BI Norwegian Business School - campus Oslo

GRA 19502

Master Thesis

Component of continuous assessment: Thesis Master of Science
Final master thesis – Counts 80% of total grade

Nudging towards a healthier lifestyle: a study on how to use nudging as an intervention to steer consumers towards the healthier choices

Navn:	Marita Myrseth, Elisabeth Rasmussen

Start:	02.03.2018 09.00
Finish:	03.09.2018 12.00

Elisabeth Rasmussen Marita
Bjørnestad Myrseth

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Hand-in date:
03.09.2018

Programme:
Master of Science in Strategic Marketing Management

Supervisor:
Auke Hunneman

"This thesis is a part of the MSc programme at BI Norwegian Business School. The school takes no responsibility for the methods used, results found and conclusions drawn."

Acknowledgement

This final project would not have been as overcoming without the love and support from the people around us. We would like to thank our family and friends who have kept motivating us through tough times, and provided us with advice and late night dinners.

Finally, our biggest and deepest gratitude goes to our supervisor Auke Hunneman for his advice and guidance throughout this process. Thank you, we are grateful for all the help you provided for us.

Abstract

Obesity has become a major issue worldwide and has a strong impact at various economic and social levels. This calls for the need to find efficient ways to tackle this growing problem. Recently, there has been a increasing interest in the use of "nudges" as a policy tool and their potential to solve some of society's biggest problems, such as obesity. By using nudges, it is possible to steer consumers in a certain direction by changing the choice architecture or environment around. This allows for encouraging healthier choices without limiting individuals' freedom of choice. While nudges have promising applications, research literature has not given them sufficient attention.

Our aim for the master thesis is to explore how health nudge interventions should be designed in order to change customer buying behavior towards healthier options while grocery shopping. In order to develop an effective nudge, we explore which system of cognitive processing should be targeted, and how a nudge should be framed at the front-of-pack label on fast moving consumer goods. Lastly, a framework by Felsen (2013) has been adopted to test whether the framing of a nudge should be through punishment or reward for making the healthier food choice. The research is based on a thoroughly designed online questionnaire with an integrated choice experiment, where our hypotheses were tested in two different product categories; soda and bar. While the findings are inconclusive, they indicate that our health logo is significantly effective in changing respondents' behaviors towards the healthier option in both product categories. The effect was strongest for bars, which suggests that the product category has a crucial role in determining the effectiveness of the nudge intervention.

Implications from this study include that the health logo has a positive effect in changing respondents' buying behavior and that it should be framed as a reward for choosing the healthy option. Moreover, a "one solution for everyone" approach will most likely be less effective, and should be adjusted when implementing different nudge interventions. Behavioral research has shown that the way the environment is constructed can shape a person's choices within it. Thus, it is hoped that by using insights from such research, people can be nudged towards making decisions which are better for their health.

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1.0 Introduction

Attention towards the field of healthy food and lifestyle has increased during the past decade. Five of six leading risk factors for ill health are linked to poor nutrition (Barreiro-Hurlé, Gracia, & de-Magistris, 2009) and the prevalence of overweight and obese people is increasing rapidly. In developed countries where food is abundant, consumers have the pleasure of multiple choices of what to eat, how much to eat, and when to eat and therefore, making healthy choices can be quite challenging. Moreover, it is no secret that unhealthy food is often cheap and more convenient, which according to World Health Organization (WHO, 2018) is a major driver of the worldwide rising levels of overweight and obesity More than 1.9 billion adults (age 18 years or older) were overweight in 2018, and 650 millions of them were obese (WHO, 2018). Considering this data, it seems crucial that academic research explores how governments and companies can facilitate consumers to make more healthy choices, as approximately 3 million people die every year as a consequence of their health condition (Bailey & Harper, 2015).

Since obesity and overweight have become a world-wide epidemic (Arno & Thomas, 2016), there have been different attempts to tackle the issue. In recent years, different governments have been interested in *"nudges"* as a means to decrease obesity (Reisch & Sunstein, 2016). Thaler and Sunstein (2008) first introduced nudges as an approach to law and policy that maintain freedom of choice, but steer people in certain directions (Halpern, 2015; Thaler & Sunstein, 2008). Thaler and Sunstein (2008) further promote nudging as an idea that people's choices can be arranged in their own and society's best interest. As a result, nudges hold the potential of making people's lives easier and safer by altering a variable within the choice architecture (the environment influencing our choices), and making a particular option easier to choose than the alternatives. This is done without forcing consumers to choose one option over another. Previous studies (i.e. Bucher et al., & Halpern, 2016), suggest that in order to change eating habits and activity patterns, it is necessary to change the environment we make our choices in (choice architecture), henceforth, nudging can assist in making the obesity issue smaller in the long run. In favor of this intervention, it has been found that choice architecture can influence the amount of calorie intake, and once the healthier lifestyle is adopted, choice architecture can assist in the maintenance of the new lifestyle (Wansink, 2004). For example, it has been found that product placement

functions as a nudge, such as when fruits and vegetables are placed at the cashier rather than sweets, it nudges people into buying the healthier option, since products that are placed closest to the cashier are more frequently sold (Goldberg & Gunasti, 2007).

Nudging has been a widely explored field within marketing, as it can help producers to make consumers choose a specific product, brand or service over the competitor. Nevertheless, past research has shown different results with regards to what kind of nudging works best, and how a nudge should be designed in order to achieve the overall objective. When consumers are doing grocery shopping, many choices are based on limited time and cognitive resources (van Herpen & Trijp, 2011). Hence, making it easy for consumers to interpret the communication from the shelf becomes more necessary in order to change unhealthy eating behavior, since time is often a scarce resource when grocery shopping (van Herpen & Trijp, 2011). Surprisingly, there has been limited research about how the cognitive processes in consumer minds operate in regards to nudging, furthermore, how a nudge should be built and designed to consider the cognitive resources and time pressure affecting the consumer when buying fast moving consumer goods (hereafter FMCG).

Moreover, when making a product choice, the communication the product itself gives from the shelf becomes increasingly important as it shall generate consumers attention by point-of-purchase (Underwood, Klein, & Burke, 2001). Labeling FMCG products have shown to have an effect on unhealthy eating behaviours among consumers, by making it easier to choose a healthy product due to clear communication provided by the label (Lobstein & Davies, 2009). Research has further shown that the attention to nutrition labels depends on how the information is displayed and how it is presented (Russo & Leclerc, 1991), however, there has been less attention given to research on how framing of a label functions as a nudge, and how much impact the framing has in order for the nudge to function at an optimal level, to steer consumers in a healthier direction.

With regards to the different attempts to tackle obesity and consumers unhealthy choices, one previous attempt is the new sugar tax on products that contain sugar. For example, the Norwegian government has since January 2018 increased the sugar tax level by 83% for general sugar-containing ready-to-eat products, and 42%

for beverages. The "trend" is catching on, and U.K will experience a major change in health and tax policy this April (2018), and join the small number of countries which have implemented taxes on sugary drinks as part of an anti-obesity policy (BBC, 2018). Consumers need to pay more for products that contain sugar, which can attract strong feelings in both a positive and negative way. Some might argue that the sugar tax punishes people for making an unhealthy option, and other might feel that they are being rewarded for their choice, and further pushed in a healthier direction. The sugar tax can function as a nudge, but there has been, to our knowledge, limited research that has contributed to insight on how the nudge should be framed in regards to the sugar tax, and if a label should highlight the sugar content of a product. Even though there are examples of how obesity and unhealthy product choices can be managed, several countries still struggle with the problem of obesity, thus the need for more knowledge of ways to nudge and steer consumers at their moment of choice, towards healthier product options. Building on existing research on the topics above, the following study is designed to contribute with new insight and academic evidence to fill research gaps. The overall objective for this master thesis is to answer the three following research questions:

Research question 1: Which cognitive process works best in order to change consumers' behavior towards more healthy choices?

Research question 2: How should labeling be framed in order to steer consumers towards healthier choices?

Research question 3: Is it more effective to frame the nudge as a punishment or reward in order for consumer to make healthier choices?

Due to the growing problem of obesity worldwide, the present study investigates how branding and communication provided by a health logo can provide possible solutions for policy makers in order to reduce sugar intake and influence consumer at point-of-purchase. By attaining new insights as to which cognitive processes should be targeted when designing a health logo, we hope to add knowledge as to how more effectively steer (e.g nudge) consumers towards healthier options. By answering the research questions, we hope to contribute with knowledge on how

policy makers and companies can adjust their labels in order to be part of the solution of fighting obesity and in general be a contributor to a better health.

2.0 Literature review and theoretical considerations

2.1 Dual process theory and the methods of thinking

In general, insight in behavioral economics and psychology teaches us how decision-making contexts may systematically lead consumers to fail with their own well-informed intentions, or achieve their preferred goals (Hansen and Jespersen, 2013). Thaler and Sunstein (1999) suggest that public policy-makers and other choice architects arrange decision-making contexts in ways to promote behavior that is in the consumer's best interest, as well as society's interest. A central theory underlying nudge is the Dual-process theory (Hansen & Jespersen, 2013). The theory suggests that there are two different systems for cognitive processing, and Kahneman (2011) presents them as System 1 and System 2. System 1 is often referred to as the Automatic System, and is characterized by being fast, instinctive and usually not associated with the word thinking (Hansen & Jespersen, 2013). System 2 is often referred to as the Reflective System, which is the mind's slower, analytical mode, where reason dominates (Kahneman, 2011).

EU healthy eating interventions have made a greater impact on influencing and informing consumers to make healthier food choices (Grunert and Wills, 2007), however there has been insignificant changes in actually changing consumers' behaviour as the improvements in health and reduction of obesity have not been satisfactory (Pe´rez-Cueto et al., 2012) Nudging can be used as a method to steer consumers towards a healthier lifestyle, however, the effectiveness of the nudging intervention has been varying from System 1 and System 2. A study conducted by Felsen (2013) reveals that people are more positive towards nudges that promote reflection and deliberation using System 2 nudges, which in addition get supported by Sunstein (2014,2015), who found empirical evidence that System 2 nudges were preferred over System 1 nudges. Nevertheless, nudges such as defaults (System 1) have shown to be more effective than System 2 nudges at actually *changing* consumer's behavior (Wisdom et. al, 2010; Felsen et. al, 2013). Since consumers are most likely to slip up when System 2 is busy or tired (which often is the case

after work, when people shop their dinner), System 1 becomes the commander (Conversion Optimization Blog, 2017). Therefore, when it comes to nutrition choice, it is more likely that an individual will be more acceptable to change their behavior through a nudge that is developed to be processed through System 1. Research reveals that even though consumers are in general more positive to the use of System 2 nudges, System 1 is preferred since nudges developed based on this kind of cognitive processing has greater impact at actually changing the consumer's behavior (Wisdom et. al, 2010; Felsen et. al, 2013). Choices that are made during grocery shopping are usually based on limited time and cognitive resources (van Herpen and Trijp, 2011), and individuals are often tired after work and eager to get home. Therefore, it is crucial to develop a nudge that requires little cognitive effort, that is, one that encompasses easy-to-understand communication so that information received does not need comprehensive review to be accepted.

