat-related cognitive dissonance framework of Rothgerber (2020) and provides a more in-depth investigation of this phenomenon, whilst also contributing to scientific literature on green consumer behavior.

The practical relevance of this research is that it provides marketers with guidance for further developing advertisements to increase organic meat consumption. Further enhancement of the consumer's understanding means marketers and policy makers will be better able to select advertisement techniques, when striving towards less conventional meat consumption amongst consumers. As purchase intention is an important predictor of future organic meat consumption, the relevance of this experiment is also that marketers and policy makers can see which mediator has the strongest effect on purchase intention for organic meat.

This study is structured as follows. First, literature on cognitive dissonance, green consumer behavior, meat-related cognitive dissonance, purchase intention, and advertisement effectiveness is provided in Chapter 2. In addition, theoretical arguments are discussed, hypotheses are formed, and a conceptual model is presented. Chapter 3 discusses the methodology. In Chapter 4, the results of the study are provided. Chapter 5 provides a discussion including implications, limitations, and directions for further research. Lastly, a conclusion is given in Chapter 6.

2. Theoretical framework

This section presents a theoretical overview of the relevant concepts and hypotheses. In Section 2.1, the relation between cognitive dissonance, green choices, and its reduction is reviewed. Section 2.2 covers the *meat-related cognitive dissonance framework* of Rothgerber (2020). In Section 2.3, an overview of MRCD concerning animal welfare, the environment, and personal health and its connection to purchase intention is provided. Section 2.4 considers the effectiveness of advertisement design, before the description of the control variables in Section 2.5. Lastly, Section 2.6 presents the hypotheses and conceptual model.

2.1 Cognitive dissonance, green consumption, and how to reduce meat consumption

The Theory of Cognitive Dissonance (Festinger, 1957) suggests that as human beings, we want to hold our attitudes and behavior in harmony and avoid disharmony. This is referred to as the principle of cognitive consistency. Cognitive dissonance refers to the contradiction between what we “claim” and our “actual behavior.” When two elements in one's cognition are inconsistent, one is in a dissonant state. According to Festinger (1957), dissonance can be “painful” and “intolerable” for some. When this inconsistency between attitude and behavior (also called the attitude–behavior gap) arises, it is therefore likely that an individual takes action to eliminate this dissonance. This can be done by either alternating behavior or using cognitive strategies to reduce the dissonance. It is a controversial phenomenon but is referred to as one of the greatest social psychological theories (Aronson, 1969).

The attitude-behavior gap can also occur when consumers consider making green purchases. Consumers may like to make green purchases to enjoy the emotional benefits and not harm the environment. On the contrary, consumers may doubt green purchases due to skepticism and lack of trust towards firms producing and selling green products as untrustworthy (Gleim et al., 2013). Consumers might also perceive their individual impact of green purchases as too little to have an actual effect on the environment (Chang, 2011). A study of Strong (1996) found that some consumers buy products that could harm the environment (such as chemicals) even though they expressed concern for greener alternatives. Peattie (2010) concludes that consumers do not perceive green social norms strong enough to experience discomfort when there is a mismatch between their attitudes and behavior. This attitude-behavior gap can lead to the use of various cognitive processes by consumers to justify their unsustainable decisions (Schütte & Gregory-Smith, 2015). However, consumers can also be motivated and provoked by external factors to reduce their dissonance.

By evoking motivation aimed at reducing inconsistency, consumers can be encouraged and motivated to change their attitudes or behavior (Freedman, 1965). Several dissonance-related techniques have proven to be successful in applied situations, such as promoting energy conservation (Gonzales et al., 1988), reducing snake phobia (Cooper, 1980) or conserving more water (Dickerson et al., 1992). Especially in applied settings when individuals already support the desired goal, but their behavior is not consistent with their beliefs (Dickerson et al., 1992).

Harmon-Jones et al. (2003) showed that increasing empathic concern and knowledge of past failures can evoke cognitive motivation aimed at reducing cognitive dissonance. For MRCD, this could mean that increasing the consumer's concerns (positively) about animal welfare, the environment, and personal health related to meat, could lead to discrepancy reduction and more alignment of behavior and cognitions.

According to the action-based model of dissonance, one's dissonance can be reduced by the arousal of a negative affective state (Harmon-Jones et al., 2010). As individuals experience something unpleasant and realize the experience of inconsistent cognitions, the brain is stimulated to take effective action (Harmon-Jones et al., 2012). More specifically, a sense of disgust and discomfort creates feelings of unease, which triggers the individual to take cognitive action and reduce the discrepancy between behavior (eating meat) and cognition (love for animals). This is why most researchers have focused on the unpleasantness of eating meat, for example in Dowsett et al., (2018). This study shows that meat consumers who are confronted with details of the meat production process have an increased negative affect towards meat.

However, resolving dissonance by the arousal of a negative affective state could also serve to increased behavioral commitment, thus reinforcing immoral behavior (Bastian & Loughnan, 2016). This note is derived from the "spreading of alternatives" theory, derived from the action-based model of dissonance of Harmon-Jones (2002). This can occur when individuals have to make a difficult decision between two or more options. Difficult decisions are referred to as decisions that are inconsistent with the individual's morals and values. Individuals who are action-oriented and have to make difficult decisions will more easily stick with what they know and use dissonance techniques to view their decisions more positive than the alternative (Bastian & Loughnan, 2016). For example, purchasing and consuming meat for consumers who simultaneously value animal welfare, the environment, and personal health could be a difficult decision. If action-oriented consumers are confronted with this

discrepancy (for example if they are confronted with the negative consequences of their meat consumption) they are more likely to stick with what they know: consuming meat.

2.2 Cognitive dissonance and meat consumption

In the previous section, cognitive dissonance and its relation to the attitude-behavior gap regarding green purchases has been discussed. This section focuses on the attitude-behavior gap regarding meat consumption. Rothgerber (2020) developed a framework that links meat consumption to cognitive dissonance, namely *meat-related cognitive dissonance* (MRCD). This refers to the phenomenon meat consumers experience when having concerns about animal welfare, the environment, and personal health. It is the extension of the meat paradox as it also focuses on the environment and personal health. MRCD is described as an unpleasant emotional state that meat consumers want to avoid. As said in the introduction, this framework explains how individuals try to prevent MRCD from happening, and how to reduce it once it has occurred. It describes the different ways meat consumers manage the negative arousal that can occur when eating meat. The next subsections will describe the framework in more detail. Appendix B shows an overview of the framework.

2.2.1 Triggers and prevention mechanisms

The framework is a flowchart describing the steps that occur in the minds of meat consumers. The first two steps in the framework are the triggers for MRCD and prevention mechanisms. These are the first two steps, as these so-called triggers can be blocked in the consumer's mind by using prevention mechanisms.

The first prevention mechanism is *avoidance*. This is done by not acknowledging or thinking about animal welfare, the environment, and personal health whilst eating meat. Avoidance can be done by distancing oneself from the animal by detachment (lack of physical contact with animals) or concealment (farmed animals are hidden away in windowless buildings) (Serpell, 1996).

The second prevention mechanism is *willful ignorance* of information concerning animal welfare, the environment, and personal health as one might be better off not knowing too much about, for example, the industry. Limited evidence is present on this dimension, yet in a study of Vrij et al. (2003) respondents claimed to remain ignorant about animal welfare and farming practices, because they knew that having knowledge about farming practices would make it more difficult to purchase meat. These first two prevention mechanisms are

triggered due to information exposure, for example, about the unethical treatment of animals that are slaughtered for consumption.

The third prevention mechanism is *dissociation* from reminders that meat originates from an animal. This mechanism is widely used by consumers and producers. Producers make use of linguistic differentiation (bacon vs. pork back), and package meat as if it was never from an animal by removing eyes and tongues. Reminding consumers about the animal led to a decrease in purchase and increase in free range and organic meat (Hoogland et al., 2005). This prevention mechanism is generally triggered when consumers are reminded that meat is from an animal.

Consumers might also convince themselves that they avoid meat consumption. This is due to *perceived behavioral change*, which is the fourth prevention mechanism. This is also common in the world of food diets. It relates to wishful thinking to make one feel better about (meat-related) food choices. This generally happens when consumers are triggered during actual meat consumption. For example, one might emphasize or convince oneself themselves that the consumed meat was produced and slaughtered in an ethical and humane way.

The fifth and final prevention mechanism, *do-gooder derogation*, is used when vegetarians are present or meat-consumers are reminded of the presence of vegetarians. Vegetarians generally carry strong and meaningful associations regarding meat consumption. In the presence of vegetarians, omnivores might self-categorize them as meat eater and it is speculated that meat-eaters will therefore be reminded of the experienced dissonance from eating meat. This confrontation can threaten the beliefs of meat-consumers. Rothgerber (2020) therefore speculates that due to the presence of vegetarians, meat eaters block MRCD by either denigrating vegetarians or diverting attention elsewhere.

2.2.2 Reduction mechanisms

Some consumers will not be able to block MRCD. These consumers will experience MRCD, but may try to reduce it. Rothgerber (2020) distinguishes two ways of reducing MRCD: *changing one's perceptual strategy* or *changing one's behavior*. The latter means behavioral change in the form of reduced meat consumption, which in the light of this study would be the most ideal outcome considering the negative effects of meat production and consumption on animal welfare, the environment, and personal health. Changing perceptions will allow meat consumers to keep consuming meat the way they do, without feeling immoral.

The first way MRCD reduction is by *denying animal mind*, which means consumers convince themselves that animals do not think, feel, and suffer the same as human beings do.

With this mindset, beliefs about animals are malleable in one's own mind to fit one's personal motivations.

The second way is *dichotomization*, which means categorizing animals in those we love and those we eat. Dogs and cats are seen as pets in the Dutch culture which is why they are not eaten.

The third way refers to the three Ns of meat justification by Joy (2010): *natural*, *normal*, and *necessary* and the fourth N by Piazza et al. (2015), *nice*. The belief that humans dominate animals, that we are on top of the natural food chain, and have the privileged power to act that way is still present and *natural* for many. Dhont and Hodson (2016) found that individuals, who think it is our right to dominate other species, also believe there is a natural societal order with individuals being at the top and animals below humans. As eating animals is the norm in a large part of society, consumers fail to link meat in supermarkets with the animals slaughtered and believe that eating meat is *normal*. Kunst et al. (2016) found that if the consumer's attention is drawn to the origins of the animal, the consumer's concern about slaughter increases and appetite for meat decreases. A common myth is that meat is necessary for essential nutrients. Many believe meat is the primary source of protein for the body, whilst dieticians widely agree that the key to a healthy diet is to eat a variety of foods which can be achieved without involving animals. Piazza et al. (2015) conclude that pleasure is one of the biggest barriers to abandon the habit of eating meat. When human beings find meat tasty and satisfactory (thus *nice*), they are good at finding justifying reasons and in avoiding information that could challenge this.

The fourth way is *blaming third parties*, which means shifting the burden to place responsibility somewhere else. An example is the labor division in many industrialized societies (breeding, growing to slaughter, transporting to slaughter), which allows farmers to avoid full responsibility of the immoral meat supply chain (Serpell, 1996).

The fifth and final way to change perception is *moral outrage*. Individuals might express defensive outrage over the treatment of animals to restore their moralities. For example, an individual can hide behind one's own failings by pointing out other people's moral failings. By doing so, the moral identity of the individual can be restored and that can even lead to reduced feelings of guilt (Rothschild & Keefer, 2017). This is related to the phenomenon of distancing, which is a way to cope with ethical dissonance (Barkan et al., 2015).

2.2.3 Predictors of prevention/reduction mechanisms

It has now become clear that some individuals will block MRCD and some individuals will experience MRCD for different reasons. Rothgerber (2020) investigates factors that could possibly predict if consumers will be able to block MRCD or if they are going to experience it. Rothgerber (2020) distinguishes four categories: (1) aspects producing MRCD; (2) motivation created by MRCD; (3) individual differences and (4) culture.

The first category, *aspects producing MRCD*, is about the context. According to Rothgerber (2020) three contextual aspects can produce MRCD: animal welfare, the environment, and personal health. This is an extension of the meat-paradox, as this paradox solely focuses on animal welfare. If an individual values or holds concerns over these aspects, it is more likely that MRCD will be experienced. The focus of this study will lie on this specific section of the MRCD framework.

