Radboud University

Advertising effectiveness in conventional and organic food markets

Is matching or mismatching product and claim types more effective?

Master Thesis

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Abstract

The purpose of this thesis was to inform consumers about products that are healthy and sustainable in order to influence their consumption choices. The thesis examined how marketers can use taste and nutrition claims in advertising to make healthier and sustainable food products more appealing to consumers. Guided by conflicting results in prior literature, this study investigated whether a match or a mismatch between product and claim type was more effective. The study employed a 2 × 2 × 2 experimental design to compare the impact of a nutrition claim to the impact of a taste claim on different food types (perceived unhealthy versus perceived healthy) and different food categories (conventional versus organic). Respondents were gathered using an online questionnaire in which they were randomly assigned to the experimental conditions. The results from the manipulation check showed that the claims were not perceived as intended. These results have influenced the results of the main analyses in such a way that the researcher was unable to accept or reject any of the stated hypotheses. The results from additional analyses showed that advertising ads with nutrition claims was more effective than advertising ads with taste claims, providing marketers with an opportunity to advertise their healthy and sustainable foods more effectively. Given the current food trends, this should benefit society by improving personal and environmental health. More research is needed to explore the impact of combining product and claim type in both conventional and organic food markets. Future research should try to find advertising strategies particularly effective in marketing healthy and sustainable foods for the benefit of society at large.

Content

1. Introduction

Threats to personal and environmental health are two major issues in the world. Despite all the efforts made by governments, organizations and consumers themselves, there are still massive health and sustainability problems worldwide caused by unhealthy and unsustainable production and consumption. For example, obesity continues to be a growing health problem. In 2016, over 650 million adults were obese and an additional 1.25 billion adults were overweight (World Health Organization 2017). Not only has overweight consequences for everyday life, it increases future risks with respect to several types of diabetes, heart diseases and cancers. Furthermore, personal health is threatened by environmental risk factors, among which pollution and climate change are frequently mentioned. One of the causes is that unsustainable food production damages the earth and leads to greenhouse gas emissions. Despite the fact that these threats to personal and environmental health have received widespread attention from academics, practitioners and society at large, they are still present. This thesis aims at informing consumers about products that are healthy and sustainable in order to influence their consumption choices.

Health and environmental issues are particularly relevant in the consumer behavior context because consumption has one of the largest impacts by continued unhealthy eating patterns and food consumption that threatens environmental sustainability. A common solution to fight these health problems is to instigate healthier food choices. Prior research has shown that health motivations often lead to organic food consumption (Baudry et al. 2017; Goetzke, Nitzko, and Spiller 2014). Since the production of organic food is an important factor contributing to sustainability (Kilcher 2007; Schader, Stolze, and Niggli 2015), health and sustainability motives can be combined when consuming organic food. This way, consumers can take care of their personal health and reduce their environmental footprint. People can limit their intake of fats and sugars, increase their intake of fruits, vegetables and other healthier foods and opt for organic food that is produced in a sustainable manner. Despite the limitations of organic food production that are addressed in prior research (Baudry et al. 2017; Bazilchuk 2016; Goetzke, Nitzko, and Spiller 2014), the current consumer trends suggest that consumers are becoming more concerned about the consequences of their food choices. Over the past few years, the

organic food market in the United States has exploded according to the Organic Trade Association (Organic Industry Survey 2017). Moreover, the study Bhavsar (2017) shows that the interest in organic food and farming also rises in the rest of the world and might even become as important there as it is in the United States.

Despite these healthy and sustainable food trends, the bottom line is that consumers want to consume food that satisfies them. They want to consume food that tastes good. The problem is that food that tastes good usually contains a substantial amount of fats and sugars. Next to this, consumers' perception of healthier food alternatives is that it is less tasteful (Raghunathan, Naylor, and Hoyer 2006), so consumers are confronted with a dilemma here (Belei et al. 2012). They want to eat tasty food without the associated guilt of possible negative health effects (Palmer 2008). Health guilt is one of the four dimensions of consumer guilt that Burnett and Lunsford (1994) identify, next to financial, moral and social responsibility guilt. They state that health guilt occurs when consumers believe they are not taking care of their physical welfare (1994). The lack of care includes consuming foods that score high on fat and sugar levels. The authors conclude that consumer guilt can not only help explain consumer behavior but provides marketers with opportunities to persuade consumers to buy their products as well. This research will focus on persuading consumers to buy healthier and more sustainable food products.

The health and sustainability trends have drawn attention from marketers because it offers them opportunities to attract consumers to buy their healthier and more sustainable food products. An increasingly used promotional tool to persuade consumers is the use of so-called health and nutrition-related (HNR) claims. A broad definition of a health claim is that it includes any statement about a relationship between food and health (European Commission, n.d.). Driven by the healthier food trend, more healthier alternatives are offered and marketers increasingly face the challenge to make these alternatives appealing to consumers. Marketers face the same challenge in advertising sustainable foods. As part of their marketing program, they often use claims or indulgences for promotion. In organic food advertising, marketers often use organic labels claiming that the food is produced in a sustainable manner. Consumers read these messages to obtain knowledge about the food's ingredients, manufacturing and benefits. It also helps them to compare different brands and revise or reinforce previously learned information. However, the use of these health claims is particularly challenging because consumers not always understand them, make

wrong inferences or do not even read them (Deakin 2011; Grunert, Wills, and Fernandéz-Celemín 2010; Wansink and Chandon 2006; Dörnyei and Gyulavári 2016). This is detrimental to marketers, businesses and consumers themselves because health claims are widely used, consumers generally see them as useful and their effectiveness has been proven many times (Williams 2005; Bialkova, Sasse, and Fenko 2016).

Despite the relevance for academics, practitioners and society at large, research on the effects of different types of health claims on food consumption is limited (Belei et al. 2012). An exception to this is the study Choi, Paek, and Whitehill King (2012) which examined the effectiveness of communicating nutrient-content or taste claims on food that is perceived as healthy or unhealthy. To follow up, Choi and Springston (2014) added the explicit distinction between benefit-seeking and risk-avoidance appeals in advertising. Again, their effects were examined for perceived healthy as well as perceived unhealthy foods. The results of Choi et al. (2012) show that respondents evaluated advertisements with nutrient-content claims more favorably for foods they perceived as healthy. In addition, advertisements with taste claims were perceived more favorably for foods perceived as unhealthy, thus illustrating the importance of matching product and claim types. Such matching in advertising was already recommended by Rossiter, Percy, and Donovan in their advertising grid (1991). They recommended to match the ad appeal with the purchase motivation. The underlying reasoning is based on social adaptation theory, associative learning theory, and expectancy-value theory. The idea is that consumers seek particular attributes when looking for a particular product. An advertising claim that is consistent with the product's attributes makes the consumer meet his or her expectations and will be more persuasive. However, other studies have found contradictory results and showed a mismatch between product and claim type to be more effective (Kim, Cheong, and Zheng 2009; Loef, Antonides, and van Raaij 2001). Kim et al. (2009) show that nutrition claims are more effective in promoting hedonic foods, whereas taste claims are more effective in promoting functional foods. Moreover, Loef et al. (2001) show that transformational advertising is more effective for utilitarian brands, whereas informational advertising is more effective for hedonic brands. The findings that a mismatch is more effective is explained by schema congruity theory, which suggests that incongruity between a claim and the product increases interest, memorability, and persuasiveness in consumers (Yoon 2013).

These studies did not take organic food markets into account. However, health considerations have shown to be important in both conventional and organic food markets, illustrating the importance of researching their interrelatedness (Kareklas, Carlson, and Muehling 2014; Magnusson et al. 2003).

From the literature mentioned above, it is clear that product and claim type matter when it comes to advertising effectiveness. However, while the underlying thought that consumers generally make a trade-off between health/nutrition and taste motives is the same, the academic literature builds on contradictory theories and finds conflicting results. In addition, the perception that healthier food is less tasteful might not apply to organic food consumption. Therefore, this research aims to add to this area of the consumer behavior literature. It tries to resolve the inconsistency in whether matching or mismatching claim and product types is more effective. Moreover, it examines whether organic food should be treated as a special case by marketers.

In short, the primary objective of this thesis is to find the best combinations of claim and product types that inform consumers about products that are healthy and sustainable in order to influence their consumptions choices. The study examines whether differences exist between organic and non-organic food products, herewith contributing to the increasing need for healthier and sustainable food by examining consumers' differential response to claims and products.

The central question this research answers is how marketers can use taste and nutrition claims in advertising to make healthier and sustainable food products more appealing to consumers.