2.2 Labeling as nudge intervention

Changing consumers' eating patterns towards healthier options has proven to be difficult and the total amount of people being obese is increasing (WHO, 2018). Labeling schemes are among the most widely known nudges to foster healthy nutrition, and one of the major instruments in trying to bring healthier eating patterns with the use of nutrition labelling (Baltas, 2001; Cheftel, 2005; Grunert & Wills, 2007). By making the health value of food products visible during the moment the product is being considered, nutrition labels reduce the information asymmetry between consumers and food manufacturers (Verbeke, 2005). Thus, it becomes important to review previous research in order to investigate which of the nutritional tables have the greatest effect on *changing* consumers buying behavior.

To date there are several different nutritional labeling schemas that have been developed in order to communicate the nutritional content and healthiness of a product. However, there has been a debate concerning the effectiveness of different labeling schemas (Thorndike, Sonnenberg, Riis, Barraclough & Levy, 2012). A variety of front-of-pack nutrition labels have been suggested, with nutrition tables, labels based on Guideline Daily Amounts (GDA's), multiple traffic light (MTL) labels, and signpost logos (e.g., Health Logo, Choices Logo) leading the discussion. What sets these labels apart is the nutritional details they communicate. On the one

extreme, nutrition tables present nutritional data in detail but no concluding information about how overall healthy a product is. On the other extreme, the presence of a signpost logo (health logo) provides evidence to the healthiness of a product without revealing the underlying nutrient composition.

Labels categorized as non-directive labels include nutrition information printed on the product and communicate the actual levels of key nutritional values which allows consumers to evaluate by themselves whether the product is healthy or not (van Herpen and Trijp, 2011). Initially, nutrition labels are rated by consumers as the preferred label and most likely to use when making food choices; however, this is in contrast with their actual behavior. According to van Herpen and Trijp (2011) in practice, the nutrition table has not been found to enhance healthy choices compared to other labels. Semi directive labels state the nutrition information based on the schemes they are based on. For example, The Guideline Daily Amount (GDA) label, shows the percentages within a group of nutrients the consumer would take in with a portion of food (van Herpen & Trijp, 2011) and multiple-traffic-light (MTL) labels provide evaluation through a color scheme. Common for these schemas is that the overall evaluation of each partial value must be done by the consumer. According to previous research (Thorndike et al., 2012; van Herpen & Trijp, 2011) MTL labels improve the healthiness of consumer's food choice. Thorndike et al., (2014) show that MTL labels have had a positive result even in the long run which they demonstrated in a traffic-light label intervention at a cafeteria. In addition, further support was supported by Reisch et al., (2017), who found that consumers support traffic light labels.

However, a disadvantage of MTL and GDA labels is that they show multiple signals at once, and thus requiring higher cognitive processing. From previous research we know that in order to actually *change* consumer buying behavior, the nudging intervention must be easy to understand and processed through System 1 (Wisdom et. al, 2010; Felsen et. al, 2013). Therefore, since MTL and GDA labels must evaluated by the consumer, these labels will automatically require more cognitive processing in order to understand the different values for each of the ingredients. Lastly, directive labels such as health logos display the overall healthiness of a product (van Herpen and Trijp, 2011). One advantage with health logo is that it provides an overall healthfulness evaluation of a product without mentioning

further details such as nutrient composition. Since they deliver a binary distinction between more and less healthful products, they allow for heuristic processing (Koenigstorfer, Wąsowicz-Kiryło, Styśko-Kunkowska, & Groeppel-Klein, 2014). As a consequence, the product usually does not contain a detailed nutrition table, since the presence of the logo itself indicates that the product meets the underlying nutritional criteria set by the organization responsible for the logo scheme (Butler, 2010). Since a health logo provides the consumer with an overall evaluation, less cognitive processing is required, and therefore it is more likely that health logos will be processed through system 1.

Moreover, health logos have been found to be very effective even when consumers are under time pressure which is often the case in grocery shopping; however, the label needs to establish trust in order to be effective (van Herpen & Trijp, 2011).There has already been much research in the area of nutrition labelling which has been detailed in a number of very comprehensive reviews (Cowburn & Stockley, 2005; Grunert & Wills, 2007; Campos et al., 2011; Hersey et al., 2013; Kroonenberg-Vyth, 2012). According to Grunert and Wills (2007), customers require three key things from the front-of-pack label whereas they must be simple to use, include underlying nutritional information and must not be unduly forced. Despite little consensus, these three key attributes have emerged as the most effective approach to communicate with consumers. Studies that have been conducted within this field of nutrition labels reveal a surprising degree of consistency that appears in the conclusions about consumers' interest in nutrition information and their interest in obtaining this information from labels on food products (Campos et al., 2011, Hersey et al., 2013).

Moreover, individuals who participated in the different studies reviewed were usually aware of the link between food and health, and thus indicated an interest in nutrition, as well as in obtaining information about properties of the food they consume (Daly, 1976; Armstrong, Farley, Gray & Durkin, 2005; Loureiro, Gracia & Nayga, 2006). Previous research also reveals that there is a common agreement on the belief that nutrition labels contribute to help consumers make healthier choices, however there is a considerable debate as to how the information should be provided through the different nutrition schemes (Drichoutis, Lazaridis, &

Nayga, 2006; Feunekes, Gortemaker, Willems, Lion, & Van den Kommer, 2008; Grunert & Wills, 2007) as mentioned above.

Health claims or health logos describe a relationship between a food substance (a food item, food component, or dietary supplement ingredient), and reduced risk of a disease or health-related conditions (FDA, 2018). In general consumers see health logos as useful and view food as more healthful if it carries a health logo (Williams, 2005). This is in accordance with Kozup, Creyer and Burton (2003), who found that consumers are more beneficial towards the product, nutrition and purchase intentions when nutrition information or health logos are presented. Healthy logos placed on the front-of-pack have been found to be particularly effective in creating favorable judgments about a product (Drichoutis, Lazaridis and Nayga, 2006), and front-of-pack formats have a high presence in many countries (Bonsmann et al., 2010). These labels are based on a limited number of key nutrients (normally salt, sugar, saturated fat and total fat) and these are the nutrients the consumers in general are most interested in (Balasubramanian & Cole, 2002). In an extensive review of consumer food labeling research, Grunert and Wills (2007) concluded that consumers are generally aware of the overall link between food and health and are interested in receiving nutrition information on food packages. Research shows that consumers often like the idea of front-of-pack nutrition labeling, and further claim that they understand the information conveyed on the given product that they are using the information in actual purchase and consumption behavior (Feunekes, Gortemaker, Willems, Lion & Van Den Kommer, 2008). Cowburn and Stockley (2005) found the same result in their study, where consumers claimed to look at nutrition labels often or at least sometimes during food purchasing.

Furthermore, most of the studies on labeling and health logos have been conducted in a lab-setting, meaning that in a real-world setting, time constraint often makes detailed information not possible to process (Hodgkins et al., 2012). In real case scenarios we know that most consumers either do not have the time or motivation to process lots of nutritional information when they are grocery shopping (Grunert et al., 2012). During grocery shopping it is likely that System 1 processing is used during routine shopping, thus the consumer will have low involvement and lack of time and sometime overload of cognitive resources. On the other hand, if the individual is following a diet (goal is to lose weight), they might be more involved

and as such, automatically switch to System 2 processing, in need of detailed information. Furthermore, based on the above it is reasonable to assume that for most scenarios, System 1 will be the dominant mode of thinking, since most people are habitual shoppers, regularly have low involvement and often experience lack of time (Bucher et al., 2016). Moreover, the literature review reveals that a label should be clear and easy in its communication, and thus include a color to make it stand out in a dense environment (Bialkova, Grunert & van Trijp, 2013), such as in a grocery store. As discussed in the introduction, sugar has been given more attention, and new policies are actively being implemented in order to lower the consumption of sugar (WHO, 2018; FDA, 2018). As a consequence, consumers will need to pay a higher price for products containing more sugar.

In a study done by Hodgkins et al., (2012), they found that the respondents used health logos as a shortcut to what they considered to be the most important messages in the other nutrition information provided on pack. Additionally, participants from the study of Kelly et al. (2009) indicated strong support for the inclusion of nutrient information on negative nutrients on the front of packages, such as sugar or fat. Elaborating on these findings, we find it interesting to look at how a health logo only displaying one key ingredient, such as sugar to highlight the healthiness or unhealthiness of a product can steer the consumer towards healthier options, and away from unhealthy options.

2.3 Framing and Return on Time

In summary, the results are mixed regarding the effectiveness of the different labels, however health logo has promising results in changing consumers buying behavior. Overall, consumers have positive feelings and attitudes towards labeling as a way to make healthier choices. To our knowledge, no research has been conducted within labeling focusing on only one key ingredient, such as sugar. By highlighting the sugar content of a given product, consumers can more easily draw conclusions about the products' healthiness without much cognitive processing.

In today's society, we have seen an increase in the trend Return-on-time (RoT), which is a goal-oriented behavior where consumers try to free up time in order to achieve a better balance in life (Andreassen, Lervik-Olsen & Calabretta, 2015).

Several studies have found that time pressure limit individuals' search of nutritional information (Beatty & Smith, 1987; Feick, Herrmann, & Warland, 1986; Park, Iyer, and Smith, 1989), and respondents who agreed with the statement "Reading labels takes more time than I can spend" were less likely to use nutritional labels (Kim, Nayga & Capps, 2001; Lin an&d Lee, 2003). This is further supported by Van Herpen & Van Trijp (2011), who found in one of their experiments that time can decrease consumers' attention and use of nutrition labels, thus, the feeling of lack of time and time pressure in general have become an obstacle to attaining healthy eating behavior (Jabs & Devine, 2006; Welch, McNaughton, Hunter, Hume, & Crawford, 2009). Therefore, it is reasonable to assume that time pressure in today's society decreases consumers' attention to nutrition label. However, research suggests that framing of the label can have a remarkably impact on consumers to make them use nutrition labels more before making a product choice (Russo et al., 1986; Russo and Leclerc, 1991). Framing is controlled by the manner in which the choice problem is presented as well as by norms, habits and expectations of the decision maker (Tversky and Kahneman, 1986).

Herpen and Trijp (2008) found in their study that front-of-pack nutrition labeling could help consumers make healthier food choices, however, lack of attention to these front-of-pack labels limited their effectiveness, even though consumers viewed nutrition table most positively. This is in accordance with what Russo and Leclerc (1991) found, namely that the manner by which the label is framed will have a huge impact on attention, which is further in line with what Bialkova et al., (2013) found regarding the importance of colors in attracting attention in a dense environment. Furthermore, Herpen and Trijp (2011) reveals that health logos enhance healthy product choice, and argues that health logos are relatively easy to interpret as they do not require extensive cognitive processing, which is in accordance to System 1 mode of thinking. Health logos, such as the "Choices logo" (i.e. the Netherlands) and "nøkkelhullsmerket" (i.e. Norway), are direct labels, and such health logos only appear on products that qualify based on underlying nutrition profile evaluations.

