



**Making Healthy Food Taste Better: The Effect of Healthy versus Hedonic Food Product
Claims on Consumers' Taste Perception and Purchase Intention**

Idyl Broeders (SNR: 2110246)

Tilburg University

Communication and Information Sciences

Businesscommunication and Digital Media

Dr. Frans Folkvord

Dr. Emmelyn Croes

June 2024

Acknowledgment

I thank everyone who supported and guided me while completing my master's thesis. I am deeply grateful to Dr. Frans Folkvord, my supervisor, for his invaluable assistance and advice throughout the research and writing process. His wise counsel and constructive critique were instrumental in shaping this thesis and helping me overcome challenges. Secondly, I would like to thank my second reader, Dr. Emmelyn Croes, for her valuable feedback. Lastly, I appreciate the love and support shown by my parents, Jan Broeders and Judith Nemezes, my brother, Thomas Broeders, and my partner, Wannes Gabriels. Your support and encouragement kept me going during the most challenging moments. I truly appreciate each of you for participating in this journey. This accomplishment would not have been achieved without your contributions.

With deep gratitude,

Idyl Broeders

Intellectual Property Statement

I state that all the content in this thesis is the outcome of my efforts. I have used Grammarly to aid with grammar, style, clarity, and correctness in my writing and Scribbr to create source references. Any other contributions, such as ideas, data, or text from various sources, have been appropriately cited and referenced according to academic standards.

Abstract

Many food options are available to customers in our contemporary, food-rich culture. Numerous medical professionals attribute the rise in obesity in Western societies to food manufacturers' marketing strategies, which frequently highlight less healthful food products. While highlighting a product's health advantages is becoming more popular, customers who value taste may not find this appealing, which might lead to a decline in sales. Policymakers, health activists, and marketers of healthier alternatives might gain important insights by analyzing the most successful strategies to promote harmful food products. The current study examined how customers' taste perceptions and purchase intentions toward healthy food products were affected by product claims (i.e., healthy vs. hedonic vs. control), considering the moderating influence of health consciousness. A between-subject experimental approach was utilized in this study, wherein 143 respondents were randomly allocated to either of the three conditions. When exposed to health claims, hedonic claims, or no claims, the participants assessed the taste of nuts, strawberries, and yogurt and their likelihood of purchasing. Health consciousness was examined to understand its impact on the link between product claims and the factors under investigation. The findings showed that health or hedonic claims did not significantly impact taste perception and purchase intentions. Nonetheless, health consciousness acted as a moderating factor; those less concerned with their health favored hedonic claims, while they slightly less impacted those more concerned about their health. The study also brought attention to the impact of education level, finding that although both groups still placed a more considerable value on sensory pleasure, higher levels of education were linked to a stronger propensity to buy healthier food products. These findings highlight the significance of customized marketing tactics that consider customer variances in health consciousness and education levels, which has significant ramifications for marketers and product manufacturers.

Keywords: product claims, healthy food products, taste perception, purchase intention, health consciousness.

Table of Contents

Abstract	3
1. Introduction	5
2. Theoretical Framework	9
2.1 Dual Process Theory	9
2.2 Unhealthy and Healthy Food Promotion	10
2.3 Taste Perception	11
2.4 Purchase Intention	12
2.5 Health Consciousness	13
3. Method	16
3.1 Experimental Design	16
3.2 Participants	16
3.3 Stimuli	17
3.4 Procedure	20
3.5 Measurements	21
3.5.1 Moderating Variable	21
3.6 Factor Analysis	22
4. Results	23
4.1 Randomization Check	23
4.2 Correlation Analysis	24
4.2.1 T-test	25
4.2.2 ANOVA	26
4.3 Multivariate Analysis of Covariance (MANCOVA)	26
4.3.1 ANCOVA Post Hoc Test	27
4.4 Explorative MANCOVAs	29
4.4.1 Gender	29
4.4.2 Age	29
4.4.3 Education Level	30
5. Discussion	31
5.1 General Findings	31
5.2 Practical Implications	34
5.3 Strengths, Limitations, and Future Research	36
6. Conclusion	39
Reference List	41
Appendix A – Randomization of Baseline Characteristics for Respondents	60

1. Introduction

Food marketers are among the most widely known product promoters through various media and promotional channels. They use marketing communications to affect consumers' thoughts and emotions, ultimately persuading their purchase decisions with advertising (Vakratsas & Amber, 1999). Studies demonstrate that food companies tend to promote calorie-dense foods, lacking important vitamins and minerals over nutrient-rich options (Cairns et al., 2009; Hawkes, 2008; Ludwig & Nestle, 2008). Namely, over 80% of food and beverage advertisements highlight fast food, sweetened drinks, candies, and unhealthy snacks high in fat and added sugar (APA, 2010). The food industry has facilitated unhealthy food options for consumers by failing to offer sufficient nutrition labeling, enlarging portion sizes, and making convenience foods more accessible (Handsley & Reeve, 2018; WHO, 2024). Chain fast-food restaurants, discounted processed meals, and persuasive advertising are examples of environmental factors encouraging consumers to choose a calorie-dense diet.

“Obesogenic environments” highlight various factors contributing to obesity and acknowledge the significant influence of environmental factors on individuals' unhealthy eating habits (Lake & Townshend, 2006, WHO). According to the World Health Organization (WHO), unhealthy diets are those established through heavy reliance on packaged convenience foods rich in sugar, salt, and fats but deficient in fruits and vegetables (2024). In contrast, Hu et al. (2013) suggest that a diet rich in seafood, vegetables, fruits, legumes, and nuts is associated with a lower risk of chronic illnesses. Obesity is a chronic, complicated condition characterized by excess fat accumulation, which can threaten one's overall well-being. Moreover, obesity can have adverse effects on bone health and reproductive functions and increase the likelihood of developing cardiovascular disease, diabetes type 2, and specific types of cancer (WHO, 2024). Since 1990, the global rate of obese adults has surpassed twofold, while the rate of teenage obesity has quadrupled (WHO, 2024). In total, 2.5 billion adults (i.e., those 18 years and above) were overweight in 2022. Eight hundred nine million of them were

obese at the time (WHO, 2024). The development of obesity treatments requires further research into practical dietary approaches.

The current global health crisis underscores the need to advocate healthy food choices by acknowledging the influence of environmental factors and experiences on consumers (DeCosta et al., 2017). Establishing an environment that offers accessible and healthier food options and opportunities for regular physical activity is essential to combat obesity (WHO, 2024). Governments, consumers, public health organizations, and other interest groups have advocated for healthy foods, leading to many manufacturers reforming their products and promoting them as healthier alternatives (De Magsitris & Gracia, 2014). For instance, employing the Healthy Food Promotion Model (Folkvord, 2019) can enhance consumers' comprehension of how healthy food promotion can shape their current and future eating choices. Most health promotion initiatives are based on cognitive decision frameworks that aim to enhance elements such as ability, attitude, knowledge, motives, and self-efficacy toward healthier eating habits or to educate and inform consumers about nutritious diets (Guthrie et al., 2015; Luca & Suggs, 2013; Pérez-Cueto et al., 2011; Roose et al., 2018; Thomson & Ravia, 2011; Truong, 2014; Wansink, 2015). However, Holdershaw et al. (2011) found that such motives may not always result in the desired outcome. While intentional actions are part of human actions, the dual process theory recognizes that most human behavior is spontaneous and influenced by the surrounding context (Bargh, 2002). Consequently, using tactics that prompt immediate reactions, either independently or in conjunction with other tactics, can enhance social marketing methods and expand their influence. More research is needed to understand how the Healthy Food Promotion Model insights can be used to influence both rational and non-rational decision-making for the design of successful health promotion initiatives. This is important given the disparities between consumers' perceptions of taste and health beliefs (Connors et al., 2001).

Nutritious food is often believed to be less appealing, less accessible, less enjoyable, and less satisfying compared to convenience foods (Breslin, 2013; Raghunathan et al., 2006; Suher et al., 2016). This may be because stimuli can trigger different goals depending on whether they are related to pleasure or health (Morewedge, 2010). Consumers are more likely to seek out and act on information relevant to the type of goal they are pursuing. Therefore, purchase intention may be influenced by primed objectives representing specific food products (i.e., healthy vs. hedonic) and personal goals (i.e., health vs. pleasure). Consequently, more health-conscious consumers tend to adopt healthy habits (Warde, 2003) and adhere to dietary guidelines more often (Thorogood et al., 1990). Thus, the goals toward pleasure and health tend to appeal to different target audiences.

The contrast between promoting food products that concentrate on pleasure versus health raises important questions about how consumers perceive and consider these products. The impact of hedonic promotion strategies on consumer taste perception, purchase intention towards healthy food products, and the effect of health consciousness in this area remains not fully understood. In a study by Bialkova et al. (2016), the researchers explored how customers' health motivation influences their future product evaluations and helps them differentiate between healthy and unhealthy items. However, the impact of this pleasure motivation on healthy food products remains uncertain. Therefore, the primary contribution is to shed light on the distinct effects of different food claims (i.e., healthy versus hedonic) on taste perceptions and purchase intention regarding healthy food products, categorizing consumers based on their level of health consciousness to understand potential differences in their behavior. It integrates insights from the dual process theory, the Reactivity of Embedded Food Cues in Advertising Model, and the Healthy Food Promotion Model to assess the effectiveness of strategies in promoting healthier dietary behaviors. The relationship examined in this study may enhance our comprehension of the complex interplay between environmental stimuli and consumer behavior. Therefore, the study hopes to provide further insight and contribute to effective health interventions. Ultimately, food

producers and marketers may use such findings to reexamine their promotion tactics toward nutritional and appealing food options (Cheney & Wansink, 2005).

The research questions of this study are, therefore, as follows:

RQ 1: How do product claims (i.e., healthy vs. hedonic) affect consumers' taste perception and purchase intention toward healthy food products?

RQ 2: To what extent does health consciousness moderate this effect?

The next chapter presents a comprehensive literature review of dependent, independent, and confounding variables when contrasted against existing theories. Chapter 3 will discuss the research methodology and experimental treatment designs. This will be followed by a description of the quantitative data analysis and a summary of the most significant findings in Chapter 4. Finally, Chapter 5 aims to provide conclusions about the research question posed at the beginning of this paper for future reference.

2. Theoretical Framework

2.1 Dual Process Theory

Social marketing has transitioned its focus toward influencing healthier consumer behavior with reasoned decision-making. As a result, social marketing efforts often overlook non-rational or instinctive behavioral patterns, particularly decisions made automatically. When making food choices, consumers tend to rely on both conscious decisions and automatic, subconscious impulses (Evans, 2006; Stanovich & West, 2002). The dual process theory by Kahneman and Tversky (1972, 1973) includes a variety of cognitive mechanisms relevant to informational and mental processes, social evaluations, and decision-making activities and acknowledges that food choices involve both conscious, thought-based decisions and impulsive, stimulus-driven responses (Köster, 2003; Köster, 2009; Neal et al., 2006; Strack & Deutsch; Wansink & Sobal, 2007; Wood et al., 2002). Given that up to 90% of food intake is believed to be based on an automatic process, the dual-process hypothesis should be carefully considered in nutrition (Cohen & Farley, 2008). Eating can occur unconsciously or uncontrollably (Moldovan & David, 2012).

Researchers have highlighted the need to acknowledge the automatic nature of human behavior and foster an environment that promotes healthier food choices without requiring conscious effort rather than advocating for strict rules and regulations (Marteau et al., 2012; Rozin et al., 2011). For example, consumers often make decisions based on time constraints and incomplete information, drawing assumptions from environmental signals and recollection of featured data (Kardes et al., 2004). Even without conscious awareness of their actions or motives, environmental alterations can subtly influence customers (Marteau et al., 2012). This underscores the potential impact of modifying surroundings to steer customers towards healthier food choices (Hoek & Jones, 2011; Wymer, 2011).

2.2 Unhealthy and Healthy Food Promotion

Research into whether promotional strategies can enhance the perceived value of healthy foods is a fascinating study area, especially considering the effectiveness of promoting unhealthy foods. The Reactivity to Embedded Food Cues in Advertising Model explains the fundamentals of marketing unhealthy food (Folkvord et al., 2016). This model proposes that advertising employs a two-step process where food-related stimuli prompt a physiological and psychological response to high-energy meals, establishing an association with eating habits. By conditioning food signals in advertisements, a core appetitive state is activated and changes eating behavior. This manipulation can weaken consumers' ability to consciously choose healthy foods, making them more susceptible to marketing tactics.