The societal relevance of this study lies in the importance of consuming healthier and more sustainable food. The consumption of unhealthy food and the resulting overweight and obesity problems have major consequences for consumers' health and quality of life. Moreover, unsustainable consumption patterns have contributed to fossil fuel depletion, climate change and increasing costs of energy and water which together threaten a healthy global future. This research may contribute to fighting these problems by identifying how healthier and more sustainable food can be made more appealing to consumers. Next to this objective, the scientific relevance of this study lies in its contribution to the consumer decision-making literature where research on the interplay between health claims and different product types is rather

embryonic. Finally, the study may help practitioners and marketers in particular in promoting their products in the most effective way.

The research consists of two main parts. It starts with an overview of the theoretical background. Conceptual insights and hypotheses will be derived from this overview. The second part consists of the collection, analysis and reporting of empirical data. The design of the study is an online experiment in which consumers evaluate product advertisements. Their response regarding preference for two product categories (unhealthy versus healthy) and two claim types (taste versus nutrition) will be evaluated, and the influence of an organic label will be examined.

The structure of the thesis is as follows. The next chapter provides the theoretical background derived from prior literature. From this overview, hypotheses are developed and tested in a way as described in the methodological chapter. After the methodology, the results of the study are presented, followed by a discussion and conclusion. Finally, several implications for managerial purposes and suggestions for further research are given.

2. Literature review

This chapter provides an overview of the most relevant theoretical insights in the consumer decision-making literature regarding the use of product and claim types in advertising. The chapter starts with an introduction to the use of health claims. Subsequently, different advertising messages and product categories are discussed. Numerous researchers have examined the effect of different communication strategies and different product types separately. Research on communication strategies has led to many different concepts, of which hedonic versus functional claims, affect versus cognition, transformational versus informational advertising, and taste versus nutrition claims have received quite some attention in the academic literature. The same applies to the product categories, of which hedonic versus utilitarian, perceived unhealthy versus perceived healthy, and nonorganic versus organic are quite familiar concepts. All these categorizations can roughly be described as distinguishing the pleasure dimension of the food from the functional dimension of the food. The pleasure dimension is often related to taste while the functional dimension predominantly relates to nutrition and health. In order to provide a thorough overview of the relevant literature regarding communication strategies, product types, and their interaction, this chapter presents a detailed overview of these distinct concepts separately. Thereafter, these concepts are integrated in the theoretical framework. This framework will be followed by the hypotheses that are stated. The chapter ends with the conceptual framework.

2.1 An introduction to the use of health claims

Motivated by the severe consequences of obesity and unsustainable practices worldwide and the relatively limited scientific research on what drives consumers to buy healthy and sustainable food, prior research has paid attention to the effects of health claims on consumer buying behavior (Wansink and Chandon 2006; Williams 2005). An important starting point is Williams (2005). This study provides a review on the use and perception of different types of health claims. Relevant insights from this research are that consumers generally see health claims as useful and products carrying health claims are seen as healthier and increase purchase likelihood. Moreover, consumers can be skeptical toward health claims and prefer relatively short

and understandable phrases approved by an authority. Wansink and Chandon (2006) provide evidence that low-fat nutrition claims are effective in increasing consumption. However, low-fat nutrition claims reduce feelings of guilt and increase the perceived appropriate serving size. The resulting increased consumption limits possible health effects. Wansink and Chandon (2006) also indicate that providing salient information on serving size does not reduce overeating among overweight people. While this result might indicate that there are barriers in adopting a healthier lifestyle, these barriers can be overcome. The global nutrition policy review of the World Health Organization (2013) shows that policies and efforts are put into place in order to increase nutrition knowledge amongst consumers and other societal groups. Multiple studies have shown the importance of nutrition knowledge in making healthier food choices (Klohe-Lehman et al. 2006; Spronk, Kullen, Burdon, and O'Connor 2014; Wardle, Parmenter, and Waller 2000). In addition, Williams (2005) found some evidence that the use of health claims improves the quality of dietary choices and knowledge of diet-disease relationships.

2.2 The differential effect of advertising messages

2.2.1 Hedonic versus functional health claims

While prior research has shown mixed results with respect to the positive relationship between health claims and consumption frequency, Belei et al. (2012) indicates that these outcomes vary for different types of health claims. They make a distinction between hedonic and functional health claims. Stressing hedonic food attributes (e.g. low fat) increases consumption whereas stressing functional or utilitarian food attributes (e.g. low cholesterol) decreases consumption. The underlying mechanism is the increase or reduction in goal conflict on the part of the consumer. Functional health claims result in the appearance of health and indulgence goals simultaneously, and hence, increase goal conflict and reduce consumption. Hedonic health claims accentuate the pleasure dimension of the food which, together with the appearance of indulgence goals, result in reduced goal conflict and increased consumption.

2.2.2 Affect versus cognition

Other researchers have considered other factors to be important on the part of the consumer. One such factor which has received widespread attention in academic research is the information processing style. The information processing style can be dominated by either affect or cognition. An affective response is more emotional in nature while a cognitive response is more rational. Consumers' trade-offs regarding food consumption are often researched in conjunction with the role of affect and cognition. This topic has received attention from studies like Shiv and Fedorikhin (1999), and Lu and Sinha (2017). These studies describe situations where consumers rely more on either affect or cognition when making a purchase decision. Shiv and Fedorikhin (1999) show that when processing resources are limited in a choice task, the resulting dominance of affect leads to choosing the alternative that is superior on the affective dimension and inferior on the cognitive dimension (e.g. chocolate cake). In contrast, when processing resources are highly available, the resulting dominance of cognition leads to choosing the alternative that is superior on the cognitive dimension and inferior on the affective dimension (e.g. fruit salad). Lu and Sinha (2017) show that socially excluded consumers prefer persuasive messages based on feelings because their information processing style is dominated by affect. By contrast, socially included consumers prefer messages based on reasons because their information processing style is dominated by cognition. This has important implications for marketers as well and will be discussed in more detail when the role of advertising is addressed in the next paragraph.

2.2.3 Transformational versus informational advertising

Furthermore, a distinction can be made between transformational and informational messages. The distinction between transformational and informational motives is put forward by Rossiter, Percy, and Donovan in their advertising grid (1991). They state that transformational motives capture positive motives corresponding to the feel side of the grid and that informational motives capture negative motives corresponding to the think side of the grid. Moreover, they state that this distinction is crucial to advertising tactics (p. 16). Later research has explicitly made the distinction between transformational and informational advertising. In this research, transformational advertising is defined as primarily attempting to move the consumer emotionally

while informational advertising is defined as primarily providing meaningful facts (Cutler, Thomas, and Rao 2000). This way, transformational advertising seeks to elicit an affective reaction by the consumer while informational advertising seeks to elicit a cognitive reaction. The distinction between transformational and informational advertising is very similar to the distinction between affective and rational ads. Consumers' responses to these ads have been researched for different product type categories. Drolet, Williams, and Lau-Gesk (2007) examined the relationship between age and responses to ads (affective versus rational) and the moderating role of product type category (hedonic versus utilitarian). They found that consumers above 65 years old preferred affective ads, regardless of product type category, and that consumers between the age of 18 to 25 preferred affective ads for hedonic products and rational ads for utilitarian products. This shows that young adults prefer ads that match the underlying product type category (Drolet et al. 2007, p. 217). In line with this result, Klein and Melnyk (2016) found that matching hedonic versus utilitarian arguments and product types significantly increases purchase likelihood compared to arguments and products that do not match. Furthermore, they show the importance of information processing styles and affective versus cognitive responses in this process. This is consistent with the research from Shiv and Fedorikhin (1999) and Lu and Sinha (2017) discussed before.

2.2.4 Taste versus nutrition claims

Another way to make a distinction between different types of food claims is to distinguish taste claims from nutrition claims. These two claims were found to be the dominant claim types used in food advertisements (Kim et al. 2009). It was also found that taste claims were predominantly used for advertising hedonic foods while nutrition claims were mainly used for advertising functional foods. However, the results of Kim et al (2009) showed that the nutrition claims in promoting hedonic foods, whereas taste claims were more effective in promoting functional foods. Other research has made the distinction between nutrient-content and taste claims as well and compared their impact on two different food product types (Choi et al. 2012). This study distinguished food products perceived as healthy and food products perceived as unhealthy. Despite the conflicting findings with regard to matching claim

and product type, both articles have further illustrated the importance of examining the differential effect of claim type and product type on consumption.