Using health logos has shown to markedly increase attention to and recall of health education information, and furthermore help consumers to understand the

information that can be hard to interpret in verbal terms (Houts, Doak, Doak, L & Loscalzo, 2006; Weidenmann, 1989). In addition, the logos are very directive which reduce the time effort related to studying the nutrition table and construct an overall evaluation that demands less cognitive processing. Nonetheless, there have been few studies that have found a strong relationship between framing the label with a health logo showing the amount of sugar in the product and change of behavior towards more healthy choices. This leads us to the assumption that using a health logo on labels, that is framed in a manner that it only shows sugar, will increase consumers' attention to nutrition, which may have the potential to change buying behavior towards healthy choices, since they do not require prolonged attention time.

2.4 Reward or punish people? The exchange matrix

Figure 1: The exchange matrix by French (2013)

In regards to how the nudge should be framed, it very much depends on how consumers react to the nudge. French (2013) has developed the Exchange matrix which describes four forms of social exchange that can be offered; hug, smack, nudge and shove (see Figure 1). Exchanges can be both positive (i.e. people get social reward or benefit) or it can be negative (i.e. people will face social disapproval or some other form of negative consequence if they continue to adopt a specific behavior) (French, 2013). Relating the matrix towards nutrition choice context and the new sugar tax on FMCG products, we can draw assumptions that consumers can feel punished (a loss) if companies use disincentives, especially

since products with sugar have increased in price. For example, the web-page Din-Side (2018) reveals that the tax consumers have to pay for regular chocolate (i.e. Melkesjokolade) is approximately 31.18% while the tax for soda with sugar is approximately 25.30%. Consumers can feel they actually lose money which could be spent otherwise if they would constantly choose unhealthy products.

Tversky and Kahneman (1986) introduced Prospect theory, which expresses outcomes as gain or losses (reward or punishment) from a neutral reference outcome, which is assigned a value of zero (Tversky and Kahneman, 1986). The key elements of prospect theory are a value function that is concave for gains, convex for losses, and steeper for losses than for gains (Tversky & Kahneman, 1992). Therefore, people react more extremely to losses than to gains, i.e. a loss of 500 NOK is more extreme than a gain of 500 NOK. In regards to nudging consumers to choose healthy, it becomes crucial to know whether the communication of the nudge should be framed as a punishment or reward in order to reach the overall objective. Prospect theory argues that the way alternatives are framed - or worded, have a tremendously impact on consumers decision (French, 2013). The theory therefore proposes that consumers should feel rewarded (a gain) if they choose products advertised as healthy, because they can avoid paying extra tax for products with a certain amount of sugar, and additionally feel rewarded for taking actions against obesity and making a healthier choice. Nonetheless, since consumers are more sensitive to losses, it is assumed that they avoid situations where there is something to lose (or get punished for), which further leads us to the suggestion that the nudge will have a greater impact in steering consumers towards a healthier food choice if it is framed in regards to the right side of the matrix. In other words, the theory postulates that framing the health nudge as a punishment will be more effective on changing consumers buying behaviour.

2.5 Theoretical framework and hypothesis

To date, several nudging interventions in the fast-moving consumer good business has been studied and statistically tested. But, when it comes to which cognitive processes policy makers should aim at targeting when designing a nudge, the results have been ambiguous, however with a little more support for System 1 mode of thinking. The literature reveals that consumers in general have limited time and

cognitive resources when performing grocery shopping. Therefore, a nudge intervention (label) that requires little mental processing (System 1), but yet provide sufficient information (like a health logo), becomes necessary.

Moreover, there has been no attempt to our knowledge of establishing whether the nudge should be framed as a punishment or reward and which of the two has the greatest impact on changing consumer buying behavior. Using Prospect theory as an underlying theory, we want investigate if the theory can be used when framing an offer to consumers, where they are either punished (e.g. paying extra for a product contain sugar) or being rewarded (pay less for products without sugar). Sugar has been given much attention and most consumers know that too much sugar is bad for their health. Therefore, by displaying only sugar on the labeling, the unhealthiness of the product will be amplified and consumers will easily see and understand how much sugar the product is containing.

The present research is based on an online experiment that investigates nudging interventions through cognitive processing, health logo and framing of the nudge. Based on the preceding thorough investigation of existing literature and theories, the first research question is investigated through hypothesis 1:

RQ1: *Which cognitive process works best in order to change consumers' behavior towards more healthy choices?*

H1: Nudge designed at targeting System 1 has greater impact then System 2 in changing consumers' behavior towards the healthier choices.

External factors such as time influence consumers at point of purchase, and makes it more important for sufficient and easy-to-understand communication. The second research question is therefore explored through hypothesis 2:

RQ2: *How should the labeling be framed in order to steer consumers towards healthier choices?*

H2: Nudging through a health logo that displays only sugar content on front-of-pack will have an effect on changing consumers behaviour towards the healthier choices.

Based on French's` exchange matrix and Prospect theory, the third research question is examined through hypothesis 3:

RQ3: *Is it more effective to frame the nudge as a punishment or reward in order for consumers to make healthier choices?*

H3: Nudge interventions are more effective if the nudge is framed as a punishment compared to reward.

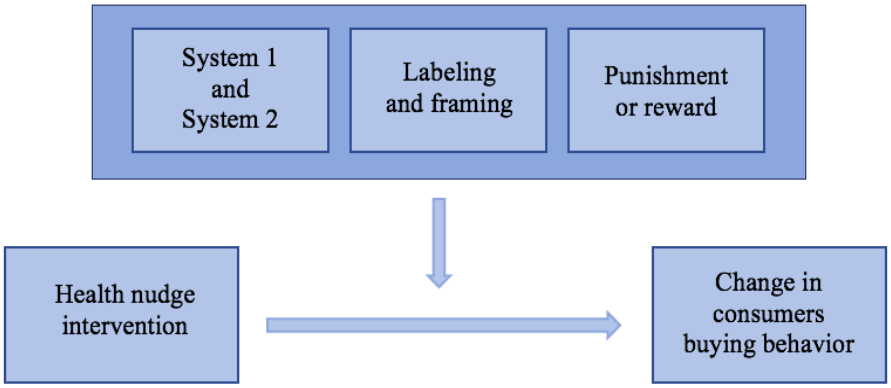


Figure 2: Own research framework

3.0 Methodology

3.1 Primary Data collection

Data collection presents one of the most crucial parts of any research projects (Saunders et al., 2015). The purpose of collecting data to this thesis is to explore the change in consumers' behaviour towards a healthier option as a response to our nudge intervention-the health logo. Given that the primary data is of quantitative nature, it has been collected through an online questionnaire, an instrument that aims to motivate the participants to provide complete, honest and accurate answers in order to avoid response errors (Malhotra et al., 2007). Through a questionnaire, it is possible to have regular questionnaire questions in combination with an integrated experiment, which has been applied in this thesis. It is the most effective

technique to use in order to acquire information from a research field that we (as the authors) already know something about (Malhotra et al., 2007). Overall, the questionnaire and incorporated experiment have been developed with the research questions in mind, with the main objective to create a questionnaire that is clear with understandable questions. In addition, it shall be encouraging for the respondents and thus, we can be able to determine the effectiveness of the choice logo leading to healthier food choices (Malhotra et al., 2012).

3.2 Sampling, population and distribution

Our main target population for this questionnaire was primarily all customers who are performing grocery shopping within the FMCG- market in Norway. In addition, the target population would need to have access to the internet in order to answer the survey. Since it is hard to calculate the exact population for this market, the study is based on a non-probability sampling in order to yield for good estimates of the population characteristics. Nonetheless, non-probability sampling is challenging to support in statistical terms and can limit generalizability because we cannot control the respondents' self-selection, thus biases are present (Malhotra et al., 2012). Moreover, a convenience sampling will be emphasized as it is the least expensive and time-consuming technique which will still give us sampling units that are accessible, easy to measure and cooperative (Malhotra et al, 2012). Although prone to bias and other undesirable influences, a convenience sample can be a useful pilot for future studies, which will use more structured samples (Saunders et al., 2015).

According to Saunders et al., (2015) no clear rules are found when it comes to how many respondents are necessary, thus the issue of sample size in non-probability sampling is rather ambiguous. Moreover, it very much depends on what the researcher wants to investigate and what available resources can offer (Saunders et al., 2015). Therefore, our goal was to attain approximately 150 usable and complete responses. The survey (see appendix I) was distributed May 2018 through a hyperlink on social media (Facebook and LinkedIn), which kindly encouraged people to complete and share the survey with their network, thus creating a snowball

effect. It was available for two weeks which gave the respondents sufficient time to complete the questionnaire and the potential to benefit from the snowball effect.

Being aware that no statistical inferences can be made, we judged the defined sample responses as sufficient enough to generate indicative results from statistical analysis.

3.3 Questionnaire content and integrated experiment

In this section, an outline of each question and its role in the project is given in the order of appearance in the questionnaire. The questionnaire comprises a total of 27 questions and is structured into five parts. The first three parts of the questionnaire serve as the integrated experiment and are directly related to our research questions and hypothesis. Part 1 (Q1-7) explores the respondents cognitive processing mode, part 2 (Q8-12), explores the nudging intervention through labeling and lastly part 3 (Q13-19) gives insight into whether a consumer should be punished for not choosing the healthy option, or rewarded for making the healthy option in order to change buying behavior. Part 4 (Q20-23) of the questionnaire is included in order to explore consumers habitual shopping behavior and their general knowledge about the products and use of labels. Lastly, part 5 (Q24-27), ends the questionnaire with the respondents` demographics.

In the integrated experiment, we have chosen two different product categories; beverage (soda) and energy bars. The reason for choosing soda is due to the high consumption of both regular and diet versions of soda in Norway. In 2014 one Norwegian person drank on average 55 liters of soda during one year, which is one of the highest consumption intakes worldwide (Dagsavisen, 2016; TV2, 2018). The reason for choosing bars is because they have become very popular during the last years, and the healthiness between these products varies quite a lot (Tv2, 2018). According to a test Tv2 did concerning bars in Norway, they concluded that some of the bars contained as much sugar as normal candy (Tv2, 2018). In general, all countries offer a broad variation of bars (e.g. muesli bars, protein bars, energy bars etc.) and the healthiness varies considerably (Aschemann-Witzel et al., 2013). A high variety in the amount and types of ingredients of different snack products is likely to lead to confusion among consumers, a situation in which nudges, such as

nutrition labels might be especially effective (Aschemann-Witzel et al., 2013). The nudge will function as an easy way of establishing the sugar content without much cognitive processing and as a result, the consumer will not be fooled and believe that it is a healthy product just because it is advertised as a meal between meals. In fact, one FlapJack Sempre contains as much as 336 calories and is further promoted as a healthy snack, when in fact a normal bar should contain approximately 150 calories (Tv2, 2015).

A more detailed review of each part and its role in the experiment will be described in detail in the following sections.

3.3.1 Experiment Part 1: System 1 and system 2

The first part of our questionnaire is related to System 1 and System 2 mode of thinking, where the underlying goal is to establish if the respondent either uses System 1 or System 2 while grocery shopping. Most of the grocery shopping in everyday life is based on Automatic thinking (System 1) due to brand habits, knowledge and repeat purchase. Nevertheless, while some research posits that System 2 nudges is preferred over System 1 nudges (Sunstein and Thaler, 2014; Sunstein 2015), System 1 nudges has the strongest impact at actually changing consumer buying behavior (Wisdom et. al, 2010; Felsen et. al, 2013). Thus, it becomes important to activate System 2 in the experiment in order to test research question 1.

