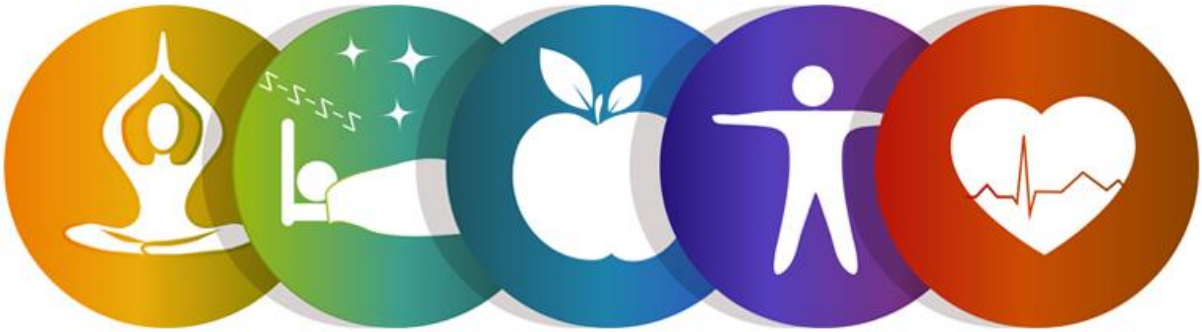
Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with a NHCs?

A research about regulating pictorial, graphic or symbolic claims on food packaging and their influence on consumers



Master thesis Food Safety Law
Sanne Simoons
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Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with a NHCs?

A research about regulating pictorial, graphic or symbolic claims on food packaging and their influence on consumers

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Preface

Before you lies the thesis: “Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with a NHCs?”. A research about Regulation 1924/2006 on nutrition and health claims made on food and the way pictorial, graphic or symbolic claims are regulated. This thesis was written for my studies Food law and Regulatory affairs at Wageningen University & Research.

It is written between September 2018 and June 2019 and it has been a bumpy ride. There has been times where I thought I would not finish it at all, but thanks to the support and devotion of my friends and family I have made it. It has been a huge personal learning experiment, where I really got to know myself and my capabilities.

I would like to thank my supervisors Alexia Herwig and Betina Piqueras Fiszman for their continuous guidance and therefore helping me completing my thesis.

Enjoy your reading.

Sanne Simoons

Wageningen, June 28, 2019.

Abstract

Aim: Consumer protection is an important aspect of Regulation 1924/2006 on nutrition and health claims made on foods. The objective of this thesis is to determine if it possible for consumers to think that a product with a symbol is healthier than a product with nutrition and health claims and therefore are misled. To define this the way of how pictorial, graphic or symbolic claims are regulated is examined and the way how consumers perceive symbols and nutrition and health claims.

Method: This thesis is based upon literature review and a survey. The literature review examined Regulation 1924/2006 on nutrition and health claims made on food, definition of a symbol, symbols used as nutrition and health claims, the average consumer, nudging, dual processing theory, influence of symbols on consumers and influence of nutrition and health claims on consumers. The survey includes six 5 point scale Likert-type scale questions, where 4 types of packaging had to be rated on the following attributes: familiar, healthy, natural, medicine-like, trustworthy and wellbeing. The 4 types of packaging consisted of a general packaging, packaging with claim, packaging with symbol and packaging with claim and symbol. Respondents were also asked to fill in the first three attributes they think of when seeing the packaging. Furthermore respondents were asked to choose 6 times between two different kinds of packaging and at last were asked some general questions.

Conclusion: There is no clear definition for pictorial, graphic or symbolic claims. It is also unknown when these claims are regarded as misleading or not. In general 'the average consumer' benchmark is used in order to conclude if something is misleading or not. However the average consumer does not take into account the dual process system of our brain and the fact that not all consumers act the same. According to the survey there is no evidence found that packaging with a symbol is perceived healthier than packaging with a claim and thus in this case it can be concluded that it does not cause consumer misleading.

Discussion: The results of the survey are not in line with literature, this could be ascribed to the symbol and health claim used. It could also be because the survey in general does not give a good representation of the EU region and the way consumers think and act while buying food products.

Keywords: Regulation 1924/2006 on nutrition and health claims made on food, nutrition and health claims, symbols used as nutrition and health claims, the average consumer, dual processing theory, nudging, influence of symbols on food packaging on consumers, influence of nutrition and health claims on food packaging on consumers.

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List of abbreviations

AAC: Advertising Code Commission
JHCI: Joint Health Claims Initiative
NHC(s): nutrition and health claim(s)
Regulation 1924/2006: Regulation 1924/2006 on nutrition and health claims made on food

1. Introduction

1.1 Problem statement

Unhealthy diets, overweight and obesity are the biggest contributors to diseases like cardiovascular diseases, type 2 diabetes and various kind of cancers in the WHO European Region. Main problems in these diets are consuming too much energy, saturated fat, trans fats, sugar and salt and a lack of vegetables, fruits and whole grains (WHO, 2019). Furthermore research suggests that the intake of several food components can influence our DNA, these changes in genes can result in the growth of tumours, the development of diseases like obesity or cardiovascular disease, and inflammation (Kirkpatrick, 2018 & Egger et al., 2004). Also diseases related to food come with great costs for the health systems, therefore several action plans are established in order to reduce the burden of disease such as The WHO European Food and Nutrition Action Plan, The EU Action Plan on Childhood Obesity and The Joint Action on Nutrition and Physical Activity (OECD/EU, 2018).