In addition, the Healthy Food Promotion Model, devised by Folkvord (2019), outlines how individuals' behaviors and food consumption can mutually influence one another. It aims to promote the consumption of nutritious foods and thereby improve dietary intake and overall health, with five underlying presumptions. First, healthy food marketing draws more attention to the need for a balanced diet. It elicits a hedonic response (i.e., enjoying it and being eager to try it) and makes people yearn for the meals. Second, it strengthens the relationship between nutritional intake and reciprocity. Thirdly, over time, this will result in greater consumption of healthy meals and the development of healthy eating habits. For instance, initially finding bitter beverages unappealing is expected due to the inherent disagreeableness of bitter tastes (Desor et al., 1975; Wardle & Cooke, 2008), yet many develop a liking for them later in life. Social norms influence the perception of certain meals as desirable, shaping individuals' preferences towards them (Stead et al., 2011). Ultimately, better health states will result from this habit's increased influence and longer duration of eating healthier foods, as evidenced by improvements in psychological and physiological factors like cravings, hunger, and mental well-being, as well as physiological ones like cholesterol, glucose tolerance, heart rate,

neurological activity, and inflammation levels. Together, these presumptions encourage healthier eating behaviors.

The Healthy Food Promotion Model (Folkvord, 2019) serves as a valuable tool for comprehending how people's eating habits are shaped and for promoting the adoption of healthy dietary practices, but it overlooks the presence of indulgent foods. Antonides and Cramer (2013) highlight that perceived health benefits of products often influence the decision-making process between nutritious and indulgent foods. Despite the logical preference for nutritious foods based on their nutritional value, consumers frequently prioritize immediate satisfaction over long-term health goals (Hoch & Loewenstein, 1991). This complex interplay between health consciousness and hedonic benefits highlights the intricate nature of consumer decision-making in food consumption and taste perception.

2.3 Taste Perception

Food marketers utilize taste perception (i.e., the expectations about the taste of a product) as a critical factor in shaping food preferences (Connors et al., 2001; Jacquier et al., 2012) by strategically leveraging the pleasurable effects of unhealthy food options (i.e., hedonic highlight) as a marketing tactic (Pettigrew, 2016). Pleasure, as highlighted by Krugelback and Berridge (2010), plays a vital role in human well-being, survival, and reproduction, driving individuals towards activities such as eating, influencing the brain's hedonic neuronal pathways and increasing the chances of survival and procreation (Kringelbach & Berridge, 2010). Pleasure as a tactic targets automatic processes and subtly increases food intake (Folkvord, 2019; Pettigrew, 2016). The complex and emotive enjoyment experienced from food consumption, rooted in ancestral preferences for energy-dense foods rich in sugar, salt, or fat due to historical food scarcity, evolved as a survival mechanism, conferring a selective advantage to those with access to high-energy foods (Holbrook & Hirschman, 1982; Dhar &

Wertenbroch, 2000; Sherwood et al., 1970). It appears that our food choices are often driven by intuitive rather than rational decision-making.

The lack of response to persuasive advertisements could be due to the subconscious nature of many eating decisions. This is because considerations of function and cognition typically influence healthy food choices (Cohen & Babey, 2012; Dhar & Wertenbroch, 2000). Consumers tend to make eating decisions subconsciously, prioritizing taste and appearance over nutritional value (Cramer & Antonides, 2011). Despite the well-known health benefits, many consumers are discouraged from choosing nutritious food because they mistakenly believe it lacks taste. (Dhar & Wertenbroch, 2000; (Lähteenmäki et al., 2010; Raghunathan et al., 2006; Roininen & Tuorila, 1999). Rather than solely highlighting the nutritional benefits, food marketers could attempt to increasingly emphasize the taste and appeal of these products to stimulate healthier choices. As a result, the following theory is put forth:

H1: Respondents exposed to healthy food products with a hedonic claim hold a more positive taste perception toward them than respondents exposed to healthy food products with a health claim.

2.4 Purchase Intention

A person's selection and thought process about food impact the food they purchase, prepare, or consume in various settings, including supermarkets, restaurants, vending machines, get-togethers, parties, and at-home snacking. Chandon and Wansink (2007) propose the selective accessibility concept that suggests consumers derive information about a product based on the connections they form between situational inputs and stored symbolic meanings or relevant experiences, which may originate from personal or socio-cultural factors. Because nutritional value is an intrinsic, knowledge-based feature compared to taste, which is an external automatic feature, consumers may not actively seek or process such information, especially amid time constraints and distractions during grocery shopping. Customers tend to look at a product category display for fewer than 12 seconds (Dickson &

Sawyer, 1990). This finding highlights the challenge of capturing consumers' attention. Although health considerations are important, most consumers lack the time or inclination to thoroughly examine nutritional content (Wansink & Sobal, 2007). Numerous studies explore how these factors can influence purchasing decisions (Rettie & Brewer, 2000). According to Raghunathan et al. (2006), disclosing health-related information about various food items resulted in a greater inclination towards foods with less health-related images, often classified as hedonic foods. Furthermore, consumers are dubious about healthy food items that make health claims (Verbeke et al., 2009). This leads to the formulation of the following hypothesis:

H2: Respondents exposed to food products with a hedonic claim hold a more positive purchase intention towards them than respondents exposed to healthy food products with a health claim.

2.5 Health Consciousness

Recognizing that consumers strive to purchase tasteful food choices, the rise of health-focused food options indicates a growing demand for healthier products. When making decisions about nutritious meals, health-conscious consumers consider their past health knowledge (Gould, 1988). Health-conscious individuals prioritize their well-being and adopt healthy habits to maintain or improve it (Becker et al., 1977; Kraft & Goodell, 1993; Newsom et al., 2005; Schifferstein & Ophuis, 1998). Despite the enduring appeal of indulgent foods, the expanding availability of health-conscious options reflects a growing interest in healthier choices. Individuals prioritizing their health tend to focus on maintaining and enhancing their well-being (Becker et al., 1977; Kraft & Goodell, 1993; Newsom et al., 2005; Schifferstein & Ophuis, 1998). They cultivate healthy behaviors informed by their health knowledge when making food-related decisions (Gould, 1988). Studies suggest that individuals who prioritize their health (e.g., consuming a diet rich in fruits and vegetables and exercising regularly) are likelier to engage in health-promoting behaviors (Iversen, 2006). Furthermore, research shows that consumers' decisions to purchase packaged foods and other food items are heavily influenced by their perception of food healthfulness, especially among those who

understand the link between nutrition and wellness (Huang & Lu, 2015; Ares & Gámbaro, 2007; Ragaert et al., 2004; Urala & Lähteenmäki, 2006).

In addition, research suggests that more health-conscious individuals tend to rely less on heuristic clues and make healthier food choices based on their personal goals (Mai & Hoffmann, 2012). How healthy food products are presented can be important in attracting health-conscious consumers. Textual information can help convey the product's benefits and highlight evaluative connections that support self-control (Amit et al., 2015). Less health-conscious consumers may be more influenced by cues that aid their assessments and rely on taste-based judgment when choosing food.

Furthermore, studies indicate that a better understanding of the goal-oriented aspects of food cues can be cultivated through thorough examination (Carnevale et al., 2014). Consumers making decisions based on informative cues instead of solely relying on heuristic cues are more sensitive toward health-related claims (Mai & Hoffmann, 2012; Mai & Hoffmann, 2015). Consequently, they are likelier to use such claims as a foundation for conclusions (Mai & Hoffmann, 2012). These findings suggest that more health-conscious individuals evaluate food products based on their health knowledge and attitudes rather than product cues. Subsequently, the following hypotheses are proposed:

H3: Health consciousness moderates the effect of the type of promotion approach (i.e., healthy or hedonic) on respondents' taste and purchase intention.

To be more explicit,

H3a: Respondents exposed to healthy food products with a hedonic claim hold a more positive taste perception towards them than respondents exposed to healthy food products with a health claim, which will be weaker for more health-conscious respondents compared to less health-conscious respondents.

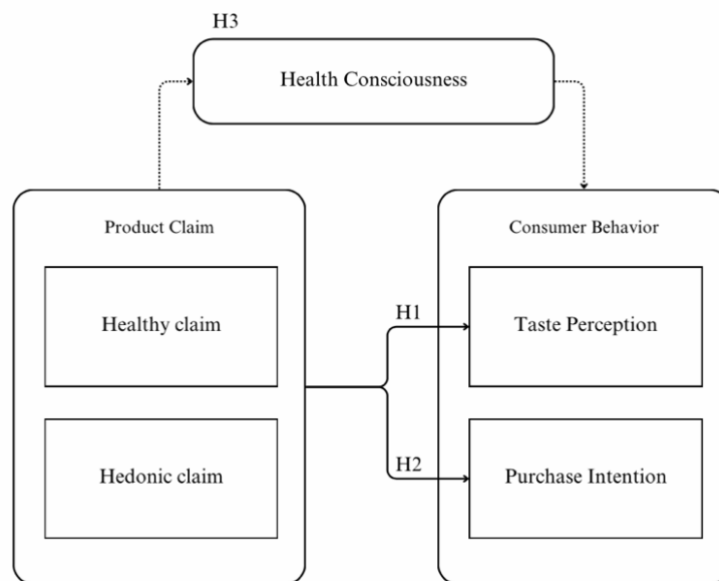
H3b: Respondents exposed to healthy food products with a hedonic claim hold a more positive purchase intention towards them than respondents exposed to healthy food products with a healthy

claim, which will be weaker for more health-conscious respondents compared to less health-conscious respondents.

For the conceptual framework, see Figure 1.

Figure 1

Conceptual Framework



Note. The dashed-dotted lines represent the moderation effect.

3. Method

3.1 Experimental Design

To test the study's hypotheses, a between-subject design was conducted using one factor and three levels. This study investigated whether a claim approach for a healthy food product (i.e., healthy vs. hedonic vs. control) influences participants' taste perception and purchase intention. Health consciousness (i.e., low vs. high) was expected to reduce the impact of the connection between independent and dependent variables. The experimental factor had three conditions differing in the approaches to food claims.

3.2 Participants

A power analysis using an ANOVA was conducted to assess the necessary sample size adequacy for detecting differences in mean scores among the three groups. The calculated sample size was 179 respondents ($F = .25$, $\alpha = .05$, Power = .80). Initially, 185 individuals responded to the experiment. Before the analysis, checks were performed for straight liners (i.e., individuals responding identically to all scale questions) and input errors. No straight liners were identified, but eight input errors were found for the 'age' variable. Additionally, nine respondents did not complete the experiment and were consequently excluded from the data, while 25 participants failed the manipulation check. Therefore, this drop in respondents may restrict the broad applicability of the initial results. Among the remaining 143 respondents, 50 were assigned to the healthy claim condition (35%), 40 to the hedonic claim condition (28%), and 53 to the control condition (37%). Of the total, 82 were women (57%), and 61 were men (43%). The average age was 46 ($SD = 162.6$). Additionally, 113 participants (79%) possessed a higher education level (i.e., HBO or higher), whereas 30 respondents (21%) had attained a lower education level (i.e., high school or MBO).

3.3 Stimuli

The experiment displayed three visually identical conditions presenting a healthy food product to investigate the effect of product claim approaches (i.e., healthy vs. hedonic vs. control) on consumers' taste perception and purchase intention. For this study, nuts, strawberries, and yogurt were chosen as drivers for the claims. The first condition exposed participants to the three products with health claims. Inversely, in condition 2, the products have a hedonic claim. In condition 3, the products do not have a claim at all. The healthy claims represented the healthy ingredients one benefits from when eating the product (e.g., 'Naturally rich in phosphorus'), whereas the hedonic claim represented the pleasant feeling of the senses when eating the product (e.g., 'A delicious, bittersweet taste'). The claims were translated into Dutch and are shown in Table 1. The three products were arranged on supermarket shelves to give respondents the impression that they were shopping for groceries. A storyline was created and positioned over each stimulus image to intensify this impression. "Imagine you are buying groceries in a supermarket because you want to purchase some products" is the scenario that will be presented. "These goods are found at the supermarket. Please carefully review the product and respond to the following questions." The nine photos utilized for the three circumstances in this study are displayed in Table 2.