2.2.5 Integrating the theoretical perspectives

The just mentioned distinctions in advertising messages are very much alike. The distinction between hedonic and functional health claims made by Belei et al. (2012) is very similar to the distinction between taste and nutrition claims when it comes to the inferences consumers make. Consumers associate a hedonic claim stressing a food's low-fat attribute with taste and food enjoyment while perceptions of a functional claim focus on the food's health-related attributes (e.g. nutritional value) (Belei et al. 2012; Raghunathan et al. 2006). Likewise, accentuating the pleasure dimension using a hedonic claim is very similar to transformational advertising which attempts to move the consumer emotionally. These kinds of messages generally evoke affective reactions and taste inferences. Similarly, functional claims are comparable to informational advertising seeking to evoke a cognitive reaction and health-related inferences. This way, these concepts are very much interrelated. Next to considering claim type, attention is devoted to the effect of different product categories. The different product types will be discussed in detail in the next section.

2.3 The differential effect of product type category

2.3.1 Hedonic versus utilitarian products

Prior research has shown that consumers' buying behavior differs when responding to different product type categories (Dhar and Wertenbroch 2000; Van Boven and Gilovich 2003; Okada 2005; Cramer and Antonides 2011). According to Van Boven and Gilovich (2003), a distinction can be made between hedonic goods, those acquired primarily to foster enjoyment, and utilitarian goods, those acquired primarily to achieve practical aims. Translating this distinction to a food context differentiates hedonic food which is mainly consumed to obtain pleasure in the absence of an energy deficit from utilitarian food which is primarily consumed to satisfy the basic need to eat. Dhar and Wertenbroch (2000) shows that preferences for hedonic and utilitarian products differ when the consumer has to decide whether to give the product up or to acquire it. Prior research showed that consumers value something

more when they own it and consider giving it up than when they consider acquiring it (Kahneman, Knetsch, and Thaler 1990). This is what they called the endowment effect. Dhar and Wertenbroch (2000) shows that this effect is stronger for hedonic items than for utilitarian items. Cramer and Antonides (2011) found the same result for hedonic versus utilitarian food products and state that this relatively strong endowment effect for hedonic products might lead to unhealthier food choices (2011).

2.3.2 Perceived unhealthy versus perceived healthy products

Another distinction that can be made with regard to product type in the food sector is to distinguish between food that is perceived as unhealthy and food that is perceived as healthy. Choi et al. (2012) used this distinction and examined its differential effect on consumer outcomes when combined with taste versus nutrient-content claims, as introduced before. It should be noted that products perceived as unhealthy or healthy can be consumed for both hedonic and utilitarian motives, so these distinctions in product type category are not similar. For example, fruits can be consumed because of their taste or their nutritional value (e.g. vitamins).

2.3.3 Nonorganic versus organic food products

Finally, it is important and relevant for this study to make a distinction between nonorganic and organic food products. According to USDA regulations, organic food is processed without the use of toxic and synthetic pesticides and fertilizers, genetic engineering, antibiotics, synthetic growth hormones, artificial flavors, colors, preservatives, sewage sludge and irradiation. Processing organic food in this way enhances sustainability in that it improves health benefits, environmental benefits, and animal welfare. In short, The Organic Trade Association defines organic food as food that contains no artificial flavors, colors or preservatives (https://www.ota.com/). As illustrated before, sustainability issues are on the rise and it is important to take their interrelatedness with health issues into account. The organic food category is chosen because of its growing importance and its related health motives in food consumption (Baudry et al. 2017; Goetzke, Nitzko, and Spiller 2014). Research on the use of health claims in organic food consumption is limited. An exception to this is Aschemann-Witzel, Maroscheck, and Hamm (2013) which showed that products with a claim were only preferred by occasional organic buyers. Their research was limited to the

investigation of functional foods with a general health claim or a nutrition-related claim. As illustrated before, the current research tries to take taste claims and the distinction between perceived unhealthy and perceived healthy foods into account as well.

2.4 Theoretical framework and hypothesis development

When it comes to combining advertising messages with product types, there are two contradicting views in the academic literature. On the one hand, researchers propose that advertising messages matching purchase motivation increases advertising effectiveness. Its reasoning relies on social adaptation theory and associative learning theory, or on the expectancy-value model. On the other hand, researchers propose that advertising messages mismatching rather than matching purchase motivation should increase advertising effectiveness. This line of reasoning is based on schema congruity theory. Both theoretical underpinnings and their corresponding empirical evidence will be discussed.

2.4.1 Social adaptation, associative learning and expectancy-value

Social adaptation theory and associative learning theory generally have been used to lay the groundwork for the match-up hypothesis in endorsement advertising research (Kahle and Homer 1985; Kamins 1990; Till and Busler 2000). Here, a fit between the endorser and the endorsed product increases advertising effectiveness. Social adaptation theory posits that people are mostly influenced by messages that connect to their values and attitudes. This way, advertising messages are most effective when they emphasize what consumers have in mind. The communications should match the inferences consumers make. These inferences are based on people's preferences or expectations. According to Kim et al. (2009), the same holds for the expectancy-value model. The expectancy-value model proposes that persuasion or attitude change is most likely to occur when the message is perceived to have characteristics that are highly valued. This is consistent with the product attributes that are sought by consumers or, in other words, with their preferences or expectations. In addition, associative learning theory assumes that people have an associative network memory model in mind, consisting of nodes and linkages. The nodes represent concepts which are connected through linkages. The more similar the concepts are, the stronger the

associations, and the more likely is it that a particular node is activated through the associated network. This way, a strong association between the advertised product and the product's related cue in the ad would lead to a more favorable evaluation of the ad. According to Choi et al. (2012), social adaptation theory and associative learning theory have one point in common. When consumers feel that a product and a certain informational cue in an advertisement are well matched, the match-up effect occurs resulting in more favorable ad evaluations, attitudes and behaviors. This match-up effect was recommended by Rossiter and Percy's advertising grid (1991) and has been supported by the empirical findings of Choi et al. (2012), which stated that taste claims match unhealthy products while nutrient-content claims match healthy products. This is explained by the unhealthy = tasty intuition put forward by Raghunathan et al. (2006). This study shows that consumers subconsciously evaluate food products perceived as unhealthy to be tasty and food products perceived as healthy to be less tasty. Hence, a taste claim matches the attributes sought or expectations of an unhealthy product, which leads to a more favorable evaluation of the advertisement. Similarly, a nutrition claim matches the expectations of a healthy product and leads to more favorable ad evaluations. Therefore, the following hypotheses are stated:

> **H1:** Advertising unhealthy foods with taste claims elicits more favorable ad evaluations than advertising unhealthy foods with nutrition claims.

> **H2:** Advertising healthy foods with nutrition claims elicits more favorable ad evaluations than advertising healthy foods with taste claims.

2.4.2 Schema congruity

Schema congruity theory suggests different results. A moderate degree of incongruence would lead to more favorable ad evaluations (Meyers-Levy and Tybout 1989). The first step in this reasoning is that incongruence in marketing communications generally leads to more extensive information processing. Based on this effect, Heckler and Childers (1992) developed a theoretical framework in which the relevancy and expectancy of the marketing communication determines the level of incongruency. Schema congruity represents a match and results from a marketing

communication that is relevant and conforms to expectations. In contrast, schema incongruity indicates a mismatch resulting from information that is irrelevant and does not conform to expectations. Mandler (1982) was one of the first studies to theorize on the effect of information incongruity. This study focused on the affective and cognitive reactions to this incongruency and stated that incongruity would increase cognitive arousal. This way, consumers' attention is attracted and they are stimulated to resolve inconsistencies (Heckler and Childers 1992). This study reasons that consumers can do this successfully when the degree of incongruence is moderate but not when is it too high. Resolving such incongruency tends to be rewarding, which leads to more favorable responses to the marketing communication (Heckler and Childers 1992; Meyers-Levy and Tybout 1989). The positive effect of this mismatching on advertising effectiveness has been supported in prior research. Kim et al. (2009) found nutrition claims to be more effective when promoting hedonic foods and taste claims to be more effective when promoting functional foods. Loef et al. (2001) found that transformational advertising is more effective for hedonic brands and that informational advertising is more effective for utilitarian brands. In line with this, and again based on the unhealthy = tasty intuition, it is expected that nutrition claims rather than taste claims are more effective in advertising unhealthy products and that taste claims rather than nutrition claims are more effective in advertising healthy products. Hence, the following hypotheses are stated:

> **H3:** Advertising unhealthy foods with nutrition claims elicits more favorable ad evaluations than advertising unhealthy foods with taste claims.

> **H4:** Advertising healthy foods with taste claims elicits more favorable ad evaluations than advertising healthy foods with nutrition claims.

Note that H3 and H4 are contradicting H1 and H2. These pairs of hypotheses are considered rival pairs. Since only one pair of hypotheses can be true, this study is aimed at finding which pair should be rejected. Accepting H1 and H2 and rejecting H3 and H4 would indicate full support for a positive matching effect. In contrast, accepting H3 and H4 and rejecting H1 and H2 would indicate full support for a positive mismatching effect. Any other result would indicate only partial or

inconsistent support for either a matching or a mismatching effect or would indicate no effect at all.