Accordingly living a healthy life is becoming more important in nowadays society. A good diet is a great contribution to living a healthy life (Margetts et al., 1997). So food causes the diseases mentioned before, but food could also reduce or prevent those diseases. Food ingredients, like phenolics and polyphenolics are well known for their prevention of cardiovascular disease and different kind of cancers (Shahidi, 2004). Functional foods are also a way to reduce or to prevent diseases (Goldberg, 2012). Besides the action plans, an important approach in the EU is to create awareness for eating healthier via providing nutritional information and communicating the beneficial effects of food to consumers (Castres, 2015). This is possible via nutrition and health claims (NHCs).

NHCs are made to make the products which are healthier for you easily recognizable and they are regulated in regulation 1924/2006 (Regulation (EC) No 1924/2006, 2007). According to this regulation a "*'claim' means any message or representation, which is not mandatory under Community or national legislation, including pictorial , graphic or symbolic representation, in any form, which states, suggests or implies that a food has particular characteristics;*" (Regulation (EC) No 1924/2006, 2007). This definition leaves a grey area while pictorial, graphic or symbol representation is included it is also a matter of context. A heart shaped symbol on a butter product can imply that this product is good for your heart, while a heart shaped symbol on a chocolate product can imply romanticism (Van Herpen & Van Trijp, 2018). Also until today case law has only focused on textual claims, providing no extra clarity (Purnhagen et al., 2016). In addition Regulation 1924/2006 provides a list of permitted nutrition claims, all these claims are textual based (European Commission, 2012). Moreover the authorisation procedure of health claims performed by EFSA is also based on text. The food or ingredient and the claimed effect have to be both textual defined (EFSA, 2019). This still provides no clarity on when pictorial, graphic or symbol representation is not allowed or misleading.

In regulation 1924/2006 determining if something is misleading or not is defined via the 'average consumer'. Recital 15 states "*(…) this Regulation takes as a benchmark the average consumer, who is reasonably well-informed and reasonably observant and circumspect taking into account social, cultural and linguistic factors, as interpreted by the Court of Justice, but makes provision to prevent the exploitation of consumers whose characteristics make them particularly vulnerable to misleading claims. Where a claim is specifically aimed at a particular group of consumers, such as children, it is desirable that the impact of the claim be assessed from the perspective of the average member of that group. (…)*" (Regulation (EC) No 1924/2006, 2007). This definition implies all consumers act via the average consumer, however this is not always the case. This goes for the way consumers percept things but also in their information seeking behaviour. It is also hard to be always well-informed and reasonably observant, while decision making such as

purchasing a product is reliant on many factors. Often decisions are made based on habits, feelings and biases. This contradicts the average consumer, which expects that consumers devote their intellectual, psychological, psychical assets as well as their time to gather and process information from the package of the product and then make a decision (Incardona & Poncibò, 2007).

Also 'reasonably well-informed and reasonably observant and circumspect' suggest that the average consumers thinks before buying. Yet making decisions, such as buying products, happens via two parts in the brain (Kahneman & Egan, 2011). Kahneman & Egan (2011) named this two parts of the brain system 1 and system 2. System 1 serves automatically and within no time. It costs the brain little to no thinking and it feels uncontrolled. This part is also responsible for impulsive buying. System 2 works with the consciousness. It demands thinking and attention in order to fulfil activities. Such as comparing two products for overall value (Kahneman & Egan, 2011). It can happen that system 1 overrules system 2 while buying products, through certain cues such as design of a package (Deliya & Parmar, 2012). This immediately nullifies the concept of the average consumer.

One ambiguous example is the Choices Logo. This logo is not regarded as a NHC, however the purpose of this logo is to help consumers easily recognize the healthier food options (Choices Programme, 2019, b). There is criticism regarding this symbol, for the reason that companies have to pay a huge amount of money in order to use this logo. This could mean that there are healthier options available which did not carry the Choices logo (because companies did not want to pay for it) and that directly dismisses the objective of the Choices Logo. Also it was possible to apply the Choices logo on food products which are not necessarily healthy. For example on French fries, sausages and liquorice. These two factors makes the Choices Logo not trustworthy and the Dutch Consumentenbond called the logo misleading (Consumentenbond, 2019). At this moment the Choices Logo is abolished in the Netherlands, however it still continues in other countries (Choices Programme, 2019, c). The Choices Logo was not abolished by Regulation 1924/2006, but because of the fact that the Dutch Consumentenbond launched a campaign against the Choices Logo (Consumentenbond, 2019).

In regulation 1924/2006 consumer protection is of high value. Important aspects of consumer protection are providing consumers with the right information and to protect their health, safety and economic interests (Valant, 2015). However how can we protect consumers while we determine if something is misleading or not using the average consumer benchmark but not taking into account how our brain works while buying products nor giving clarification when pictorial, graphic or symbol representation is misleading or not allowed. Looking at the Choices logo organizations from the outside had to provide proof this logo was misleading and then it was decided to remove the logo (Consumentenbond, 2019). When looking at textual NHCs it is the other way around, first it has to be concluded that the specific NHC is not misleading and then it is allowed to use.

Therefore the main question rises if regulation 1924/2006 is sufficient enough in achieving its goal to not mislead consumers by making it possible for them to think that a product with a certain kind of symbol is healthier than a product with an actual NHC.