The second category, *motivation created by MRCD*, is about how strongly individuals are motivated to change themselves. Rothgerber (2020) hereby links three other dissonance theories to MRCD and thereby not only limits the framework to the cognitive dissonance theory of Festinger (1957). First *Inconsistency* is mentioned, which builds on the classical dissonance theory. This means, the more inconsistent someone is, the more likely it is that an individual will experience MRCD. Secondly, building on the New Look model of dissonance (Cooper & Fazio, 1984), *responsibility based revisions* are mentioned. This means individuals believe that they had no choice but to act upon it. The stronger an individual is able to perceive one as responsible, the less likely it is that MRCD is experienced. Thirdly, *self-integrity* is mentioned. This means restoring one's self-conception by changing cognitions. For example, one might emphasize that one does nice things for animals, and thereby block MRCD from occurring.

The third category is about *individual differences*, meaning that the use of either prevention or reduction mechanisms depends on this. It is found that different *genders* use different MRCD reduction techniques, and that it is more likely that masculine men block MRCD. *Values* are also of importance, as individuals hold different values that can influence attitudes towards animals and meat. The framework hypothesizes that conservatives are more likely to justify their meat consumption, as opposed to liberals who are more likely to block MRCD from occurring. *Affinity towards animals/meat* and *exposure to animals* are also both of influence. Meat lovers are more likely to engage in techniques to reduce MRCD as opposed to animal lovers. Also, the framework predicts that farmers probably do not reduce

their MRCD by denying minds to animals (diminish the mental capabilities of animals), as the animals provide the farmers a way of living.

The fourth and last is category *culture*. This means that cultural heritage also influences if consumers will experience MRCD or not, as some cultures are more accepting to exploit and harm certain animals. Tian et al. (2016) conducted research on the French and Chinese culture related to meat consumption. The eating behavior of the French culture might be more tied to self-concept than the Chinese culture. The French culture might also be more susceptible to the triggers of MRCD, because food production is more hidden in France as opposed to China. A study of Mayfield et al. (2007) showed that Swedes, generally speaking, do not think about the animal origin when consuming it as often as the British do. However, cross-cultural data on MRCD should be carefully interpreted due to the many moderators involved that can differ per individual.

2.3 Mediators of purchase intention for organic meat

For this study, the focus will lie on what Rothgerber (2020) describes as the aspects that produce MRCD: animal welfare, the environment, and personal health. These aspects will be manipulated and used as mediators, to study the effects on purchase intention for organic meat. It is expected that the consumers' emotional state will be influenced by the ad manipulation, more specifically by taking away the consumer's concern, it is expected they will feel less negative emotions. Before describing the mediators in more detail, the concept of purchase intention is described.

Purchase intentions are correlated with future sales and can represent what consumer's future actions in the marketplace will be. Nevertheless, purchase intention is an imperfect predictor of future consumer behavior (Namias, 1959). This means consumers might have the intention to purchase a good or service, but fail to fulfil those intentions. For example, due to loss of a job or other required expenses. Consumers might also indicate they have no purchase intention at all, yet still end up buying that product. Thus, purchase intention means what consumers think they are going to buy (Blackwell et al., 2001). Purchase intention is still useful information, as consumers who have the intention to buy a product show higher buying rates than consumers who have no intention of buying (Brown et al., 2003). This means that an increased purchase intention for organic meat is a step towards increased sustainable meat choices.

Purchase intention for organic meat is influenced by the ability and willingness to pay premium prices (Van Loo et al., 2012); yet other factors also come into play. Verhoef (2005)

found that purchasing behavior of organic meat is not solely based on economic variables such as price, but also on emotions. A study of Harper and Makatouni (2002) found that health, ethical, and moral concerns are all significant factors in the decision-making process when considering purchasing organic food. Rothgerber's (2020) mediators fit into that finding. Organic meat meets the standards for improved ethical and moral concerns as animals can behave more naturally by staying outdoors in nature all year, and by using ecological resources as natural grasslands and no artificial fertilizers and pesticide. Organic meat also meets health concerns, as the production of organic meat does not add preservatives and additives. These benefits related to the mediators may also influence the purchase intention for organic meat (Harper & Makatouni 2002; Kareklas et al. 2014), which is further elaborated upon in the sections below.

2.3.1 Animal welfare

The link between animal welfare and meat consumption has been long established. The majority of the population consumes meat. However, a major part of them finds animal suffering offensive, disturbing, and disruptive to their diets (Loughnan et al., 2010). Loughnan et al. (2011) question themselves how one can both love and eat animals. It is a paradox between harm and care, and these individual processes are tied to a larger social system and they conclude that hard work needs to be done to prevent this paradoxical treatment of animals. Also, some consumers view conventional food production methods as a threat to animals, and organic food production as more animal friendly (Harper & Makatouni, 2002). A study of Šedová et al. (2016) showed that environmental science graduate students viewed animal welfare concerns as more problematic than environmental concerns, even though they studied environmental science and were aware of the danger of meat to the environment. Overall, several studies have shown that animal welfare is an important driver of organic meat purchase (Hugher et al. 2007; McEachern & Willock, 2004; Van Loo et al., 2010; Zanolli & Naspetti, 2002). Rothgerber (2020) shortly mentions that animal welfare has the strongest link to MRCD.

2.3.2 Environment

The environment has also been linked to meat consumption and production in many studies. Studies have shown that individuals who hold a positive attitude towards environmentalism are also likely to possess a positive attitude towards organic food (Nordvall, 2014) and a negative attitude towards meat consumption (Hjelmar, 2011). Environmental concern is also

related to environmentally conscious behavior (Grunert & Juhl, 1995). Protection of the environment is also an important driver for organic food purchase which has been proven in literature across several years (Harper & Makatouri, 2002; Hugher et al. 2007; Van Loo et al., 2010). Environmental awareness specifically related to meat has been underdeveloped in literature. Also, Rothgerber (2020) does not speculate in particular about this mediator.

2.3.3 Personal health

Meat may expose consumers to health risks, as meat contains added additives, pesticides, hormones, and antibiotics (Richardson et al., 1994). Godfray et al. (2018) also show that meat can be a source of nutrition, yet it also increases the risk of getting colorectal cancer and cardiovascular disease. These concerns are referred to as the *personal health* motive. Some studies even show that health concern is the most important driver for organic food purchase (Harper & Makatouri, 2002; Hugher et al. 2007; Zanolli & Naspetti, 2002). In line with these studies are the findings of Schifferstein and Ophuis (1998) who found that health-related issues are important determinants for the consumption of organic products. However, little is known related to organic meat. Rothgerber (2020) argues that MRCD based on threat to personal health is the least common. This is due to the fact that a widely-used perceptual strategy to reduce dissonance is that animal meat is necessary for proteins and good health.

2.4 Advertisement effectiveness and purchase intention

Besides the above mentioned rational, economic, and emotional variables, intention to purchase organic meat may also be affected by the way the products are advertised; therefore it is important to understand what aspects customers value in advertisements of green products. Kareklas et al. (2014) found that a combination of egoistic concerns (health concerns, personal welfare) and altruistic concerns (environmental concerns) drive organic food purchases. In addition, their study shows that advertisements that highlight these two concerns simultaneously, impact consumer's attitudes towards intention to purchase organic products the most. Apart from advertisement design, in general two types of appeal are used in advertisements: altruistic (societal benefits) and egoistic (consumer/self-benefits) (Green & Peloza, 2014). Both appeals are targeted in green advertisements, but it remains unknown which appeal is more effective in influencing consumer behavior, as results are contradictory (Jäger & Weber, 2020). Next to that, the content of advertisements can be formulated in two ways. Firstly, as abstract and holistic, for example: "this meat is better for your well-being." Secondly, as concrete and detailed, for example "this meat contains 0% added additives." As

sustainability is perceived as a more abstract term (Carmi & Kimhi, 2015), Green and Pelozo (2014) recommend using more concrete message framing. However, the focus should lie on a credible way of communicating. This can be achieved by using arguments that are familiar to consumers. This means that for the health-related argument, the focus should for example lie on added additives and hormones as that is a well-known argument for consumers. Mentioning specific emulsifiers or antimicrobials that are unknown to consumers is not recommended.

2.5 Control variables

This study controls for important variables including gender, age, income, and habit. We know from literature that purchase intention is influenced by the above mentioned, therefore these variables are seen as control variables. Women generally have more positive attitudes towards organic food than men (Aslihan et al., 2014; Krystallis et al., 2008; Lea & Worsley, 2005). Next to that, masculinity and strength are associated with meat consumption (Roth, 2005) and men have shown to consume more meat and endorse more justification strategies than woman (Piazza et al., 2015). Also, young consumers hold a more positive attitude towards purchase intention for organic products (Van Doorn & Verhoef, 2011). Age has been found to influence organic food purchase over time as well (Singh & Verma, 2017; Lockie et al., 2004). As there is a general assumption that organic products are expensive, the consumption of organic products is mostly associated with high income (Magnusson et al., 2001; Tsakiridou et al., 2008) and high education (Wier et al., 2003; Storstad & Bjørkhaug, 2003). Therefore we also control for income and educational level. The fourth control variable is habit, as it is assumed that consumers who prefer conventional meat over organic meat show lower purchase intention for organic meat.

2.6 Conceptual model

Based on the information in the sections above, the following hypotheses and conceptual framework are derived:

H1a: The advertisement content (animal welfare, environment, and personal health) will positively affect purchase intention towards organic meat

H1b: The advertisement content (animal welfare, environment, and personal health) will positively affect attitude towards the ad of the informative advertisement

H2a: The MRCD aspect *animal welfare* will influence the consumers' meat related cognitive dissonance

H2b: The effect of the advertisement content on attitude towards the ad and purchase intention is mediated by the MRCD aspect: animal welfare

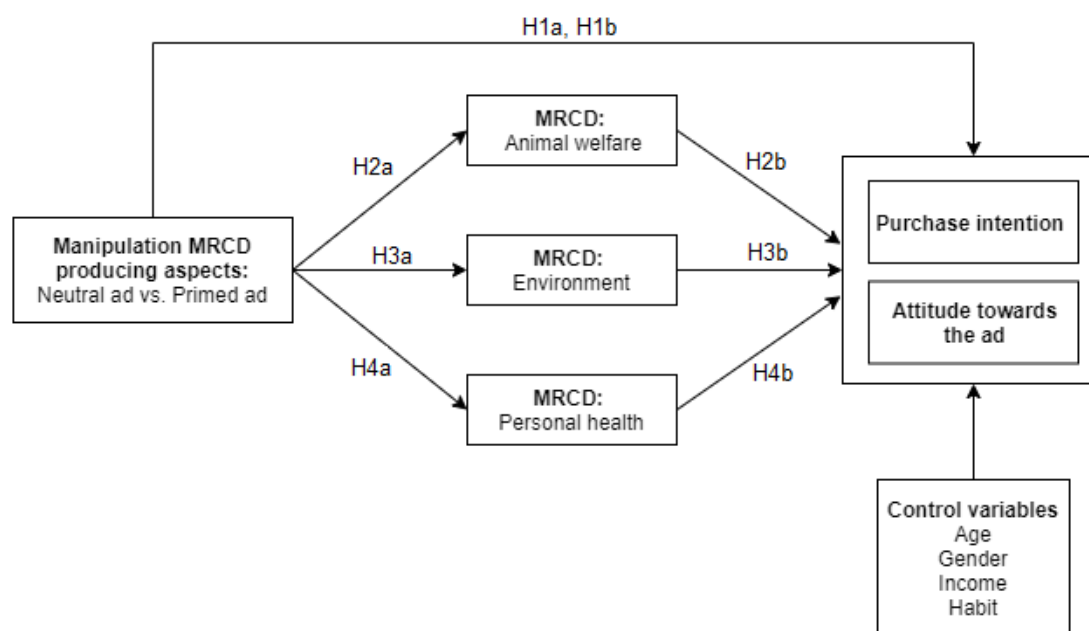
H3a: The MRCD aspect *environment* will influence the consumers' meat related cognitive dissonance

H3b: The effect of the advertisement content on attitude towards the ad and purchase intention is mediated by the MRCD aspect: environment

H4a: The MRCD aspect *personal health* will influence the consumers' meat related cognitive dissonance

H4b: The effect of the advertisement content on attitude towards the ad and purchase intention is mediated by the MRCD aspect: personal health

Figure 1: Conceptual Model



3. Methodology

This chapter discusses the methodology, consisting of four parts. Section 3.1 discusses the research design. In Section 3.2 an overview of the respondents and research sample is given, in addition to the research ethics in Section 3.3. Lastly, the measures used are provided in Section 3.4.

3.1 Research design

The mechanism of this experiment is a priming manipulation to increase the consumer's concern about animal welfare, the environment, and personal health and to see if this affects their purchase intention for organic meat. The measuring instrument for this research was an online experiment and survey.