Table 1

Selected Drivers and Claims

Driver	Health Claim	Hedonic Claim
1. Nuts	'Van nature rijk aan fosfor' (‘Naturally rich in phosphorus’)	'Een heerlijke bitterzoete smaak' ('A delicious, bittersweet taste')
2. Yogurt	'Van nature een bron van eiwit' (‘Naturally a source of protein’)	'Vol en romig van smaak' (‘Full bodied and creamy’)

3. Strawberries	‘Rijk aan vitamine C en foliumzuur’ (‘A rich in vitamin C and folic acid’) and ‘Een frisse volzoete smaak’ (‘A fresh, full-sweet taste’)
-----------------	--

Table 2

Material Stimuli for Each Condition



Condition 1: Health Claim
Walnuts

Condition 1: Health Claim
Yogurt

Condition 1: Health Claim
Strawberries



Condition 2: Hedonic Claim
Walnuts

Condition 2: Hedonic Claim
Yogurt

Condition 2: Hedonic Claim
Strawberries



Condition 3: Control Walnuts	Condition 3: Control Yogurt	Condition	3:	Control
		Strawberries		

Nuts were chosen because this type of food can be seen as a snack or used in all sorts of recipes. Nut consumption is still below recommended levels despite established health advantages. For instance, the Global Burden of Disease Study 2017 discovered that, although 21 grams of nuts and seeds should be consumed daily, only 12% of this amount was consumed worldwide (Afschin et al., 2019). Nonetheless, it is vital to include nuts in a balanced diet because they have been related to a lower risk of obesity and overweight (Esmali et al., 2019). Furthermore, it was shown that, in many countries, limited consumption of seeds and nuts was one of the primary risk variables for dying and years of life adjusting for disabilities (Willett et al., 2019). People must alter their lifestyles by consuming more nuts, other nutrient-dense foods, and behavioral modifications to prevent health issues and illnesses.

Strawberries were chosen because the abundance of bioactive substances, such as folate, vitamin C, phenolic elements, and significant antioxidant properties, makes them a nutritious option (Proteggente et al., 2002). Additionally, strawberries are commonly consumed either whole or processed, such as in jams, fruit juices, and sauces. They are in the group of fruit that have been examined the most in terms of nutrition because of their economic and commercial significance.

Yogurt was selected because of its diverse range of nutrients, which function in a complementary or synergistic manner to promote health. According to Chen et al. (2014), yogurt intake has been shown to have preventive benefits against some diet-related disorders, including diabetes. Furthermore, it was demonstrated that preserving the quality of antioxidants throughout digestion enhanced the dairy matrix's antioxidant activity (Lamothe et al., 2014).

Together, this set of products reflects diverse health and hedonic claims carriers. The claims were based on the subscription provided by Albert Heijn, the supermarket selling these products. A pretest

determined whether participants perceived the chosen products as healthy. 32 respondents were presented with the three products and asked to rate the perceived healthiness of each item on a five-point Likert scale. The results indicated that all products were universally perceived as healthy as most participants chose the (strongly) agree option (nuts = 76%; strawberries = 93%; yogurt = 83%).

3.4 Procedure

Participants were recruited to participate in the study through convenience and snowball sampling using social media platforms like LinkedIn, Instagram, Facebook, and WhatsApp. The survey was designed using Qualtrics, an online survey tool. Before starting the survey, participants were required to read a brief introduction explaining the study's expectations. Additionally, they were informed about the duration of the questionnaire and that their answers remained unidentified and would not be shared with other parties. No other personal data was collected besides gender, age, and educational level. Afterward, the questionnaire asked them to provide consent and start the survey. Random assignment placed respondents into one of three conditions.

At the start of the survey, respondents were asked several demographic questions concerning their age, gender, and education level. The demographic questions featured a "required response" to prompt respondents to provide input. The response choice "prefer not to say" was included to offer respondents more comfort in not answering these questions. After reading the scenario and looking at the three product photos, respondents were asked to rate the taste of nuts, yogurt, and strawberries and whether they would consider purchasing them. Apart from that, they were also asked about their general health consciousness.

After completing the scale items for taste perception, purchase intention, and health consciousness, a manipulation check question was posed: "Did you notice any description on the food packages?" with "yes" and "no" for responses. If respondents selected "yes," a follow-up task asked them to "explain what the additional description mentioned."

Following that, respondents were thanked for their participation. They were not informed about the study's purpose at the end because they could discuss it with each other, which may affect the study's validity. However, an email address was listed at the end of the questionnaire, which respondents could mail if they wanted to receive more information about the study's purpose afterward.

3.5 Measurements

Two constructs were developed to assess how the different advertising strategies affected consumers' perceptions of taste and purchase intentions. In line with Roininen (1999), five items were used to evaluate the dependent variable: taste perception. The scale showed satisfactory reliability (Cronbach's $\alpha = .74$). The following questions were to be answered by respondents: "I believe these products look tasty," "I believe I can appreciate the taste of these products," "I value the products' health more than their taste," "These products taste better than other products," and "I consider flavor important when buying food." A five-point Likert scale, from strongly agree to disagree strongly, was used to rate each of the five questions.

Five questions in line with Baker and Churchill's (1977) purchase intention scale were used to measure purchasing intention. "I am interested in trying these products," "If I see these products at the supermarket, I would want to purchase them," "I find these products appealing," "I would suggest these products to others," "I am willing to purchase these products," and "I think these products are desirable" are the questions that participants must respond to. A five-point Likert scale, from strongly agree to disagree strongly, was used to rate each of the five questions, displaying a strong reliability (Cronbach's $\alpha = .90$).

3.5.1 Moderating Variable

The study's moderator is health consciousness. Five items based on Roininen (1999) were used to measure this variable, showing strong reliability (Cronbach's $\alpha = .88$). The following statements

were required of participants to respond to: “I am concerned about the healthiness of food,” “I eat a nutritious, well-balanced diet,” “It matters to me that I consume a diet rich in vitamins daily,” “I eat anything I want, and I am not concerned about the healthiness of the food,” and “Whether or if snacks are healthful does not matter to me.” A five-point Likert scale, from strongly agree to disagree strongly, was used to rate each of the five questions.

3.6 Factor Analysis

A factor analysis demonstrated strong construct validity for the measurement scales. Using a Varimax Rotation, the exploratory factor analysis (Principal Axis Factoring) revealed a factor structure that is consistent and closely linked to theoretical frameworks. Bartlett’s test of sphericity produced significant results for all three measurement scales (taste perception: $X^2(10) = 165, p < .001$; purchase intention: $X^2(10) = 165, p < .001$; health consciousness: $X^2(10) = 491, p < .001$), and the data was considered suitable for factor analysis based on the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, with values of .78 for taste perception, .89 for purchase intention, and .76 for health consciousness.

The Scree Point inflection point recommended retaining 1 factor, which was further supported by the Kaiser criterion (i.e., only 1 factor with an Eigenvalue larger than 1), accounting for 40.0% of the total variance for taste perception, 60.5% for purchase intention, and 61.3% for health consciousness. The factor loadings were robust, with all items loading above 0.40 on their respective factors, and no significant cross-loadings were observed, confirming the scale’s discriminant validity.

4. Results

The research employed Jamovi to explore the intricate relationship between customers' taste perceptions, purchase intentions, and product claims as important variables while also considering health consciousness. This study aimed to shed light on the complex factors that impact consumers' decision-making processes using correlational, comparative, and multivariate analyses.

The study ensured that the respondents were thoroughly randomized through a comprehensive assessment. They also investigated the correlations between age, health consciousness, purchase intention, and taste perception. Additionally, the research delved into the impact of demographic variables such as gender and level of education. ANOVA was utilized to evaluate the influence of education level on these consumer characteristics, while t-tests were used to scrutinize gender differences in taste perception and purchase intention.

A MANCOVA was used to examine the complex connection between product claims and consumer perceptions, considering potential confounding variables. Controlling for health consciousness, this method helps identify product claims' impact on taste perception and purchase intention. Additionally, a series of exploratory MANCOVAs was conducted to understand better how demographic factors impact the primary effects.

4.1 Randomization Check

A randomization check was performed to compare how the initial characteristics of age, gender, and education level were spread over the health claim, hedonic claim, and control claim conditions. According to the data in Appendix A, the randomization checks did not uncover any statistically significant age or educational level discrepancies across the conditions. This indicates that randomization effectively created similar conditions; therefore, any previous differences should have less effect on the study outcomes. Nevertheless, the gender distribution characteristics revealed significant divergence in the data ($X^2 = 13.62, p = .001$), so that relative to the control claim ($N = 20$),

the health claim ($N = 33$) and hedonic claim ($N = 29$) conditions contained a greater proportion of females and the health claim ($N = 17$) and hedonic claim ($N = 11$) conditions contained a greater proportion of males than the control condition ($N = 33$). It suggested that the randomization did not assign the patient gender equally, which biased the result by more gender distinction than the treatment itself.

4.2 Correlation Analysis

A Pearson correlation analysis explored the connections between taste perception, purchase intention, product claims, health consciousness, and the demographic factor of age. Understanding these correlations lays the groundwork for additional investigations and provides insight into the underlying relationships among these factors. The results are available in Table 3.

Table 3

Correlation Matrix for Taste Perception, Purchase Intention, Product Claim, and Health Consciousness

	Taste Perception	Purchase Intention	Health Consciousness	Age
Taste Perception	-	$r = .67$	$r = .21$	$r = .07$
	-	$p < .001^{**}$	$p = .01^{**}$	$p = .40$
Purchase Intention	$r = .67$	-	$r = .30$	$r = .06$
	$p < .001^{**}$	-	$p < .001^{**}$	$p = .51$
Health Consciousness	$r = .21$	$r = .30$	-	$r = .00$

	$p = .01^{**}$	$p < .001^{**}$	-	$p = 1.00$
Age	$r = .07$	$r = .06$	$r = .06$	-
	$p = .40$	$p = .51$	$p = .46$	-

Note: * Significant at $p < 0.05$; ** Significant at $p < 0.01$.

Many important findings arise from this analysis. This means that when taste ratings increase, purchase likelihood increases ($r = 0.67, p < .001$). Health consciousness and taste perception are significantly associated ($r = 0.21, p = .01$), indicating that better-tasting food is linked with greater health awareness. Besides this, a significant positive relationship exists between purchase intention and health consciousness ($r = 0.30, p < .001$), suggesting that more people will buy a product if they think it is healthy for them to do so. Therefore, these results are important for understanding factors affecting purchase intentions based on taste perception and those informed by health consciousness. On the other hand, no significance was found within the sample group regarding the relationships between age and concepts such as taste perception, purchase intention, and health consciousness. This suggests that these variables are not dependent on the age of the participants in this study.

4.2.1 T-test

This study used an independent samples *t*-test to examine differences in taste perception, purchase intention, and health consciousness between the two genders. The results indicated a significant difference in taste perception, showing that males are less sensitive to taste than females ($t(141) = 2.20, p = .03, \text{Cohen's } d = 0.37$). On the other hand, no significant difference was found for purchase intention ($t(141) = 0.84, p = .39, \text{Cohen's } d = 0.15$) or health consciousness ($t(141) = 0.75, p = .46, \text{Cohen's } d = 0.13$) meaning that males and females judged them equally. These findings provide valuable insights into gender-specific consumer preferences.

4.2.2 ANOVA

An ANOVA was conducted to examine whether education level affected taste perception, purchase intention, and health consciousness. The results revealed that taste perception ($F(1) = 0.33$, $p = .57$), purchase intention ($F(1) = 1.42$, $p = .24$), and health consciousness ($F(1) = 0.45$, $p = .51$) were not significantly affected by the level of education, indicating that low and highly educated respondents were equally perceiving and judging the conditions.

4.3 Multivariate Analysis of Covariance (MANCOVA)

To investigate the effects of product claims on taste perception and purchase intention while controlling for health consciousness, a Multivariate Analysis of Covariance (MANCOVA) was conducted. MANCOVA allows for the simultaneous analysis of multiple dependent variables.

Before conducting the MANCOVA, preliminary assumptions were thoroughly evaluated. These encompassed assessments for multivariate normality, homogeneity of variance-covariance matrices, linearity, and independence. The data did not satisfy the assumptions of multivariate normality and homogeneity of variance-covariance matrices as indicated by the Shapiro-Wilk test ($W = 0.95$, $p > .001$) and the Box's M test ($M(6) = 24.92$, $p < .001$), respectively. Given the multivariate normality assumption violation, caution should be exercised when interpreting the robustness of the MANCOVA results. Furthermore, the violation of the homogeneity of variance-covariance matrices assumption suggests potential issues with the equality of variances across groups, which could impact the validity of the results. Linearity was confirmed through visual inspection of scatterplots, revealing linear relationships within the data. Additionally, due to the nature of the data collection process, the independence assumption was presumed to be upheld.

The multivariate test findings indicated that there was no significant main effect of food claims on the combined dependent variables taste perception and purchase intention, as evidenced by Pillai's Trace value of 0.06, $F(4, 278) = 2.07$, $p = .09$. These results suggest that food claims did not have a

statistically significant impact on the overall pattern of responses related to taste perception and purchase intention. Consequently, it can be concluded that H1 and H2 did not receive support from the data.