2.4.3 Organic labelling

This research takes the perceived healthiness of food products into account. As Choi et al. (2012) shows, there are quite some foods that are generally perceived as either healthy or unhealthy. This study also finds support for the unhealthy = tasty intuition, which is a fundamental part of the research described so far in this theoretical framework. Choi et al. (2012) did not take the distinction between organic and nonorganic foods into account. However, health is an important motive in consuming organic food (Goetzke et al. 2014, Magnusson et al. 2003) and labelling food as organic can change health and nutrition perceptions positively (Lee and Yun 2015). This result suggests that labelling food as organic may change the health perceptions of food that is generally perceived as unhealthy. If this is indeed the case, using a health or a taste claim in organic food advertising may change the expectations with regard to advertising effectiveness. Based on the empirical evidence that organic food is often associated with health, it is expected that organic food is perceived as healthy, regardless of the perceived healthiness of the food when the organic label is not present. Thus, consistent with social adaptation, associative learning, and expectancy-value, nutrition claims are expected to be more effective than taste claims in advertising organic foods. Hence, the following hypothesis is stated:

> **H5:** Advertising organic foods with nutrition claims elicits more favorable ad evaluations than advertising organic foods with taste claims, regardless of the perceived healthiness of the food when the organic label is not present.

As illustrated before, schema congruity theory suggests different results. Consistent with schema congruity, taste claims are expected to be more effective than nutrition claims in advertising organic foods. Hence, the following hypothesis is stated:

H6: Advertising organic foods with taste claims elicits more favorable ad evaluations than advertising organic foods with nutrition claims, regardless of the perceived healthiness of the food when the organic label is not present.

Again, note that H5 is contradicting H6. These hypotheses are considered rival. Since only one of them can be true, this study is aimed at finding which one should be rejected. Accepting H5 and rejecting H6 would indicate full support for a positive matching effect. In contrast, accepting H6 and rejecting H5 would indicate full support for a positive mismatching effect. Any other result would indicate only partial or inconsistent support for either a matching or a mismatching effect or would indicate no effect at all.

2.4.4 Conceptual framework

This study focuses on advertising effectiveness which can either be increased by matching or mismatching product and claim types. In this dependence relationship, the (mis)match between product and claim type is the independent variable which influences the dependent variable advertising effectiveness. Recall that positive relationships for both a match and a mismatch are proposed but that only one of them can be true. The conceptual model is shown in figure 1.

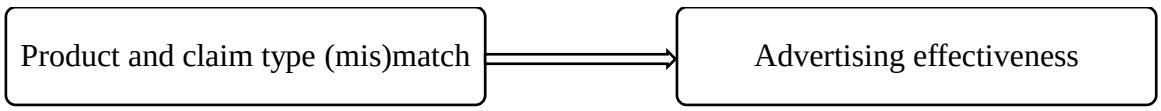

Figure 1. Conceptual model

The concepts included in the conceptual model are general constructs. Their operationalization will be described in detail in the next chapter.

3. Methodology

3.1 Design

The study used a 2 (unhealthy versus healthy product types) × 2 (nutrition versus taste claim types) × 2 (conventional versus organic food categories) experimental design to measure consumers' responses to the ads. For a complete between-subjects design, this would have required 8 groups of respondents which was quite numerous considering the available resources for this thesis. Therefore, the decision was made to conduct a within-subjects design to uncover possible differences between conventional and organic food markets. Possible differences between nutrition claims and taste claims were evaluated using a between-subjects design. Hence, the study employed a mixed design requiring four groups of respondents.

An experimental design can limit the generalizability of the results but was selected because it enabled the researcher to isolate the factor under study (in this case, the ad) to test the hypotheses. Furthermore, this design was chosen because it specifically applied to food advertising. The nutrition claims were considered to be counterparts to the taste claims because of the unhealthy = tasty intuition or the derived healthy = less tasty intuition put forward by Raghunathan et al. (2006). The distinction between nutrition claims and taste claims was consistent with prior research (Choi et al. 2012). The food categories chosen were largely adopted from Choi et al. (2012) as well. Chocolate ice cream was chosen as unhealthy food product because of its hedonic attributes and because it was expected to be distinctively perceived as unhealthy. Yogurt was chosen as healthy food category because of its utilitarian food attributes and because it was expected to be distinctively perceived as healthy. The claims were developed based on these food attributes and it was made sure that these were consistent with the transformational and informational motives of Rossiter and Percy's advertising grid (1997). A pretest was conducted to make sure that the food categories and claims were perceived as intended.

3.2 Pretest

In order to make sure that the food categories and claim types used in the experiment were distinctively perceived as unhealthy/tasty and healthy/less tasty, a pretest was conducted. A seven-point scale was chosen to evaluate perceived healthiness and tastefulness, which was consistent with prior research (Choi et al. 2012). In addition, a

manipulation check was performed to evaluate the degree to which the claims were perceived to address the food's nutritional value. To measure the hedonic attributes, the following items were selected: tasteless/tasty and not enjoyable/enjoyable. To measure the utilitarian attributes, unhealthy/healthy and not nutritious/nutritious were selected. These items were adopted from Garg, Wansink, and Inman (2007).

The results of the pretest were not entirely as anticipated. The results clearly showed that the chocolate ice cream was perceived as tastier while the yogurt was perceived as healthier. Since the pretest was conducted among 13 participants, no significant results were expected. Therefore, the selected food categories were considered appropriate to use in the main experiment. However, the products with the nutrition claims were not distinctively perceived as healthier and the products with the taste claims were not distinctively perceived as tastier. Given these mixed results, minor changes to the ads were made in order to make sure that participants read the claims and were able to interpret them as intended. The manipulation check was also included in the main experiment.

3.3 Subjects

Data was collected in May 2018 via an online experiment spread around 203 Dutch citizens. The online questionnaire is included in appendix A. The personal network of the researcher was reached out to in order to reach a large number of respondents. These participants were asked to forward the link to the online experiment to others close to them. It was expected that this network would yield a total of about 70 responses. The remaining 133 respondents were reached through online groups in which questionnaires were exchanged.

3.4 Ad stimuli

Images of three scoops of chocolate ice cream and a bowl of yogurt were used to represent the types of food chosen. The nutrition claims emphasized the healthy nutritional value of the food and indicated that the food was rich in calcium. The taste claims emphasized that the foods were delicious and tastier than ever. To distinct the conventional foods from the organic foods, an organic label was designed and used. In addition, a short introduction to organic food markets was given which explained

how organic food is produced and that food wearing the label can be considered to be organic. The advertisements are shown in appendix B.

3.5 Experiment procedure and research ethics

Respondents were informed that they were about to participate in an online experiment in which advertised products had to be evaluated. They were asked for permission allowing the researcher, excluding third parties, to use the submitted data strictly for research purposes. They were notified that, if desired, they could opt out at any point in time during the experiment, no explanation required. They were informed that their answers would be treated carefully and confidentially. The experiment consisted of two main parts. First, respondents were asked to fill in some demographic characteristics like age and gender. Thereafter, they were asked to evaluate the advertised products in randomized order.

3.6 Dependent variables

Advertising effectiveness was measured through ad evaluation and purchase intention. Ad evaluation was specified as attitude toward the ad. Consistent with prior research, attitude toward the ad was operationalized and measured using a 7-point bipolar scale including the following items: bad/good, dislike/like, irritating/not irritating, and uninteresting/interesting (Mitchell and Olson 1981). Choi et al. 2012 added the unfavorable/favorable distinction which was included in this study as well. Hence, attitude toward the ad was measured on five 7-point bipolar items.

Purchase intention was the second dependent variable, operationalized and measured using a 7-point bipolar scale including the following four items: unlikely/likely, improbable/probable, impossible/possible, and uncertain/certain. These items were adopted from Bearden, Lichtenstein, and Teel (1984) and using them was consistent with prior research (Choi et al. 2012).

3.7 Covariates

There were some variables that could explain possible differences in the measured outcomes which were not part of the main relationship under study. In order to control for these variables, they were included as covariates. The first two covariates were age and gender. This was motivated by Wansink, Cheney, and Chan (2003) where different food preferences were found across gender and age. The two other variables

included as covariates in the analysis were health consciousness and nutrition knowledge because they have shown to be related to how people respond to health and nutrition information (Dutta-Bergman 2005). Health consciousness was measured using a 5-point bipolar scale adopted from Haws and Winterich (2013). The scale included the following seven items: 'I reflect about my health a lot', 'I am very self-conscious about my health', 'I am generally attentive to my inner feelings about my health', 'I am constantly examining my health', 'I am alert to changes in my health', 'I am usually aware of my health', and 'I am aware of the state of my health as I go through the day'. Nutrition knowledge was measured using several multiple-choice questions adopted from Andrews, Netemeyer, and Burton (1998). Their original Nutrition Information Questionnaire consisted of 15 multiple choice questions. 8 multiple choice questions were considered to be most relevant for this study and were adopted. These questions were included in appendix A.