In the first section of the survey, respondents were asked about their (organic) meat consumption, and if they ever considered animal welfare, the environment and personal health related to that. After that, respondents were randomly assigned to either the treatment or control group. To prevent linguistic dissociation and taking into account its popularity (Van Loo et al., 2011), chicken breast was used for the advertisement in the experiment. The treatment group was shown an advertisement of chicken breast, containing information about animal welfare, the environment, and personal health. This was framed in a more concrete detailed way, as that is perceived more credible for organic food products than abstract messages (Jäger & Weber, 2020). The control group was shown the same advertisement of chicken breast, with the same amount of information, but formulated in a neutral way. Appendix A shows the content of the manipulations.

The second section of the survey measured the respondent's level of dissonance. Respondents were asked to fill in the dissonance thermometer of Elliot and Devine (1994), related to animal welfare, the environment, and personal health. The respondents were asked to assume as if they were to buy and consume the meat in the advertisement. The treatment effect was measured by differences in posttest scores on the dissonance meter between the groups and between the mediators. To prevent a testing-threat where respondents are conditioned by pretest responses and to improve internal validity, a posttest-only design was used.

In the third section, respondents were asked about their purchase intention for organic meat. In addition, attitude towards the ad was measured as an extra check, because purchase intention positively correlates with attitude towards the ad (Sallam et al., 2016).

The fourth and final section involved questions about demographics, such as gender, age, educational level, and via which channel they found this survey. After that, a manipulation check was done by asking respondents which mediator they paid most attention to. By doing so, it was double checked if the mediator that showed the highest dissonance reduction was indeed the mediator respondents paid most attention to.

This study used a between-groups design as each participant was assigned to only one condition. A mediation analysis was conducted by using PROCESS (Hayes, 2018) to examine if the effect of advertisement content on the purchase intention for organic meat operates, fully or partially, through the intervening variables. The results were analyzed via IBM SPSS Statistics 24. Based on three test surveys, various adjustments were made (specifically in the way sentences were phrased and worded) before the actual distribution via the program Qualtrics.

3.2 Respondents

A power analysis using MedPower (Kenny, 2017) revealed that a sample size of 165 is needed, to find a significant indirect path (ab). This entails .95 power, $\alpha=.05$, effect sizes of .3 path a and b , and an effect size of .1 for path c' . To obtain this number, a sample of Dutch supermarket customers was asked to fill out the survey. These were recruited by handing out door-to-door flyers. In total, 300 flyers were handed out that contained a link and QR-code to the survey. To ensure a representative sample, flyers were distributed amongst citizens in Utrecht, ranging from low- to high-income neighborhoods, and from student- to family neighborhoods. By doing so, variation in age, gender, income, and background was maximized. Ideally it would be distributed in supermarkets, but due to COVID-19 this was not a realistic option as 1.5m distance cannot be maintained. To still reach supermarket visitors, the flyer was attached to the public message board.

Using targeted snowball sampling, the survey was also distributed amongst friends and family. This started at five friends who are aged around 25 years, varying in income, and my parents who are aged around 60 and friends of theirs, varying in income. These respondents in turn recruited individuals in their network with the same demographic characteristics.

As an incentive, three fifteen Euro shopping vouchers for Bol.com were handed to three respondents who were selected by lottery. Anonymity was ensured as respondents first sent their survey input and then had the option to opt-in for the Bol.com voucher by entering their email. This means the reward email was not embedded in the survey itself. Respondents who do not consume meat were excluded from the survey.

3.3 Research ethics

Research ethics for respondents were addressed by protecting the anonymity and confidentiality of the respondents and their data. Respondents were also provided with the right to withdraw from the study at any time. To obtain informed consent, the survey included an introduction that provided information to help participants understand that they were taking part in this research and the purpose of the study. The underlying mechanism of this experiment was unknown to participants. However, all necessary information about the study to ensure informed consent and transparency was provided to the participants.

3.4 Measures

Key variables were measured via an online survey. After an introduction, participants were either assigned to the treatment or control group, after which the first set of questions needed to be completed. In the first section, questions evolved around the consumer's meat consumption. Consumers who do not consume meat were directly guided to the last page of the survey and informed that the study focused on meat consumers. Consumers that do consume meat were asked about the frequency of conventional and organic meat consumption. To check if participants experienced meat-related cognitive dissonance, participants were asked if they ever considered animal welfare, the environment, and personal health related to meat before.

The second section of the survey measured the mediators, using the Affect Measure of Elliot and Devine (1994), also referred to as the dissonance thermometer. This is a questionnaire consisting of four factors with six relevant items per factor. Thus, in total 24 items are included that represent dissonance-relevant terms and measures the affective state of individuals. The four factors are discomfort, negative self-image, embarrassment, and positive self-image. Studies have shown that self-reported attitude change can prove the presence of cognitive dissonance and is a reliable measure (Martinie et al., 2013). It has been previously used and has been proven to be highly reliable with Cronbach's $\alpha=0.81$. From each of the four factors, the two most relevant items were chosen for the experiment. For the first factor, discomfort, *uncomfortable* and *bothered* were chosen as related items. For the second factor, negative self-image, *angry towards myself* and *dissatisfied with myself* were used. For the third factor, embarrassment, the items *embarrassed* and *ashamed* were used. For the fourth factor, positive self-image, the items *feeling happy* and *feeling good* were chosen. Respondents were asked to indicate how they were feeling "right now" based on a 7-point Likert scale ranging from 1 (does not apply at all) to 7 (applies very much). Prior to the

analysis, the positively-worded items were reverse scored. Respondents had to indicate this for all three mediators for all eight items. The following statement was used:

1. You have seen the chicken meat advertisement. If you now think about *the wellbeing of the chickens used for this meat*, could you please indicate how you are feeling right now?
2. You have seen the chicken meat advertisement. If you now think about *the effects of chicken meat on the environment* – could you please indicate how you are feeling right now?
3. You have seen the chicken meat advertisement. If you now think about *the effects of chicken meat on your personal health* – could you please indicate how you are feeling right now?

In previous studies, participants who experienced cognitive dissonance reported more discomfort and increased negative feelings (Elliot & Devine, 1994; Harmon-Jones, 2000). Therefore it was expected that respondents who were primed scored lower on discomfort, negative self-image and embarrassment (indicating less negative affect) and higher on happiness as opposed to the control group.

The third section measured *purchase intention*. The scale “purchase intention” comprised a 4 item, 7-point Likert scale that measured the inclination of a consumer to buy the specified good (Bruner, 2015). This scale was proven highly reliable. Cronbach Alphas of .73, .91, .81, .81, .81 and .7338 have been reported by Kilbourne (1986), Kilbourne et al., (1985), Neese and Taylor (1994), Perrien et al., (1985), Stafford (1998), and Stafford et al., (2002). Scale items included:

1. Would you like to try organic chicken?
2. Would you buy organic chicken if you happened to see it in a store?
3. Would you actively seek out organic chicken in a store to purchase it?
4. I would patronize organic chicken

It is important to stress that purchase intention is dependent on several other variables, such as gender, age, income, and preferences. Therefore, to increase validity *attitude towards the ad* was also used as a dependent variable. This variable has a positive and significant effect on purchase intention (Sallam et al., 2016). The scale “attitude towards the ad (informative)” comprised a 3 item, 7-point Likert scale that measured the degree to which an advertisement is informative and thought-provoking. This scale was proved highly reliable with Cronbach’s $\alpha=0.86$ (Pham & Avnet, 2004) and $\alpha=0.81$ (Haws et al., 2010). Scale items included statements as (1) this ad gives me additional information about animal welfare/the

environment/personal health; (2) this ad explains the link between meat and animal welfare/the environment/personal health; and (3) this ad stimulates my thoughts about animal welfare/the environment/personal health.

The fourth and final section asked respondents about their gender, age, educational level, income, and via which channel they found this survey. The last question involved the manipulation check, where respondents were asked which of the three mediators they paid most attention to.

4. Results

This chapter provides the results of this research. Section 4.1 shows the sample information. The preliminary steps to prepare the data for the mediation analysis are presented in Section 4.2, including a factor analysis and reliability analysis. Section 4.3 provides the main analysis, starting with an Independent Samples *t*-test and regression analysis. After that, the Process analysis is presented.

4.1 Sample information

A total of 254 respondents completed the survey and the demographic analysis is shown in Table 1. From this number, 25 respondents dropped out after starting the questionnaire and 13 respondents were non-meat eaters, thus data of 216 respondents in total was used. Gender had an almost equal distribution with 49.1% females and 50.9% males. For most respondents, applied university (HBO) was the highest education (51.4%) and for some a Master's Degree (25.9%). The majority of the sample was aged between 21-29 (29.2%) and 30-39 years (22.7%). The three highest income categories were €30k-40k (22.2%), €40k-50k (20.5%) and less than €10k (18.1%) per annum. The latter category probably included all fellow students that completed the survey. Table 1 provides an overview of the socio-demographic characteristics.

Of the 216 respondents, 157 found the survey via the snowball sampling method and 59 completed the survey via the distributed door-to-door flyers. All respondents indicated that they at least sometimes thought about the consequences of their meat consumption related to animal welfare, the environment, or personal health which is an indicator of experiencing meat-related cognitive dissonance. In total, 110 respondents consumed organic meat on a monthly basis and 65 indicated to never eat organic meat. Regular meat was consumed more often, with 86 respondents eating meat daily and 116 weekly.

Table 1: Socio-demographic characteristics

Socio-demographic characteristic	% of total (N) = 254
<i>Gender</i>	
Male	50.9
Female	49.1
<i>Age year group</i>	
17 or below	5.6
18-20	.5
21-29	29.2
30-39	22.7
40-49	18.5
50-59	11.1
60+	12
<i>Educational level</i>	
Less than high school	2.3
High school, MBO 1	2.3
MBO 2-4	7.4
University of Applied Sciences (HBO)	51.4
Bachelor's Degree (University)	6.9
Master's Degree	25.9
Doctoral Degree	1.4
<i>Annual personal income</i>	
Less than €10,000	18.1
€10,000 tot €20,000	4.6
€20,000 tot €30,000	6.9
€30,000 tot €40,000	22.2
€40,000 tot €50,000	20.4
€50,000 tot €100,000	16.2
€100,000 tot €200,000	1.9
More than €200,000	.9

4.2 Preliminary analysis

All items related to the three mediators were analyzed by a principal component factor analysis. The number of required cases with the rule of thumb ($N/\text{Numb. of variables} > 5$) is 155 cases, as 31 variables were included in the factor analysis, and that criterion was met. Prior to the factor analysis, six positively-worded items were reverse scored (for ‘happy’ and ‘good’). The factor analysis did not confirm the theoretical positions of the variables as too many cross-loaders were present or loadings on one factor (Appendix E). The three mediators were correlating highly which is why oblique rotation (promax) was chosen as rotation method. It could indicate that if one cares about animal welfare related to organic meat, one might also care more about the environment and personal health. As there were too many underlying patterns, respondents did most likely not distinguish the three mediators as intended. Table 2 shows that purchase intention and attitude towards the ad correlated with .183** indicating a low correlation, yet significant.

Following the factor analysis, a reliability analysis was conducted for each of the three mediators and purchase intention and attitude towards the ad. For purchase intention, two items were deleted as the Cronbach’s Alpha increased from .787 to .875. Environment could have increased with .003 and personal health with .007 by deleting 1 item per mediator, however due to internal validity and consistency issues it was decided upon not removing the related items. After the factor and reliability analysis, scales for all five variables were calculated. The results are shown in Table 2. As the Cronbach’s Alpha values all surpass the correlation values, discriminant validity was established to some extent, despite the outcomes of the factor analysis.

Table 2: Construct correlation table and Cronbach’s Alpha

Variable	Mean (SD)	1.	2.	3.	4.	5.	α
1. Animal welfare	3.90 (1.63)						.96
2. The environment	3.80 (1.61)	.91**					.96
3. Personal health	3.43 (1.52)	.83**	.85**				.95
4. Purchase intention	4.47 (1.67)	-.27**	-.28**	-.36**			.88
5. Attitude towards the ad	4.74 (1.38)	-.31**	-.29**	-.13	.18**		.79
6. Condition	.49 (.50)	-.78**	-.70**	-.70**	.32**	.40**	

Note. N = 216. *** $p < .001$. ** $p < .01$. * $p < .05$.