Conversely, the analysis revealed that health consciousness significantly impacted product claims on the combined dependent variables, with Pillai's Trace at 0.09, $F(2, 138) = 3.57$, and $p = .002$. After adjusting for health consciousness, the between-subject effects revealed that product claims significantly influenced taste perception ($F(1) = 6.17$, $p = .01$) and purchase intention ($F(1) = 13.0$, $p < .001$). This indicates that the product claim (i.e., healthy, hedonic, control) greatly influences taste perception and purchase intention after adjusting for health consciousness. This suggested that marketing methods highlighting various product claims could influence customers' taste perception and purchase intentions, especially when targeting health-conscious consumers.

4.3.1 ANCOVA Post Hoc Test

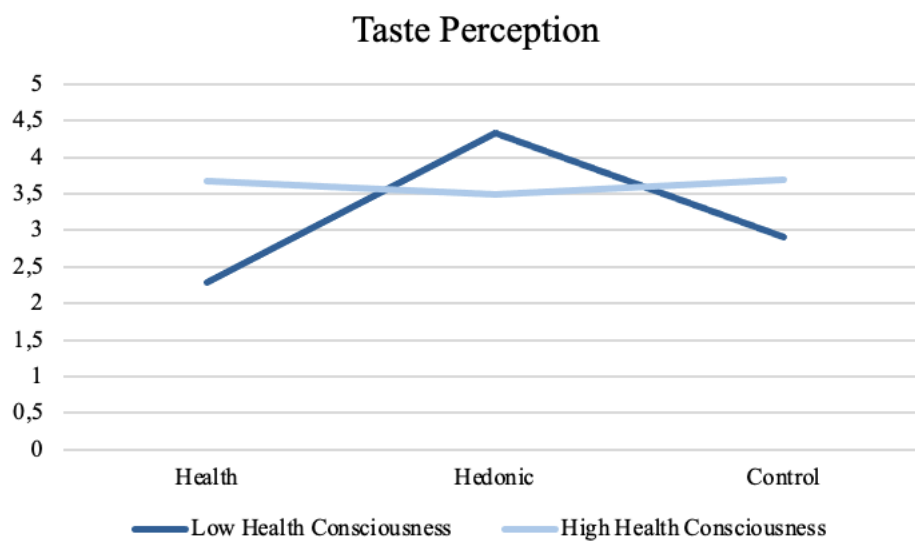
A Bonferroni post hoc test was conducted to analyze the differences between the different levels of the product claims conditions (i.e., health, hedonic, control). This test was done in response to the significant findings of the multivariate MANOVA, which looked at how product claims affect taste perception and purchase intention while considering health consciousness. To further explore the impact of product claims on taste perception and purchase intention, a two-way Analysis of Covariance (ANCOVA) was conducted, considering the moderating effect of health consciousness. This approach was chosen because Jamovi, the software used, does not offer a post hoc test for MANCOVA (Jamovi, 2022).

For taste perception and purchase intention, pairwise comparisons revealed a significant difference between the health and hedonic conditions (taste perception: $p = .05$, purchase intention: $p = .05$), with higher taste perceptions and purchase intentions reported for products with a hedonic claim than health. No significant differences were observed between the health and hedonic conditions

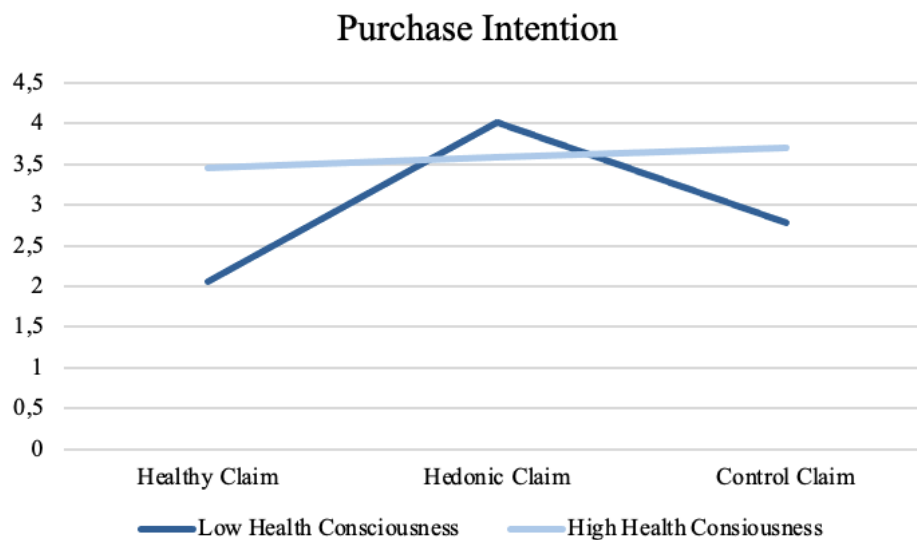
compared to the control condition. The findings suggest that product claims significantly influence taste perception and purchase intentions, with products labeled as hedonic eliciting more favorable responses than healthy ones. Figure 2 shows that individuals with lower health consciousness highly preferred healthy food products with a hedonic claim ($M = 4.34$, $SD = 0.47$) compared to those with a health claim ($M = 2.26$, $SD = 1.05$). This difference was more extensive compared to more health-conscious individuals, who rated healthy claims as slightly better tasting (health: $M = 3.68$, $SD = 0.53$) than those with a hedonic claim (hedonic: $M = 3.50$, $SD = 0.46$). Therefore, these findings offer partial support for H3a.

Figure 2

Taste Perception Measures for Level of Health Consciousness



Compared to the participants exposed to the health claim, those exposed to food products with a hedonic claim showed a greater inclination to purchase the food products. Figure 3 illustrates that this preference for food products with hedonic claims was more pronounced among those with lower health consciousness (health: $M = 2.05$, $SD = 0.91$, hedonic: $M = 4.02$, $SD = 0.53$) compared to those with higher health consciousness (health: $M = 3.58$, $SD = 0.54$, hedonic: $M = 3.45$; $SD = 0.83$). These findings provide support for hypothesis H3b.

Figure 3*Purchase Intention Measures for Level of Health Consciousness*

Overall, the MANOVA results provide evidence for the significant main effects of health consciousness on taste perception and purchase intention.

4.4 Explorative MANCOVAs

While correlation analyses help identify relationships, MANCOVA allows for the simultaneous evaluation of multiple dependent variables while controlling for the effects of covariates. Specifically, we are examining how age, gender, and educational attainment moderate the relationship between product claims and consumers' perceptions of taste and purchase intentions.

4.4.1 Gender

A MANCOVA was performed for the variable of gender, and it was found that gender did not yield any significant results: Pillai's Trace = 0.04, $F(2, 136) = 2.86$, $p = .06$. This suggests that gender did not affect taste perception and purchase intention.

4.4.2 Age

An additional exploratory MANCOVA analysis was conducted to explore age's effects on product claims, taste perception, and purchase intention. Results showed that for age, there was no

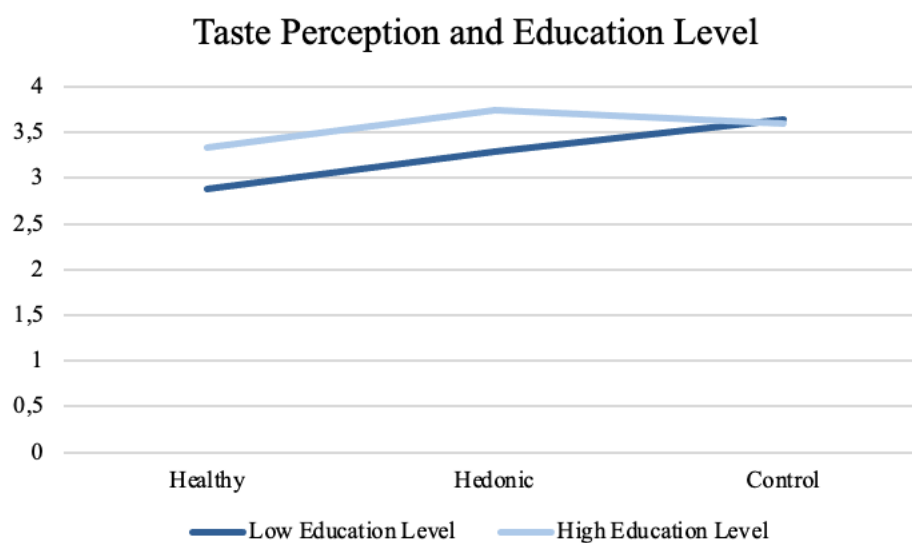
statistically significance association (Pillai's Trace = 0.008, $F(2, 138) = 0.58$, $p = .56$), indicating that age did not affect taste perception and purchase intention.

4.4.3 Education Level

A third exploratory MANOVA was performed for the combined dependent variables of taste perception and purchase intentions. Education level (i.e., low vs. high) had an effect, Pillai's Trace = 0.19, $F(12, 252) = 2.24$, $p < .01$. This implies that education levels can influence consumers' taste perceptions and purchase intentions. A follow-up univariate analysis controlling for education level also supported an association between product claims and purchase intention ($F(6) = 2.10$, $p = .05$). Product claims influence purchase intention regardless of educational level. Figure 4 shows that highly educated consumers are more prone to purchase healthy food products; the hedonic appeals are preferred ($M = 3.74$, $SD = 0.54$) compared to the healthy ones ($M = 3.33$, $SD = 1.00$). Conversely, respondents lower in education displayed overall lower purchase intentions and higher preference for hedonic claims ($M = 3.29$, $SD = 0.52$) relative to healthy claims ($M = 2.88$, $SD = 0.73$).

Figure 4

Purchase Intention Measures for Education Level



5. Discussion

Despite the availability of various health promotion programs, many consumers still unconsciously tend to choose unhealthy food options, as discussed by Dhar and Wertenbroch (2000). The mistaken belief that nutrient-dense foods lack taste discourages many individuals from opting for healthier alternatives (Lähteenmäki et al., 2010; Raghunathan et al., 2006; Roininen & Tuorila, 1999). The current study investigated how different food claims (i.e., healthy vs. hedonic) affect consumers' taste perceptions and purchase intentions toward healthy food products. In addition, consumers were segmented based on their levels of health consciousness to gain a deeper understanding of potential variations in consumer behavior. The hypotheses suggested that hedonic claims would positively impact consumers' perceptions of taste and purchase intentions but would have a lesser effect on highly health-conscious customers. However, the study results did not fully support these hypotheses.

5.1 General Findings

Contrary to hypothesis H1, which suggested that product claims (i.e., health vs. hedonic) would significantly influence customers' taste perception, the results showed that neither claim had a noticeable impact on consumers' taste perception. This indicates that consumer evaluations of a product's taste may be less affected by marketing claims than what the Reactivity to Embedded Food Cues in Advertising Model suggests. The model emphasizes the significant influence of product claims on consumers' attitudes and perceptions. Additionally, Wansink and Park (2002) and Aaron et al. (1994) found that claims and labeling considerably affected individuals' taste perceptions. Conversely, the current study's results do not align with these findings, casting doubt on how much claims and labeling may significantly impact consumers' taste perception. This is consistent with a subset of existing literature highlighting the complexity of taste perception in response to marketing claims. Previous studies have suggested that taste perception might be an important factor in diet food selection and preference (Connors et al., 2001; Neumark-Sztainer et al., 1999). It has often been noticed that consumers are reluctant to compromise taste for health advantages (Verbeke, 2006). This suggests that

taste holds a substantial intrinsic value that may override external product promises, potentially contributing to the variations in the study's outcomes. As a consequential and direct sensory experience, taste can transcend biases arising from external assertions. Consumers may rely more on their immediate sensory experiences when evaluating taste rather than external information. Furthermore, the null effect observed in the study may be attributed to individual variability, encompassing differences in past experiences, personal preferences, and levels of skepticism.