The relevance for researching this question is that it will create new insights in the effectiveness of Regulation (EC) No 1924/2006. The goal of Regulation 1924/2006 is consumer protection and guiding consumers in making healthier choices, thereby enhancing fair competition. The products with claims have to compete with the products without claims. It is therefore important to know how this goal can best be achieved. It is also important to know that the products with NHCs are perceived healthier, because if not the message of NHCs does not come across. The information found can be used to change the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006.

1.2 Research question

The following research question has been made:

"Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with a NHCs?"

This research question is divided in the following sub questions:
-*What is already known about consumer behaviour regarding to NHCs/symbols on packaging?*
-*Which symbols do consumers associate with health?*
-*What is the underlying aim of the way Regulation (EC) No 1924/2006 on nutrition and health claims made on foods is formulated?*
-*How do consumer perceive symbols?*
-*How do consumers perceive NHCs?*
-*Which product (NHCs vs symbol) and for what reason will consumers buy?*

To answer the research question the following hypotheses will be tested:
$H1_a$ People will perceive products with a claim as healthier than products without a claim.
$H1_b$ People will *not* perceive products with a claim as healthier than products without a claim.
$H2_a$ People will perceive products with a symbol as healthier than products with a claim.
$H2_b$ People will *not* perceive products with a symbol as healthier than products with a claim.
The method of this research is interdisciplinary. There will be literature study, surveys and statistical analyses.

1.3 Outline

In order to answer this research question chapter 2 gives more detailed information about Regulation 1924/2006. In chapter 2.1 the background of Regulation 1924/2006 will be explained, chapter 2.2 explains the objective of Regulation 1924/2006 and chapter 2.3 provides more information about the definition of a NHC, the definition of a symbol, symbols placed on food packages associated with health, the average consumer, the dual process theory and NHC seen as nudging. Secondly chapter 3 describes the influence of NHCs and symbols on consumer behaviour and which symbols are associated with health. The information found in chapter 2 and 3 is used to write chapter 4 where the method of this thesis is defined. Then in chapter 5 the results will be illustrated. After this conclusion are made in chapter 6. In chapter 7 the results will be discussed and there will also be some recommendations.

2. Regulation 1924/2006

In this chapter the background of Regulation 1924/2006 will be reviewed and the underlying theory of Regulation 1924/2006 will be explained.

2.1 Background

Looking back into the European history of NHCs reveals that they were not allowed in the Netherlands and other European countries as well. The Dutch Nutrition Council published a report in 1977 which stated that NHCs are by nature misleading, because when eating healthy the whole diet is important and not only that one product which claims to be healthy. It would be unjustifiable and deceitful to let people think they would be healthy if it is only focused on one product instead of all the products that they eat.

At first, the Advertising Code Commission (AAC) also agreed with this view, however in 1989 the Commission agreed on advertising milk as healthy. They stated it would not be misleading and by stating this they also refrained from the opinion of the Dutch Nutrition Council. At that time the notation of the alert consumer was used by the European Court of Justice and the AAC claimed that an alert consumer would know that being healthy is not derived from one single product but is dependent on the whole diet. They stated "*It will be clear to the consumer that the attribute 'healthy' is not intended to convey that exclusive use of a single food or drink like milk will maintain or promote health*" (Advertising Code Commission, 1989). After this the AAC kept continuing to approve NHCs advertisements, because the products were promoted accompanied with the information that it is important to have a varied diet and live a healthy lifestyle. The AAC stated that they see "*no danger that the challenged communications would lead a consumer with a reasonable power of discernment to abandon a balanced and variegated nutritional pattern*" (Advertising Code Commission, 1996). Again the notion of the alert consumer was used. However, the Consumer Union still had some problems because they believed that the NHCs advertisements were not substantiated enough. The AAC did not agree with this because the companies who advertised with the NHCs provided some scientific evidence.

Nevertheless, the evidence was rather thin and several organisations, such as the Consumer Union, were afraid of more products with unsubstantiated NHCs and therefor the Code of Practice for the assessment of health effects was made in 1998. This Code made it possible to test the legitimacy of nutrition and health claims on products. These tests were performed by an independent panel. The downsides of this Code were that it was completely voluntary and companies were not allowed to communicate that their claims on products were tested to be substantiated towards the consumer. Thus, it offered no solution.

Then in 1997 the Joint Health Claims Initiative (JHCI) was created in the United Kingdom. The most important reason for this was the lack of satisfaction with the laws and regulations focused on the use of nutrition and health claims. The fear that more products with unsubstantiated nutrition and health claims would enter the market still existed. It was wished to have controls on all food claims obligated, but these controls were absent. So, the Joint Health Claims Initiative was made to create notice for this problem by the British Government and the European Union. The creators hoped this would result in better regulation.

The JHCI had overlap with the Code of Practice for the assessment of health effects, but it was also more detailed. It laid down which claims were allowed and which not. The JHCI kept the rule that companies are not allowed to communicate towards the consumer that their claims on products were tested to be substantiated. Furthermore, it laid down the importance for consumer perception and understanding towards claims.

Eventually in 2002 a draft regulation on nutrition claims, functional claims, and health claims has been presented to the European Union (Klompenhouwer & van den Belt, 2003). This draft version was further developed and this resulted in Regulation (EC) No 1924/2006 on nutrition and health claims made on food in 2006.

2.2 Objective

The recitals of regulation 1924/2006 show that consumer protection is of high value. Important aspects of consumer protection are providing consumers with the right information and to protect their health, safety and economic interests (Valant, 2015).