Multicollinearity was not problematic for the covariates and mediators, with all tolerance values being $>.10$. However, when analyzing the coefficients of the mediators in detail for the dependent variable purchase intention (Table 6) it was shown that the tolerance values of animal welfare (.13) and environment (.14) were both low and not close to significance. Yet, the tolerance value for personal health was highly significant. This result was caused by the high correlations of the three variables. This correlation resulted in the mediators ‘competing’ and taking away explanatory effects from each other. The mediator with the highest correlation and significance would win and show significance whereas the others would not. This was confirmed via a regression analysis, shown in Tables 3 and 4, therefore it was decided upon conducting the Process analyses separately and not include all mediators simultaneously. All covariates and both dependent variables were included in these tables, yet the experiment variable was not, to show that the mediators correlated without respondents being manipulated by the experiment. For all covariates, dummy variables were created because the variables were nominal or ordinal. Reference groups were chosen based on group size.

Table 3: Coefficients of linear regression output for purchase intention with covariates and mediators

	<i>Unstandardized B</i>	<i>SE</i>	β	<i>t</i>	<i>Sig.</i>	<i>Tolerance</i>
Animal welfare	.06	.15	.06	.42	.68	.16
Environment	-.06	.15	-.05	-.40	.70	.14
Personal health	-.51	.13	-.47	-4.00	.00***	.22

Note. N = 216. *** $p < .001$. ** $p < .01$. * $p < .05$.

Table 4: Coefficients of linear regression output of attitude toward the ad with covariates and mediators

	<i>Unstandardized B</i>	<i>SE</i>	β	<i>t</i>	<i>Sig.</i>	<i>Tolerance</i>
Animal welfare	-.30	.13	-.35	-2.42	.02*	.16
Environment	-.37	.12	-.43	-2.83	.00**	.14
Personal health	.38	.11	.42	3.56	.00***	.23

Note. N = 216. *** $p < .001$. ** $p < .01$. * $p < .05$.

4.3 Hypotheses testing

To test the mediating role of animal welfare, the environment, and personal health on purchase intention and attitude towards the ad, the PROCESS function of Hayes (2018) was used, more specifically the mediation model (Model 4). The results are presented in Appendix

D. Purchase intention and attitude towards the ad were used as the dependent variables, the condition as independent variable, and animal welfare, the environment, and personal health as the mediators. The covariates for the purchase intention analysis included gender, age, and habit. The covariates for the attitude towards the ad analysis included age and habit.

4.3.1 Differences in condition

To analyze the differences between the two conditions, mean differences were analyzed. This was done via Independent Samples *t*-tests. The results of the manipulation check are presented in Table 5. Equal variances were assumed for all scales, except for personal health. For the mediators, a high mean means more negative feelings as opposed to a low score that indicates less negative feelings. The responses differed significantly between the conditions. All means for the three mediators were significantly lower as compared with the neutral ad, indicating that respondents experienced less negative feelings. Purchase intention and attitude towards the ad were also both significantly higher compared to the neutral ad, indicating that the manipulated advertisements increased purchase intention for organic chicken and the attitude towards the corresponding advertisement. However, the mediators and control variables were not taken into account thus the results in Table 3 are only an indicator of the desired results. The mediators were included and the covariates were controlled for in the Process analyses to be considered next.

Table 5: Mean scale values by type of ad

Variable	Mean (SD)		<i>t</i>
	Neutral ad	Manipulated ad	
Animal welfare	5.13 (1.04)	2.62 (1.02)	17.94***
The environment	4.89 (1.15)	2.66 (1.17)	14.16***
Personal health	4.47 (1.34)	2.35 (.75)	14.50***
Purchase intention	3.96 (1.64)	5.00 (1.52)	-4.86***
Attitude towards the ad	4.19 (1.29)	5.31 (1.24)	-6.47***

Note. N = 216. *** $p < .001$. ** $p < .01$. * $p < .05$.

4.3.2 Mediating effects of animal welfare

For both purchase intention and attitude towards the ad, the relationship between the condition and animal welfare were significant. This means that the manipulation affected the emotional state of the respondents significantly as opposed to the control group. Both effects

were negative, indicating that the manipulation (taking away the consumers' concern about animal welfare), reduced the negative emotional state of the respondent. Thus, hypothesis H2a was supported.

The indirect effect of animal welfare in the relationship between the condition and purchase intention was positive and statistically different from zero: $B = -.73$, $BC95 = [.26 - 1.29]$. The total effect was significant and the direct effect was not significant (Table 6), which indicates that animal welfare fully mediated the relationship between the condition and purchase intention. The effects with respect to animal welfare were negative, which was expected because a higher score of animal welfare indicated more negative feelings toward the meat consumption. The indirect effect of animal welfare in the relationship between the condition and attitude towards the ad was positive but statistically not different from zero: $B = .16$, $BC95 = [-.34 - .63]$. The total effect and direct effect were significant (Table 7), thus attitude towards the ad was not mediated by animal welfare. This provides partial support for hypothesis H2b.

Table 6: Outcomes of the mediation regression analysis (animal welfare and purchase intention)

Antecedent	Consequent					
	Animal welfare (M)			Purchase intention (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.45	.14	$p < .001^{***}$	.49	.30	$p = .11$
Animal welfare (M)	-	-	-	-.30	.10	$p < .05^*$
Constant	4.76	.34	$p < .001^{***}$	5.5	.66	$p < .001^{***}$
Total X on Y	$B = 1.22$, $BC95 = [.84 - 1.60]$, $p < .001^{***}$					
Direct X on Y	$B = .49$, $BC95 = [-.11 - 1.10]$, $p = .11$					
Indirect X on Y	$B = .73$, $BC95 = [.26 - 1.29]$					
	$R^2 = .65$			$R^2 = .35$		
	$F(9,205) = 42.00$, $p < .001$			$F(10,204) = 11.16$, $p < .001$		

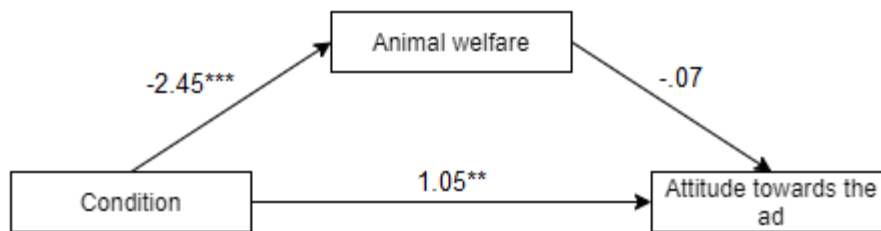
Figure 2: Indirect effects of animal welfare on purchase intention



Table 7: Outcomes of the mediation regression analysis (animal welfare and attitude towards the ad)

Antecedent	Consequent					
	Animal welfare (M)			Attitude towards the ad (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.45	.14	<.001***	1.05	.25	p<.001***
Animal welfare (M)	-	-	-	-.07	.08	p=.42
Constant	4.76	.34	<.001***	4.56	.55	p<.001***
Total X on Y	B=1.21, BC95 [.90 – 1.53], p<.001***					
Direct X on Y	B=1.05, BC95 [.55 – 1.55], p<.001***					
Indirect X on Y	B=.16, BC95=[-.34 – .63]					
	R ² =.65			R ² =.34		
	F(9,205)=42.00, p<.001			F(10,204)=10.60, p<.001		

Figure 3: Indirect effects of animal welfare on attitude towards the ad.



4.3.3 Mediating effect of the environment

For both purchase intention and attitude towards the ad, the relationship between the condition and environment were significant. This means that the manipulation affected the emotional state of the respondents significantly as compared with the control group. Both effects were negative, indicating that the manipulation (taking away the consumers' concern about the environment), resulted in a less negative emotional state of the respondent. Thus, hypothesis H3a was supported.

The indirect effect of the environment in the relationship between the condition and purchase intention was positive and statistically different from zero: B=.71, BC95=[.30 – 1.23]. The total effect was significant and the direct effect was not significant (Table 8), which indicates that the environment fully mediated the relationship between the condition and purchase intention. The effects with respect to the environment were negative, which was expected because a higher score of environment indicated more negative feelings toward the meat consumption. The indirect effect of the environment in the relationship between the condition and attitude towards the ad was positive and statistically not different from zero: B=.26, BC95=[-.15 – .62]. The total effect and direct effect were significant (Table 9), thus

attitude towards the ad was not mediated by the environment. This provides partial support for hypothesis H3b.

Table 8: Outcomes of the mediation regression analysis (environment and purchase intention)

Antecedent	Consequent					
	Environment (M)			Purchase intention (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.14	.15	p<.001***	.51	.26	p=.05
Environment (M)	-	-	-	-.33	.09	p<.01**
Constant	4.84	.38	p<.001***	5.74	.62	p<.001***
Total X on Y	B=1.22, BC95=[.84 – 1.6], p<.001***					
Direct X on Y	B=.51, BC95=[-.00 – 1.03], p=.05					
Indirect X on Y	B=.71, BC95=[.30 – 1.23].					
	R ² =.55			R ² =.37		
	F(9,205)=27.31, p<.001			F(10,204)=11.98, p<.001		

Figure 4: Indirect effects of the environment on purchase intention

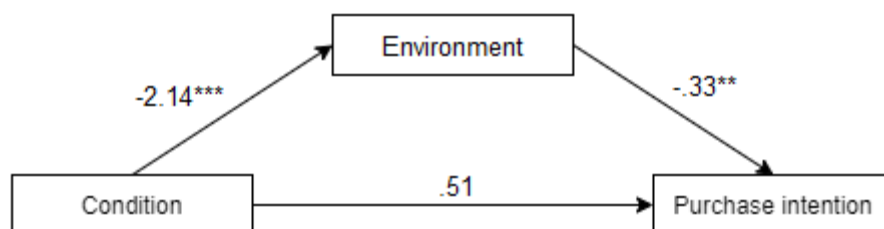
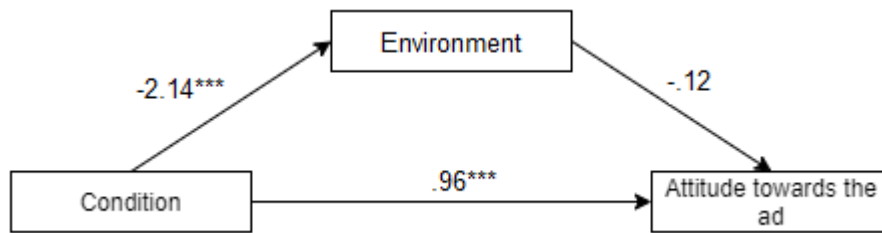


Table 9: Outcomes of the mediation regression analysis (environment and attitude towards the ad)

Antecedent	Consequent					
	Environment (M)			Attitude towards the ad (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.14	.15	p<.001***	.96	.22	p<.001***
Environment (M)	-	-	-	-.12	.07	p
Constant	4.84	.17	p<.001***	4.82	.53	p<.001***
Total X on Y	B=1.21, BC95=[.90 – 1.53], p<.001***					
Direct X on Y	B=.96, BC95=[.52 – 1.39], p<.001***					
Indirect X on Y	B=.26, BC95=[-.15 – .62]					
	R ² =.55			R ² =.35		
	F(9,205)=27.31, p<.001			F(10,204)=10.92, p<.001		

Figure 5: Indirect effects of the environment on attitude towards the ad



4.3.4 Mediating effects of personal health

For both purchase intention and attitude towards the ad, the relationship between the condition and personal health were significant. This means that the manipulation affected the emotional state of the respondents significantly as compared with the control group. Both effects were negative, indicating that the manipulation (taking away the consumers' concern about personal health), reduced the negative emotional state of the respondent. Thus, hypothesis H4a was supported.

The indirect effect of personal health in the relationship between the condition and purchase intention was positive and statistically different from zero: $B=.94$, $BC95=[.54 - 1.45]$. The total effect was significant and the direct effect was not significant (Table 10), which indicates that personal health fully mediated the relationship between the condition and purchase intention. The effects with respect to personal health were negative, which was expected because a higher score of personal health indicated more negative feelings toward the meat consumption. The indirect effect of the environment in the relationship between the condition and attitude towards the ad was negative and statistically not different from zero: $B=-.33$, $BC95=[-.67 - .02]$. The confidence interval barely crosses zero and the p -level of .03 is on the edge of being non-significant. Hence, hypothesis H4b is partially supported.