In addition, the current study's findings suggest that product claims do not significantly impact purchase intentions, contradicting H2. This indicates that factors other than marketing claims may influence customers' intent to purchase. These results differ from research by Enneking et al. (2007), Delgado et al. (2013), and Ballco et al. (2020), which showed that product claims do have a significant influence on consumers' purchase decisions. Multiple research findings have suggested that assertions concerning nutrition and health may result in unfavorable consumer assessments and decreased intentions to buy products. (Aschemann-Witzel & Grunert, 2015; Bialkova et al., 2016; Lähteenmäki, 2013; Lähteenmäki et al., 2010; Mauback et al., 2014; Orquin & Scholderer, 2015). Some studies suggest that consumers' perceptions of a product's expected enjoyment may be influenced by healthy claims (Wardle, 2000), potentially resulting in decreased purchases (Berning et al., 2010; Bialkova et al., 2016; Kiesel & Villas-Boas, 2013). Although this is inconsistent with the study's findings, other research indicates that the impact of product claims on purchase intentions might be less significant than previously thought. For instance, Fenko et al. (2016) and Verbeke (2006) discovered that factors such as product quality, price, and brand reputation also significantly impact consumers' purchase decisions. This aligns with the Healthy Food Promotion Model, which asserts that food must evoke a pleasurable response (i.e., enjoyment and eagerness to try it) to spark interest in the product, indicating that traditional marketing literature might place excessive emphasis on the influence of product claims on purchase intentions. When purchasing consumers may prioritize intrinsic qualities such as product quality, price, and personal preferences over external claims. This could be because customers

experience 'claim fatigue' in an environment flooded with marketing messages, causing them to overlook product claims and focus on other factors when making decisions (Ratneswaran et al., 2016).

The current study's findings provide insight into the complex interactions among health consciousness, taste perceptions, and purchase intentions in food product marketing. The discovery that participants' taste perceptions and purchase intentions were considerably influenced by their level of health consciousness offers important insights into consumer behavior. Compared to products advertised with a health claim, people with lesser health consciousness were likelier to believe that healthy food products with a hedonic claim tasted better and were more willing to buy them. As hypothesized by H3b, the effect on purchase intention was more minor for people who were more health conscious. This implies that while generating taste perceptions and purchase intentions, customers with lesser health consciousness prioritize hedonic rewards over health considerations. H3a is partially supported by consumers who are more health conscious, who thought that items with health-related claims tasted marginally better than those advertised with a hedonic claim. Following the dual process theory, the results indicate that health-conscious consumers tend to make intentional and rational decisions. In contrast, those less health-conscious are more likely to make automatic and instinctive decisions.

The study's findings align with other studies by Vyth et al. (2010) and Irmak et al. (2011), which discovered that consumption increased with health labels mainly among individuals concerned about their diet. Comparably, Mai & Hoffmann (2012) demonstrated that less health-conscious consumers prioritize taste and non-health-related factors when making food choices, while health-conscious consumers make their selections based on criteria about health. Research has repeatedly demonstrated that consumer behavior is mainly determined by the degree of health consciousness (Michaelidou et al., 2011; Michaelidou & Hassan, 2007; Tarkianen & Sundqvist, 2009; Vyth et al., 2010). The current study, however, offers a fresh perspective by illustrating how marketing tactics affect consumers' taste perceptions and purchase intentions concerning health consciousness.

The present study delved into the effects of education levels on taste perceptions and purchase intentions in food product marketing. The results uncovered a complex correlation between consumer behavior and educational attainment. Specifically, individuals with higher education levels demonstrated a greater inclination to purchase healthier food products than those with lower education levels. From the perspective of the dual-process theory, the results illustrate that respondents with higher education reflect greater cognitive consideration of long-term health impacts. Interestingly, both groups preferred indulgent claims. This indicates that low and highly educated respondents both favor products designed to provide pleasure. This reflects their immediate gratification preferences driven by automatic processes. These findings also align with previous research (Darmon & Drewnoski, 2008; Giskes et al., 2007), highlighting the positive link between education levels and health-conscious behaviors, particularly dietary choices. Studies consistently show that individuals with higher education levels are more likely to adopt healthier lifestyles and make informed dietary decisions than those with lower education levels (Drewnoski & Eichelsdoerfer, 2009; Hiza et al., 2013). This behavior suggests that consumer preferences are influenced by a preference for short-term gratification over long-term health considerations (Guthrie et al., 2009). It is apparent that consumer decisions are strongly swayed by enjoyment, regardless of their educational background. Nonetheless, this study sheds new light on how indulgent claims shape preferences across different educational levels, emphasizing that pleasure significantly informs consumer choices irrespective of education.

5.2 Practical Implications

The current research suggests that marketing claims may not have as significant an impact on consumers' taste perceptions and purchase intentions as previously believed. This implies that while product claims can influence perceptions about quality or health benefits, they may impact taste perceptions and purchase intentions less. This insight is crucial for marketing and product development professionals. With consumers' taste perceptions possibly being more influenced by the actual sensory experience than by marketing promises, it may be more effective for marketers to focus on enhancing

the intrinsic qualities of their products. Building brand trust through consistent quality and reliability, rather than relying heavily on product promises, could also be more successful. Strategies such as word-of-mouth marketing, client testimonials, and authentic brand storytelling may impact purchase intentions more.

In addition, the study's findings suggest that individuals with lower health consciousness tend to prioritize pleasurable experiences over health considerations when forming their taste perceptions and making purchasing decisions. On the other hand, those with higher health consciousness tend to prioritize health benefits over purely indulgent concerns. These results underscore the importance of considering individual differences in health consciousness when analyzing consumer behavior and developing marketing strategies. Incorporating this factor into theoretical frameworks can lead to a more comprehensive understanding of customer behavior in the food industry. The importance of tailoring marketing strategies to different customer segments based on their level of health consciousness cannot be overstated. For example, products marketed for enjoyable qualities may appeal more to consumers with lower health consciousness. In comparison, those with higher health consciousness may respond more positively to products emphasizing their health-related attributes. Marketers can effectively meet consumers' diverse interests and needs by recognizing and capitalizing on these distinctions.

Understanding the influence of education levels on consumer behavior is of paramount importance. Studies suggest that consumers with higher education levels are more likely to prioritize health considerations and are receptive to messages emphasizing the advantages of specific food products. Conversely, individuals with lower education levels may prioritize immediate gratification over long-term health concerns. These insights contribute to understanding how sociodemographic factors impact consumer behavior in food product marketing. By recognizing the link between consumer preferences and education levels, targeted interventions can be crafted to encourage healthier

food choices among different demographic groups. These findings have implications for marketers and policymakers promoting healthy eating habits. While well-educated consumers may already gravitate towards healthier options, the appeal of sensory experiences allows marketers to harness taste as a compelling marketing strategy. Marketers can help bridge the gap between consumers' inclination to make health-conscious purchases and their actual behavior by highlighting the sensory appeal of healthy food products, regardless of educational background.

5.3 Strengths, Limitations, and Future Research

Many of the study's qualities improve the validity and reliability of its conclusion. Firstly, the results are more broadly applicable to a wider variety of healthful meals due to the utilization of diverse stimuli, such as three distinct food products (i.e., nuts, strawberries, yogurt). This variety is essential to comprehending how consumers behave in practical situations. To confirm that participants believed the chosen goods to be healthy, a pretest was also conducted to verify the stimuli's manipulation. Secondly, the research also employed a strong manipulation check to ensure participants were aware of and understood the promotional claims. This phase is crucial for verifying that the independent variable was successfully manipulated, which supports the internal validity of the research. Thirdly, the study's measures are more reliable and valid, using validated scales to assess flavor perception (Roininen, 1999) and purchase intention (Baker & Churchill, 1977). Lastly, including health consciousness as a moderating variable helped us clarify how individual variations affect the relationship between promotional techniques and dependent variables. This perspective enhanced the study's conclusions and insights.

While this study has many strengths, it also has certain limitations that should be acknowledged. Firstly, although adequate for the research, the final sample size of 143 respondents may restrict the broad applicability of the results. The sample size was reduced by excluding individuals who dropped out of the experiment or failed the manipulation check, and it was insufficient

to ensure a balanced gender distribution in every category. The generalizability of the results may be affected by any gender-related bias resulting from this imbalance (women: $N = 82$, 57%, men: $N = 61$, 43%). Future research should strive to recruit representative and diverse samples to enhance the generalizability of the results across other demographic groups. Secondly, the recruitment strategy, which included convenience and snowball sampling through social media platforms, may introduce self-selection bias. As a significant proportion of respondents in the sample (79%) had higher education levels, the sample may not accurately represent the general population, limiting the applicability of the findings to individuals from different educational backgrounds. Future research should aim for more extensive and diverse sample sizes to improve the generalizability of the results. Including individuals with diverse educational backgrounds, age ranges, and socioeconomic statuses may lead to a more comprehensive understanding of customer behavior across various demographic segments.

The study's narrow scope of variables may have failed to account for significant factors such as individual differences in cognitive and automatic processing, social influences, cultural norms, and environmental cues like packaging or store layout. The current study's limited scope may have caused the variations from other studies. Examining extra factors could result in a more comprehensive understanding of customer behavior, particularly regarding dietary choices. Future research in marketing and consumer behavior should strive to delve deeper into the intricate factors influencing consumer decisions, especially in the context of promoting a healthy diet. This may involve considering factors beyond product labeling, such as personal preferences, sensory perceptions, and past interactions with advertising materials. Experts suggest that rather than relying solely on survey data, analyzing accurate product packaging in authentic settings could enhance the sophistication of marketing strategies. Additionally, neuroimaging research could offer valuable insights into how different claims activate specific brain regions associated with cognitive and sensory processing.

The research provides valuable insights that could improve the marketing strategies used by companies promoting healthy food products. However, many unanswered questions remain about how effectively these strategies influence consumption habits. Future research could analyze the impact of product claims on actual packaging in real-world scenarios over an extended period. This approach would involve monitoring the time customers spend examining food items. Conducting trials in real-world settings, such as supermarkets, could yield more realistic results. Additionally, evaluating the long-term effectiveness of advertising campaigns to promote healthy eating over an extended period could offer valuable insights into changing consumer behavior.

Studying the psychological characteristics of different customer groups and investigating how technology might improve marketing methods can result in specialized advertising approaches that appeal to a wide range of demographics. The study stresses how an individual's education level affects their choices and food preferences. Future research should examine the elements contributing to differences between educated groups to design individualized solutions. Researchers who delve into these study areas can improve their understanding of consumer behavior and create more successful marketing campaigns to promote healthy eating habits.

6. Conclusion

The research investigated how product claims (e.g., healthy vs. hedonic) influence customers' taste perceptions and purchase intentions, considering the moderating effect of health consciousness. The results indicated that hedonic or health-related claims did not significantly affect taste perception and purchase intentions. This suggests that consumers' evaluations of food products in response to marketing claims are more complex than previously believed, emphasizing the importance of highlighting intrinsic product attributes such as sensory experiences, quality, and trust rather than relying solely on external claims.

The study also stressed the importance of health consciousness in influencing consumer behavior. People less concerned about their health appreciated hedonic claims and gave hedonic advantages precedence over health concerns when making decisions. On the other hand, individuals who prioritized their health were slightly more influenced by health claims, resulting in their purchase intentions and taste evaluations matching their priorities. The research contributes to a deeper understanding of consumer behavior by demonstrating how people with varying levels of health awareness respond to marketing strategies. It also provides valuable insights for advertisers and product manufacturers.

In addition, the study examined the influence of educational level on consumer behavior, suggesting that individuals with higher education tend to choose healthier food options. Notably, both demographic groups still emphasize taste, underscoring its universal appeal. This finding offers valuable insights into the sociodemographic factors affecting food-related consumer behavior. By acknowledging educational attainment as a key factor, researchers can gain fresh perspectives on its intersection with dietary preferences. These insights can be leveraged to develop strategies for promoting healthy eating habits and improving public health.

The research results offer valuable insights into the intricate relationship between product claims, consumer taste perceptions, and purchase intentions in the context of healthy food products. They also highlight the significance of customized marketing strategies considering differences in consumer health consciousness and educational backgrounds.