To make the stimulus consistent with the desired action, we used in both the Q2 and Q3 the Stroop-test technique, which half of the respondents randomly received. The Stroop test is the measure of cognitive interference through the reaction time of a task. The most common Stroop test uses the name of a color printed in a color not denoted by the name. By using this test, respondents are required to read a short list of words and name the color of the ink in which the word is printed. The Stroop effect which is the reaction time, is greater when the color of the ink does not match the name of the color than when the color of the ink matches the name of the color (MacLeod & MacDonald, 2000). Respondents got exposed to the word “GRØNN” (green) written in the color *red*, and the word “LILLA” (purple) written in the color *blue* (see appendix I). The aim of the question is to make respondents choose the

alternative that indicates the color the word is written in, when reading the word. Theories claims that the Automatic System (System 1) reads the word faster than the color naming system (Thaler and Sunstein, 2009); therefore, the ones who received the Stroop-test need to activate the Reflective System (System 2). The main reason for doing a Stroop-test at the beginning of the survey is due to Q4 and Q5, where we test if respondents used the nutrition table on two fictive products (SLOPE and MELT), or if they intuitively choose the product without reading the nutrition table. The respondents who randomly received the Stroop-test have a bigger chance of activating System 2, thus we can analyze the difference between the two groups and their respective answers in Q4 and Q5. We used fictive products in order to avoid biases such as brand preference, color and names. In addition, the fictive products are "new" products for the participants, therefore, we can indicate if they actually use nutrition tables when buying a new product within the two product categories, since they do not have any pre-knowledge of the products.

Since return-on-time (RoT) is a underlying factor in hypothesis 1, we used Q6 and Q7 to establish whether the respondents used the nutrition table when making a choice in Q4 and Q5, furthermore, if they experienced reading the nutrition table as time consuming or not. Answers here will provide valuable insight when analyzing the results related to the health logo.

3.3.2 Experiment Part 2: Labeling as nudging intervention

During part two of the survey, the aim is to test H2. The respondents are presented with five questions where the intention is to check whether or not the implemented directive choice logo alter the respondents' behavior (Figure 3). A directive choice label was chosen because findings suggest that logos are most effective in influencing consumers' choices towards healthier food (van Herpen and Trijp, 2011). A new health logo is therefore developed for this study, where the aim was to develop a logo that was easy to understand, and required as little cognitive processing as possible, however not at the expense of the logos' purpose. For the label to be noticed, its comprehensibility and visual attractiveness had to be ensured, and for that purpose a schema with four different health choice logos was forwarded to a test-group of 20 people. The logos varied in color and shape and the test group

was asked about their preferences, likes and dislikes where the result is the two different logos presented in this study. Green was the color that ensured that the communication on the different product labels were framed in a way that consumer noticed and understood it, and is therefore chosen as the color for the health logo. The logo is placed on every label within the two chosen product categories, and the green color indicates how much sugar the product contains in total.

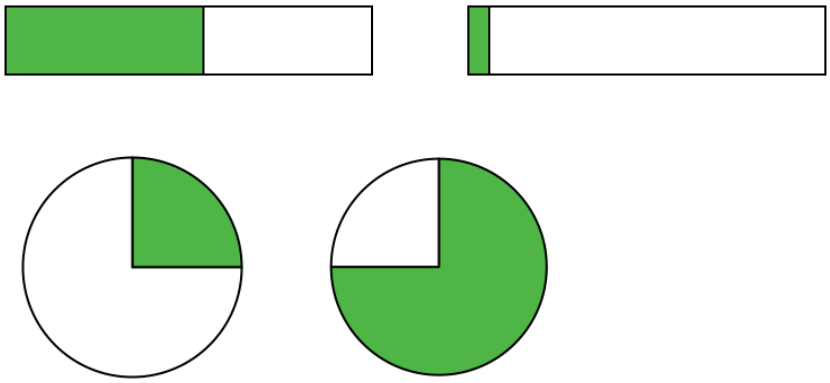


Figure 3: Health logo as a nudge intervention

The positioning of the logo was held consistent in both product categories, with one exception regarding the "Nutrilett bar" where the logo was placed on the upper right corner, instead of bottom right corner. The reason for this was that it was the most appropriate positioning based on the product design, and our new logo naturally fit over another already positing logo, making the placement a good choice. It has been found that obesity is a larger problem among less educated people (Devaux, Sassi, Church, Cecchini, and Borgonovi, 2011) thus, it is important to implement nudge interventions that are appropriate, and easy to understand for individuals from different educational backgrounds. The health logos are formed as easy to understand, thus do not require much explanation nor cognitive processing from the respondents. In the survey, the logos intention is explained in Q10 and Q12 (see appendix I), in both categories to exclude any misunderstanding, and to emphasis that the logo display sugar content of the given product.

3.3.3 Part 3: Punishment or Reward

Q13 to Q18 take research question three into account, where the aim is to investigate if punishment works better than reward in order to make consumer change their behavior to choose the healthier option. This part of the survey is based on different scenarios where question Q13, Q15 and Q17 are framed as a

punishment and question Q14, Q16 and Q18 are framed as a reward. The questions use three different brands within the soda category (Coca-Cola, Solo and Sprite) because this is a product category that everyone is familiar with and have to some extent knowledge about.

Scenario 1 and 2 (Q13 and Q14) takes the sugar tax into account, where it reveals that you have to pay 10 NOK in sugar tax on Coca-Cola, or avoid paying 10 NOK in sugar tax by choosing Coca-Cola Light. In scenario 3 and 4 (Q15 and Q16), respondents get information that they will consume 150 calories more by choosing Solo compared to Solo Super, or the other way around; avoid the 150 calories by choosing Solo Super. Scenario 5 and 6 (Q17 and Q18) respondents get information that they need to walk for one hour in order to burn the calories from Sprite compared to Sprite Zero, and for the other way around; do not need to walk for one hour in order to burn calories from Sprite Zero. By asking those different scenarios, we aim to measure hypothesis 3 *"Health interventions are more effective if you use punishment compared to reward"* because Q13 to Q18 can indicate whether the participants choose the healthy products or not when the scenarios are framed as either punishment or reward.

In addition, in Q19 we indicate if consumers would choose healthy products if they always get 5% discount. The question was asked in order to establish more support for the answers in Q13-Q18 (punishment vs. rewards scenarios). The question was asked because in Norway, Kiwi has introduced 15% discount on fruit and vegetables, and Rema 1000 has 10% discount. This question therefore gives an indication on whether consumers would change their behavior to choose more healthy products if they constantly get rewarded (discount on the products).

3.3.4 Part 4: Buying behavior

Part 4 of the survey consists of a line of questions that is included to clarify the respondents habitual shopping behavior, health consciousness or strong product preferences which interact with the effects of nudges (Bucher et al., 2016). Q20 and Q21 explore the respondents purchase frequency within the two given categories. It is likely that respondents who buy frequently have stronger brand preference and therefore are even more habitual in their behavior, however, if these respondents

change their behavior after being presented with the health logo, the support for the health nudge will be even stronger. In order to know if the respondents have a strong brand preferences, Q22 and Q23 will provide insights with regards to return-on-time, the respondents' habitual buying behavior, how frequently they actually use the nutrition label, and if not, the reason for not using it. The questions and part four are not directly related to the hypothesis, however they serve as an important source of understanding consumers' behavior and consumption habits, and thus is accommodating in explaining the results of the statistical analysis.

3.3.5 Part 5: Demographic

The final section comprises four demographic questions, including gender (Q24), age (Q25), work situation (Q26) and level of education (Q27). Our research questions and hypotheses do not include any variation within demographic variables, nonetheless, it might be interesting to see if there is a difference within demographic groups regarding the three hypotheses.

3.4 Structure of the questionnaire

In this section we will go through the technical part of the questionnaire design. Further, we will address the structure of the individual questions in terms of rating and measurement scales. An overview of the of the structure of the questionnaire and its questions can be found in Appendix I. All the questions in the questionnaire is of closed nature, which means that the respondents get to choose between a set of already given alternatives. However, one exception is made in Q9 where respondents can write down an alternative soda if they have other preferences then the alternatives available.

A selection of different rating scales has been applied throughout the questionnaire. The majority of questions are scaled through either a 7-point Likert scale (Q1, Q8, Q10-Q12, and Q19) where values range from "Extreme likely" to Extremely unlikely" or a single response scale (Q2-Q5, Q9, Q13-Q18) where respondents can only choose one of the options presented. When measuring buying behavior (Q6-Q7, Q20-Q23), a 5-point Likert scale has been chosen because there was no need for any further alternatives, in addition to allowing for a neutral response which was preferable (Cox III, 1980). The Likert scale has been chosen due to its advantage,

namely the fact it proves more depth to the questions rather than a simple yes/no statement. Moreover, allowing for more nuanced measures in addition to allowing respondents to choose a "neutral" option if they do not have any strong preferences. In addition, Likert scale questions are easy to understand and simple to administer (Malhotra et al., 2012).

3.5 Layout of the questionnaire

Layout-related considerations of online questionnaires differ substantially from paper versions (Malhotra et al., 2012). In order to increase response rates and keep the respondents interested throughout the survey, the visual presentation should be attractive and thus, encourage respondents to complete the questionnaire (Saunders et al., 2015). In order to utilize this, the statistical program Qualtrics was chosen, a modern and professional tool that allows for customization of design with regards to colors, design and the layout in general. A modern design is important due to our integrated experiment with fictive products where high resolution images should be perceived as realistic as possible. In order to make the products look genuine and authentic, a professional graphic designer was hired to create the fictive bottle of soda and the fictive bars. The graphic designer used advanced programs and draw inspirations from already existing and well-known brands when designing the shape of the products. Moreover, to ensure a clear and easy overview, the questions were divided into separate pages which assures that the respondents are not being exposed to overwhelming information at once. It is commonly agreed not to have a long questionnaire because this will decrease the response rate. On the other hand, a "one fits all" approach is not promising since it depends on what is being measured, thus the need for customization of the survey. According to Saunders et al. (2015) a questionnaire should not be longer than necessary and not contain questions that is not necessary for the study's purpose, and if there is not satisfactory need of the question it should be eliminated (Malhotra et al., 2012).

It is of high importance to consider how to overcome participants' inability and unwillingness to answer, and one should not assume that respondents can provide accurate and reasonable answers to the questions (Malhotra et al., 2012). Some of the most prominent reasons for participants to drop out of a questionnaire is that

respondents may not be informed or have sufficient information about the topic, may have difficulty to remember a specific context, or exhibit the inability to articulate responses (Malhotra et al., 2012; Saunders et al., 2015). These possible problems are dealt with by providing a clear introduction to the questionnaire and its objective, and including information on data protection and how it will be used, and emphasis anonymity. However, performing grocery shopping and choosing between products are seemingly a task that most individual are familiar with, thus not faced with a complex task. Further, low effort is required to answer the questionnaire questions since most questions suggest response alternatives and no open questions are provided. Finally, the researcher avoided including sensitive questions, which would be likely to cause high drop-out rates.