Table 10: Outcomes of the mediation regression analysis (personal health and purchase intention)

Antecedent	Consequent					
	Personal health (M)			Purchase intention (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.05	.15	$p<.001^{***}$	.28	.26	$p=.27$
Personal health (M)	-	-	-	-.46	.26	$p<.001^{***}$
Constant	4.82	.36	$p<.001^{***}$	6.34	.62	$p<.001^{***}$
Total X on Y	$B=1.22$, $BC95=[.84 - 1.60]$, $p<.001^{***}$					
Direct X on Y	$B=.28$, $BC95=[-.22 - .79]$, $p=.27$					
Indirect X on Y	$B=.94$, $BC95=[.54 - 1.45]$					
	$R^2=.55$			$R^2=.40$		
	$F(9,205)=27.53$, $p<.001$			$F(10,204)=13.75$, $p<.001$		

Figure 6: Indirect effects of personal health on purchase intention

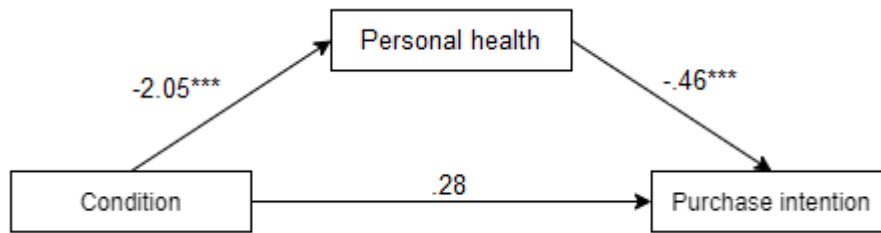
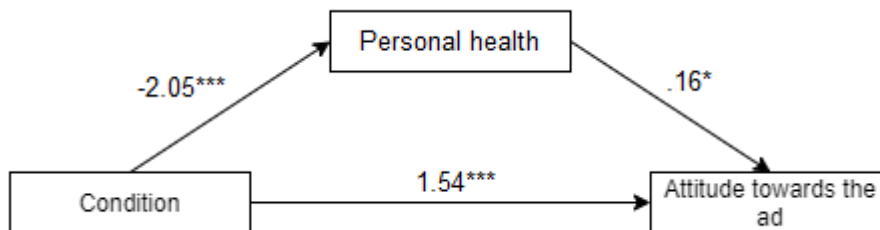


Table 11: Outcomes of the mediation regression analysis (personal health and attitude towards the ad)

Antecedent	Consequent					
	Personal health (M)			Attitude towards the ad (Y)		
	Coeff.	SE	P	Coeff.	SE	P
Condition (X)	-2.05	.14	p<.001***	1.54	.22	p<.001***
Personal health (M)	-	-	-	.16	.08	p<.05*
Constant	4.82	.36	p<.001***	3.46	.54	p<.001***
Total X on Y	B=1.21, BC95=[.90 – 1.53], p<.001***					
Direct X on Y	B=1.54, BC95=[1.11 – 1.98], p<.001***					
Indirect X on Y	B= -.33, BC95=[-.67 – .02]					
	R ² =.54			R ² =.35		
	F(9,205)=27.53, p<.001			F(10,204)=11.18, p<.001		

Figure 7: Indirect effects of personal health on attitude towards the ad



4.3.5 Covariates

To analyze the covariates and include them in Process, dummy variables were created. Significant results for the covariate age and habit were found for both dependent variables. These effects are shown in Appendix D, and are summarized in Table 12. Habit showed negative significant results for the relationship between the condition and purchase intention and all mediators. Purchase intention of consumers who almost never consume organic meat is much lower than purchase intention of consumers who consume organic meat on a monthly base. Consumers who almost never consume organic meat also had less negative feelings compared to consumers who consume organic meat on a monthly basis. For purchase

intention, gender showed positive and significant results for all three mediators. This means that women have a higher purchase intention for organic meat.

Table 12: Covariates by label and definition

<i>Variable name</i>	<i>Label</i>	<i>Definition</i>
Agegr	Age group (reference)	17 – 29 years
Agegr_1	Age group 1	30 – 49 years
Agegr_2	Age group 2	50 years or older
igr	Income group (reference)	Unknown
Igr_1	Income group 1	€10.000 - €30.000
Igr_2	Income group 2	€30.000 - €50.000
Igr_3	Income group 3	€50.000 or more
Hab	Habit (reference)	Monthly (consumption of organic meat)
Hab_1	Habit 1	Almost never (consumption of organic meat)
Hab_2	Habit 2	Daily/Weekly (consumption of organic meat)
Q84	Gender (reference women)	Women, men

5. Discussion

This study focused on aspects that produce meat-related cognitive dissonance according to Rothgerber (2020) in the relationship between attitude towards the advertisement and purchase intention for organic meat. As shown in the results section, the data provided support for the main hypothesis. All total effects, for all three mediators and two dependent variables, were highly significant. This indicates that the manipulation indeed positively affected purchase intention for organic meat and the attitude towards the ad. The direct effects for attitude towards the ad were also positively significant, which means that with the manipulated ad, consumers are triggered to think about the positive effects of organic chicken meat which results in an increased attitude towards the ad.

Second, it was confirmed that the advertisement manipulation influenced the consumers' emotional state. By showing the consumers an informative advertisement that states the benefits of organic chicken meat, the consumers' emotional negative state decreased significantly, thus influencing the consumers' meat-related cognitive dissonance. This aligns with the theory of MRCD of Rothgerber (2020). When neutralizing the aspects that produce MRCD, the negative emotional state will be decreased which results in a higher purchase intention for organic meat.

When taking the mediators into account, it was shown that the relationship between the condition and purchase intention was fully mediated by animal welfare, the environment, and personal health. This also aligns with the findings in the theoretical framework, where it was summarized that combining health concerns and welfare with environmental concerns drive organic food purchases (Kareklas, 2014). It should be stressed that the three mediators are strongly tied to each other. This was first discovered during the factor analysis, but confirmed throughout the other analyses as well as the three variables show high correlations. This is an interesting finding and does make sense, as environmental concern is related to environmentally conscious behavior (Grunert & Juhl, 1995) and these concerns are triggered by the advertisement that focusses on all three mediators simultaneously. Yet, it is surprising that no differences in effect size were found between the three mediators as they all significantly impact purchase intention for organic meat.

Surprisingly, the relationship between the condition and attitude towards the ad was not mediated by animal welfare, the environment, or personal health. For personal health, the confidence interval came very close to not include zero. Also, for personal health the indirect effect is negative and the direct effect is positive. As the direct effect is opposite in sign to the indirect effect, the mediator personal health acts as suppressor variable. This is referred to as

an inconsistent mediation and explains why the direct effect is larger than the total effect. The total effect of the condition on attitude towards the ad will be smaller because the direct and indirect effects tend to cancel each other out. Yet, it is surprising that no significant effects were found for the mediators regarding attitude towards the ad. A possible explanation is that the difference in scores on attitude towards the ad in relation to the mediators between the control group and treatment group do not differ significantly. That means that the neutral advertisement also stimulated respondents to think about animal welfare, the environment, and personal health. Even though the neutral ad provided information that was phrased neutrally compared to the manipulation ad, respondents might have still linked it, or thought it was linked to, one of the mediators.

5.1 Theoretical implications

First, this study found a positive relationship between the condition and purchase intention. The condition presented the benefits of organic meat and therefore decreased the concerns a consumer holds about the three mediators. This finding aligns with what previous researchers found. Several studies have shown that animal welfare is an important driver of organic meat purchase (Hugher et al. 2007; McEachern & Willock, 2004; Van Loo et al., 2010; Zanolli & Naspetti, 2002). Personal health was also known to be an important driver for organic food purchase (Harper & Makatouri, 2002; Hugher et al. 2007; Zanolli & Naspetti, 2002). Environmental awareness specifically related to organic meat was underdeveloped in literature and the results of this study add to that.

Furthermore, it was found that the control variable habit and gender influenced purchase intention for all three mediators. The process analysis shows that if consumers almost never consume organic meat, their purchase intention for organic meat is much lower as opposed to consumers who consume organic meat on a monthly base. Consumers who almost never consume organic meat also did not experience as many negative feelings compared to consumers who consume meat on a monthly basis. This result aligns with the assumption that consumers who prefer conventional meat over organic meat show lower purchase intention for organic meat. This group also felt significantly less negative about animal welfare, the environment, and personal health. That might be due to the fact that these consumers are less environmentally aware, thus almost never consume organic meat and feel less negative towards the three mediators. For the control variable gender, the results showed that women have a higher purchase intention for organic meat. This result aligns with the theoretical expectations (Aslihan et al., 2014; Krystallis et al., 2008; Lea & Worsley, 2005;

Piazza et al., 2015; Roth, 2005). The significant and positive correlation of attitude towards the ad and purchase intention also aligns with the conclusion about these variables of Sallam et al., (2016).

Secondly, Rothgerber (2020) speculates that animal welfare has the strongest effect and personal health the least effect on MRCD. This was speculated because a well-known mechanism to reduce MRCD is the belief that protein from meat is necessary for good health. This was not proven empirically yet, indicating a gap in scientific knowledge. When analyzing the standardized coefficients of the relationship between the condition and the mediators for purchase intention, the results provided effects of -17.969 for animal welfare, -13.96 for the environment, and -14.15 for personal health. As expected, animal welfare had the highest explanatory power in the relationship of the manipulation and the emotional state of the respondent. However, personal health did not have the smallest effect on MRCD as Rothgerber (2020) speculates. That could be due to a change in the way meat is perceived due to COVID-19. Recent research brought to light that the current COVID-19 pandemic caused changes in meat eating patterns. Especially due to negative media coverage on food safety and infected animals, the food supply chain was disrupted. If these events cause long-term change in consumer behavior overconsumption of meat might decrease (Attwood & Hajat, 2020). The fact that the environment has the lowest explanatory power could be due to skepticism towards green products due to firms claiming false environmental information (Goh & Balaji, 2016).

When analyzing the standardized coefficients of the relationship between the mediators and purchase intention, the results showed effects of -3.06 for animal welfare, -3.86 for the environment, and -5.19 for personal health. This result aligns with previous studies about personal values and organic food beliefs. Lea and Worsley (2005) found that values impact organic food beliefs more positively than socio-demographic variables, because values guide behavior. In addition, organic food purchase is influenced the most by personal values like health (Nasir & Karakaya, 2014; Chen, 2009; Padel & Foster, 2005).

In addition, all relations of the advertisement manipulation on animal welfare, the environment, and personal health were negative and highly significant for both dependent variables. This means that the consumers' emotional state can be affected by informative advertisements. If a consumer feels less negative towards organic chicken meat, it could increase the consumers' purchase intention of that product. This aligns with the theory of Harmon-Jones et al. (2003), who show that increasing empathic concern can evoke cognitive

emotion to reduce cognitive dissonance (resulting in increased purchase intention in this case).

Besides that, this study provided evidence for the influence of informative advertisements as an underlying mechanism in the relation to purchase intention of organic chicken meat. The study of Kareklas (2014) showed that advertisement that highlight egoistic concerns (health concerns, personal welfare) and altruistic concerns (environmental concerns) simultaneously impact the impact consumer's attitudes towards intention to purchase organic products the most. That is confirmed by this study. Jäger and Weber (2020) mention that it remains unknown which appeal is more effective as results are contradictory. Unfortunately this study adds to that finding, as only small differences were found between the mediators and their impact on purchase intention.

Lastly, to our knowledge, no previous empirical study has tested the influence of the three MRCD producing aspects in an advertisement. Based on previous literature, these aspects were evaluated against purchase intention but not related to the theory of cognitive dissonance (Festinger, 1957). Rothgerber (2020) speculated about these aspects that produce MRCD and this study answered that call to determine if they were of influence, and which would have the strongest effect.

5.2 Practical implications

This study also provides some practical implications for marketers in general. Based on the results of this study, it is recommended to advertise animal welfare, the environment, and personal health simultaneously in an advertisement if the goal is to increase purchase intention for organic chicken meat. The messages should be framed both concrete and detailed. This means that the claims should be short, yet to-the-point containing the necessary information as such improves credibility (Jäger & Weber, 2020). This is especially important for the personal health claim as this mediator shows the strongest explanatory power. That means that this claim should include emphasis on well-known arguments for consumers and not mention specific emulsifiers or antimicrobials that are unknown to consumers.

Furthermore, this study has demonstrated the importance of informative advertisements in relation to purchase intention of organic meat. Although this was an online experiment and results need to be validated in practice, the use of these claims combined together could be used to further develop marketing campaigns for organic chicken meat. This would be especially effective for women and consumers who purchase and/or consumer organic meat on a monthly basis.

5.3 Limitations and future research

This study was subject to several limitations. First, the three mediators were tested and presented to the respondents simultaneously in one advertisement. If the mediators were isolated and only one mediator was presented in the advertisement, large sample sizes would be required. Due to the scope and length of this study that was not feasible. This means that the differences between the isolated effects of the manipulation on purchase intention and attitude towards should be carefully interpreted. As the mediators are highly correlated, one might enhance the other. It is recommended to conduct further research by isolating the mediators per advertisement, to find out which mediator holds the strongest impact.