Reference List

- Aaron, J., Mela, D., & Evans, R. (1994). The Influences of Attitudes, Beliefs and Label Information on Perceptions of Reduced-fat Spread. *Appetite*, 22(1), 25–37. <https://doi.org/10.1006/appe.1994.1003>
- Afshin, A., Sur, P. J., Fay, K., Cornaby, L., Ferrara, G., Salama, J., Mullany, E. C., Abate, K. H., Abbafati, C., Zegeye, A., Afarideh, M., Aggarwal, A., Agrawal, S., Akinyemiju, T., Alahdab, F., Bacha, U., Bachman, V. F., Badali, H., Badawi, A. Murray, C. J. L. (2019). Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 393(10184), 1958–1972. [https://doi.org/10.1016/s0140-6736\(19\)30041-8](https://doi.org/10.1016/s0140-6736(19)30041-8)
- Amit, E., Algom, D., Trope, Y., & Liberman, N. (2015). “Thou Shalt Not Make Unto Thee Any Graven Image”: The Distance Dependence of Representation. In *Routledge eBooks*. <https://doi.org/10.4324/9780203809846.ch4>
- Anghelcev, G., Chung, M. Y., Sar, S., & Duff, B. R. L. (2015). A ZMET-based analysis of perceptions of climate change among young South Koreans. *Journal Of Social Marketing*, 5(1), 56–82. <https://doi.org/10.1108/jsocm-12-2012-0048>
- Antonides, G., & Cramer, L. (2013). Impact of limited cognitive capacity and feelings of guilt and excuse on the endowment effects for hedonic and utilitarian types of foods. *Appetite*, 68, 51–55. <https://doi.org/10.1016/j.appet.2013.04.020>
- APA. (2010). <https://www.apa.org>. <https://www.apa.org/topics/obesity/food-advertising-children>
- Ares, G., & Gámbaro, A. (2007). Influence of gender, age and motives underlying food choice on perceived healthiness and willingness to try functional foods. *Appetite*, 49(1), 148–158. <https://doi.org/10.1016/j.appet.2007.01.006>

- Ares, G., Giménez, A., Bruzzone, F., Vidal, L., Antúnez, L., & Maiche, A. (2013). Consumer Visual Processing of Food Labels: Results from an Eye-Tracking Study. *Journal Of Sensory Studies*, 28(2), 138–153. <https://doi.org/10.1111/joss.12031>
- Aschemann-Witzel, J., & Grunert, K. G. (2015). Influence of ‘soft’ versus ‘scientific’ health information framing and contradictory information on consumers’ health inferences and attitudes towards a food supplement. *Food Quality And Preference*, 42, 90–99. <https://doi.org/10.1016/j.foodqual.2015.01.008>
- Baker, M., & Churchill, G. A. (1977). The Impact of Physically Attractive Models on Advertising Evaluations. *Journal Of Marketing Research*, 14(4), 538. <https://doi.org/10.2307/3151194>
- Ballco, P., Caputo, V., & De-Magistris, T. (2020). Consumer valuation of European nutritional and health claims: Do taste and attention matter? *Food Quality And Preference*, 79, 103793. <https://doi.org/10.1016/j.foodqual.2019.103793>
- Bargh, J. A. (2002). Losing Consciousness: Automatic Influences on Consumer Judgment, Behavior, and Motivation. *Journal Of Consumer Research*, 29(2), 280–285. <https://doi.org/10.1086/341577>
- Becker, M. H., Maiman, L. A., Kirscht, J. P., Haefner, D. P., & Drachman, R. H. (1977). The Health Belief Model and Prediction of Dietary Compliance: A Field Experiment. *Journal Of Health And Social Behavior*, 18(4), 348. <https://doi.org/10.2307/2955344>
- Berning, J. P., Chouinard, H. H., & McCluskey, J. J. (2010). Do Positive Nutrition Shelf Labels Affect Consumer Behavior? Findings from a Field Experiment with Scanner Data. *American Journal Of Agricultural Economics*, 93(2), 364–369. <https://doi.org/10.1093/ajae/aaq104>
- Bhattarai, N., Prevost, A. T., Wright, A. J., Charlton, J., Rudisill, C., & Gulliford, M. (2013). Effectiveness of interventions to promote healthy diet in primary care: systematic review and meta-analysis of randomised controlled trials. *BMC Public Health*, 13(1). <https://doi.org/10.1186/1471-2458-13-1203>

- Bialkova, S., Sasse, L., & Fenko, A. (2016). The role of nutrition labels and advertising claims in altering consumers' evaluation and choice. *Appetite, 96*, 38–46. <https://doi.org/10.1016/j.appet.2015.08.030>
- Breslin, P. A. (2013). An Evolutionary Perspective on Food and Human Taste. *Current Biology, 23*(9), R409–R418. <https://doi.org/10.1016/j.cub.2013.04.010>
- Cairns, G., Angus, K., & Hastings, G. (2009). THE EXTENT, NATURE AND EFFECTS OF FOOD PROMOTION TO CHILDREN: A REVIEW OF THE EVIDENCE TO DECEMBER 2008. In World Health Organization, *World Health Organization*. https://iris.who.int/bitstream/handle/10665/44237/9789241598835_eng.pdf
- Capacci, S., Mazzocchi, M., Shankar, B., Macias, J. B., Verbeke, W., Pérez-Cueto, F. J. A., Koziół-Kozakowska, A., Piórecka, B., Niedźwiedzka, B., D'Addesa, D., Saba, A., Turrini, A., Aschemann-Witzel, J., Bech-Larsen, T., Strand, M., Smillie, L., Wills, J., & Traill, W. B. (2012). Policies to promote healthy eating in Europe: a structured review of policies and their effectiveness. *Nutrition Reviews, 70*(3), 188–200. <https://doi.org/10.1111/j.1753-4887.2011.00442.x>
- Carnevale, J. J., Fujita, K., HyunWoo, H., & Amit, E. (2014). Immersion versus transcendence. *Social Psychological And Personality Science, 6*(1), 92–100. <https://doi.org/10.1177/1948550614546050>
- Carrillo, E., Varela, P., & Fiszman, S. (2012). Effects of food package information and sensory characteristics on the perception of healthiness and the acceptability of enriched biscuits. *Food Research International, 48*(1), 209–216. <https://doi.org/10.1016/j.foodres.2012.03.016>
- Chandon, P., & Wansink, B. (2007). The Biasing Health Halos of Fast-Food Restaurant Health Claims: Lower Calorie Estimates and Higher Side-Dish Consumption Intentions. *Journal Of Consumer Research, 34*(3), 301–314. <https://doi.org/10.1086/519499>

- Chen, M., Sun, Q., Giovannucci, E., Mozaffarian, D., Manson, J. E., Willett, W. C., & Hu, F. B. (2014). Dairy consumption and risk of type 2 diabetes: 3 cohorts of US adults and an updated meta-analysis. *BMC Medicine*, *12*(1). <https://doi.org/10.1186/s12916-014-0215-1>
- Clarke, J. (2004). Dissolving the Public Realm? The Logics and Limits of Neo-liberalism. *Journal Of Social Policy*, *33*(1), 27–48. <https://doi.org/10.1017/s0047279403007244>
- Cohen, D., & Babey, S. H. (2012). Contextual influences on eating behaviours: heuristic processing and dietary choices. *Obesity Reviews*, *13*(9), 766–779. <https://doi.org/10.1111/j.1467-789x.2012.01001.x>
- Cohen, D., & Farley, T. A. (2008). Eating as an automatic behavior. *PubMed*. <https://pubmed.ncbi.nlm.nih.gov/18082012>
- Colby, J. J., Elder, J. P., Peterson, G., Knisley, P. M., & Carleton, R. A. (1987). Promoting the Selection of Healthy Food Through Menu Item Description in a Family-Style Restaurant. *American Journal Of Preventive Medicine*, *3*(3), 171–177. [https://doi.org/10.1016/s0749-3797\(18\)31273-x](https://doi.org/10.1016/s0749-3797(18)31273-x)
- Connors, M., Bisogni, C. A., Sobal, J., & Devine, C. M. (2001). Managing values in personal food systems. *Appetite*, *36*(3), 189–200. <https://doi.org/10.1006/appe.2001.0400>
- Cramer, L., & Antonides, G. (2011). Endowment effects for hedonic and utilitarian food products. *Food Quality And Preference*, *22*(1), 3–10. <https://doi.org/10.1016/j.foodqual.2010.05.020>
- Darmon, N. N., & Drewnowski, A. (2008). Does social class predict diet quality? *The American Journal Of Clinical Nutrition*, *87*(5), 1107–1117. <https://doi.org/10.1093/ajcn/87.5.1107>
- De Magistris, T., & Gracia, A. (2014). Do consumers care about organic and distance labels? An empirical analysis in Spain. *International Journal Of Consumer Studies*, *38*(6), 660–669. <https://doi.org/10.1111/ijcs.12138>

- DeCosta, P., Møller, P., Frøst, M., & Olsen, A. (2017). Changing children's eating behaviour - A review of experimental research. *Appetite, 113*, 327–357. <https://doi.org/10.1016/j.appet.2017.03.004>
- Delgado, C., Gómez-Rico, A., & Guinard, J. (2013). Evaluating bottles and labels versus tasting the oils blind: Effects of packaging and labeling on consumer preferences, purchase intentions and expectations for extra virgin olive oil. *Food Research International, 54*(2), 2112–2121. <https://doi.org/10.1016/j.foodres.2013.10.021>
- Desor, J. A., Maller, O., & Andrews, K. (1975). Ingestive responses of human newborns to salty, sour, and bitter stimuli. *Journal Of Comparative And Physiological Psychology, 89*(8), 966–970. <https://doi.org/10.1037/h0077171>
- Dhar, R., & Wertenbroch, K. (2000). Consumer Choice between Hedonic and Utilitarian Goods. *Journal Of Marketing Research, 37*(1), 60–71. <https://doi.org/10.1509/jmkr.37.1.60.18718>
- Dickson, P. R., & Sawyer, A. G. (1990). The Price Knowledge and Search of Supermarket Shoppers. *Journal Of Marketing, 54*(3), 42. <https://doi.org/10.2307/1251815>
- Drewnowski, A., & Eichelsdoerfer, P. (2009). Can Low-Income Americans Afford a Healthy Diet? *Nutrition Today, 44*(6), 246–249. <https://doi.org/10.1097/nt.0b013e3181c29f79>
- Dutta, M. J. (2007). Health Information Processing From Television: The Role of Health Orientation. *Health Communication, 21*(1), 1–9. <https://doi.org/10.1080/10410230701283256>
- Enneking, U., Neumann, C., & Henneberg, S. (2007). How important intrinsic and extrinsic product attributes affect purchase decision. *Food Quality And Preference, 18*(1), 133–138. <https://doi.org/10.1016/j.foodqual.2005.09.008>
- Eslami, O., Shidfar, F., & Dehnad, A. (2019). Inverse association of long-term nut consumption with weight gain and risk of overweight/obesity: a systematic review. *Nutrition Research, 68*, 1–8. <https://doi.org/10.1016/j.nutres.2019.04.001>

- Evans, J. St. B. T. (2006). The heuristic-analytic theory of reasoning: Extension and evaluation. *Psychonomic Bulletin & Review*, *13*(3), 378–395. <https://doi.org/10.3758/bf03193858>
- Fenko, A., Lotterman, H., & Galetzka, M. (2016). What's in a name? The effects of sound symbolism and package shape on consumer responses to food products. *Food Quality And Preference*, *51*, 100–108. <https://doi.org/10.1016/j.foodqual.2016.02.021>
- Fishbach, A., & Zhang, Y. (2008). Together or apart: When goals and temptations complement versus compete. *Journal Of Personality And Social Psychology*, *94*(4), 547–559. <https://doi.org/10.1037/0022-3514.94.4.547>
- Fitzsimons, G. J., & Lehmann, D. R. (2004). Reactance to Recommendations: When Unsolicited Advice Yields Contrary Responses. *Marketing Science*, *23*(1), 82–94. <https://doi.org/10.1287/mksc.1030.0033>
- Folkvord, F. (2019). *The Psychology of Food Marketing and Overeating*.
- Folkvord, F., Anschutz, D. J., Boyland, E., Kelly, B., & Buijzen, M. (2016). Food advertising and eating behavior in children. *Current Opinion in Behavioral Sciences*, *9*, 26–31. <https://doi.org/10.1016/j.cobeha.2015.11.016>
- Fotopoulos, C., Athanasios, K., Vassallo, M., & Pagiaslis, A. P. (2009). Food Choice Questionnaire (FCQ) Revisited: Suggestions for the Development of an Enhanced General Food Motivation Model. *Social Science Research Network*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1393756
- Giskes, K., Avendaño, M., Brug, J., & Kunst, A. E. (2010). A systematic review of studies on socioeconomic inequalities in dietary intakes associated with weight gain and overweight/obesity conducted among European adults. *Obesity Reviews*, *11*(6), 413–429. <https://doi.org/10.1111/j.1467-789x.2009.00658.x>