Recital 1 states about ensuring "*a high level of protection for consumers and to facilitate their choice.*" (Regulation (EC) No 1924/2006, 2007).

In addition recital 8 states that it is important "*to ensure a high level of consumer protection*" and to "*give the consumer the necessary information to make choices in full knowledge of the facts.*" (Regulation (EC) No 1924/2006, 2007).

Next recital 15 reads "*It is important that claims on foods can be understood by the consumer and it is appropriate to protect all consumers from misleading claims*." (Regulation (EC) No 1924/2006, 2007). Where 'can be understood' and 'protect all consumers from misleading claims' suggest you should deliver consumers the right information. Otherwise these objectives can not be achieved.

Subsequently recital 20 reads "*Furthermore, for comparative claims it is necessary that the products being compared be clearly identified to the final consumer.*" (Regulation (EC) No 1924/2006, 2007). Where 'clearly identified' suggest that you should deliver the consumer right information. Or else it may not be clear for the consumer.

At last recital 34 mentions the objective of regulation 1924/2006 "*namely to ensure the effective functioning of the internal market as regards nutrition and health claims whilst providing a high level of consumer protection (…)*" (Regulation (EC) No 1924/2006, 2007).
The importance of eating healthy and therefore promoting the health interests of consumers can also be found in the recitals of regulation 1924/2006. An example is in recital 10 "*which could mislead consumers when trying to make healthy choices in the context of a balanced diet*." (Regulation (EC) No 1924/2006, 2007). The aspect of eating healthy is shown in 'trying to make healthy choices in the context of a balanced diet' and the aspect of consumer protection is shown in 'could mislead consumers'.

Furthermore recital 9 states "*whilst justified for the purpose of allowing consumers to make informed nutritional choices*" (Regulation (EC) No 1924/2006, 2007). Where 'to make informed nutritional choices' indicates about eating healthy through nutritional choices, but also that consumer information is important through 'informed choices'.

Moreover recital 18 explains that nutrition and health claims can influence dietary habits which refers to eating healthy, but also that "the *consumer should be able to evaluate their global nutritional quality*" (Regulation (EC) No 1924/2006, 2007) which refers to consumer protection. Additionally recital 27 states "*A varied and balanced diet is a prerequisite for good health and single products have a relative importance in the context of the total diet. (…) Specific labelling requirements should therefore apply in respect of claims relating to the reduction of a disease risk.*" (Regulation (EC) No 1924/2006, 2007). Where on the one hand there is a statement about eating healthy and on the other hand a statement about giving consumer the right information through 'specific labelling requirements'.

At last recital 28 mentions consumer information through "*In order to ensure that health claims are truthful, clear, reliable and useful (…) the wording and the presentation of health claims should be taken into account*" while "*the consumer in choosing a healthy diet*" (Regulation (EC) No 1924/2006, 2007) mentions consumer information.

The information above points out that the main goal of regulation 1924/2006 is consumer protection and providing the right information. The information given can help consumers eat more healthy.

2.3 Interpretation

Knowing the background of Regulation 1924/2006 it is interesting to see that recital (1) states about the need to protect consumers and that "*a varied and balanced diet is a perquisite for good health and single products have a relative importance in the context of the total diet*". Recital (2) sates the importance of why it is needed to have one regulation for the use of NHCs "*differences between national provisions relating to such claims may impede the free movement of foods and create unequal conditions of competition."* Furthermore, this regulation lays down all the rules of when and how a NHC can be made in "*commercial communications, whether in the labelling, presentation or advertising of foods to be delivered as such to the final consumer*" (Regulation (EC) 1924/2006, 2007, Article 1).

After exploring what a claim exactly is the following can be found. According to regulation 1924/2006 a "*'claim' means any message or representation, which is not mandatory under Community or national legislation, including pictorial , graphic or symbolic representation, in any form, which states, suggests or implies that a food has particular characteristics;"* (Regulation (EC) No 1924/2006, 2007, article 2). This regulation includes a list of permitted NHCs. Here the allowed claims are stated in text and under which conditions they are allowed. There are no conditions stated how to use these claims in a pictorial, graphic or symbolic way (European Commission, 2012) .

There are three different kind of claims: nutrition claims, health claims and reduction of disease risk claims (which is also seen as a type of health claim). Article 2 of Regulation 1924/2006 describes the following definitions:

"4. 'nutrition claim' means any claim which states, suggests or implies that a food has particular beneficial nutritional properties due to: (a) the energy (calorific value) it (i) provides, (ii) provides at a reduced or increased rate, or (iii) does not provide; and/or (b) the nutrients or other substances it (i) contains, (ii) contains in reduced or increased proportions, or (iii) does not contain;

5. 'health claim' means any claim that states, suggests or implies that a relationship exists between a food category, a food or one of its constituents and health;

6. 'reduction of disease risk claim' means any health claim that states, suggests or implies that the consumption of a food category, a food or one of its constituents significantly reduces a risk factor in the development of a human disease;" (Regulation (EC) No 1924/2006, 2007).

This means that the definition of a claim including 'any message or representation' and 'particular characteristics' is only applicable when a claim is made about nutritional properties, a relationship between the food and health or when there is a mentioning about reduction of disease. In regulation 1924/2006 the definition of a claim is also a matter of context, a heart shaped symbol on a butter product can imply that this product is good for your heart, while a heart shaped symbol on a chocolate product can imply romanticism (Van Herpen & Van Trijp, 2018).