3.6 Pilot testing

In order to eliminate potential and unseen fore problems during the questionnaire, a pilot test was conducted (Malhotra et al., 2012). The pilot sample consisted of 15 respondents and was equally divided by gender, age and background. In addition, the selected respondents were asked to provide feedback with regards to the clarity and purpose of the study, technical functionality or other notes they might have. For us to later asses what is considered an acceptable time to complete the questionnaire, 5 respondents were asked to thoroughly complete the questionnaire whereas 5 other respondents were asked to quickly complete the questionnaire (while still reading everything rather carefully). The first group used an average of 350 seconds and the second group used an average of 940 seconds; thus, respondents who used less than 300 and more than 950 seconds on average were deleted and considered un-valid. The reason is that these respondents might have just clicked randomly at options, not reading the text nor understanding its purpose, hence using less time than average. Moreover, been focused on other things at the same time as they were responding to the questionnaire may have made respondents spending more time than average and as a result not giving the questionnaire its necessary attention. Based on the feedback the wording was adjusted in order to make the purpose of the study even more easy to understand, switching some of the words to fewer comprehensive words. The pilot study therefore had some minor

adjustments before the questionnaire was distributed through a selection of social media channels.

4.0 Data Processing

4.1 Data cleaning

Before the initial data analysis was conducted, the data set was carefully investigated and cleaned and all the variables were converted into numerical values. The original data set consisted of 258 observations, however after the cleaning the data set the number was reduced to 179. All respondents that quit the questionnaire with a completion of less than 50 % were deleted. Participants who quit the questionnaire might not have been committed to giving careful consideration when answering the questions, therefore the elimination of their responses also displays a measure to ensure a high quality of responses. As mentioned in the pilot study, respondents who did not meet the time standards were initially removed in order to ensure a consistent data analysis across questions. Moreover, respondents who had many similar values, for example only selected the option to the far right, were initially removed if they were close to minimum or maximum time horizon, since these respondents most likely have not given the study sufficient attention and their response was seen as un-valid.

4.2 Missing values

Before starting the analysis, we cleaned our data and removed the respondent who had too many missing values. We chose to have an upper limit to the survey (60 minutes) because the questionnaire was designed in an easy way, and it should not take more than approximately 10-15 minutes to complete. Therefore, 18 respondents were removed due to exceeding the time limit and furthermore, 41 respondents were removed as they did not complete more than 49% of the questionnaire. 13 respondents completed between 49%-99%, but the information provided by them was still used as the information provided in the beginning of the survey could still contain insightful information. Hair, Black, Babin and Anderson (2014) state that cases where 10% of the data is missing can be ignored. In order to utilize the answers where respondents had not 100% completion of the survey, missing values were re-coded into -1 and further labeled missing values as -1, thus SPSS would not include the missing values in the analysis. Moreover, we run a

frequency analysis test in order to be sure that all the missing values were set to zero, thus leaving us with a high-quality data set.

5.0 Data analysis

5.1 Presentation of the sample

The sample consists of 100% Norwegian inhabitants, where the total sample represents females (71.1%) and males (28.9%). The age ranges between under 18 to over 65, but the majority is the in age group 25-34 (39.2%), followed by 45-55 (21.1%) and 18-24 (20.5%). The sample belongs to a higher education group, as 46.4% hold a bachelor degree and 16.9% a master degree. 33.7% of the respondents have only completed high school. Nonetheless, half of the sample (54.2%) have a full-time job, and 22.9% are students with part-time jobs, which indicates that they are economically stable and are valid to the survey as we investigate buying behavior and purchase intention. Since the data consist of 179 observations, it can only give an indication about the overall population, and the study is therefore a non-representative sample due to the sample size.

5.2 Analysis of the hypotheses

The aim of the analysis is to investigate if our three variables moderate the relationship between health nudge and change in consumers buying behavior. First, we want to see if there is a difference between the ones who received the Stroop test and the ones who did not (the control group). This is measured with Q4 (SLOPE) and Q5 (MELT) to see if respondents took the time to read the nutrition table when answering Q4 and Q5. A cross-tab analysis with chi-square was conducted in SPSS, revealing no statistically significant relationship between the Stroop test group and the outcome (MELT = χ^2 *(1, N = 179) = 0.079,* $p > .05$ and SLOPE = χ^2 *(1, N = 179) = 1.030,* $p > .05$.) There was no clear difference between the group that received the Stroop and the control group in Q4 and Q5, moreover, the control group surprisingly a had higher score on the option SLOPE with nutrition table and MELT with nutrition table compared to regular SLOPE and MELT without any nutrition information (see Table 1 below).

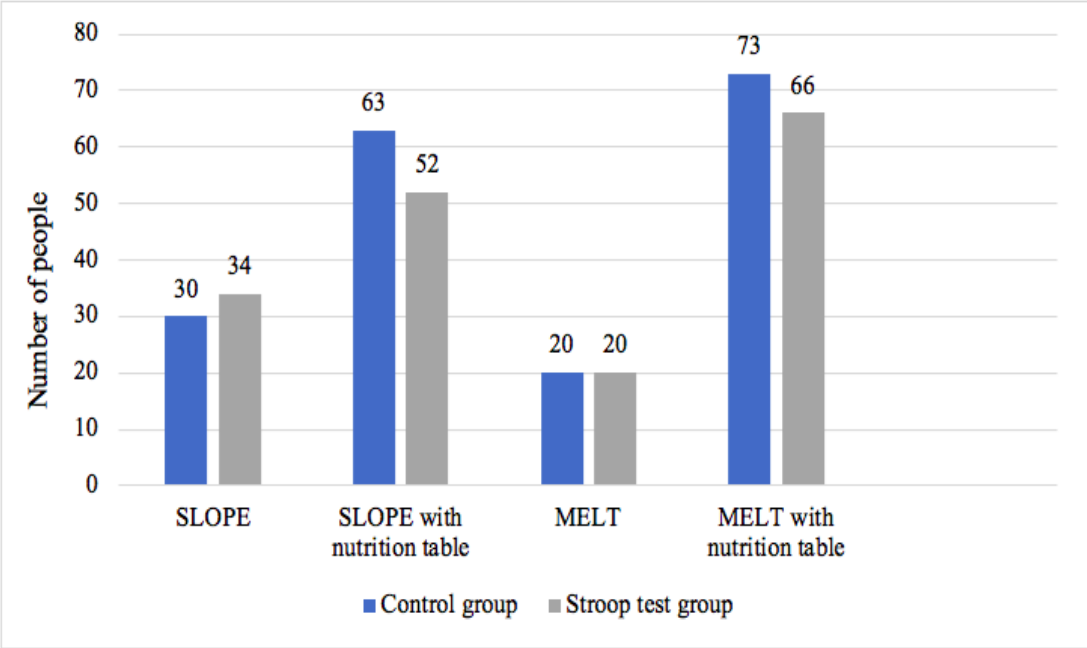


Table 1: Frequency diagram of the control group and Stroop test group

Furthermore, an independent t-test was run to determine if there were differences in the use of nutrition table between the Stroop test group and the control group when making an answer of SLOPE and MELT. There was homogeneity of variances for both Q6 and Q7 as assessed by Levene's test for equality of variance (Q6, p = .235) and (Q7, p = .705).

The independent t-test revealed a statistical significant difference in the mean score between the two groups when using the nutrition table to make a choice in Q4 and Q5 (SLOPE and MELT), with the control group scoring higher than the Stroop test group M = 0.39, SE = .193, t(177) = 2.016, p = .045. There were no statistical significant difference in the means scores between the two groups due to their experience of reading nutrition tables as time consuming, t(177) = -1.321, p = .188.

Overall, the majority used the nutrition table when choosing SLOPE and MELT, indicating that the Stroop test and activating System 2 did not have any effect. The analysis revealed that the control group actually used the nutrition table more than the Stroop test group. An example of that can be shown in Table 2, where the control group have higher scores on the 5-point scale in Q6, where approximately 45 of the respondents in the control group used the nutrition table; however, only 36 from the Stroop group used it when choosing MELT or SLOPE (see Table 2).

Q6	Very small degree	Small degree	Occasionally	Large degree	Very large degree
Stroop group	20	16	14	30	6
Control group	13	12	23	31	14

Table 2: Frequency table of question 6 «I hvor stor grad brukte du informasjonen på etiketten for å ta valget ditt i de forrige spørsmålene?»

The two groups were further analyzed for their buying behavior (Q22 and Q23). A crosstab and chi-square analysis showed no statistically significant relationship between the two groups and their confusion of the nutrition information on labels (Stroop test group $\chi^2(4, N = 166) = 1.423$, $p > .05$ and control group χ^2 (20, N = 166) = 10.410, $p > .05$). with the Stroop test having a mean of 2.70 and the control group a mean 2.58 on the 5-point scale, indicating that there is no clear gap between the two groups. Furthermore, re there was no statistically significant differences in the frequency to which the respondents take the time to read nutrition tables (Q23) (Stroop test group $\chi^2(4, N = 166) = 4.431$, $p > .05$ and control group $\chi^2(20, N = 166) = 31.116$, $p > .05$) although the control group showed a higher mean compared to the Stroop test group, $M = 0.07$, $SE =. 096$. Based on the results from the independent t-test and chi-square, we find no statistically significant results when comparing the Stroop test group and the control group, which gives us no support for hypothesis 1.

Nonetheless, a frequency analysis reveals that the majority, regardless of group belonging experienced the reading of nutrition table as more time consuming (see Table 3), which suggests that System 1 should be the best alternative in order to change consumers' behavior due to the time spend on reading nutrition tables.

Q7	Very small degree	Small degree	Occasionally	Large degree	Very large degree
Stroop group	6	21	36	16	2
Control group	9	22	45	15	2
Total	15	43	81	31	9

Table 3: Frequency table of question 7: «Opplever du det som tidkrevende å lese næringsetiketten på produktene?»

It is likely that System 1 is used during routine shopping due to habitual shoppers and lack of time. One way to steer the consumer to a healthier direction is through health logo on labels, which our hypothesis 2 aims to test. Respondents were first introduced to regular products which did not display the health logo, followed by the next question where the health logo was placed on the products, showing how

much sugar the product contains. A paired sample t-test was therefore conducted in SPSS in order to check whether the respondents changed their option after being exposed to the heath logo.

5.2.1 Part 1: Soda (Coca-Cola, Coca-Cola Light, Solo and Solo Super)

The paired sample t-test (appendix 2) reveals a statistically significant mean difference between the two groups (with and without health logo) for all four pairs. For the unhealthy product, the health logo placed on Coca-Cola gave a statistically significant decrease in consumers' choice of product, compared to regular Coca-Cola without logo, $t(179) = -3.564$, $p < .000$. The same effect was found for Solo, as the health logo gave a statistically significant decrease compared to regular Solo, $t(178) = -3.904$, $p < .000$. For the healthy products, Solo Super with health logo showed a statistically significant increase in the mean compared to Solo Super without health logo, $t(178) = 5.167$, $p < .000$. Furthermore, Coca-Cola Light with health logo had a significant higher mean compared to Coca-Cola Light without health logo, $t(178) = 3.567$, $p < .000$.