3.8 Data analysis procedure

The experimental manipulations regarding product and claim type were evaluated by analyzing the manipulation check. Thereafter, multiple analyses of covariance (ANCOVAs) with a mixed design and multiple analyses of variance (ANOVAs) were performed. Finally, some additional analyses were performed.

4. Results

4.1 Manipulation check

In the main experiment, a manipulation check was performed to test whether the food categories and claims were perceived as intended. Table 3 in appendix C shows the mean values of the eight advertisements for both perceived taste and perceived healthiness. The results show that the chocolate ice cream was perceived as tastier while the yogurt was perceived as healthier across all product (conventional versus organic) and claim type (nutrition versus taste) combinations ($p < 0.001$). These results indicate that the manipulations for the food categories were successful.

However, different outcomes resulted when the mean scores were evaluated on whether an organic label was added or not. Table 4 in appendix C shows the mean values across all food (chocolate ice cream versus yogurt) and claim type (nutrition versus taste) combinations. In general, the organic products were perceived to be both tastier and healthier. For the yogurt ad with a taste claim, these results were significant ($p < 0.01$). For the chocolate ice cream with a taste claim, an opposite effect was found. Hence, this ad with the organic label was perceived as less tasty.

Furthermore, table 1 shows the manipulation of claim type which is the main factor under study. Here, mean scores are listed for the perception of hedonic and utilitarian attributes.

Table 1: Mean differences in hedonic and utilitarian perceptions between nutrition and taste claims

Product	**Variable**	**Mean (SD)**		**t**
		Nutrition claim ad	**Taste claim ad**	
Chocolate ice cream (C)	PH	5.11 (1.27)	5.20 (1.33)	-0.35
	PU	2.90 (1.18)	2.72 (1.22)	0.74
	N	49	52	
Yogurt (C)	PH	3.79 (1.55)	3.42 (1.36)	1.29
	PU	5.23 (1.19)	4.65 (1.12)	2.52*
	N	51	51	
Chocolate ice cream (O)	PH	5.40 (1.12)	5.09 (1.11)	1.42
	PU	3.19 (1.38)	2.80 (1.28)	1.45
	N	51	51	
Yogurt (O)	PH	4.23 (1.29)	4.11 (1.54)	0.46
	PU	5.49 (0.88)	5.39 (0.99)	0.51
	N	49	52	

Note: C = Conventional; O = Organic; PH = Perceived Hedonism; PU = Perceived Utilitarianism. The mean difference is significant at the level of $*p < 0.05$

The results show that the products with the taste claim were perceived to be more hedonic than the products with the nutrition claim for only one of the four ads. These results were nonsignificant. Nevertheless, the results show that the products with the nutrition claim were perceived to be more utilitarian than the product with the taste claim for all four ads. However, this result was only significant for the ad with the conventional yogurt ($p < 0.05$). Therefore, the manipulation was deemed unsuccessful.

4.2 Hypothesis testing

A mixed factorial ANCOVA with food category (unhealthy versus healthy) as within-subjects factor, claim type as between-subjects factor and purchase intention as dependent variable was performed. The interaction between food category and claim type was not found to be significant ($F(1, 193) = 0.067$, $p = .795$). Moreover, none of the interactions with the covariates age, gender, health consciousness and nutrition knowledge resulted in a significant effect. These results indicate that age, gender and health consciousness do not influence purchase intention across the food category and claim type combinations. The *F*-values are presented in table 5 in appendix D. In addition, no main effect for age, gender or health consciousness was found on the food category. However, a significant effect for nutrition knowledge was found ($F(1, 193) = 9.880$, $p = .002$). This result shows that nutrition knowledge seems to be of importance when considering buying an unhealthy or a healthy product. Nutrition knowledge influences purchase intention in favor of yogurt, indicating that participants with more nutrition knowledge were more likely to buy yogurt than chocolate ice cream.

A similar design with food label (conventional versus organic) as within-subjects factor, claim type as between-subjects factor and purchase intention as dependent variable resulted in no significant interaction effect between claim type and food label ($F(1, 193) = 1.453$, $p = .230$). In addition, no main effects were found indicating that none of the covariates influenced purchase intention across any combination of food label and claim type. The *F*-values are presented in table 6 in appendix D.

A mixed factorial ANOVA with food category (unhealthy versus healthy) as within-subjects factor, claim type as between-subjects factor and purchase intention as

dependent variable resulted in no significant interaction effect between food category and claim type ($F(1, 201) = .389$, $p = .533$). Table 7 in appendix D displays the *F*-values.

A similar design with food label (conventional versus organic) as within-subjects factor and claim type as between-subjects factor resulted in no significant interaction effect between food label and claim type ($F(1, 201) = .552$, $p = .458$). However, a significant main effect of claim type was found ($F(1, 201) = 4.093$, $p = .044$) across all combinations of food category and label. This result indicates that purchase intention was higher when ads contained nutrition claims than when ads contained taste claims. Table 8 in appendix D displays the *F*-values.

Table 2: Mean differences in dependent variables between nutrition and taste claims

		Mean (SD)	
Product	**Claim**	**Pi**	**At**
Chocolate ice cream (C)	NC	4.32 (1.38)	4.57 (1.14)
	TC	4.36 (1.53)	4.25 (1.04)
Yogurt (C)	NC	4.14 (1.61)	4.24 (1.32)
	TC	3.66 (1.37)	4.04 (1.16)
Chocolate ice cream (O)	NC	4.28 (1.69)	4.59 (1.05)
	TC	3.77 (1.38)	4.38 (1.02)
Yogurt (O)	NC	4.54 (1.51)	4.74 (1.09)
	TC	4.19 (1.49)	4.54 (1.15)

Note: C = Conventional; O = Organic; NC = Nutrition Claim; TC = Taste Claim; Pi = Purchase intention; At = Attitude toward the ad

A mixed factorial ANCOVA with food category (unhealthy versus healthy) as within-subjects factor, claim type as between-subjects factor and attitude toward the ad as dependent variable resulted in no significant interaction effect between food category and claim type ($F(1, 193) = .186$, $p = .667$). Moreover, no significant interaction effects between the covariates age, gender, health consciousness and nutrition knowledge and the factors food category and claim type were found. All main effects were found to be nonsignificant and all the *F*-values are presented in table 5 in appendix D.

A similar design with food label (conventional versus organic) as within-subjects factor, claim type as between-subjects factor and attitude toward the ad as dependent variable resulted in no significant interaction effect between food label and claim type ($F(1, 193) = 2.031$, $p = .156$). In addition, no interaction or main effects were found. The *F*-values are presented in table 6 in appendix D.

A mixed factorial ANOVA with food category (unhealthy versus healthy) as within-subjects factor, claim type as between-subjects factor and attitude toward the ad as dependent variable did not result in a significant interaction effect ($F(1, 201) = .111$, $p = .740$) or main effect of food category. The resulting *F*-values are displayed in table 7 in appendix D.

A similar design with food label (conventional versus organic) as within-subjects factor, claim type as between-subjects factor and attitude toward the ad as dependent variable did not result in a significant interaction effect ($F(1, 201) = .055$, $p = .814$). However, a significant main effect of food label was found ($F(1, 201) = 7.144$, $p = .008$) across all combinations of food category and label. This result indicates that attitude toward the ad was more positive when ads contained an organic label than when they did not. In this case, no significant main effect of claim type was found ($F(1, 201) = 3.865$, $p = .051$). Table 8 in appendix D displays the *F*-values.

In sum, no interaction effects between food category and claim type or organic label and claim type were found. Therefore, H1-6 could not be supported or rejected.

4.3 Additional analyses

Independent-samples *t*-tests were performed to examine differences in taste perceptions, health perceptions, purchase intention, and attitude toward the ad by age, gender, health consciousness and nutrition knowledge. Tables 9-12 in appendix E include the *t*-values and significance levels for these independent analyses.

On average, men perceived the product from the chocolate ice cream ads as tastier than women ($t(201) = -3.690$, $p = .000$). Health consciousness showed some significant differences as well. Above average health conscious participants perceived the yogurt as tastier than below average health conscious participants did ($t(201) = 2.62$, $p = .009$). In addition, above average health conscious participants perceived the products with the organic label as tastier than below average health conscious participants did (($t(201) = 3.43$, $p = .001$).

Regarding health perceptions, above average health conscious participants perceived the conventional products as healthier than below average health conscious participants did ($t(201) = 3.189$, $p = .002$).