This thesis will focus on symbols and NHCs. However in this regulation there is no definition for a symbol. The Cambridge dictionary uses the following definition for a symbol:

"*a sign, shape, or object that is used to represent something else:*

A heart shape is the symbol of love.

The wheel in the Indian flag is a symbol of peace.

(...)

An object can be described as a symbol of something else if it seems to represent it because it is connected with it in a lot of people's minds:

The private jet is a symbol of wealth." (Cambridge University Press, 2019)

There is previous research done about the effects of health claims and symbols and how this influences consumer behaviour. One big research was named CLYMBOL. In this research no textual definition of a symbol was found, however there were overviews presented about which symbols

related to health are found in the EU (Hieke et al., 2016) . Next the symbols placed on food packages will be explained in detail.

The Choices logo (see figure 1) is an internationally registered trademark (Choices Programme, 2019, a). It is created to help consumers recognize which foods are the better options in terms of health and to stimulate innovation in the food industry regarding healthier food. However, it is not registered as a claim (Choices Programme, 2019, b). Companies need to pay for the use of this logo and for the scientific research in order to substantiate the logo placed on their food products (Consumentenbond, 2019).

The Keyhole logo (see figure 2) is a Swedish trademark. It is certified as a nutrition claim. This claim may only be used as a symbol on a package, it is not allowed to accompany this symbol with the corresponding slogan "*Healthy choices made easy*"(Swedish National Food Administration et al., 2012). The keyhole logo is also designed to help consumers easily identify the healthier food products. It is free to use for companies (Swedish National Food Administration et al., 2012).

The Toothfriendly logo (see figure 3) is a trademark from Schwitzerland (Toothfriendly International, 2019, b). They have the following statement about their symbol: "*According to the Regulation, all health claims that are not specifically permitted or are still under evaluation, must disappear from the food labels by December 2012. The Toothfriendly trademark and the associated term "Toothfriendly" may, however, continue uninterrupted until at least the 19th January 2022*." (Toothfriendly International, 2019, a) Indicating that there is awareness of the fact that this symbol is associated with health, but it is not registered as a health claim.

The Finnish Heart Symbol (see figure 4) is created for the same reasons as the Choices and Keyhole logo (Sydanmerkki, 2019). This symbol is acknowledged as a nutrition claim (Finnish Food Authority, 2019). Companies need to pay a small fee in order to use this symbol (Sydanmerkki, 2019).

Furthermore there were also some generic symbols associated with health mentioned, such as: slim female waist, whole grain and an arrow (illustrating digestive health) (Hieke et al., 2016). An example for a whole grain symbol can be found in Denmark (see figure 5). This trademark is not seen as a nutrition or health claim, but as official dietary advice (Danish Whole Grain Partnership, 2015).

Although not all symbols cited above are regarded as a claim they do require scientific substantiation before they can be placed on a food package (Choices Programme, 2019, a & Regulation On Voluntary Labelling Of Foods With Key Hole, 2015 & Toothfriendly International, 2019, b & Sydanmerkki, 2019). In addition they all fit the definition of the Cambridge dictionary and so this definition of a symbol is used in this thesis.

Applying the definition of a claim used in regulation 1924/2006 it could be concluded that all symbols "*states, suggests or implies that a food has particular characteristics".* However, the Toothfriendly logo does not offer a direct relationship between the food and health or a reduction of disease. Toothfriendly does not necessarily result in healthier teeth or something similar and can therefore not be a defined as a health claim. The whole grain logo does not fit in the permitted nutrition claims. Indirectly whole grain can mean 'source of fibre' or 'high fibre', but maybe this link is not always made by consumers and therefore it is not a "*claim likely to have the same meaning for the consumer.*" (European Commission, 2012).

Figure 5: the Choices Logo (Choices Programme, 2019, a)

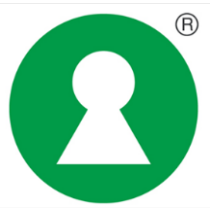

Figure 4: Keyhole Logo (Swedish National Food Administration et al., 2012)

Figure 3: Toothfriendly logo (Toothfriendly International, 2019, b)

Figure 2: Finnish Heart Symbol (Sydanmerkki, 2019)

Figure 1: Danish whole grain logo (Danish Whole Grain Partnership, 2015)

The Choices logo is in meaning similar to the Keyhole logo and the Finnish heart symbol. It is unclear why this logo is not regarded as a nutrition claim.

Article 3 of regulation 1924/2006 states that *"(…) the use of nutrition and health claims shall not: (a) be false, ambiguous or misleading; (…)"*.

Looking into case law two cases can be found about misleading NHCs. One was about a slogan on a package and the other one was about a food company requesting to authorise five different textual health claims regarding glucose (Case C-609/12, 2014 & Case T-100/15, 2016). Both cases are about textual claims only and there no cases found which are focused on misleading pictorial, graphic or symbolic claims. This is also confirmed by Purnhagen et al. (2016).