The paired sample t-test revealed that regular Solo had a higher mean score on the 7-point scale ($M = 4.11$) compared to Solo with health logo ($M = 3.71$). For the case where the health logo was placed on Solo, the mean is lower by 0.397 points, indicating that respondents are less likely to choose regular Solo when the logo is placed on the bottle. Furthermore, respondent were more likely to buy Solo Super when the sugar content logo is placed on the product ($M = 4.21$) compared to Solo Super without the logo ($M = 3.76$).

For Coca-Cola with health logo ($M = 2.99$) the mean was 0.335 points less after the presentation of the health logo compared to when only regular Coca-Cola was presented ($M = 3.32$). As for Coca-Cola Light ($M = 3.51$), the mean was 0.263 points higher after the logo was presented on the bottle, as Coca-Cola Light with health logo provided a mean of 3.78. A mean decrease in the unhealthy products (Solo and Coca-Cola) and an increase in the mean of the healthy products (Solo Super and Coca-Cola light) after the health logo was placed on the bottles demonstrates that respondents are more likely to choose the healthy option when presented with the nudge intervention, the health logo (see appendix 3).

5.2.2 Part 2: Bars (Nutrilett, Roo`bar, Wasa and Eat Natural)

The same procedure was conducted for the bars in Q11 and Q12. The difference between soda and bars is that normally, bars do not contain a healthier or less healthy option (i.e. zero or light version). Nonetheless, sugar content in bars varies considerably, and therefore, the bars in the survey range from a healthy option to an unhealthy option. However, consumers might not be as aware of the sugar content as they are with soda. Roo`bar followed by Nutrilett are the healthy option and Eat Natural followed by Wasa are depicted as unhealthier with a higher amount of sugar. Therefore, due to the hypothesis, Nutrilett and Roo´bar should have an increase in mean, and Wasa and Eat Natural should have a decrease in mean after being presented with the health logo in Q12.

For the healthy bars, the paired sample t-test (see appendix 4) revealed that regular Nutrilett (M = 3.64) had a lower mean than Nutrilett with health logo *(*M = 4.06). The health logo on Nutrilett gave a statistically significant increase in the respondents choice compared to Nutrilett bar without a health logo, t(169) = 4,121, p < .000. Furthermore, Roo`bar (M = 3.11) had a higher mean when the health logo is placed on the bar (M = 4.38) which gave a statistically significant difference between the two variables, t(169) = 9,008, p < .000, and an increase in mean of 1.271.

For the unhealthy bars, regular Wasa without health logo (M = 4.01) has a decrease in mean after the health logo is presented (M = 3.27), with an t(169) = -5.866, p < .000, and a mean decrease of 0.741. Furthermore, the unhealthiest bar, Eat Natural showed a lower mean after the health logo was presented (M = 2.50) compared to regular Eat Natural (M = 3.58) which gave a mean decrease of 1.082. The health logo on Eat Natural gave a statistically significant decrease in the respondent's choice compared to the Eat Natural without the logo, t(169) = -.0821, p < .000.

Based on the results above we find statistical support for H2. Given that there is an increase in the mean for both the healthy option after being displayed on a health logo, and a decrease in mean for the unhealthier option, we conclude that a health logo placed on a product has a significant effect in changing consumer buying behavior towards a healthier option.

5.2.3 Punishment or reward

Q13 to Q18 consists of six different scenarios whereas three scenarios are framed as a punishment for choosing the unhealthy option, and three scenarios are framed as a reward for choosing the healthy option. A crosstab-analysis with chi-square for association was conducted between gender and the preference of reward or punishment (Q13 - Q18). There was a statistically significant association between gender and scenario 1 (punishment), $\chi^2(1) = 8{,}742$, $p = .003$ and scenario six (reward), $\chi^2(1) = 7{,}229$, $p = .007$. There were no statistically significant association between gender and the other four scenarios.

The frequency analysis revealed the percentage differences in each of the six scenarios (see Table 4). The hypothesis suggests that punishment should work better to steer consumers towards the healthy option, which means that the percentage of healthy products (Coca-Cola Light, Solo Super and Sprite Zero) should be higher in the punishment scenarios than the reward scenarios. The frequency analysis shows that there is a big difference for Coca-Cola, as none of the respondents choose regular Coca-Cola when Coca-Cola Light was framed as a reward ("If you choose Coca-Cola Light you will save 10 NOK due to sugar tax payment") However, in the punishment scenario, 25.6% chose Coca-Cola and 74.4% chose Coca-Cola Light, which means that for Coca-Cola, the reward scenario had the best effect on the respondents. For the other four scenarios there was no significant difference. For instance, while Solo Super had a percentage of 61.9% in the punishment scenario and 61.3% in reward, Sprite Zero had 70.1% in punishment while 70.7% in the reward scenario respectively.

The interesting finding is therefore the big difference between Coca-Cola and Coca-Cola Light in scenario one and two. These scenarios include the sugar tax payment which further shows that respondents are more sensitive to losses than to gains which is in accordance with prospect theory (Tversky & Kahneman, 1992). The respondents would rather choose the framed option where they get an assurance that they will save money, rather the option that is framed as money they would lose.

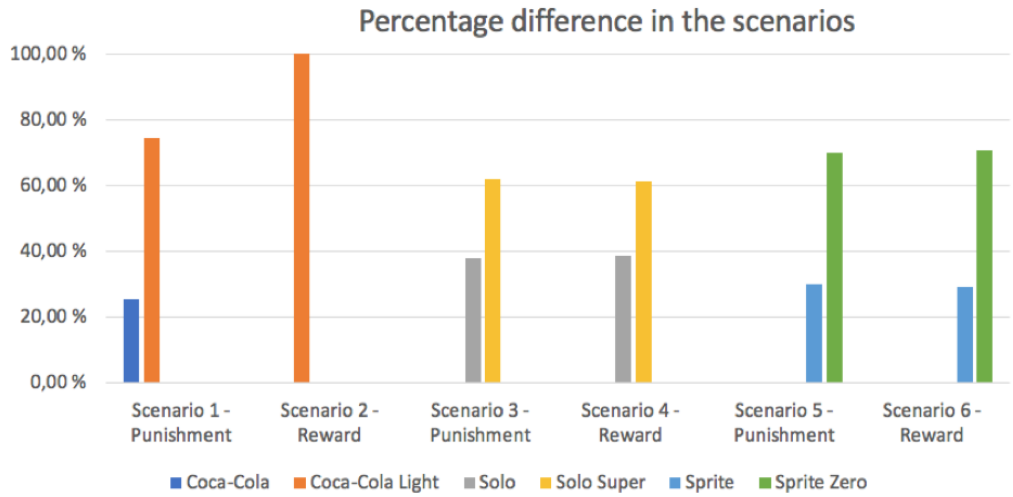


Table 4: Percentage difference in punishment and reward scenarios

The analysis of the six scenarios do not give clear insight to whether punishment works better than reward as scenario three to six are quite similar in their percentages. Nonetheless, one can assume that for Coca-Cola and the sugar tax, rewarding consumers have a higher effect on steering consumers to choose the healthier option Coca-Cola Light.

Furthermore, we investigate Q19 and the likelihood of people always choosing healthy food if they always get rewarded for it (the questions gives 5% discount). The frequency table showed that approximately 59.6% of the respondents are quite and extremely likely to always choose healthy products if they get 5% off, followed by 21.7% of somewhat likely. The results showed a $M = 5.58$ among females and $M = 4.90$ among males on the 7-point scale.

Based on the six scenarios and Q19, the analysis reveals that for most of the cases (especially for Q13, Q14 and Q19) reward works better than punishment. In scenario three to six there was no clear difference and therefore it becomes misleading to take those results into account. Therefore, we cannot conclude that health interventions are more effective if you use punishment compared to reward, and the hypothesis is therefore rejected.

5.3 Summary of results

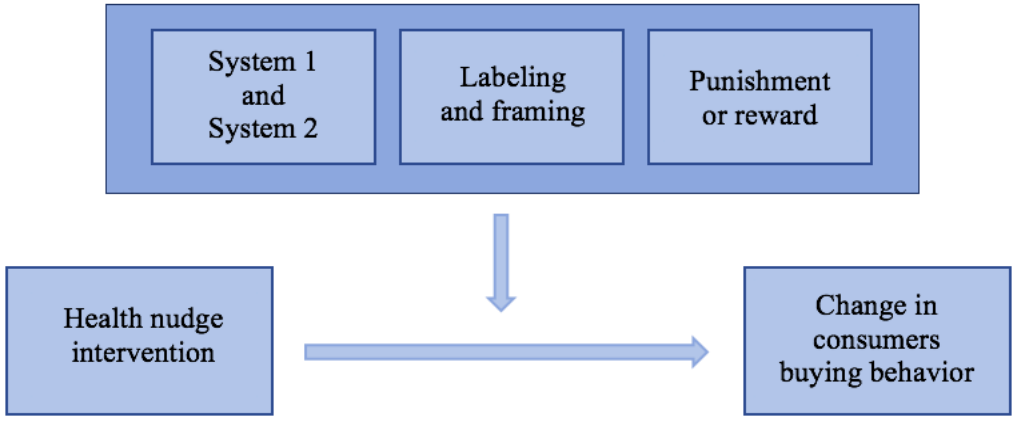
The table below reviews which hypotheses were supported by the results and which were not.

Hypotheses	Reject	Support
H1: Nudge designed at targeting System 1 has greater impact than System 2 in changing consumers' behavior towards the healthier choices.	**X**	
H2: Nudging through a health logo that displays only sugar content on front-of-pack will have an effect on changing consumers behaviour towards the healthier choices.		**X**
H3: Nudge interventions are more effective if the nudge is framed as a punishment compared to reward.	**X**	

Table 5: Overview of the results

6.0 Discussion

In the previous sections the results of the study were presented, and further in this chapter, we will discuss the most important findings in order to answer the research questions of the study. The discussion will be based on our theoretical framework:



According to low-involvement theories that look at grocery shopping implies that consumers will try to minimize their cognitive effort needed in an attempt to manage more complex processes when making the actual purchase decisions for new products (Hoyer and MacInnis, 2010).

6.1 System 1 and System 2

According to low-involvement theories that investigate grocery shopping, consumers will try to minimize their cognitive effort needed in an attempt to manage more complex processes when making the actual purchase decision for new products (Hoyer & MacInnis, 2010). In order to activate System 2, a Stroop test was designed and assigned randomly to the respondents, with the intention of activating an analytical mindset when making choices. However, the results showed no clear difference between the respondents who received the Stroop test and the control group, thus the Stroop test did not fulfill its intentions and is therefore less valid for the present study. The reason for this might be that the Stroop test did not contain enough words to fully activate System 2; however, according to several studies, an estimate of 2-6 words are considered acceptable (MacLeod, 1991). On the other hand, by only being exposed to 2 words, it is possible that the respondent did not activate System 2 and for that reason the Stroop test did not have any effect. Another possible explanation, and likelier, could be that System 2 is known as the "lazy controller" and does not like to expend much effort, and one of its main functions is to monitor and control thoughts suggested by System 1 (Kahneman, 2011). However, Kahneman (2011) has proven through several studies that this is often not the case, and that this often cause problems for researches (which has been the case for this study). Moreover, if respondents are asked questions that require thinking (such as the Stroop test) but their System 2 is not being properly engaged, there is less chance of getting useful information from the respondents (Kahneman 2011). Most of the time System 1 runs automatically and System 2 is in a comfortable low-effort mode in the background, therefore, the Stroop test was not successful in engaging the respondents by activating System 2.