Participants also reported differences in purchase intention when evaluated by health consciousness. Health conscious participants were more likely to buy the

yogurt ($t(201) = 2.658$, $p = .009$). In addition, participants with more nutrition knowledge were more likely to buy the yogurt ($t(201) = 2.926$, $p = .004$).

Finally, participants reported differences in attitude toward the ad. Attitude toward the yogurt ads was more positive for above average health conscious participants than for below average health conscious participants ($t(201) = 2.017$, $p = .045$).

5. Discussion and conclusion

Prior literature found conflicting results with regard to the influence of product and claim type on advertising effectiveness. Relying on social adaptation, associative learning and expectancy-value, it was proposed that matching product and claim type is more effective than mismatching (Choi et al. 2012; Rossiter and Percy 1991). Relying on schema congruity theory, it was proposed that mismatching rather than matching product and claim type is more effective in advertising (Heckler and Childers 1992; Kim et al. 2009; Loef et al. 2001; Meyers-Levy and Tybout 1989). This study was aimed at resolving this inconsistency and finding evidence in support of one stream of literature. Chocolate ice cream and yogurt were selected to represent the perceived unhealthy and perceived healthy food types respectively. Nutrition and taste claims were selected to distinct claim type. In addition, a distinction in sustainability was made with conventional and organic foods by leaving out or adding an organic label.

The manipulation of product type is successful as the results show that the chocolate ice cream is distinctively perceived as tastier and less healthy than the yogurt across all ad combinations. This supports the result of Choi et al. (2012) that ice cream and yogurt differ significantly in their perceived healthiness and taste. The result further supports the unhealthy = tasty intuition put forward by Raghunathan et al. (2006). The manipulation of the level of sustainability provides mixed results. The products with the organic label are distinctively perceived as healthier but only one out of four results is significant. However, in three out of four product and claim type combinations, the products with the organic label are also perceived as tastier. Although these results are not significant, they might suggest that the derived healthy = less tasty intuition does not apply to organic foods and that both nutrition and taste claims could represent a match when they are used in organic food markets. Therefore, this result stresses the importance of examining the effect of claim type on advertising effectiveness in both conventional and organic food markets. Unfortunately, this study was not able to fully examine these potential differences because the manipulation of claim type was deemed unsuccessful. One of the reasons that the manipulation is unsuccessful could be that the information incongruency in the ads with a mismatch is too high. According to Heckler and Childers (1992), consumers are able to resolve inconsistencies when the degree of incongruence is

moderate. Resolving such incongruency leads to more favorable responses to the marketing communication. When the degree of incongruence is too high, consumers might not be able to resolve the information inconsistencies and consequently respond differently to the marketing communication. Another reason might be that the nutrition and taste claims are not believable. The claims having a mismatch with the product would most likely be perceived as unreliable. On the one hand, this possibility could have strengthened the mismatch effect. On the other hand, lack of claim believability could have resulted in ignorance of the claims when evaluating the ad, which could have caused an unsuccessful manipulation in turn. It is likely that the unsuccessful manipulation is the reason that all but one of the differences in perceived hedonism and utilitarianism between nutrition and taste claims are nonsignificant. In addition, these differences are not consistently bigger in favor of a match or mismatch with a product. Therefore, the proposed hypotheses cannot be accepted, nor rejected.

Nevertheless, some valuable insights may result from this study. First, the differences in purchase intention and attitude toward the ad across the product and claim type combinations, though not significant, suggest that significant differences could result if the claim type manipulation is successfully performed. Second, the significant main effect of claim type on purchase intention indicates that nutrition and taste claims influence participants' purchase intention differently. In this study, participants' purchase intention for ads with nutrition claims rather than taste claims was higher, illustrating the importance to make a distinction in claim types. Third, the result that attitude toward the ad is more positive for organic foods is in line with the Organic Industry Survey (2017) and Bhavsar (2017) in which it is argued that consumers' interest in organic food rises. As this development is expected to continue during the next years, it is important to both researchers and practitioners that research on organic food markets continues as well. Finally, this study provides some insights into whether the variables initially included as covariates are of importance when consumers make food choices. Age did not seem to be an important variable, contrary to Drolet et al. (2007) and Wansink, Cheney, and Chan (2003). Gender seems to be of importance as men perceived the chocolate ice cream as tastier than women. As taste could be considered an important part of purchase motivation, especially in the case of chocolate ice cream, this finding seems to contradict Wansink, Cheney, and Chan (2003) in which it was found that women prefer snack related comfort foods like chocolate and ice cream. However, the differences in taste reported in this study did

not translate into differences in advertising effectiveness in terms of purchase intention or attitude toward the ad. The finding that health consciousness influences taste perceptions, health perceptions, attitude toward the ad and purchase intention is in line with Dutta-Bergman (2005) as it indicates that health conscious consumers respond differently to health and nutrition information. Similar results could be expected for nutrition knowledge. However, only attitude toward the yogurt ads was significantly influenced by nutrition knowledge.

In sum, the main analysis and hypothesis testing did not provide satisfying results. The hypotheses could not be accepted or rejected, most likely due to an unsuccessful manipulation. However, some additional findings can help answering the problem statement. The central focus of this study was to answer the question how marketers can use taste and nutrition claims in advertising to make healthier and sustainable food products more appealing to consumers. Consumers evaluate products with nutrition claims better in terms of purchase intention than products with taste claims. Therefore, marketers can enhance advertising effectiveness by communicating nutrition information on their products.

The theoretical implications of this study are limited. Since none of the hypotheses could be accepted or rejected, the results neither support social adaptation theory, associative learning theory and the expectancy-value model, nor do they support schema congruity theory. They do support the theoretical and practical differential effect of product type category and advertising messages separately. Consumers respond differently to perceived unhealthy versus perceived healthy products, to conventional versus organic products, and to nutrition versus taste claims.

The insights from this study also have some practical implications. First, marketers should consider the type of claim they use when advertising a product. The findings from this study indicate that purchase intention is higher when nutrition claims are used than when taste claims are used. Attitude toward the ads with nutrition claims is also more positive. This result is particularly relevant when a product is offered that is familiar for both its taste and its nutritional value, since using either type of claim would be considered both a match and a mismatch. This is the case for organic foods as this study shows that the organic products score higher on both taste and health perceptions. Therefore, marketers of organic foods could increase advertising effectiveness by using nutrition claims instead of taste claims.

In addition to these practical implications, there are some societal implications. It is of crucial importance for society at large that consumers purchase and consume healthy and sustainable foods. This study provides marketers with an opportunity to make healthy and sustainable foods more appealing to consumers by using nutrition information in their marketing communications. This would benefit consumers, producers, the environment and society at large by improving health. It should be noted that the results of this study suggest that the same communications are effective in marketing unhealthy and less sustainable products. However, nutrition claims are only effective in the long term if they provide credible information, which makes them less suitable for products with little or no nutritional value. Along with the current food trends, this opens up opportunities for offering healthier alternatives which can benefit society at large as well.

Despite these academic, practical and societal contributions, this study has some limitations. Most of these limitations open up areas for further research. Since this study was not able to fully examine the potential differences of claim type on advertising effectiveness, more research is needed to solve the inconsistency regarding matching and mismatching effects. Furthermore, more research is needed to uncover the potential differences between conventional and organic food markets. This study has found differences between these markets, indicating that advertising organic food might be treated as a special case. The finding opens up an interesting area for further inquiry. Another limitation is that students are overrepresented in the sample. As a result, the findings might be limited to this population. Future research should use a more representative sample of the entire population. Finally, this study was conducted using an online questionnaire. This setting provided the researcher with little control over the experiment once the participants received the questionnaire. Future research could use a more controlled environment.