Secondly, in the introduction it is mentioned that less meat intake can result in five options: (1) avoidance of meat; (2) favoring meat alternatives over meat; (3) favoring organic meat over conventional meat; (4) reduced meat portions or (5) lower frequency of meat consumption. This study focuses on favoring organic meat over conventional meat, yet it could be interesting to replicate this study and see what the effects might be for the other options.

Thirdly, the results of this study are based on an online experiment. To test if purchase intention for organic chicken meat will actually increase due to informative advertisements, the study needs to be validated in practice. By validating the results in practice, it can be tested if informative advertisements are a stimulator in real-life situations. In addition, future research could include other influencing variables such as advertisement design and advertisement placement. A study of Seher et al. (2012) showed that red, brown, and orange were popular colors associated with food. Elliot et al., (2009) found that red and green result in different motivational levels and have different behavioral impact on individuals. Also, the claims in the informative advertisement claims might be best placed on the product package itself instead of on an ad itself (Fajardo & Townsend, 2015). In addition, price is an important predictor of purchase intention, thus future research could include price and the previously mentioned variables as well.

Fourthly, the principal factor analysis showed that 18 items were loading on the same factor which indicates interrelationships among the variables. This has negative consequences for the internal validity. This could be due to the fact that the variables were measured via self-reported items, which can lead to self-serving bias or interpretation issues which can occur when individuals report their own behavior and attitudes (Johns, 1994). Normally, data would be reduced to identify underlying dimensions; however due to the amount of cross-loaders that would be not advisable. This should be taken into account for future research.

Future research could try a different set-up and order when combining these mediators and the scale of Elliot and Devine (1994).

Lastly, this study is subject to several methodological challenges. The study focused on one organic meat product, namely organic chicken. Even though this was a well-considered decision, as it is a popular product category and it prevents linguistic dissociation, future research could focus on other meat products. In addition, this study focused on Dutch, meat-eating supermarket consumers. It would be interesting to see how different cultures respond to the informative advertisement. The method of snowball sampling also came with limitations, as respondents were mainly aged between 21-39 and were all mostly highly educated which limited generalization. A more representative sample would have helped in generalizing the results amongst the Dutch population.

6. Conclusion

Decreased conventional meat consumption is an effective solution to ensure a sustainable food future (Reisch et al. 2013). This could be, amongst others, achieved by favoring organic meat over conventional meat. In 2020, an article was published by Rothgerber that introduced meat-related cognitive dissonance. It is a relatively new phenomenon that can occur whilst having concerns about animal welfare, the environment and personal health, whilst having the status as meat eater. The aim of this study was to build on the meat-related cognitive dissonance framework to find out if consumers could be influenced by informative advertisements to influence their emotional state and purchase intention for organic meat. Building on this theory, it was proposed that decreasing the concerns one might hold over animal welfare, the environment, and personal health would influence the consumer's meat-related cognitive dissonance and increase purchase intention for organic meat.

The results showed that purchase intention can be influenced by informative advertisements, which advertise the benefits of organic meat, based on animal welfare, the environment, and personal health. By taking away the consumers' concern about these three MRCD producing aspects, the consumer will experience less negative emotions towards organic chicken meat, which will increase the purchase intention of the product. As the three MRCD producing aspects are strongly tied to each other, marketers must acknowledge that advertising these aspects separately could result in different outcomes. The results of this study and suggested recommendations can be a starting point for future research. Based on the growing popularity of this topic and its illustrated importance, it is expected that future research will focus on the combination of these topics again to move into a sustainable food future.

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Appendices

Appendix A Advertisement manipulation

	Control group	Treatment group
Design		
Additional information separate in survey	Je kunt ervan uitgaan dat de informatie in deze advertentie waar is. Het gaat hier om regulier kippenvlees. Deze kippen verbleven in hokjes volgens de minimumeisen van de pluimveehouderij. De productie van dit kippenvlees voldoet aan de wet- en regelgeving van de reguliere vleesindustrie. Als dit kippenvlees in de koelkast wordt bewaard is het twee dagen houdbaar.	Je kunt ervan uitgaan dat de informatie in deze advertentie waar is. Het gaat hier om biologisch geproduceerd kippenvlees. Deze kippen hadden veel vrije bewegingsruimte, binnen en buiten. De productie van dit kippenvlees zorgt gemiddeld voor minder uitstoot per kilo vlees. Dit kippenvlees bevat geen toevoegingen, zoals kleur- en smaakstoffen of resten van chemische bestrijdingsmiddelen.

Appendix B MRCD Framework Rothgerber (2020)

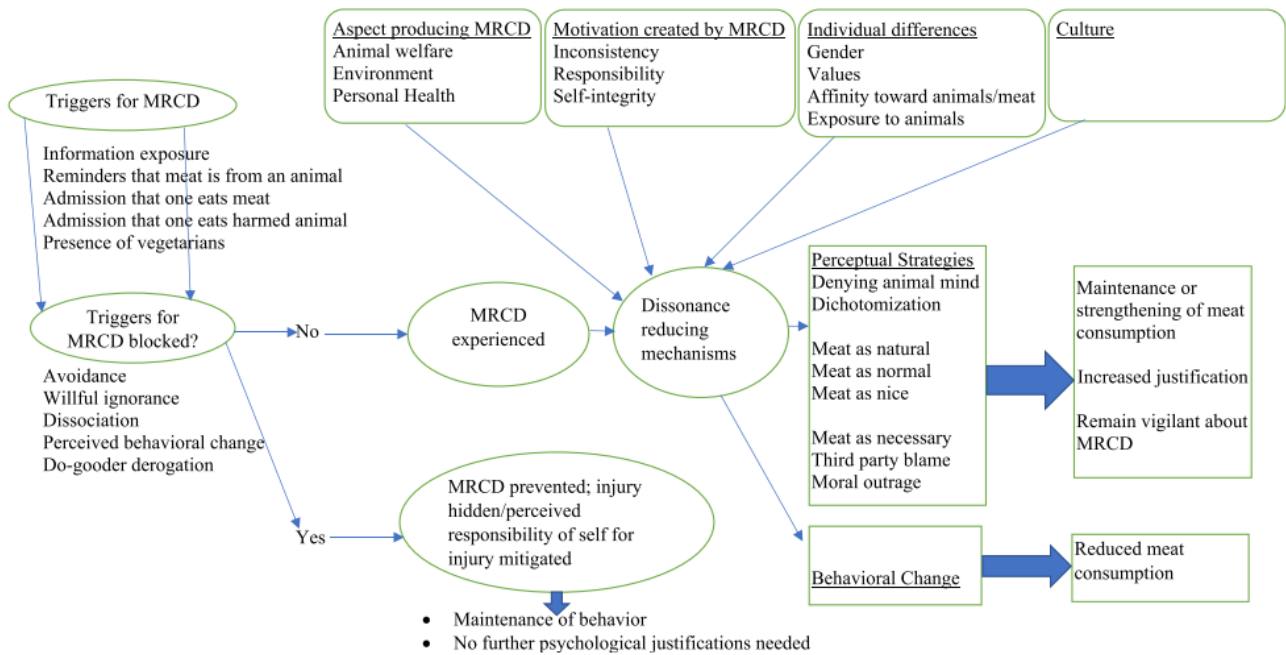


Fig. 1. The MRCD framework.

Appendix C Questionnaire

Introductie:

Mijn naam is Wico van Spanje en voor mijn master Bedrijfskunde aan de Radboud Universiteit doe ik onderzoek naar het kopen en eten van vlees.

Het invullen van de enquête duurt hooguit tien minuten en uw antwoorden zijn volledig anoniem. Uw deelname is geheel vrijwillig en u kunt op elk moment besluiten met de enquête te stoppen. Na het inzenden van uw antwoorden heeft u de mogelijkheid uw mailadres op te geven om kans te maken op één van de drie Bol.com vouchers van €15.

Als u vragen heeft over de enquête of geïnteresseerd bent in de resultaten, kunt u een e-mail sturen naar: wico.vanspanje@student.ru.nl.

Uw deelname wordt zeer op prijs gesteld.

Door verder te gaan gaat u akkoord met het gebruik van uw gegevens voor het onderzoek.

Q2 Eet u wel eens vlees?

1 = ja / 2 = nee

Q3 Hoe vaak eet u biologisch* vlees?

*Biologisch vlees wordt geproduceerd met respect voor natuur, milieu en de dieren. De dieren krijgen veel leefruimte, stro en mogen naar buiten. Pijnlijke ingrepen zijn verboden. Het voer is biologisch en het gebruik van antibiotica is zeer beperkt.

1 = Nauwelijks tot nooit / 2 = Dagelijks / 3 = Wekelijks / 4 = Maandelijks

Q4 Hoe vaak eet u regulier* vlees?

*Regulier vlees wordt geproduceerd volgens de wet- en regelgeving van de reguliere vleesindustrie. Dieren hebben minder leefruimte, zitten vaak binnen en het gebruik van antibiotica en chemische bestrijdingsmiddelen op het voer van de dieren komt vaker voor.

1 = Nauwelijks tot nooit / 2 = Dagelijks / 3 = Wekelijks / 4 = Maandelijks

Q5 Denkt u wel eens na over gevolgen van de vleesindustrie op dierenwelzijn?*

*Dierenwelzijn is het lichamelijke en gevoelsmatige welzijn van dieren.

1 = Nooit / 2 = Soms / 3 = Regelmatig / 4 = Vaak / 5 = Altijd

Q6 Denkt u wel eens na over de gevolgen van de vleesindustrie op het milieu?

1 = Nooit / 2 = Soms / 3 = Regelmatig / 4 = Vaak / 5 = Altijd

Q7 Denkt u wel eens na over de gevolgen van het eten van vlees op uw persoonlijke gezondheid?

1 = Nooit / 2 = Soms / 3 = Regelmatig / 4 = Vaak / 5 = Altijd

Q8 [Manipulatie of Neutrale advertentie]

Bij het kopen van vlees kan er rekening gehouden worden met:

- 1) Dierenwelzijn
- 2) Het effect van de vleesindustrie op het milieu
- 3) Het effect van het eten van vlees op uw persoonlijke gezondheid

U ziet hieronder een advertentie, houd de bovenstaande punten in gedachten tijdens het lezen van de advertentie. U kunt ervan uit gaan dat de informatie in deze advertentie waar is. Het gaat hier om regulier geproduceerd kippenvlees.

Q9 Sta nu stil bij het dierenwelzijn van het kippenvlees uit de advertentie. Geef bij elk van de onderstaande vragen aan hoe u zich zou voelen als u het kippenvlees uit de advertentie zou kopen.

Q10 Ik voel mij oncomfortabel als ik dit kippenvlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q11 Ik voel mij geïrriteerd als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q12 Ik ben boos op mijzelf als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q13 Ik voel mij ontevreden als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q14 Ik voel mij verlegen als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q15 Ik voel mij beschaamd als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q16 Ik voel mij blij als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q17 Ik voel mij goed als ik dit vlees zou kopen, vanwege **het dierenwelzijn** van de kippen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q18 Sta nu stil bij het effect op het milieu van de productie van het kippenvlees uit de advertentie (hieronder nogmaals getoond). Geef bij elk van de onderstaande vragen aan hoe u zich zou voelen als u het kippenvlees uit de advertentie zou kopen.

Q19 Ik voel mij oncomfortabel als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q20 Ik voel mij geïrriteerd als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q21 Ik ben boos op mijzelf als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q22 Ik voel mij ontevreden als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q23 Ik voel mij verlegen als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q24 Ik voel mij beschaamd als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q25 Ik voel mij blij als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q26 Ik voel mij goed als ik dit vlees zou kopen, vanwege het effect op **het milieu**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q27 Sta nu stil bij het effect op uw persoonlijke gezondheid van het eten van het kippenvlees uit de advertentie (hieronder nogmaals getoond). Geef bij elk van de onderstaande vragen aan hoe u zich zou voelen als u het kippenvlees uit de advertentie zou kopen.

Q28 Ik voel mij oncomfortabel als ik dit vlees zou kopen, vanwege het effect op mijn persoonlijke gezondheid.