Two fictive products were presented, as it was not desired to use brands or ingredients to which users may have had previous knowledge. However, the consumers could attain knowledge by reading the ingredient list of the two products under the survey. Very interestingly, and in contrast to what was expected, the control group used the nutrition label more than the Stroop test group (45 vs. 36 respectively). Some consumers might perceive grocery shopping as a burden or chore and feel time pressured, while others view it as an enjoyable activity and like to go grocery shopping themselves (Huang & Oppewalor, 2006). In addition, several studies have found that time pressure limit consumers' search of nutrition

information (Beatty & Smith, 1987; Feick, Herrmann & Warland, 1986; Katona & Mueller, 1955; Park, Iyer, & Smith, 1989). The results from Q2, Q3 (the Stroop test), Q4 and Q5 (SLOPE and MELT) did not yield results that are in line with previous findings, as the control group used the nutrition table more than the Stroop test group.

Regardless of which group the respondents were assigned to (Stroop test or the control group), they all experienced reading nutrition table as somewhat time consuming, which further support the importance of a health logo being easy to understand in order to be an effective nudge (van Herpen and Trijp, 2011). Despite that the analysis for H1 did not yield any statistical significance, one can argue that due to the respondents' answers in Q7 and in part 4 of the survey "Buying behavior", there is reason to further stress the claim of previous research, namely that for a health logo to be an effective nudge, it must be easy to understand and require little cognitive processing (van Herpen and Trijp, 2011).

6.2 Framing with health logo

The results from research question 2 suggests significant improvements in the respondents' choice. This means that the experiment was successful in steering consumer's choice towards the healthier option, rather than choosing the unhealthy option when the health logo was placed on the product. Hence, the nudge intervention was successful. van Herpen and Trijp (2011) found in their research that consumers need directive information in order to improve their food choice; therefore, the applied health logo for this study aimed at being clear and with objective information that is easy to understand and use (van Herpen & Trijp, 2011; Campos et al., 2011 and Grunert & Wills, 2007). Moreover, the applied health logo enabled the respondents even without much prior nutrition knowledge, to make healthier choices only nudged by the health logo.

Based on the above, the characteristics needed for a heath logo to be successful can be assumed from the study's labels based on the positive and significant results. The health logo shows significant effects in both categories of the experiment, but the strongest change in behavior can be seen in the bar category (see appendix 4) and this can most likely be explained by the fact that soda already has a healthiness

indication given by the name such as “Zero” and “light”. Since the health logo provides clear information regarding sugar content, placing it on bars can be assumed to have a stronger effect based on consumers’ prior knowledge about the nutritional sugar content. Thus, since performing grocery shopping is for most people a habitual act (Bucher et al., 2016) the health logo functions as a cognitive shortcut, since most consumers normally use system 1 when grocery shopping (Kahneman, 2011). Thus, by highlighting that bars such as “Eat Natural”, a bar that indicates through its brand name to be a healthier option, in fact contain a large amount of sugar, which is confusing for consumers. Even though the results were expected to be positive, the findings still provided surprising information, as according to van Herpen and Trijp (2011) trust is particularly important for the labels’ effectiveness. Therefore, it might seem somewhat surprising that the results show such a strong improvement in the choice for the healthier option. One can argue that consumers who do not know the sugar content in products that seemingly are healthy, are more likely to switch because they can feel betrayed by the food producer, and thus don’t need to establish trust with the logo before making a purchase. Additionally, it is common knowledge that sugar is bad for your health, and everybody can relate to sugar as something bad, thus trust becomes less important.

Based on the results, a nudge through a health logo such as the one created for the present study could potentially lead to even more favorable outcomes, and function as a trustworthy cognitive shortcut for consumers, which can steer consumers towards making healthier choices and nudge them into an overall healthier life.

6.3 Punishment or reward?

The questionnaire consisted of six scenarios that were framed differently in terms of kroners, calories and walking distance as either a loss or a gain (punishment or reward). As demonstrated in section 2.4, people in general react more strongly to losses then to gains (Tversky and Kahneman, 1986). Moreover, the only clear difference between the punishment and reward scenario were found in the Coca-Cola example where the framing was done in kroners. Normally, losses and gains are expressed in kroners, thus one can assume that the translation to monetary value would be easier than from calories and walking distance, because normally people

do not know how many calories are burned after walking an hour. It is reasonable to assume that individuals will have greater understanding of what 10 NOK yields in terms of monetary value, rather than what 150 calories would. Consumers will notice in the grocery store if they have 10 kroners extra, but will not notice if the consume 150 calories extra, and as a result, would require less cognitive processing which research has establish that consumers would avoid if possible (Gerrier, 2012; Grunert et al., 2012; Hodgkins et al., 2012; Kahneman, 2011). Moreover, the results indicate that both scenarios framed as either a reward or punishment have an effect, however the effectiveness is determined by how it is framed.

The results indicate that for all scenarios except Coca-Cola, the respondents did not differ in terms of punishment or reward. One possible explanation is related to what has been discussed above – that consumers do not care since they cannot relate to what calories and walking distance will provide in terms of monetary value. Lastly, when looking at Q19 and the likelihood of people always choosing healthy food if they always get rewarded for it (the questions gives 5% discount), the results show that approximately 59.6% of the respondents are quite, and extremely likely to always choose healthy products if they get 5% off. Based on the six scenarios and Q19, the analysis reveals that for most of the cases (especially for scenario one, two and Q19) nudges should be framed as a reward rather than punishment.

7.0 Practical implications

The main findings of our master thesis are highly relevant for policy makers and businesses due to the increasing problem of obesity worldwide. Food manufactures can choose to be one of the causing problems or become part of the solution and the much-needed change by altering or changing ingredients, thus making it easier for consumers to choose the healthier option through directive labels (e.g. health logos) and nudge consumers to make healthier choices. Several countries have already started to adapt by changing their labels, even the US as requested by the FDA (FDA, 2018). Companies who adapt faster can achieve sustainable competitive advantages in the marketplace, and gain consumers' trust faster than their competitors (van Herpen & Trijp, 2011). Next, we will present tactical steps that can be made by policy makers and businesses to change the current food environment which do not promote healthy food choices.

7.1 Implications for policy makers and businesses

The World Health Organization estimates that individuals in the developed world could extend their life-span by a mean of 1.9-3.4 years through healthier dietary habits (World Health Organization, 2002). Valuing these life-years at $100, 000 (Gruber and Koszegi, 2001), means that a trillion dollars in life-years will be lost every single year in the US alone as a result of not eating the healthiest diet. Thankfully there have been recent moves in policy circles to adopt strategies that are created to encourage individuals to live better and healthier lives; however, these strategies does not come in a "one solutions for everyone". Results from the present study illustrate that one strategy (different nudge intervention) might not work across all product categories. Moreover, to follow a strategy that targets all customers or all products groups will be less effective than target, for example, one product category or product categories that are similar. Furthermore, a health logo will have a stronger effect when consumers are less aware of the sugar content, thus the health logo will have stronger effects in creating awareness regarding the nutritional content. This is beneficial for companies that offer categories such as bars and cereals where sugar content is normally less known and can be further leveraged in order to create a competitive advantage and boost the company' brand image. Moreover, giving discounts is a frequently used method to increase sales and attain new customers, and the present study provides guideline on how to frame discounts in order to make consumers choose the company's product above the competitors. In addition, if a label such as this study's health logo were introduced, food producers might need to consider changing the composition of their products to receive a more attractive nutritional label and thereby become more attractive for consumers (Galizzi, 2012).

Just as there is no "one solution for everyone", finding solutions to fight obesity cannot be put on policy makers alone. Food producers and retailers must actively engage and contribute in making healthier options easier to choose and more available, rather than wait for regulations to kick in. Gladly, many supermarkets have chosen to be part of the solution, and are making adjustments both in the choice architect, altering ingredients and positioning health products more favorably, potentially in an attempt to avoid harsher regulation (Reisch et al., 2017). Through such steps, supermarkets could potentially increase their image among consumers.

8.0 Limitations and future research

The study contains only a small sample of the Norwegian population that performs grocery shopping, and additionally gender was not equally divided which can limit the power of statistical results. For future research, the sampling population should be more representative in order to implement the findings in real life. Furthermore, the Stroop test did not have the effect that it was intended to achieve, which made hypothesis 1 unsustainable in the light of evidence. For future research it would perhaps be better to perform the experiment in-store, or highlight the Stroop test more, alternatively add more tasks. The Stroop test can also be seen in the light of the small sample, and the fact that it might have another outcome if the Stroop test is applied to a larger size of respondents. In addition, it becomes difficult to control for factors like brand preference and price knowledge, even though we used new products (SLOPE and MELT) during the Stroop test and presented the respondents with quite different products within each category. Such factors might have an influence on the results, and if possible for future research, it would be necessary to control for those variables in order to get more valid and reliable results. In addition, we only investigate using health logo with color, which excluded any other form of framing, such as logo with text.

Moreover, since the study is an experiment conducted through a survey questionnaire, it might appear as an artificial setting as the respondents are forced to choose between pre-determined products. In a real-life scenario, consumers would have the independence to choose among several products and several product categories, or decide not to buy anything. Future research might support the results by creating a better real case scenario by adding more products. In addition, for future research it would be necessary to highlight the sugar tax more clearly due to the results in H3, seen in part 1 and 2 of the thesis. Since the sugar tax was the only scenario that had a big difference between punishment and reward, it might be essential to further investigate in depth if the sugar tax can function as a nudge in order to steer consumers in a healthier direction.

9.0 Conclusions

A rather new policy tool known as nudging has been developed through economic behavioral insights and has shown to be effective in helping with general improvements by altering individual dynamic inconsistency. A variety of professionals, including psychologists, economists, political scientists, and behavioral scientists have worked together to correct the faults in how individuals make choices by changing the framework by which those choices are made. Nudges alter the choice framework in order to steer individuals to the most optimal choice, but they are still free to make other choices if they want too. In the right environment and context, nudges can be developed to guide and steer individuals away from unhealthy food options and towards the healthier food options without limiting or removing other food alternatives. Nudges have shown to be easy to implement, inexpensive, and effective in correcting for preference inconsistencies.

The theoretical contribution from the present study is mixed, especially concerning **R1** and **H1**. Even though the statistical analysis did not yield any statistically significant result, we argue that based on the answers in Q7 and in part 4 of the survey "Buying behavior", respondents in general found reading nutrition labels as time consuming. Therefore it is reason to stress the findings of previous research, namely that for a health logo to be an effective nudge, it must be easy to understand and require little cognitive processing (van Herpen and Trijp, 2011). Furthermore, **R2** and **H2** provide valuable insights when it comes to the effectiveness of a health logo. Our findings show a positive change in buying behaviors after being exposed to the health nudge intervention. A differentiation should be made between the two product categories; within the soda category a change is present towards healthier options, however a stronger and significant change can be seen within the bar category. Even though **R3** and **H3** provide mixed results, the results indicate that labels should be framed in monetary value making it easier for the consumers to relate and understand what they have and might lose, and further be framed as a reward in the context of monetary value.