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7. Appendix

7.1 Appendix A: questionnaire items online experiment

General questions					
Age: 15-24; 25-34; 35-44; 45-54; 55-64; 65+					
Gender: man; woman					
Educational level: none; primary education; preparatory secondary vocational education; senior secondary vocational education and training; senior general secondary education; university preparatory education; universities of applied sciences; research universities; PhD					
Statements (Health consciousness)	**Level of agreement**				
	Totally disagree				**Totally agree**
I reflect about my health a lot	1	2	3	4	5
I am very self-conscious about my health	1	2	3	4	5
I am generally attentive to my inner feelings about my health	1	2	3	4	5
I am alert to changes in my health	1	2	3	4	5
I am usually aware of my health	1	2	3	4	5
I am constantly examining my health	1	2	3	4	5
I am aware of the state of my health as I go through the day	1	2	3	4	5
Nutrition knowledge questions (correct answers in bold)					
Saturated fats are usually found in: A. Vegetables and vegetable oils **B. Animal products like meat and dairy** C. Grain products such as bread and cereal D. None of the above E. Don't know					
Which kind of fat is more likely to raise people's blood cholesterol level? **A. Saturated fats** B. Polyunsaturated fats C. Both of them D. None of the above E. Don't know					
Which kind of fat is higher in calories? A. Saturated fats B. Polyunsaturated fats **C. They are both the same** D. None of the above E. Don't know					
Risk of high blood pressure is most likely to be reduced by eating a diet with: A. Less sugar					

B. More iron
C. More fiber
D. Less salt
E. Don't know

A gram of fat provides about… as many calories as a gram of protein.
A. One-half
B. Twice
C. Four times
D. Six times
E. Don't know

Vegetables, fruits, and grain products provide:
A. Complex carbohydrates
B. Dietary fiber
C. Both complex carbohydrates and dietary fiber
D. Neither complex carbohydrates or dietary fiber
E. Don't know

Which food group provides protein, B vitamins, iron, and zinc?
A. Meat, poultry and fish
B. Milk and dairy products
C. Fruits
D. Grain products such as bread, cereal, and rice
E. Don't know

Is cholesterol found in:
A. Vegetables and vegetable oils
B. Animal products like meat and dairy
C. All foods containing fat or oil
D. None of the above
E. Don't know

Randomly assigned to one of the following:
1. Conventional chocolate ice cream ad and organic yogurt ad with nutrition claim
2. Conventional chocolate ice cream ad and organic yogurt ad with taste claim
3. Organic chocolate ice cream ad and conventional yogurt ad with nutrition claim
4. Organic chocolate ice cream ad and conventional yogurt ad with taste claim

Then, for each ad:

Indicate how you perceived the product advertised

Tasteless	1	2	3	4	5	6	7	Tasty
Not enjoyable	1	2	3	4	5	6	7	Enjoyable
Unhealthy	1	2	3	4	5	6	7	Healthy
Not nutritious	1	2	3	4	5	6	7	Nutritious

Indicate your attitude toward the ad

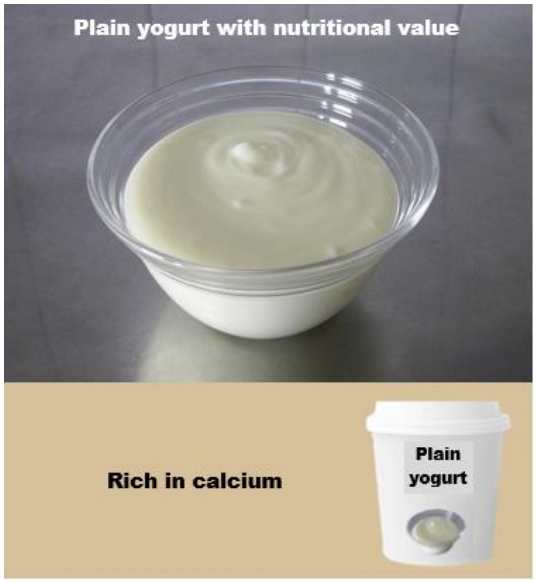
Bad	1	2	3	4	5	6	7	Good
Dislike	1	2	3	4	5	6	7	Like

Irritating	1	2	3	4	5	6	7	Not irritating
Uninteresting	1	2	3	4	5	6	7	Interesting
Unfavorable	1	2	3	4	5	6	7	Favorable
Indicate how likely it is that you purchase the product advertised								
Unlikely	1	2	3	4	5	6	7	Likely
Improbable	1	2	3	4	5	6	7	Probable
Impossible	1	2	3	4	5	6	7	Possible
Uncertain	1	2	3	4	5	6	7	Certain

Control question (correct answer in bold)
Did you see ads with? A. Granola bars and biscuits B. Potato chips and cereal **C. Chocolate ice cream and yogurt** D. Whole-wheat bread and cola

7.2 Appendix B: experimental ad stimuli

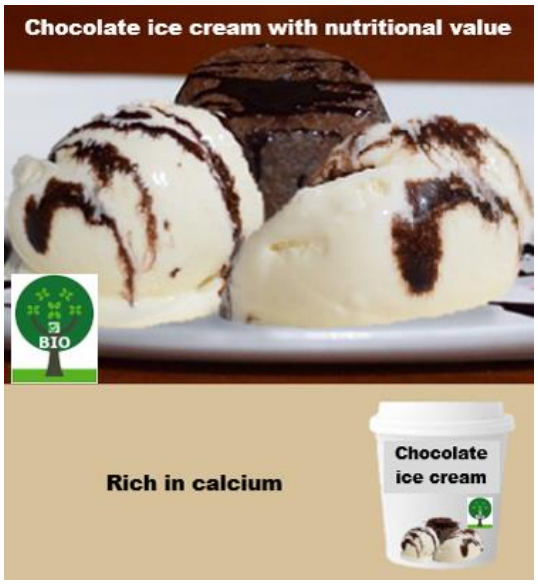
Chocolate ice cream
with nutritional claim



Plain yogurt
with nutritional claim

Chocolate ice cream
with taste claim

Plain yogurt
with taste claim



Organic chocolate ice cream
with nutritional claim

Organic plain yogurt
with nutritional claim

Organic chocolate ice cream
with taste claim

Organic plain yogurt
with taste claim

7.3 Appendix C: summary tables manipulation check

Table 3: Mean differences of taste and health perceptions between chocolate ice cream and yogurt

		Mean (SD)		
Product and claim	**Variable**	**Chocolate ice cream**	**Yogurt**	**t**
Conventional with nutrition claim	PT	5.00 (1.53)	3.73 (1.65)	4.00***
	PH	2.61 (1.29)	5.33 (1.18)	-11.03***
	N	49	51	
Organic with nutrition claim	PT	5.53 (1.16)	4.10 (1.45)	5.46***
	PH	3.00 (1.67)	5.65 (0.88)	-9.98***
	N	51	49	
Conventional with taste claim	PT	5.33 (1.25)	3.20 (1.46)	7.98***
	PH	2.31 (1.25)	4.94 (1.26)	-10.69***
	N	52	51	
Organic with taste claim	PT	5.20 (1.11)	4.00 (1.60)	4.42***
	PH	2.49 (1.27)	5.58 (1.04)	-13.53***
	N	51	52	

Note: PT = Perceived Tastiness; PH = Perceived Healthiness. The mean difference is significant at the level of $*p < 0.05$; $**p < 0.01$, $***p < 0.001$

Table 4: Mean differences of taste and health perceptions between conventional and organic products

		Mean (SD)		
Product and claim	**Variable**	**Conventional**	**Organic**	**t**
Chocolate ice cream with nutrition claim	PT	5.00 (1.53)	5.53 (1.16)	-1.96
	PH	2.61 (1.29)	3.00 (1.67)	-1.30
	N	49	51	
Yogurt with nutrition claim	PT	3.73 (1.65)	4.10 (1.45)	-1.21
	PH	5.33 (1.18)	5.65 (0.88)	-1.53
	N	51	49	
Chocolate ice cream with taste claim	PT	5.33 (1.25)	5.20 (1.11)	0.56
	PH	2.31 (1.25)	2.49 (1.27)	-0.74
	N	52	51	
Yogurt with taste claim	PT	3.20 (1.46)	4.00 (1.60)	-2.67**
	PH	4.94 (1.26)	5.58 (1.04)	-2.81**
	N	51	52	

Note: PT = Perceived Tastiness; PH = Perceived Healthiness. The mean difference is significant at the level of $*p < 0.05$; $**p < 0.01$

7.4 Appendix D: summary tables main analysis

Table 5: *F*-values mixed ANCOVA food and claim type

Factor	Purchase intention	Attitude toward the ad
Covariates:		
Age	1.146	0.563
Gender	1.647	2.086
Health consciousness	0.001	0.160
Nutrition knowledge	0.096	0.052
Main effects:		
Food type (A)	8.753**	7.196**
Claim type (B)	1.081	0.943
Interaction effects:		
A by B	0.067	0.186
Note: *df* = 1/193, the effects are significant at the level of *$p < 0.05$, **$p < 0.01$		

Table 6: *F*-values mixed ANCOVA claim type and food label

Factor	Purchase intention	Attitude toward the ad
Covariates:		
Age	0.005	0.183
Gender	0.504	0.113
Health consciousness	0.241	2.918
Nutrition knowledge	0.803	0.060
Main effects:		
Claim type (B)	1.081	0.943
Food label (C)	0.052	1.781
Interaction effects:		
B by C	1.453	2.031
Note: *df* = 1/193, the effects are significant at the level of *$p < 0.05$, **$p < 0.01$		