Q29 Ik voel mij geïrriteerd als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q30 Ik ben boos op mijzelf als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q31 Ik voel mij ontevreden als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q32 Ik voel mij verlegen als ik dit vlees zou kopen, vanwege het effect op mijn **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q33 Ik voel mij beschaamd als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q34 Ik voel mij blij als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q35 Ik voel mij goed als ik dit vlees zou kopen, vanwege het effect op **mijn persoonlijke gezondheid**.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q36 De onderstaande vragen gaan over uw overwegingen om biologisch* kippenvlees te kopen.

*Biologisch vlees wordt geproduceerd met respect voor natuur, milieu en de dieren. De dieren krijgen veel leefruimte, stro en mogen naar buiten. Pijnlijke ingrepen zijn verboden. Het voer is biologisch en het gebruik van antibiotica is zeer beperkt.

Q37 Ik wil biologisch kippenvlees proberen.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q38 Ik zou biologisch kippenvlees kopen in de winkel als ik het zou zien.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q39 Ik zou actief op zoek gaan naar biologisch kippenvlees in de supermarkt.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q40 Ik denk negatief over biologisch kippenvlees.

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q41 Hieronder ziet u nogmaals dezelfde advertentie voor kippenvlees. De onderstaande vragen gaan over de advertentie zelf.

Q42 Deze advertentie geeft mij extra informatie over:

1) Dierenwelzijn 2) Het effect van de kippenvlees industrie op het milieu 3) Het effect van het eten van kippenvlees op uw persoonlijke gezondheid

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q43 Deze advertentie legt een verband tussen vlees en 1) Dierenwelzijn 2) Het effect van de kippenvlees industrie op het milieu 3) Het effect van het eten van kippenvlees op uw persoonlijke gezondheid

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q44 Deze advertentie stimuleert mijn gedachten over: 1) Dierenwelzijn 2) Het effect van de kippenvlees industrie op het milieu 3) Het effect van het eten van kippenvlees op uw persoonlijke gezondheid

1 = Sterk mee oneens / 2 = Mee oneens / 3 = Beetje mee oneens / 4 = Neutraal / 5 = Beetje mee eens / 6 = Mee eens / 7 = Sterk mee eens

Q110 Op welk onderdeel in de advertentie heeft u het meest gelet?

1 = Dierenwelzijn / 2 = Het effect van de kippenvlees industrie op het milieu / 3 = Het effect van het eten van kippenvlees op uw persoonlijke gezondheid

Q82 U bent nu aangekomen bij het laatste deel van de enquête.

Q84 Wat is uw geslacht?

1 = Vrouw / 2 = Man / 3 = Non-binair / 4 = Transgender/Transseksueel / 5 = Zeg ik liever niet / 6 = Ander

Q85 Wat is uw hoogst behaalde opleidingsniveau?

1 = Ik heb geen diploma van de middelbare school behaald / 2 = Middelbare school, MBO 1 / 3 = MBO 2-4 / 4 = HBO / 5 = Universiteits Bachelor / 6 = Universiteits Masters / 7 = Kandidaats/PhD / 8 = Zeg ik liever niet

Q86 In welke leeftijdscategorie valt u?

1 = 17 of jonger / 2 = 18-20 / 3 = 21-29 / 4 = 30-39 / 5 = 40-49 / 6 = 50-59 / 7 = 60 of ouder / 8 = Zeg ik liever niet

Q87 Wat is uw persoonlijk jaarlijks bruto inkomen?

1 = minder dan 10 000 euro / 2 = 10 000 tot 20 000 euro / 3 = 20 000 tot 30 000 euro / 4 = 30 000 tot 40 000 euro / 5 = 40 000 tot 50 000 euro / 6 = 50 000 tot 100 000 euro / 7 = 100 000 tot 200 000 euro / 8 = 200 000 euro of meer / 9 = Zeg ik liever niet

Q88 Via welk kanaal heeft u deze enquête gevonden?

1 = Vrienden/familie/kennissen / 2 = Deur-tot-deur flyer / 3 = Prikbord supermarkt

Appendix D Process output SPSS

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : purint
X : cond
M : Wellfare

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

Wellfare

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.8051	.6481	.9754	41.9582	9.0000	205.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.7576	.3404	13.9763	.0000	4.0864	5.4287
cond	-2.4511	.1364	-17.9693	.0000	-2.7200	-2.1822
agegr_1	.3196	.2165	1.4765	.1413	-.1072	.7465
agegr_2	.7159	.2360	3.0328	.0027	.2505	1.1813
igr_1	.2731	.3187	.8570	.3924	-.3552	.9015
igr_2	-.0090	.2847	-.0315	.9749	-.5702	.5523
igr_3	-.3709	.2938	-1.2625	.2082	-.9501	.2083
hab_1	-.3667	.1682	-2.1807	.0303	-.6982	-.0352
hab_2	.0453	.1897	.2388	.8115	-.3287	.4193
Q84	.2721	.1407	1.9337	.0545	-.0053	.5495

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5946	.3536	1.8862	11.1592	10.0000	204.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.5520	.6615	8.3931	.0000	4.2478	6.8563
cond	.4891	.3044	1.6070	.1096	-.1110	1.0893
Wellfare	-.2975	.0971	-3.0635	.0025	-.4890	-.1060
agegr_1	.1052	.3026	.3475	.7286	-.4915	.7019
agegr_2	.5567	.3355	1.6593	.0986	-.1048	1.2183

igr_1	-.7674	.4440	-1.7284	.0854	-1.6428	.1080
igr_2	-.7640	.3959	-1.9300	.0550	-1.5445	.0165
igr_3	-.4993	.4101	-1.2176	.2248	-1.3079	.3092
hab_1	-.9033	.2365	-3.8187	.0002	-1.3696	-.4369
hab_2	.7205	.2638	2.7313	.0069	.2004	1.2406
Q84	.8308	.1974	4.2077	.0000	.4415	1.2200

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5691	.3239	1.9634	10.9101	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.1365	.4829	8.5652	.0000	3.1843	5.0887
cond	1.2184	.1935	6.2960	.0000	.8369	1.6000
agegr_1	.0101	.3071	.0328	.9739	-.5955	.6156
agegr_2	.3437	.3349	1.0264	.3059	-.3165	1.0040
igr_1	-.8487	.4522	-1.8769	.0620	-1.7401	.0428
igr_2	-.7613	.4039	-1.8851	.0608	-1.5576	.0350
igr_3	-.3890	.4168	-.9333	.3518	-1.2107	.4327
hab_1	-.7941	.2386	-3.3288	.0010	-1.2645	-.3238
hab_2	.7070	.2691	2.6274	.0093	.1765	1.2376
Q84	.7498	.1996	3.7561	.0002	.3562	1.1434

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2184	.1935	6.2960	.0000	.8369	1.6000

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.4891	.3044	1.6070	.1096	-.1110	1.0893

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Wellfare	.7293	.2591	.2631	1.2851

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : purint
X : cond
M : environ

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

environ

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.7384	.5453	1.2281	27.3112	9.0000	205.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8452	.3819	12.6854	.0000	4.0921	5.5982
cond	-2.1376	.1531	-13.9663	.0000	-2.4394	-1.8358
agegr_1	.1711	.2429	.7043	.4820	-.3078	.6500
agegr_2	.5666	.2649	2.1394	.0336	.0444	1.0888
igr_1	.1188	.3576	.3323	.7400	-.5862	.8239
igr_2	-.1274	.3194	-.3987	.6905	-.7571	.5024
igr_3	-.4792	.3296	-1.4539	.1475	-1.1291	.1707
hab_1	-.6612	.1887	-3.5043	.0006	-1.0332	-.2892
hab_2	-.1583	.2128	-.7438	.4578	-.5779	.2613
Q84	.2727	.1579	1.7272	.0856	-.0386	.5840

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.6082	.3699	1.8386	11.9756	10.0000	204.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.7351	.6244	9.1850	.0000	4.5040	6.9662
cond	.5132	.2616	1.9615	.0512	-.0027	1.0290
environ	-.3299	.0855	-3.8607	.0002	-.4984	-.1614
agegr_1	.0665	.2976	.2235	.8234	-.5202	.6532
agegr_2	.5307	.3277	1.6195	.1069	-.1154	1.1768
igr_1	-.8094	.4377	-1.8494	.0658	-1.6724	.0535
igr_2	-.8034	.3910	-2.0547	.0412	-1.5743	-.0324

igr_3	-.5471	.4054	-1.3495	.1787	-1.3464	.2522
hab_1	-1.0123	.2377	-4.2590	.0000	-1.4809	-.5437
hab_2	.6548	.2608	2.5111	.0128	.1407	1.1690
Q84	.8398	.1946	4.3158	.0000	.4561	1.2234

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5691	.3239	1.9634	10.9101	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.1365	.4829	8.5652	.0000	3.1843	5.0887
cond	1.2184	.1935	6.2960	.0000	.8369	1.6000
agegr_1	.0101	.3071	.0328	.9739	-.5955	.6156
agegr_2	.3437	.3349	1.0264	.3059	-.3165	1.0040
igr_1	-.8487	.4522	-1.8769	.0620	-1.7401	.0428
igr_2	-.7613	.4039	-1.8851	.0608	-1.5576	.0350
igr_3	-.3890	.4168	-.9333	.3518	-1.2107	.4327
hab_1	-.7941	.2386	-3.3288	.0010	-1.2645	-.3238
hab_2	.7070	.2691	2.6274	.0093	.1765	1.2376
Q84	.7498	.1996	3.7561	.0002	.3562	1.1434

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2184	.1935	6.2960	.0000	.8369	1.6000

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.5132	.2616	1.9615	.0512	-.0027	1.0290

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
environ	.7053	.2367	.3063	1.2299

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : purint
X : cond
M : Health

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

Health

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.7397	.5472	1.0962	27.5261	9.0000	205.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8214	.3609	13.3608	.0000	4.1099	5.5328
cond	-2.0467	.1446	-14.1537	.0000	-2.3318	-1.7616
agegr_1	.3533	.2295	1.5397	.1252	-.0991	.8058
agegr_2	.4510	.2502	1.8022	.0730	-.0424	.9443
igr_1	-.2390	.3379	-.7075	.4800	-.9052	.4271
igr_2	-.4263	.3018	-1.4126	.1593	-1.0213	.1687
igr_3	-.6012	.3114	-1.9306	.0549	-1.2152	.0128
hab_1	-.6665	.1783	-3.7388	.0002	-1.0179	-.3150
hab_2	-.4498	.2011	-2.2369	.0264	-.8462	-.0533
Q84	.0418	.1492	.2804	.7794	-.2523	.3359

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.6346	.4027	1.7430	13.7516	10.0000	204.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	6.3393	.6224	10.1855	.0000	5.1122	7.5665
cond	.2833	.2564	1.1050	.2705	-.2222	.7888
Health	-.4569	.0881	-5.1878	.0000	-.6305	-.2832
agegr_1	.1715	.2911	.5892	.5564	-.4024	.7454
agegr_2	.5498	.3180	1.7287	.0854	-.0773	1.1768
igr_1	-.9579	.4266	-2.2456	.0258	-1.7989	-.1168
igr_2	-.9561	.3824	-2.5003	.0132	-1.7100	-.2022

igr_3	-.6637	.3962	-1.6749	.0955	-1.4449	.1176
hab_1	-1.0987	.2323	-4.7290	.0000	-1.5567	-.6406
hab_2	.5015	.2566	1.9543	.0520	-.0045	1.0075
Q84	.7689	.1881	4.0873	.0001	.3980	1.1398

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

purint

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5691	.3239	1.9634	10.9101	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.1365	.4829	8.5652	.0000	3.1843	5.0887
cond	1.2184	.1935	6.2960	.0000	.8369	1.6000
agegr_1	.0101	.3071	.0328	.9739	-.5955	.6156
agegr_2	.3437	.3349	1.0264	.3059	-.3165	1.0040
igr_1	-.8487	.4522	-1.8769	.0620	-1.7401	.0428
igr_2	-.7613	.4039	-1.8851	.0608	-1.5576	.0350
igr_3	-.3890	.4168	-.9333	.3518	-1.2107	.4327
hab_1	-.7941	.2386	-3.3288	.0010	-1.2645	-.3238
hab_2	.7070	.2691	2.6274	.0093	.1765	1.2376
Q84	.7498	.1996	3.7561	.0002	.3562	1.1434

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2184	.1935	6.2960	.0000	.8369	1.6000

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.2833	.2564	1.1050	.2705	-.2222	.7888

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Health	.9351	.2282	.5373	1.4452

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : Attit
X : cond
M : Wellfare