The two cases mentioned before uses 'the average consumer' benchmark defined in regulation 1924/2006 in order to conclude if a claim is misleading or not (Case C-609/12, 2014 & Case T-100/15, 2016). Article 5.2 of Regulation 1924/2006 says the following "*The use of nutrition and health claims shall only be permitted if the average consumer can be expected to understand the beneficial effects as expressed in the claim."* (Regulation (EC) No 1924/2006, 2007). Furthermore recital 15 of Regulation 1924/2006 states "*(…) this Regulation takes as a benchmark the average consumer, who is reasonably well-informed and reasonably observant and circumspect taking into account social, cultural and linguistic factors, as interpreted by the Court of Justice, but makes provision to prevent the exploitation of consumers whose characteristics make them particularly vulnerable to misleading claims. Where a claim is specifically aimed at a particular group of consumers, such as children, it is desirable that the impact of the claim be assessed from the perspective of the average member of that group. (…)*" (Regulation (EC) No 1924/2006, 2007).

The average consumer is based on 'homo economicus'. In economics this concept means that consumers act consistently rational and thus always think through their purchasing decisions (Purnhagen, 2017)[1]. This concept might work for buying a television but when buying food products, which is a necessity of life, consumers act differently. It is shown through research that consumers generally do not act rationally. The basis of regulation 1924/2006 is providing consumers the right information, however research states that people have a hard time processing large amounts of information (Duivenvoorde, 2015). The average consumer states that all consumers acts the same, but in reality every consumer acts differently. This goes for the way consumers percept things but also in their information seeking behaviour. It is also hard to be always well-informed and reasonably observant, while decision making such as purchasing a product is reliant on many factors. Often decisions are made based on habits, feelings and biases. This contradicts the average consumer, which expects that consumers devote their intellectual, psychological, psychical assets as well as their time to gather and process information from the package of the product and then make a decision (Incardona & Poncibò, 2007).

Another aspect of decision making is described as the dual process theory. Understanding this it is needed to know that are two parts in the brain which both are involved in making decisions, such as purchasing a product (Kahneman & Egan, 2011). Kahneman & Egan (2011) named this two parts of the brain system 1 and system 2. System 1 serves automatically and within no time. It costs the brain little to no thinking and it feels uncontrolled. This part is also responsible for impulsive buying. System 2 works with the consciousness. It demands thinking and attention in order to fulfil activities. Such as comparing two products for overall value (Kahneman & Egan, 2011). The average consumer suggests that it is someone who works with system 2. They ought to think before they buy. Which is interesting because buying products can also happen via system 1 through certain cues such as design of a package (Deliya & Parmar, 2012). This immediately nullifies the concept of the average consumer and the goal of regulation 1924/2006.

[1] Source originating from WUR Blackboard (not publicly accessible).

NHCs are designed to make the products which are healthier for you easily recognizable. Therefore it could be questioned if using NHCs can be seen as nudging. A nudge is "*any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any option or significantly changing their economic incentives*" (Thaler & Sunstein, 2008). A NHC being presented on a food package can influence the behaviour of the consumer and therefor influence the choice. Furthermore, it is still possible to choose every other food products as well so in that way the other options aren't forbidden, which is also an important aspect of a nudge. NHCs can both influence system 1 and 2 of the brain and therefore Hansen & Jespersen (2013) agree that NHCs are a form of nudging. Furthermore Sunstein (2014) lists the ten most important nudges. One of these nudges is increases in ease and convenience (e.g., making low-cost options or healthy foods visible). This form of nudging would be applicable for NHCs because it helps the consumer quickly notice which exact product would be the healthiest. It is therefore not needed for the consumer anymore to devote a lot of time reading every single package to figure it out themselves and thus NHCs increase ease and convenience.

Nudging also has some criticism, because 'altering people's behaviour in a predictable way' can be seen as manipulative. This is a problem because it jeopardizes our freedom of choice (Vallgårda, 2012).

3. Consumer behaviour towards claims and symbols on packaging

This chapter will explain how consumer are influenced via claims and symbols on packaging.

3.1 Influence of claims and symbols

Packaging is the first thing consumers see when buying a food product, there is no doubt that this has great influence on consumer buying behaviour. Putting claims and symbols on the packaging is a way to attract consumers to your products (Mengler-Ogle & Graham 2018).
Roe, Levy & Derby (1999) did a research about how American consumers behaved when claims where present on a product. Three products (cereal, lasagna, and yogurt) were used with 10 different kinds of labels, where one label had no claim, one label had a nutrient-content claim only and the rest of the 8 labels were accompanied with a health claim in combination with a nutrion-content claim. The respondents were asked questions about the products and the interviewer would document if the respondents looked at "*(1) only the package's front panel, (2) only the package's Nutrition Facts panel, (3) both the front and Nutrition Facts panel, or (4) neither panel*" Roe, Levy & Derby (1999). The following conclusion were found in this research:
"*1. The presence of health claims, and to a lesser extent, nutrient- content claims, significantly increases the probability that respondents truncate information search, such that only information from the front panel is viewed.*
2. When respondents look only at the front panel, they are more likely to say they will purchase the product, regardless of whether a claim is present. (…)
4. When a product features a health or content claim, respondents view the product as healthier and state they are more likely to purchase it, independent of their information search behavior. (…)
6. Consumers are more likely to attribute inappropriate health benefits to products in the closed-ended questions when a health or content claim is present, which suggests that the claim creates a halo effect. For the lasagna product, a magic- bullet effect also may exist, because claims are associated with more inappropriate health attributions during open- ended questioning.
7. A vast majority of respondents view both health and nutrient- content claims as constituting health information, and gener-ally, both types of claims have a similar impact on reported ratings and reported health benefits." Roe, Levy & Derby (1999).
In general products with claims are perceived as healthier than products without claims (Dean et al., 2007 & Urula et al., 2003). This is also shown in the research of Kozup, Creyer & Burton (2003) which stated that a health claim can help American consumers believe that the product is good for reducing disease risks.
Several studies suggest that visual representation, such as symbols have a greater influence than verbal messages. One example is from Fiszman, Lähteenmäki & Varela (2014) who did a study with 4 symbols, 3 target claims (heart, bones and memory) and 2 different type of claims, where one was about benefit and the other about risk-reduction. The Danish and Spanish participants were asked to rate different combinations of the symbols, claims and type on appeal and convincingness on a 7-point scale. The participants had to imagine the symbol and claim were on a yoghurt product. The results were that the symbol was the most important in determining if a product is appealing or convincing. Furthermore the verbal claim hearth scored the highest regarding appeal and convincingness. The other two claims, bones and memory, scored a negative value for appeal. In Denmark the convincingness of the bones claim also scored negative, however the Danish also showed a more negative attitude towards foods with health claims than the Spanish. At last the type