- Gould, S. (1988). Consumer Attitudes Toward Health and Health Care: A Differential Perspective. *Journal Of Consumer Affairs*, 22(1), 96–118. <https://doi.org/10.1111/j.1745-6606.1988.tb00215.x>
- Guthrie, L. C., Butler, S. C., & Ward, M. M. (2009). Time perspective and socioeconomic status: A link to socioeconomic disparities in health? *Social Science & Medicine*, 68(12), 2145–2151. <https://doi.org/10.1016/j.socscimed.2009.04.004>
- Guthrie, J. F., Mancino, L., & Lin, C. J. (2015). Nudging Consumers toward Better Food Choices: Policy Approaches to Changing Food Consumption Behaviors. *Psychology & Marketing*, 32(5), 501–511. <https://doi.org/10.1002/mar.20795>
- Handsley, E., & Reeve, B. (2018). Holding Food Companies Responsible for Unhealthy Food Marketing to Children: Can International Human Rights Instruments Provide a New Approach? *University Of New South Wales Law Journal*, 41(2). <https://doi.org/10.53637/oxlv4395>
- Hawkes, C. (2008). Dietary Implications of Supermarket Development: A Global Perspective. *Development Policy Review*, 26(6), 657–692. <https://doi.org/10.1111/j.1467-7679.2008.00428.x>
- Hieke, S., & Taylor, C. R. (2011). A Critical Review of the Literature on Nutritional Labeling. *The Journal Of Consumer Affairs/The Journal Of Consumer Affairs*, 46(1), 120–156. <https://doi.org/10.1111/j.1745-6606.2011.01219.x>
- Hiza, H. A., Casavale, K. O., Guenther, P. M., & Davis, C. A. (2013). Diet Quality of Americans Differs by Age, Sex, Race/Ethnicity, Income, and Education Level. *Journal Of The Academy Of Nutrition And Dietetics*, 113(2), 297–306. <https://doi.org/10.1016/j.jand.2012.08.011>
- Hoch, S. J., & Loewenstein, G. (1991). Time-inconsistent Preferences and Consumer Self-Control. *Journal Of Consumer Research*, 17(4), 492–507. <https://doi.org/10.1086/208573>

- Hoefkens, C., Verbeke, W., & Van Camp, J. (2011). European consumers' perceived importance of qualifying and disqualifying nutrients in food choices. *Food Quality And Preference*, 22(6), 550–558. <https://doi.org/10.1016/j.foodqual.2011.03.002>
- Hoek, J., & Jones, S. C. (2011). Regulation, public health and social marketing: a behaviour change trinity. *Journal Of Social Marketing*, 1(1), 32–44. <https://doi.org/10.1108/20426761111104419>
- Holbrook, M. B., & Hirschman, E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *Journal Of Consumer Research*, 9(2), 132. <https://doi.org/10.1086/208906>
- Holdershaw, J., Gendall, P., & Wright, M. (2011). Predicting blood donation behaviour: further application of the theory of planned behaviour. *Journal Of Social Marketing*, 1(2), 120–132. <https://doi.org/10.1108/20426761111141878>
- Hu, E., Toledo, E., Díez-Espino, J., Estruch, R., Corella, D., Salas-Salvadó, J., Vinyoles, E., Gómez-Gracia, E., Arós, F., Fiol, M., Lapetra, J., Serra-Majem, L., Pintó, X., Portillo, M. P., Lamuela-Raventós, R. M., Ros, E., Sorlí, J. V., & Martínez-González, M. Á. (2013). Lifestyles and Risk Factors Associated with Adherence to the Mediterranean Diet: A Baseline Assessment of the PREDIMED Trial. *PLOS ONE*, 8(4), e60166. <https://doi.org/10.1371/journal.pone.0060166>
- Hu, W. (2011). *Consumer visual processing of food labels: Results from an eye-tracking study*. The New York Times. <http://www.nytimes.com/2011/10/04/education/04vending.html?pagewanted=all>
- Huang, L., & Lu, J. (2015). The Impact of Package Color and the Nutrition Content Labels on the Perception of Food Healthiness and Purchase Intention. *Journal Of Food Products Marketing*, 22(2), 191–218. <https://doi.org/10.1080/10454446.2014.1000434>

- Irmak, C., Vallen, B., & Robinson, S. L. (2011). The Impact of Product Name on Dieters' and Nondieters' Food Evaluations and Consumption. *Journal Of Consumer Research*, *38*(2), 390–405. <https://doi.org/10.1086/660044>
- Iversen, A. C. (2006). Does socio-economic status and health consciousness influence how women respond to health related messages in media? *Health Education Research*, *21*(5), 601–610. <https://doi.org/10.1093/her/cyl014>
- Jacquier, C., Bonthoux, F., Baciú, M., & Ruffieux, B. (2012). Improving the effectiveness of nutritional information policies: assessment of unconscious pleasure mechanisms involved in food-choice decisions. *Nutrition Reviews*, *70*(2), 118–131. <https://doi.org/10.1111/j.1753-4887.2011.00447.x>
- Jamovi. MANCOVA post hoc - jamovi. (2022,). <https://forum.jamovi.org/viewtopic.php?t=2281>
- Januszevska, R., Pieniak, Z., & Verbeke, W. (2011). Food choice questionnaire revisited in four countries. Does it still measure the same? *Appetite*, *57*(1), 94–98. <https://doi.org/10.1016/j.appet.2011.03.014>
- Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology*, *3*(3), 430–454. [https://doi.org/10.1016/0010-0285\(72\)90016-3](https://doi.org/10.1016/0010-0285(72)90016-3)
- Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, *80*(4), 237–251. <https://doi.org/10.1037/h0034747>
- Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer Inference: A Review of Processes, Bases, and Judgment Contexts. *Journal Of Consumer Psychology*, *14*(3), 230–256. https://doi.org/10.1207/s15327663jcp1403_6
- Kaur, A., Scarborough, P., & Rayner, M. (2017). A systematic review, and meta-analyses, of the impact of health-related claims on dietary choices. *The International Journal Of Behavioural Nutrition And Physical Activity*, *14*(1). <https://doi.org/10.1186/s12966-017-0548-1>

- Kiesel, K., & Villas-Boas, S. B. (2013). Can information costs affect consumer choice? Nutritional labels in a supermarket experiment. *International Journal Of Industrial Organization*, *31*(2), 153–163. <https://doi.org/10.1016/j.ijindorg.2010.11.002>
- Köster, E. (2003). The psychology of food choice: some often encountered fallacies. *Food Quality And Preference*, *14*(5–6), 359–373. [https://doi.org/10.1016/s0950-3293\(03\)00017-x](https://doi.org/10.1016/s0950-3293(03)00017-x)
- Köster, E. (2009). Diversity in the determinants of food choice: A psychological perspective. *Food Quality And Preference*, *20*(2), 70–82. <https://doi.org/10.1016/j.foodqual.2007.11.002>
- Kraft, F. B., & Goodell, P. (1993). Identifying the health conscious consumer. *PubMed*, *13*(3), 18–25. <https://pubmed.ncbi.nlm.nih.gov/10129812>
- Kringelbach, M. L., & Berridge, K. C. (2010). Pleasures of the Brain. *Affective Science*.
- Lähteenmäki, L. (2013). Claiming health in food products. *Food Quality And Preference*, *27*(2), 196–201. <https://doi.org/10.1016/j.foodqual.2012.03.006>
- Lähteenmäki, L., Lampila, P., Grunert, K. G., Boztuğ, Y., Ueland, Ø., Åström, A., & Martinsdóttir, E. (2010). Impact of health-related claims on the perception of other product attributes. *Food Policy*, *35*(3), 230–239. <https://doi.org/10.1016/j.foodpol.2009.12.007>
- Lake, A., & Townshend, T. (2006). Obesogenic environments: exploring the built and food environments. *Journal Of The Royal Society For The Promotion Of Health*, *126*(6), 262–267. <https://doi.org/10.1177/1466424006070487>
- Lamothe, S., Azimy, N., Bazinet, L., Couillard, C., & Britten, M. (2014). Interaction of green tea polyphenols with dairy matrices in a simulated gastrointestinal environment. *Food & Function*, *5*(10), 2621–2631. <https://doi.org/10.1039/c4fo00203b>
- Liu, P. J., Wisdom, J., Roberto, C. A., Liu, L. J., & Ubel, P. A. (2013). Using Behavioral Economics to Design More Effective Food Policies to Address Obesity. *Applied Economic Perspectives And Policy*, *36*(1), 6–24. <https://doi.org/10.1093/aep/ppt027>

- Locher, J. L., Ritchie, C., Roth, D., Sen, B., Vickers, K., & Vailas, L. (2009). Food choice among homebound older adults: Motivations and perceived barriers. *The Journal Of Nutrition, Health & Aging/The Journal Of Nutrition, Health And Aging*, *13*(8), 659–664. <https://doi.org/10.1007/s12603-009-0194-7>
- Lombardi, A., Carlucci, D., Cavallo, C., De Gennaro, B., Del Giudice, T., Giannoccaro, G., Paparella, A., Roselli, L., Vecchio, R., & Cicia, G. (2021). Do consumers understand health claims on extra-virgin olive oil? *Food Research International*, *143*, 110267. <https://doi.org/10.1016/j.foodres.2021.110267>
- Luca, N. R., & Suggs, L. S. (2013). Theory and Model Use in Social Marketing Health Interventions. *Journal Of Health Communication*, *18*(1), 20–40. <https://doi.org/10.1080/10810730.2012.688243>
- Ludwig, D. S., & Nestle, M. (2008). Can the Food Industry Play a Constructive Role in the Obesity Epidemic? *JAMA*, *300*(15), 1808. <https://doi.org/10.1001/jama.300.15.1808>
- Mai, R., & Hoffmann, S. (2012). Taste lovers versus nutrition fact seekers: How health consciousness and self-efficacy determine the way consumers choose food products. *Journal Of Consumer Behaviour*, *11*(4), 316–328. <https://doi.org/10.1002/cb.1390>
- Mai, R., & Hoffmann, S. (2015). How to Combat the Unhealthy = Tasty Intuition: The Influencing Role of Health Consciousness. *Journal Of Public Policy & Marketing*, *34*(1), 63–83. <https://doi.org/10.1509/jppm.14.006>
- Marteau, T. M., Hollands, G. J., & Fletcher, P. C. (2012). Changing Human Behavior to Prevent Disease: The Importance of Targeting Automatic Processes. *Science*, *337*(6101), 1492–1495. <https://doi.org/10.1126/science.1226918>
- Maubach, N., Hoek, J., & Mather, D. (2014). Interpretive front-of-pack nutrition labels. Comparing competing recommendations. *Appetite*, *82*, 67–77. <https://doi.org/10.1016/j.appet.2014.07.006>

- McGill, R., Anwar, E., Orton, L., Bromley, H., Lloyd-Williams, F., O'Flaherty, M., Taylor-Robinson, D., Guzman-Castillo, M., Gillespie, D., Moreira, P. V. L., Allen, K., Hyseni, L., Calder, N., Petticrew, M., White, M., Whitehead, M., & Capewell, S. (2015). Are interventions to promote healthy eating equally effective for all?
- Michaelidou, N., Christodoulides, G., & Torova, K. (2011). Determinants of healthy eating: a cross-national study on motives and barriers. *International Journal Of Consumer Studies*, 36(1), 17–22. <https://doi.org/10.1111/j.1470-6431.2011.01031.x>
- Michaelidou, N., & Hassan, L. M. (2007). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal Of Consumer Studies*, 32(2), 163–170. <https://doi.org/10.1111/j.1470-6431.2007.00619.x>
- Mittelstaedt, J. D., Kilbourne, W. E., & Shultz, C. J. (2015). Macromarketing approaches to thought development in positive marketing: Two perspectives on a research agenda for positive marketing scholars. *Journal Of Business Research*, 68(12), 2513–2516. <https://doi.org/10.1016/j.jbusres.2015.06.038>
- Moldovan, A. R., & David, D. (2012). Features of automaticity in eating behavior. *Eating Behaviors*, 13(1), 46–48. <https://doi.org/10.1016/j.eatbeh.2011.09.006>
- Montgomery, K., Grier, S., Chester, J., & Dorfman, L. (2011). Food Marketing in the Digital Age: A Conceptual Framework and Agenda for Research. *Center for Digital Democracy*. https://bmsg.org/wp-content/uploads/2011/04/bmsg_report_food_marketing_in_the_digital_age_a_conceptual_framework_0.pdf
- Morewedge, C. K., Huh, Y. E., & Vosgerau, J. (2010). Thought for Food: Imagined Consumption Reduces Actual Consumption. *Science*, 330(6010), 1530–1533. <https://doi.org/10.1126/science.1195701>