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

Wellfare

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.8051	.6481	.9754	41.9582	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.7576	.3404	13.9763	.0000	4.0864	5.4287
cond	-2.4511	.1364	-17.9693	.0000	-2.7200	-2.1822
agegr_1	.3196	.2165	1.4765	.1413	-.1072	.7465
agegr_2	.7159	.2360	3.0328	.0027	.2505	1.1813
igr_1	.2731	.3187	.8570	.3924	-.3552	.9015
igr_2	-.0090	.2847	-.0315	.9749	-.5702	.5523
igr_3	-.3709	.2938	-1.2625	.2082	-.9501	.2083
hab_1	-.3667	.1682	-2.1807	.0303	-.6982	-.0352
hab_2	.0453	.1897	.2388	.8115	-.3287	.4193
Q84	.2721	.1407	1.9337	.0545	-.0053	.5495

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5847	.3419	1.3221	10.5962	10.0000	204.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.5564	.5538	8.2274	.0000	3.4645	5.6484
cond	1.0516	.2548	4.1264	.0001	.5491	1.5540
Wellfare	-.0660	.0813	-.8121	.4177	-.2264	.0943
agegr_1	.7727	.2534	3.0496	.0026	.2731	1.2722
agegr_2	.1518	.2809	.5404	.5895	-.4021	.7057
igr_1	.3196	.3717	.8599	.3908	-.4132	1.0525
igr_2	-.2161	.3314	-.6520	.5151	-.8695	.4374

igr_3	-.3324	.3433	-.9682	.3341	-1.0093	.3445
hab_1	-.9385	.1980	-4.7390	.0000	-1.3289	-.5480
hab_2	-.6335	.2209	-2.8682	.0046	-1.0689	-.1980
Q84	.0685	.1653	.4144	.6790	-.2574	.3944

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5829	.3397	1.3199	11.7197	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.2423	.3960	10.7136	.0000	3.4616	5.0230
cond	1.2134	.1587	7.6473	.0000	.9006	1.5263
agegr_1	.7516	.2518	2.9845	.0032	.2551	1.2481
agegr_2	.1045	.2746	.3807	.7038	-.4368	.6459
igr_1	.3016	.3707	.8135	.4169	-.4293	1.0325
igr_2	-.2155	.3311	-.6507	.5159	-.8684	.4374
igr_3	-.3079	.3417	-.9011	.3686	-.9817	.3658
hab_1	-.9142	.1956	-4.6739	.0000	-1.2999	-.5286
hab_2	-.6364	.2206	-2.8845	.0043	-1.0715	-.2014
Q84	.0505	.1637	.3088	.7578	-.2722	.3732

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2134	.1587	7.6473	.0000	.9006	1.5263

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.0516	.2548	4.1264	.0001	.5491	1.5540

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Wellfare	.1619	.2429	-.3353	.6255

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : Attit
X : cond
M : environ

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

environ

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.7384	.5453	1.2281	27.3112	9.0000	205.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8452	.3819	12.6854	.0000	4.0921	5.5982
cond	-2.1376	.1531	-13.9663	.0000	-2.4394	-1.8358
agegr_1	.1711	.2429	.7043	.4820	-.3078	.6500
agegr_2	.5666	.2649	2.1394	.0336	.0444	1.0888
igr_1	.1188	.3576	.3323	.7400	-.5862	.8239
igr_2	-.1274	.3194	-.3987	.6905	-.7571	.5024
igr_3	-.4792	.3296	-1.4539	.1475	-1.1291	.1707
hab_1	-.6612	.1887	-3.5043	.0006	-1.0332	-.2892
hab_2	-.1583	.2128	-.7438	.4578	-.5779	.2613
Q84	.2727	.1579	1.7272	.0856	-.0386	.5840

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5904	.3486	1.3086	10.9155	10.0000	204.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8234	.5268	9.1568	.0000	3.7848	5.8620
cond	.9570	.2207	4.3361	.0000	.5218	1.3922
environ	-.1199	.0721	-1.6637	.0977	-.2621	.0222
agegr_1	.7721	.2510	3.0755	.0024	.2771	1.2671
agegr_2	.1725	.2764	.6240	.5333	-.3726	.7175
igr_1	.3159	.3692	.8554	.3933	-.4122	1.0439
igr_2	-.2308	.3299	-.6996	.4850	-.8811	.4196

igr_3	-.3654	.3420	-1.0684	.2866	-1.0397	.3089
hab_1	-.9936	.2005	-4.9550	.0000	-1.3889	-.5982
hab_2	-.6554	.2200	-2.9793	.0032	-1.0892	-.2217
Q84	.0832	.1642	.5071	.6126	-.2404	.4069

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5829	.3397	1.3199	11.7197	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.2423	.3960	10.7136	.0000	3.4616	5.0230
cond	1.2134	.1587	7.6473	.0000	.9006	1.5263
agegr_1	.7516	.2518	2.9845	.0032	.2551	1.2481
agegr_2	.1045	.2746	.3807	.7038	-.4368	.6459
igr_1	.3016	.3707	.8135	.4169	-.4293	1.0325
igr_2	-.2155	.3311	-.6507	.5159	-.8684	.4374
igr_3	-.3079	.3417	-.9011	.3686	-.9817	.3658
hab_1	-.9142	.1956	-4.6739	.0000	-1.2999	-.5286
hab_2	-.6364	.2206	-2.8845	.0043	-1.0715	-.2014
Q84	.0505	.1637	.3088	.7578	-.2722	.3732

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2134	.1587	7.6473	.0000	.9006	1.5263

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.9570	.2207	4.3361	.0000	.5218	1.3922

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
environ	.2564	.1947	-.1461	.6191

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Version 3.5.3 *****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

Model : 4
Y : Attit
X : cond
M : Health

Covariates:

agegr_1 agegr_2 igr_1 igr_2 igr_3 hab_1 hab_2 Q84

Sample

Size: 215

OUTCOME VARIABLE:

Health

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.7397	.5472	1.0962	27.5261	9.0000	205.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8214	.3609	13.3608	.0000	4.1099	5.5328
cond	-2.0467	.1446	-14.1537	.0000	-2.3318	-1.7616
agegr_1	.3533	.2295	1.5397	.1252	-.0991	.8058
agegr_2	.4510	.2502	1.8022	.0730	-.0424	.9443
igr_1	-.2390	.3379	-.7075	.4800	-.9052	.4271
igr_2	-.4263	.3018	-1.4126	.1593	-1.0213	.1687
igr_3	-.6012	.3114	-1.9306	.0549	-1.2152	.0128
hab_1	-.6665	.1783	-3.7388	.0002	-1.0179	-.3150
hab_2	-.4498	.2011	-2.2369	.0264	-.8462	-.0533
Q84	.0418	.1492	.2804	.7794	-.2523	.3359

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5950	.3540	1.2976	11.1803	10.0000	204.0000
.0000						

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.4636	.5370	6.4499	.0000	2.4048	4.5225
cond	1.5439	.2212	6.9790	.0000	1.1078	1.9801
Health	.1615	.0760	2.1252	.0348	.0117	.3113
agegr_1	.6945	.2511	2.7655	.0062	.1994	1.1896
agegr_2	.0317	.2744	.1155	.9082	-.5093	.5727
igr_1	.3402	.3680	.9244	.3564	-.3855	1.0659

igr_2	-.1466	.3299	-.4445	.6572	-.7972	.5039
igr_3	-.2108	.3419	-.6167	.5381	-.8849	.4633
hab_1	-.8066	.2005	-4.0239	.0001	-1.2018	-.4114
hab_2	-.5638	.2214	-2.5462	.0116	-1.0004	-.1272
Q84	.0438	.1623	.2697	.7876	-.2763	.3638

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:

Attit

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5829	.3397	1.3199	11.7197	9.0000	205.0000
	.0000					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.2423	.3960	10.7136	.0000	3.4616	5.0230
cond	1.2134	.1587	7.6473	.0000	.9006	1.5263
agegr_1	.7516	.2518	2.9845	.0032	.2551	1.2481
agegr_2	.1045	.2746	.3807	.7038	-.4368	.6459
igr_1	.3016	.3707	.8135	.4169	-.4293	1.0325
igr_2	-.2155	.3311	-.6507	.5159	-.8684	.4374
igr_3	-.3079	.3417	-.9011	.3686	-.9817	.3658
hab_1	-.9142	.1956	-4.6739	.0000	-1.2999	-.5286
hab_2	-.6364	.2206	-2.8845	.0043	-1.0715	-.2014
Q84	.0505	.1637	.3088	.7578	-.2722	.3732

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.2134	.1587	7.6473	.0000	.9006	1.5263

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
1.5439	.2212	6.9790	.0000	1.1078	1.9801

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
Health	-.3305	.1766	-.6740	.0209

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

----- END MATRIX -----

Appendix E Factor analysis output SPSS

Communalities

	Initial	Extraction
Q10	1,000	,711
Q11	1,000	,759
Q12	1,000	,783
Q13	1,000	,835
Q14	1,000	,771
Q15	1,000	,806
Q16	1,000	,783
Q17	1,000	,874
Q19	1,000	,804
Q20	1,000	,842
Q21	1,000	,850
Q22	1,000	,847
Q23	1,000	,768
Q24	1,000	,830
Q25	1,000	,841
Q26	1,000	,899
Q28	1,000	,811
Q29	1,000	,919
Q30	1,000	,914
Q31	1,000	,862
Q32	1,000	,855
Q33	1,000	,881
Q34	1,000	,860
Q35	1,000	,847
Q37	1,000	,694
Q38	1,000	,817
Q39	1,000	,780
Q40	1,000	,591
Q42	1,000	,715
Q43	1,000	,767
Q44	1,000	,745

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	17,103	55,171	55,171	17,103	55,171	55,171	16,371
2	3,401	10,971	66,143	3,401	10,971	66,143	11,623
3	2,377	7,667	73,810	2,377	7,667	73,810	2,582
4	1,274	4,110	77,919	1,274	4,110	77,919	4,147
5	,904	2,915	80,834	,904	2,915	80,834	1,742
6	,847	2,732	83,566				
7	,586	1,889	85,454				
8	,544	1,756	87,210				
9	,493	1,592	88,802				
10	,437	1,410	90,212				
11	,380	1,224	91,436				
12	,340	1,097	92,533				
13	,304	,981	93,514				
14	,239	,769	94,284				
15	,221	,713	94,997				
16	,192	,618	95,615				
17	,170	,549	96,164				
18	,152	,491	96,655				
19	,138	,446	97,101				
20	,118	,382	97,483				
21	,108	,348	97,831				
22	,099	,318	98,150				
23	,093	,299	98,448				
24	,081	,262	98,710				
25	,076	,244	98,954				
26	,070	,226	99,180				
27	,063	,205	99,385				
28	,058	,186	99,571				
29	,056	,181	99,752				
30	,044	,143	99,895				
31	,032	,105	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	17,103	55,171	55,171	17,103	55,171	55,171	16,371
2	3,401	10,971	66,143	3,401	10,971	66,143	11,623
3	2,377	7,667	73,810	2,377	7,667	73,810	2,582
4	1,274	4,110	77,919	1,274	4,110	77,919	4,147
5	,904	2,915	80,834	,904	2,915	80,834	1,742
6	,847	2,732	83,566				
7	,586	1,889	85,454				
8	,544	1,756	87,210				
9	,493	1,592	88,802				
10	,437	1,410	90,212				
11	,380	1,224	91,436				
12	,340	1,097	92,533				
13	,304	,981	93,514				
14	,239	,769	94,284				
15	,221	,713	94,997				
16	,192	,618	95,615				
17	,170	,549	96,164				
18	,152	,491	96,655				
19	,138	,446	97,101				
20	,118	,382	97,483				
21	,108	,348	97,831				
22	,099	,318	98,150				
23	,093	,299	98,448				
24	,081	,262	98,710				
25	,076	,244	98,954				
26	,070	,226	99,180				
27	,063	,205	99,385				
28	,058	,186	99,571				
29	,056	,181	99,752				
30	,044	,143	99,895				
31	,032	,105	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix^a

	Component				
	1	2	3	4	5
Q32	,952				
Q21	,948				
Q33	,947				
Q23	,946				
Q30	,937				
Q29	,935				
Q24	,918				
Q20	,908				
Q22	,880				
Q28	,854				
Q12	,851				
Q31	,836				
Q14	,836				
Q15	,781				
Q11	,757				
Q19	,743				
Q13	,711				
Q10	,580	,306			
Q34		1,101			
Q35		1,038			
Q25		,828			
Q17		,772			
Q26		,762			
Q16		,639			
Q38			,913		,313
Q37			,904		,418
Q39			,871		
Q43				,963	
Q44				,862	
Q42				,804	
Q40			,608		,848

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.