of claims which stated about health benefits scored a positive impact on appeal and convincingness (Fiszman, Lähteenmäki & Varela, 2014).
Another example is from Kapsak et al. who did a research where they created 4 different kinds of textual claims who represented 4 different type of levels. The levels represented how scientifically substantiated the claim was. The American respondents were asked to rank the textual claims into the right level of scientific evidence. Via different textual formats the participants were having a difficult time ranking the claims correctly, however this was solved when a visual format of the claims was used (Kapsak et al, 2008). Other studies also confirm that visual elements can help consumers define and understand the specific health or nutrition claim (Bone and France, 2001 & Purnhagen et al., 2016).

3.2 Symbols associated with health

As explained before symbols can have a strong influence while conveying a message to consumers. A study of Fiszman, Lähteenmäki & Varela (2014) showed that the symbols numbered 1, 2 and 3 in figure 6 on the right side were associated with health. This association was made only via visual representation. The symbol numbered 4 in figure 6 was associated with brain/thought/brainwork, which is also interesting because this again shows the effect of visual representations on the brain and how are brain creates its own associations with it. The symbols are on purpose black and white so that the colour of the image would have no influence.

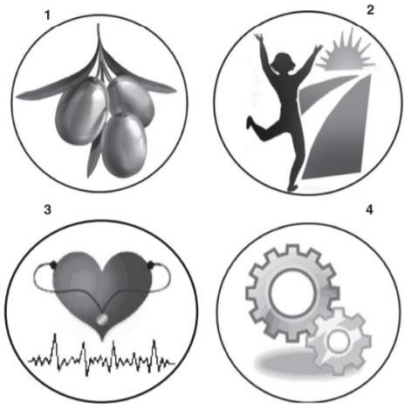

Figure 6: Symbols used in the study of Fiszman, Lähteenmäki & Varela (2014)

Klepacz et al. (2016) did a research called "*When is an image a health claim?*" they concluded that pictures on packages can cause people to believe that the products had certain health attributes. They found that respondents recalled health claims that were not present on the product and this happened to a greater extent when there were also pictures shown on the product. This could be ascribed to the fact that people make two different kind of inferences in their mind: implicit and explicit. The implicit ones are subconscious, while the explicit ones are conscious. Implicit inferences cause people to believe that they remember information which they actually never saw. This could also be the reason why many images are associated with health. Unfortunately, only one symbol used is shown in the research of Klepacz et al. (2016). See figure 7. It is known that they used six different kind of images representing: women's health, memory and cognitive function, sleep, bones and joints, cold and flu, and heart function.

Figure 7: One of the symbol used in the study of Klepacz et al. (2016)

In a research of Saba et al. (2010) people rated different kind of packages and the research concluded that the packages containing a picture of a plant leaf or a picture of a cross (which you would for example see on a first aid kit) were rated as healthier. The exact images used are shown below in figure 8.

Figure 8: Symbols used in the study of Saba et al. (2010)

Another study was done by Ares et al. (2011). They showed the participants different kind of labels and they had to state which associations they made with that kind of label. One label had an arrow pointing down and this label was associated with gastrointestinal health. Where another label had two stripes with some bend in it which could be seen as a slim figure. This label was indeed associated with weight control. See figure 9 below for the previous mentioned labels. It can be seen that the design of the labels does not contain any health claim.

Figure 9: Two of the labels used in a study of Ares et al. (2011)

4. Methods

In this chapter the methods used during this thesis is explained.

4.1 Type of research

In order to answer the question *"Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with certain symbols is healthier than a product with a health claim?"* qualitative and quantitative research is done. Literature review is done and surveys were held.

4.2 Collection of data

For the literature review Regulation 1924/2006 on nutrition and health claims made on food is analysed as well as articles about Regulation 1924/2006 on nutrition and health claims made on food, definition of a symbol, symbols used as NHCs, the average consumer, nudging, dual processing theory, influence of symbols on consumers and influence of claims on consumers.
Based on the information of the literature review the survey was made. The survey consists of six 5 point scale Likert-type scale questions, 18 multiple choice questions and one open question.
The survey was a postal survey.

4.3 Inclusion criteria

The literature review is done based on articles that focussed on Regulation 1924/2006 on nutrition and health claims made on food, the average consumer used in food law, definition of a symbol according to the Cambridge dictionary, NHCs as symbols used on food packaging in the EU, nudging with nutrition and health claims, influence of symbols on food products on consumers and influence of claims on food products on consumers. In addition the dual process theory explained by Kahneman & Egan (2011) is used.
For the survey only respondents living in the EU are taken into account, because this thesis is about EU legislation.