Although the use of behaviorally informed tools, such as nudges, has been increasing (Reisch et al., 2017), the importance to find evidence in the effectiveness of these tools should not be neglected and continue to be further investigated across product categories.

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Appendix

Appendix 1: Survey

Hei du! Takk for at du tar deg tid til å hjelpe oss med vår masteroppgave :)

Denne spørreundersøkelsen tar for seg ulike scenarioer basert på en fiktiv handletur i dagligvarebutikken. Spørsmålene som blir stilt skal kun besvares på bakgrunn av den informasjon du har fått med tilhørende tekst og bilde. Det er derfor viktig at du leser spørsmålene nøye, og svarer så ærlig og realistisk som du klarer.

Svarene dine vil bli behandlet helt anonymt, og vil ikke bli brukt til noe annet enn denne oppgaven.

TUSEN TAKK FOR HJELPEN :)
Elisabeth Rasmussen & Marita Bjørnestad Myrseth

Part 1 – System 1 and System 2

Question 1:

Se for deg at du er i butikken og skal handle diverse varer fra ulike produktkategorier. Hvor stor sannsynlighet er det for at du bruker **næringsinformasjonen** gitt av etiketten for å ta et valg?

	Ekstremt usannsynlig	Ganske unsannsynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig
Frokostblanding	○	○	○	○	○	○	○
Energi/proteinbarer	○	○	○	○	○	○	○
Ferdigmat	○	○	○	○	○	○	○
Kjøttpålegg	○	○	○	○	○	○	○
Brus	○	○	○	○	○	○	○
Meieriprodukter	○	○	○	○	○	○	○
Tørrvarer	○	○	○	○	○	○	○

→

Question 2 (only for the Stroop test group):

GRØNN

Vennligst indiker hvilken farge ordet ovenfor er skrevet i

Grønn	Rød	Lilla

Question 3 (only for the Stroop test group):

LILLA

Vennligst indiker hvilken farge ordet ovenfor er skrevet i

Lilla	Grønn	Blå

Question 4:

Forestill deg følgende situasjon: Du er i butikken og skal handle en ny drikke. Trykk på det produktet du ville valgt.

Question 5:

Forestill deg følgende situasjon: Du er i butikken og skal handle en bar som et mellommåltid. Trykk på det produktet du ville valgt.

Question 6:

I hvor stor grad brukte du informasjonen på etiketten for å ta valget ditt i de forrige spørsmålene?

Svært liten grad	Liten grad	Av og til	Stor grad	Svært stor grad

→

Question 7:

Opplever du det som tidkrevende å lese næringsetiketten på produktene?

Svært liten grad	Liten grad	Av og til	Stor grad	Svært stor grad

→

Part 2 – Nudging through labeling

Question 8:

Se for deg at du er i butikken og skal kjøpe brus. Du kan velge mellom de 4 produktene vist ovenfor. På en skala fra 1-7, hvor stor sannsynlighet er det for at du kjøper følgende produkter?

	Ekstremt usannsynlig	Ganske usansynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig
Coca-Cola	O	O	O	O	O	O	O
Coca-Cola Light	O	O	O	O	O	O	O
Solo	O	O	O	O	O	O	O
Solo Super	O	O	O	O	O	O	O

Question 9:

Hva er ditt foretrukne merke?

- Coca-Cola
- Coca-Cola Light
- Solo
- Solo Super
- Annet

Question 10:

Du vil nå bli presentert for de samme produktene, men med ny etikett som viser mengden sukker i brusen ved bruk av fargen grønn.
F.eks: En hel grønn linje indikerer 100% sukkermengde, en halv linje indikerer 50% sukkermengde.

På en skala fra 1-7, hvor stor sannsynlighet er det for at du kjøper følgende produkter?

	Ekstremt usannsynlig	Ganske usannsynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig
Coca-Cola	O	O	O	O	O	O	O
Coca-Cola Light	O	O	O	O	O	O	O
Solo	O	O	O	O	O	O	O
Solo Super	O	O	O	O	O	O	O

Question 11:

Se for deg at du er i butikken og skal kjøpe et mellommåltid. Du kan velge mellom de 4 produktene vist ovenfor. På en skala fra 1-7, hvor stor sannsynlighet er det for at du kjøper følgende produkter:

	Ekstremt usannsynlig	Ganske usannsynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig
Nutrilett	O	O	O	O	O	O	O
Wasa	O	O	O	O	O	O	O
Roo´bar	O	O	O	O	O	O	O
Eat Natural	O	O	O	O	O	O	O

→

Question 12:

Du vil nå bli presentert for de samme produktene, men med ny etikett som viser mengden sukker i baren ved bruk av fargen grønn.
F.eks: En hel grønn sirkel indikerer 100% sukkermengde, en halv grønn sirkel indikerer 50% sukkermengde.

På en skala fra 1-7, hvor stor sannsynlighet er det for at du kjøper følgende produkter:

	Ekstremt usannsynlig	Ganske usannsynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig
Nutrilett	○	○	○	○	○	○	○
Roo´bar	○	○	○	○	○	○	○
Wasa	○	○	○	○	○	○	○
Eat Natural	○	○	○	○	○	○	○

Part 3 – Punishment or reward

Question 13:

Scenario 1: Du er i butikken og skal velge drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du vanlig Coca-Cola må du betal 10 kroner ekstra i sukkeravgift.

Coca-Cola (velger du dette produktet må du betal 10 kroner ekstra i sukkeravgift)

Coca -Cola Light

→

Question 14:

Scenario 2: Du er i butikken og skal velge drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du Coca-Cola Light sparer du 10 kroner i sukkeravgift.

Coca-Cola

Coca-Cola Light (velger du dette produktet sparer du 10 kroner i sukkeravgift)

→

Question 15:

Scenario 3: Du er i butikken og skal velge en drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du Solo konsumerer du 150 kalorier ekstra enn ved Solo Super.

Solo (velger du dette produktet konsumerer du 150 kalorier ekstra enn ved Solo Super)

Solo Super

→

Question 16:

Scenario 4: Du er i butikken og skal velge en drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du Solo Super konsumerer du 150 kalorier mindre enn ved kjøp av Solo.

Solo

Solo Super (velger du dette produktet slipper du å konsumere 150 kalorier)

→

Question 17:

Scenario 5: Du er i butikken og skal velge en drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du Sprite må du gå i 1 time for å forbrenne brusen i motsetning til Sprite Zero

Sprite (velger du dette produktet må du gå 1 time for å forbrenne brusen i motsetning til Sprite Zero)

Sprite Zero

→

Question 18:

Scenario 6: Du er i butikken og skal velge en drikke. Du har valget mellom de to produktene under. Hvilken velger du? **Til informasjon:** Velger du Sprite Zero slipper du å gå i 1 time for å forbrenne brusen

Sprite

Sprite Zero (velger du dette produktet slipper du å gå 1 time for å forbrenne brusen)

→

Question 19:

Se for deg et scenario hvor du alltid får **5% avslag** på alle drikkevarer og mellommåltid som er promotert som sunne (har mindre sukker eller ingen sukker i seg). Hvor stor sannsynlighet er det for at du ville ha valgt disse produktene foran de "vanlige" produktene?

Ekstremt usannsynlig	Ganske usannsynlig	Noe usannsynlig	Nøytral	Noe sannsynlig	Ganske sannsynlig	Ekstremt sannsynlig

→

Part 4 – Buying behavior

Question 20:

Hvor ofte kjøper du barer som mellommåltid?

Aldri	Sjeldent	Av og til	Ofte	Alltid

Question 21:

Hvor ofte kjøper du brus som tørstedrikk?

Aldri	Sjeldent	Av og til	Ofte	Alltid

Question 22:

Blir du forvirret av næringsinnholdet på etikettene?

Aldri	Sjeldent	Av og til	Ofte	Alltid

Question 23:

Hvor ofte tar du deg til å lese næringsinnholdet på etikettene?

Aldri	Sjeldent	Av og til	Ofte	Alltid

Part 5 – Demographic

Question 24:

Kjønn

- Mann
- Kvinne
- Annet

Question 25:

Alder

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 eller eldre

Question 26:

Situasjon

- Fulltidsjobb
- Deltidsjobb
- Student med deltidsjobb
- Student
- Jobber ikke

Question 27:

Fullført utdanning

- Videregående skole
- Bachelorgrad
- Mastergrad
- Doktorgrad
- Har ikke utdanning

Appendix 2: Paired sample t-test for soda

Results of paired sample test between Q8 (regular products) and Q10 (products with health logo)

Paired Samples Correlations (Q8 and Q10)

	N	Correlation	Sig
Coca-Cola with logo & Coca-Cola	179	.839	.000
Coca-Cola Light with logo & Coca-Cola Light	179	.902	.000
Solo with logo & Solo	179	.747	.000
Solo Super with logo & Solo Super	179	.856	.000

Paired Samples Test (Q8 and Q10)

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Coca-Cola with logo & Coca-Cola	.-335	1.258	.094	-3.564	178	.000
Coca-Cola Light with logo & Coca-Cola Light	.263	.985	.074	3.567	178	.000
Solo with logo & Solo	.-397	1.359	.102	-3.904	178	.000
Solo Super with logo & Solo Super	.453	1.172	.088	5.167	178	.000

Appendix 3: Overview of mean for soda

Overview of the mean between Q8 and Q10

		M	Std.Error Mean
Pair 1	Coca-Cola with logo	2,99	0,163
	Coca-Cola	3,32	0,169
Pair 2	Coca-Cola Light with logo	3,78	0,168
	Coca-Cola Light	3,51	0,165
Pair 3	Solo with logo	3,71	0,143
	Solo	4,11	0,143
Pair 4	Solo Super with logo	4,21	0,164
	Solo Super	3,76	0,162

Appendix 4: Paired sample t-test bars

Paired samples correlations between Q11 (regular products) and Q12 (products with health logo)

Paired Samples Correlations (Q11 and Q12)

	N	Correlation	Sig
Eat Natural with logo & Eat Natural	170	.476	.000
Wasa with logo & Wasa	170	.558	.000
Roo`bar with logo & Roo`bar	170	.445	.000
Nutrilett with logo & Nutrilett	170	.762	.000

Results of paired samples test between Q11 (regular products) and Q12 (products with health logo)

Paired Samples Test (Q11 and Q12)

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Eat Natural with logo & Eat Natural	-1.082	1,728	.133	-8.165	169	.000
Wasa with logo & Wasa	-.741	1.647	.126	-5.866	169	.000
Roo`bar with logo & Roo`bar	1.271	1.839	.141	9.008	169	.000
Nutrilett with logo & Nutrilett	.424	1.340	.103	4.121	169	.000

Overview of the mean between Q11 and Q12

		M	Std.Error Mean
Pair 1	Eat Natural with logo	2,50	0,117
	Eat Natural	3,58	0,140
Pair 2	Wasa with logo	3,27	0,127
	Wasa	4,01	0,140
Pair 3	Roo`bar with logo	4,38	0,144
	Roo`bar	3,11	0,121
Pair 4	Nutrilett with logo	4,06	0,148
	Nutrilett	3,64	0,150