- Neal, D. T., Wood, W., & Quinn, J. M. (2006). Habits—A repeat performance. *Current Directions in Psychological Science*, *15*(4), 198–202. <https://doi.org/10.1111/j.1467-8721.2006.00435.x>
- Neumark-Sztainer, D., Story, M., Perry, C., & Casey, M. A. (1999). Factors Influencing Food Choices of Adolescents. *Journal Of The American Dietetic Association*, *99*(8), 929–937. [https://doi.org/10.1016/s0002-8223\(99\)00222-9](https://doi.org/10.1016/s0002-8223(99)00222-9)
- Newsom, J. T., McFarland, B. H., Kaplan, M. S., Huguet, N., & Zani, B. G. (2005). The health consciousness myth: implications of the near independence of major health behaviors in the North American population. *Social Science & Medicine*, *60*(2), 433–437. <https://doi.org/10.1016/j.socscimed.2004.05.015>
- Nocella, G., & Kennedy, O. (2012). Food health claims – What consumers understand. *Food Policy*, *37*(5), 571–580. <https://doi.org/10.1016/j.foodpol.2012.06.001>
- Nørgaard, M. K., & Brunsø, K. (2009). Families' use of nutritional information on food labels. *Food Quality And Preference*, *20*(8), 597–606. <https://doi.org/10.1016/j.foodqual.2009.07.005>
- Orquin, J. L., & Scholderer, J. (2015). Consumer judgments of explicit and implied health claims on foods: Misguided but not misled. *Food Policy*, *51*, 144–157. <https://doi.org/10.1016/j.foodpol.2015.01.001>
- Pearce, A., Kirk, C. A., Cummins, S., Collins, M. L., Elliman, D., Connolly, A., & Law, C. (2009). Gaining children's perspectives: A multiple method approach to explore environmental influences on healthy eating and physical activity. *Health & Place*, *15*(2), 614–621. <https://doi.org/10.1016/j.healthplace.2008.10.007>
- Pérez-Cueto, F. J. A., Aschemann-Witzel, J., Shankar, B., Brambila-Macias, J., Bech-Larsen, T., Mazzocchi, M., Capacci, S., Saba, A., Turrini, A., Niedźwiedzka, B., Piórecka, B., Kozioł-Kozakowska, A., Wills, J., Traill, W. B., & Verbeke, W. (2011). Assessment of evaluations made to healthy eating policies in Europe: a review within the EATWELL Project. *Public Health Nutrition*, *15*(8), 1489–1496. <https://doi.org/10.1017/s1368980011003107>

- Pettigrew, S. (2016). Pleasure: An under-utilised 'P' in social marketing for healthy eating. *Appetite*, *104*, 60–69. <https://doi.org/10.1016/j.appet.2015.10.004>
- Pettinger, C., Holdsworth, M., & Gerber, M. (2004). Psycho-social influences on food choice in Southern France and Central England. *Appetite*, *42*(3), 307–316. <https://doi.org/10.1016/j.appet.2004.01.004>
- Petty, R. E., Cacioppo, J. T., & Schumann, D. W. (1983). Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement. *Journal Of Consumer Research*, *10*(2), 135. <https://doi.org/10.1086/208954>
- Proteggente, A. R., Pannala, A. S., Paganga, G., Van Buren, L., Wagner, E., Wiseman, S. A., Van de Put, F., Dacombe, C., & Rice-Evans, C. (2002). The Antioxidant Activity of Regularly Consumed Fruit and Vegetables Reflects their Phenolic and Vitamin C Composition. *Free Radical Research*, *36*(2), 217–233. <https://doi.org/10.1080/10715760290006484>
- Ragaert, P., Verbeke, W., Devlieghere, F., & Debevere, J. (2004). Consumer perception and choice of minimally processed vegetables and packaged fruits. *Food Quality And Preference*, *15*(3), 259–270. [https://doi.org/10.1016/s0950-3293\(03\)00066-1](https://doi.org/10.1016/s0950-3293(03)00066-1)
- Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The Unhealthy = Tasty Intuition and Its Effects on Taste Inferences, Enjoyment, and Choice of Food Products. *Journal Of Marketing*, *70*(4), 170–184. <https://doi.org/10.1509/jmkg.70.4.170>
- Ratneswaran, C., Chisnall, B., Li, M., Tan, S., Douiri, A., Anantham, D., & Steier, J. (2016). Desensitisation to cigarette package graphic health warnings: a cohort comparison between London and Singapore. *BMJ Open*, *6*(10), e012693. <https://doi.org/10.1136/bmjopen-2016-012693>
- Rettie, R., & Brewer, C. (2000). The verbal and visual components of package design. *Journal Of Product & Brand Management*, *9*(1), 56–70. <https://doi.org/10.1108/10610420010316339>

- Roininen, K., Lähteenmäki, L., & Tuorila, H. (1999). Quantification of Consumer Attitudes to Health and Hedonic Characteristics of Foods. *Appetite*, 33(1), 71–88. <https://doi.org/10.1006/appe.1999.0232>
- Roose, G., Geuens, M., & Vermeir, I. (2018). From informational towards transformational advertising strategies? A content analysis of Belgian food magazine advertisements. *British Food Journal*, 120(6), 1170–1182. <https://doi.org/10.1108/bfj-10-2017-0559>
- Rozin, P., Scott, S. E., Dingley, M., Urbánek, J., Jiang, H., & Kaltenbach, M. (2011). Nudge to nobesity I: Minor changes in accessibility decrease food intake. *Judgment And Decision Making*, 6(4), 323–332. <https://doi.org/10.1017/s1930297500001935>
- Scalzo, J., Politi, A., Pellegrini, N., Mezzetti, B., & Battino, M. (2005). Plant genotype affects total antioxidant capacity and phenolic contents in fruit. *Nutrition*, 21(2), 207–213. <https://doi.org/10.1016/j.nut.2004.03.025>
- Schifferstein, H. N., & Ophuis, P. O. (1998). Health-related determinants of organic food consumption in The Netherlands. *Food Quality And Preference*, 9(3), 119–133. [https://doi.org/10.1016/s0950-3293\(97\)00044-x](https://doi.org/10.1016/s0950-3293(97)00044-x)
- Sherwood, L. M., Parris, E. E., & Cahill, G. F. (1970). Starvation in man. *The New England Journal Of Medicine*, 282(12), 668–675. <https://doi.org/10.1056/nejm197003192821209>
- Stanovich, K. E., & West, R. F. (2002). Individual Differences in Reasoning: Implications for the Rationality Debate? In *Cambridge University Press eBooks* (pp. 421–440). <https://doi.org/10.1017/cbo9780511808098.026>
- Stead, M., McDermott, L., MacKintosh, A. M., & Adamson, A. J. (2011). Why healthy eating is bad for young people's health: Identity, belonging and food. *Social Science & Medicine*, 72(7), 1131–1139. <https://doi.org/10.1016/j.socscimed.2010.12.029>

- Strack, F., & Deutsch, R. (2004). Reflective and Impulsive Determinants of Social Behavior. *Personality And Social Psychology Review*, 8(3), 220–247. https://doi.org/10.1207/s15327957pspr0803_1
- Suher, J., Raghunathan, R., & Hoyer, W. D. (2016). Eating Healthy or Feeling Empty? How the “Healthy = Less Filling” Intuition Influences Satiety. *Journal Of The Association For Consumer Research*, 1(1), 26–40. <https://doi.org/10.1086/684393>
- Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting Obesogenic Environments: The Development and Application of a Framework for Identifying and Prioritizing Environmental Interventions for Obesity. *Preventive Medicine*, 29(6), 563–570. <https://doi.org/10.1006/pmed.1999.0585>
- Systematic review of socioeconomic inequalities in impact. *BMC Public Health*, 15(1). <https://doi.org/10.1186/s12889-015-1781-7>
- Tarkiainen, A., & Sundqvist, S. (2009). Product involvement in organic food consumption: Does ideology meet practice? *Psychology & Marketing*, 26(9), 844–863. <https://doi.org/10.1002/mar.20302>
- Thomson, C. A., & Ravia, J. J. (2011). A Systematic Review of Behavioral Interventions to Promote Intake of Fruit and Vegetables. *Journal Of The American Dietetic Association*, 111(10), 1523–1535. <https://doi.org/10.1016/j.jada.2011.07.013>
- Thorogood, M., Roe, L., McPherson, K., & Mann, J. (1990). Dietary intake and plasma lipid levels: lessons from a study of the diet of health conscious groups. *The BMJ*, 300(6735), 1297–1301. <https://doi.org/10.1136/bmj.300.6735.1297>
- Trail, W. B., Mazzocchi, M., Niedzwiedzka, B., Shankar, B., & Wills, J. (2013). The EATWELL project: Recommendations for healthy eating policy interventions across Europe. *Nutrition Bulletin*, 38(3), 352–357. <https://doi.org/10.1111/nbu.12048>
- Truong, V. D. (2014). Social marketing. *Social Marketing Quarterly*, 20(1), 15–34. <https://doi.org/10.1177/1524500413517666>

- Tulipani, S., Romandini, S., Busco, F., Bompadre, S., Mezzetti, B., & Battino, M. (2009). Ascorbate, not urate, modulates the plasma antioxidant capacity after strawberry intake. *Food Chemistry*, *117*(1), 181–188. <https://doi.org/10.1016/j.foodchem.2009.03.096>
- Urala, N., & Lähteenmäki, L. (2006). Hedonic ratings and perceived healthiness in experimental functional food choices. *Appetite*, *47*(3), 302–314. <https://doi.org/10.1016/j.appet.2006.04.007>
- Vakratsas, D., & Ambler, T. (1999). How advertising works: What do we really know? *Journal Of Marketing*, *63*(1), 26–43. <https://doi.org/10.1177/002224299906300103>
- Verbeke, W. (2006). Functional foods: Consumer willingness to compromise on taste for health? *Food Quality And Preference*, *17*(1–2), 126–131. <https://doi.org/10.1016/j.foodqual.2005.03.003>
- Verbeke, W., Scholderer, J., & Lähteenmäki, L. (2009). Consumer appeal of nutrition and health claims in three existing product concepts. *Appetite*, *52*(3), 684–692. <https://doi.org/10.1016/j.appet.2009.03.007>
- Vyth, E. L., Steenhuis, I. H., Vlot, J. A., Wulp, A., Hogenes, M. G., Looije, D. H., Brug, J., & Seidell, J. C. (2010). Actual use of a front-of-pack nutrition logo in the supermarket: consumers' motives in food choice. *Public Health Nutrition*, *13*(11), 1882–1889. <https://doi.org/10.1017/s1368980010000637>
- Wansink, B. (2000). How soy labeling influences preference and taste. *The International Food And Agribusiness Management Review*, *3*(1), 85–94. [https://doi.org/10.1016/s1096-7508\(00\)00031-8](https://doi.org/10.1016/s1096-7508(00)00031-8)
- Wansink, B. (2015). Change Their Choice! Changing Behavior Using the CAN Approach and Activism Research. *Psychology & Marketing*, *32*(5), 486–500. <https://doi.org/10.1002/mar.20794>
- Wansink, B., & Cheney, M. M. (2005). Leveraging FDA health claims. *Journal Of Consumer Affairs*, *39*(2), 386–398. <https://doi.org/10.1111/j.1745-6606.2005.00020.x>

- Wansink, B., & Park, S. (2002). RETRACTED: SENSORY SUGGESTIVENESS AND LABELING: DO SOY LABELS BIAS TASTE? *Journal Of Sensory Studies*, 17(5), 483–491. <https://doi.org/10.1111/j.1745-459x.2002.tb00360.x>
- Wansink, B., & Sobal, J. (2007). Mindless eating. *Environment And Behavior*, 39(1), 106–123. <https://doi.org/10.1177/0013916506295573>
- Wardle, J. (2000). An experimental investigation of the influence of health information on children's taste preferences. *Health Education Research*, 15(1), 39–44. <https://doi.org/10.1093/her/15.1.39>
- Wardle, J. (2003). Socioeconomic differences in attitudes and beliefs about healthy lifestyles. *Journal Of Epidemiology And Community Health*, 57(6), 440–443. <https://doi.org/10.1136/jech.57.6.440>
- Wardle, J., & Cooke, L. (2008). Genetic and environmental determinants of children's food preferences. *British Journal Of Nutrition*, 99(1), 15–21. <https://doi.org/10.1017/s000711450889246x>
- Willett, W. C., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S. J., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. Á., De Vries, W., Sibanda, L. M., . . . Murray, C. J. L. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, 393(10170), 447–492. [https://doi.org/10.1016/s0140-6736\(18\)31788-4](https://doi.org/10.1016/s0140-6736(18)31788-4)
- WHO (2003). Diet, nutrition and the prevention of chronic diseases WHO Technical Report Series. Geneva: World Health Organisation, pp. 1–149.
- WHO. (2024). Obesity and overweight. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

Wood, W., Quinn, J. M., & Kashy, D. A. (2002). Habits in everyday life: Thought, emotion, and action. *Journal Of Personality And Social Psychology*, 83(6), 1281–1297. <https://doi.org/10.1037/0022-3514.83.6.1281>

Appendix A**Randomization of Baseline Characteristics for Respondents**

Characteristic	W/ X^2	<i>P</i> -Value
Gender (Male/Female)	13.62	.001
Age (Years)	0.95	.39
Education Level (High school/MBO/HBO/WO)	10.33	.59