Table 7: *F*-values mixed ANOVA food and claim type

Factor	Purchase intention	Attitude toward the ad
Main effects:		
Food type (A)	0.141	0.318
Claim type (B)	4.093*	3.865
Interaction effects:		
A by B	0.389	0.111
Note: *df* = 1/201, the effects are significant at the level of *$p < 0.05$, **$p < 0.01$		

Table 8: *F*-values mixed ANOVA claim type and food label

Factor	Purchase intention	Attitude toward the ad
Main effects:		
Claim type (B)	4.093*	3.865
Food label (C)	0.287	7.144**
Interaction effects:		
B by C	0.552	0.055

Note: $df = 1/201$, the effects are significant at the level of $*p < 0.05$, $**p < 0.01$

7.5 Appendix E: summary tables additional analyses

Table 9: Mean differences of perceptions and dependent variables between age groups

		Mean (SD)		
Products	**Variable**	**25+ (N = 64)**	**15-24 (N = 139)**	**t**
Unhealthy	PT	5.39 (1.27)	5.21 (1.28)	0.95
	PH	2.61 (1.41)	2.60 (1.39)	0.06
	PI	4.04 (1.60)	4.24 (1.46)	-0.90
	AT	4.34 (1.04)	4.49 (1.08)	-0.93
Healthy	PT	3.89 (1.68)	3.69 (1.52)	0.84
	PH	5.42 (1.22)	5.35 (1.08)	0.41
	PI	4.13 (1.58)	4.13 (1.50)	-0.00
	AT	4.27 (1.29)	4.44 (1.16)	-0.96
Conventional	PT	4.52 (1.68)	4.22 (1.72)	1.16
	PH	3.81 (1.88)	3.80 (1.82)	0.05
	PI	4.07 (1.55)	4.14 (1.47)	-0.32
	AT	4.21 (1.24)	4.30 (1.15)	-0.51
Organic	PT	4.77 (1.65)	4.68 (1.42)	.364
	PH	4.22 (1.97)	4.15 (1.89)	0.23
	PI	4.10 (1.63)	4.23 (1.49)	-0.58
	AT	4.40 (1.09)	4.63 (1.07)	-1.44

Note: PT = Perceived Tastiness; PH = Perceived Healthiness; PI = Purchase Intention; AT = Attitude Toward The Ad.

Table 10: Mean differences of perceptions and dependent variables between women and men

		Mean (SD)		
Products	**Variable**	**Women (N = 126)**	**Men (N = 77)**	**t**
Unhealthy	PT	5.02 (1.34)	5.68 (1.04)	-3.69***
	PH	2.45 (1.23)	2.84 (1.61)	-1.84
	PI	4.03 (1.43)	4.42 (1.62)	-1.77
	AT	4.34 (1.07)	4.63 (1.04)	-1.89
Healthy	PT	3.77 (1.53)	3.73 (1.64)	0.187
	PH	5.30 (1.13)	5.49 (1.11)	-1.18
	PI	4.09 (1.53)	4.18 (1.51)	-0.39
	AT	4.36 (1.21)	4.42 (1.20)	-0.33
Conventional	PT	4.22 (1.68)	4.45 (1.76)	-0.938
	PH	3.62 (1.76)	4.10 (1.92)	-1.84
	PI	4.01 (1.46)	4.29 (1.54)	-1.27
	AT	4.21 (1.16)	4.38 (1.20)	-0.99
Organic	PT	4.56 (1.43)	4.95 (1.57)	-1.791
	PH	4.13 (1.91)	4.23 (1.92)	-0.36
	PI	4.12 (1.49)	4.31 (1.60)	-0.89
	AT	4.49 (1.10)	4.67 (1.03)	-1.14

Note: PT = Perceived Tastiness; PH = Perceived Healthiness; PI = Purchase Intention; AT = Attitude Toward The Ad. The mean difference is significant at the level of ***$p < 0.001$

Table 11: Mean differences of perceptions and dependent variables between health consciousness groups

Products	Variable	Mean (SD)		t
		Above average health consciousness (N = 105)	Below average health consciousness (N = 98)	
Unhealthy	PT	5.30 (1.26)	5.22 (1.30)	0.45
	PH	2.74 (1.62)	2.45 (1.09)	1.53
	PI	4.14 (1.53)	4.22 (1.49)	-0.36
	AT	4.42 (1.12)	4.48 (1.01)	-0.43
Healthy	PT	4.03 (1.61)	3.46 (1.48)	2.62**
	PH	5.39 (1.19)	5.36 (1.06)	0.21
	PI	4.40 (1.43)	3.84 (1.57)	2.66**
	AT	4.55 (1.19)	4.21 (1.20)	2.02*
Conventional	PT	4.29 (1.62)	4.34 (1.81)	-0.21
	PH	4.19 (1.89)	3.39 (1.68)	3.19**
	PI	4.16 (1.44)	4.06 (1.56)	0.48
	AT	4.34 (1.20)	4.20 (1.15)	-0.89
Organic	PT	5.05 (1.44)	4.35 (1.47)	3.43**
	PH	3.94 (1.99)	4.42 (1.80)	-1.79
	PI	4.37 (1.53)	3.99 (1.53)	1.78
	AT	4.62 (1.09)	4.49 (1.06)	0.84

Note: PT = Perceived Tastiness; PH = Perceived Healthiness; PI = Purchase Intention; AT = Attitude Toward The Ad. The mean difference is significant at the level of $*p < 0.05$; $**p < 0.01$

Table 12: Mean differences of perceptions and dependent variables between nutrition knowledge groups

Products	Variable	Mean (SD)		t
		Above average nutrition knowledge (N = 92)	Below average nutrition knowledge (N = 111)	
Unhealthy	PT	5.39 (1.24)	5.16 (1.30)	1.28
	PH	2.61 (1.49)	2.59 (1.32)	0.07
	PI	4.14 (1.54)	4.21 (1.49)	-0.33
	AT	4.40 (1.08)	4.48 (1.05)	-0.56
Healthy	PT	3.92 (1.60)	3.61 (1.54)	1.41
	PH	5.48 (1.10)	5.29 (1.14)	1.20
	PI	4.46 (1.50)	3.85 (1.48)	2.93**
	AT	4.56 (1.22)	4.24 (1.17)	1.88
Conventional	PT	4.41 (1.65)	4.23 (1.77)	0.78
	PH	4.04 (1.89)	3.60 (1.76)	1.71
	PI	4.21 (1.52)	4.04 (1.47)	0.81
	AT	4.37 (1.22)	4.19 (1.13)	1.03
Organic	PT	4.90 (1.53)	4.55 (1.44)	1.68
	PH	4.04 (2.01)	4.28 (1.83)	-0.88
	PI	4.39 (1.54)	4.02 (1.51)	1.74
	AT	4.59 (1.08)	4.53 (1.08)	0.41

Note: PT = Perceived Tastiness; PH = Perceived Healthiness; PI = Purchase Intention; AT = Attitude Toward The Ad. The mean difference is significant at the level of $**p < 0.01$

7.6 Appendix F: Research integrity form

Research Integrity Form - Master Thesis

Name: Mark Fluit	Student number: S4491998
RU e-mail address: m.fluit@student.ru.nl	Master specialisation: Marketing

Thesis title: **Advertising effectiveness in conventional and organic food markets** Is matching or mismatching product and claim types more effective?
Brief description of the study: The purpose of the thesis is to inform consumers about products that are healthy and sustainable in order to influence their consumption choices. The thesis examines how marketers can use taste and nutrition claims in advertising to make healthier and sustainable food products more appealing to consumers. Guided by conflicting results in prior literature, the study investigates whether a match or a mismatch between product and claim type is more effective. The study employs a 2 × 2 × 2 experimental design to compare the impact of a nutrition claim to the impact of a taste claim on different food types (perceived unhealthy versus perceived healthy) and different food categories (conventional versus organic). Respondents are gathered using an online questionnaire in which they were randomly assigned to the experimental conditions.

It is my responsibility to follow the university's code of academic integrity and any relevant academic or professional guidelines in the conduct of my study. This includes:

- providing original work or proper use of references;
- providing appropriate information to all involved in my study;
- requesting informed consent from participants;
- transparency in the way data is processed and represented;
- ensuring confidentiality in the storage and use of data;

If there is any significant change in the question, design or conduct over the course of the research, I will complete another Research Integrity Form.

Breaches of the code of conduct with respect to academic integrity (as described / referred to in the thesis handbook) should and will be forwarded to the examination board. Acting contrary to the code of conduct can result in declaring the thesis invalid

Student's Signature: m. fluit **Date:** 17-06-2018

To be signed by supervisor

I have instructed the student about ethical issues related to their specific study. I hereby declare that I will challenge him / her on ethical aspects through their investigation and to act on any violations that I may encounter.

Supervisor's Signature: _____ **Date:** 17-06-2018