4.4 Exclusion criteria

Articles that focussed on other types of nudging which are not about nutrition and health claims, symbols used as NHCs outside the EU, influence of symbols and claims on consumer applied to non-food products were not reviewed. Furthermore, only Dutch and English articles were reviewed. Surveys filled in within 180 seconds are removed from the analyses. Also surveys that were not completely filled in are removed from the analyses.

4.5 Research progress

The survey was made in English and Dutch via WUR Qualtrics. It was online distributed via different channels, namely WhatsApp, Facebook and LinkedIn. The survey was estimated to take 5 minutes to complete. The survey went live on the 30th of April and ended on the 27th of May. Eventually the survey had 336 responses. After deleting surveys filled in from people living outside of the EU, surveys filled in within 180 seconds and surveys partially filled in or not filled in at all a number of 142 responses remained.
The following hypotheses coming from the literature review were tested:
$H1_a$ People will perceive products with a claim as healthier than products without a claim.

$H1_b$ People will *not* perceive products with a claim as healthier than products without a claim.
$H2_a$ People will perceive products with a symbol as healthier than products with a claim.
$H2_b$ People will *not* perceive products with a symbol as healthier than products with a claim.

4.6 Data analysis

The results of the survey are imported into SPSS and then analysed via SPSS.

4.7 Validity and reliability

For the purpose of validity the survey is based on literature and the expertise of Betina Piqueras Fiszman. Literature that was selected in order to answer the research question is used. The green leaf used on the packaging in the survey is based on the research of Saba et al. (2010) and the seven attributes used for the Likert-type scale questions are based on the research of Carrillo et al. (2014).

Before the survey went live it was tested by several friends and family members on practicability and comprehensibility. This resulted in incorporating a progress bar in the survey, because people thought all the pictures were the same and they got stuck at the first question. Also blocks of questions included numbering like 1/4, 2/4 etc. to make it even more visual to respondents that they are not stuck at the first question. Furthermore it resulted in question 7 till 13 having the following text 'Please note that if you want to select an option, you have to select the text'. This was done because people were struggling selecting the option they wanted on their mobile phone. Also the persons testing the survey were asked to time how long it took to fill the survey in which gave an average completion time of 5 minutes.

The SPSS analyses are done with a reliability of 95%. Hypotheses are rejected when the level of significance is below or equal to 0.05. This is reflected into a p-value smaller or equal to 0.05. With 142 respondents this results into a margin of error of 8.22% (CheckMarket, 2019).

In order to create a higher reliability of the responses in the survey, surveys filled in within 180 seconds and surveys partially filled in or not filled in at all were removed from the analysis.

5. Results

In this chapter the results of the survey are illustrated. All analyses are done with 142 responses.

5.1 Demographics

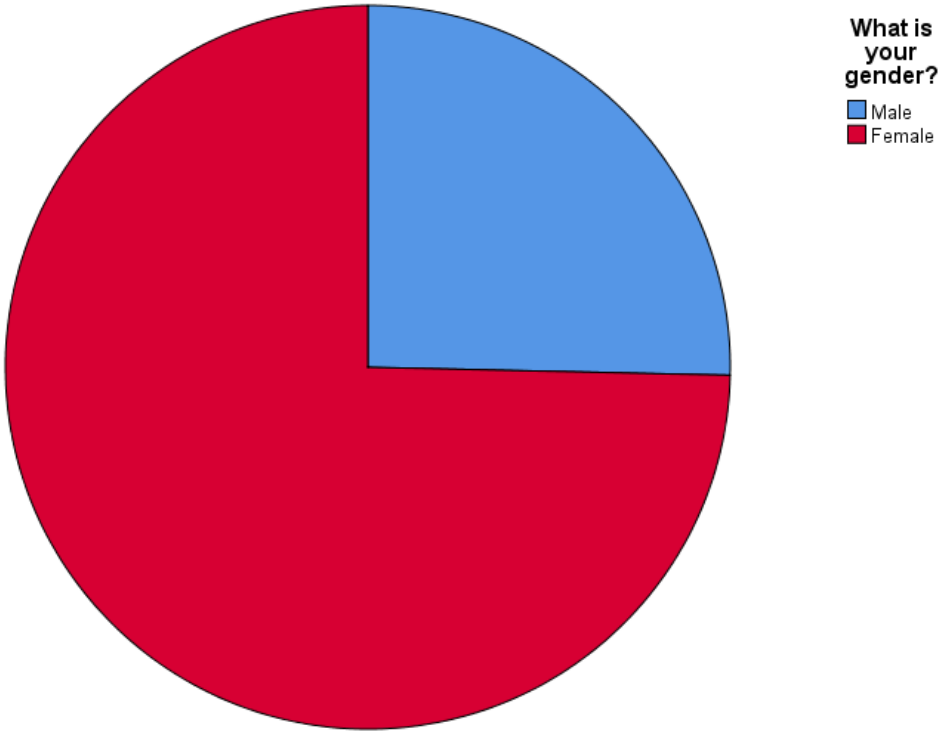

Figure 10: Pie chart male versus female respondents

In figure 10 above can be seen that more females than males filled in the survey. From the 142 respondents, 106 were female and 36 were male.

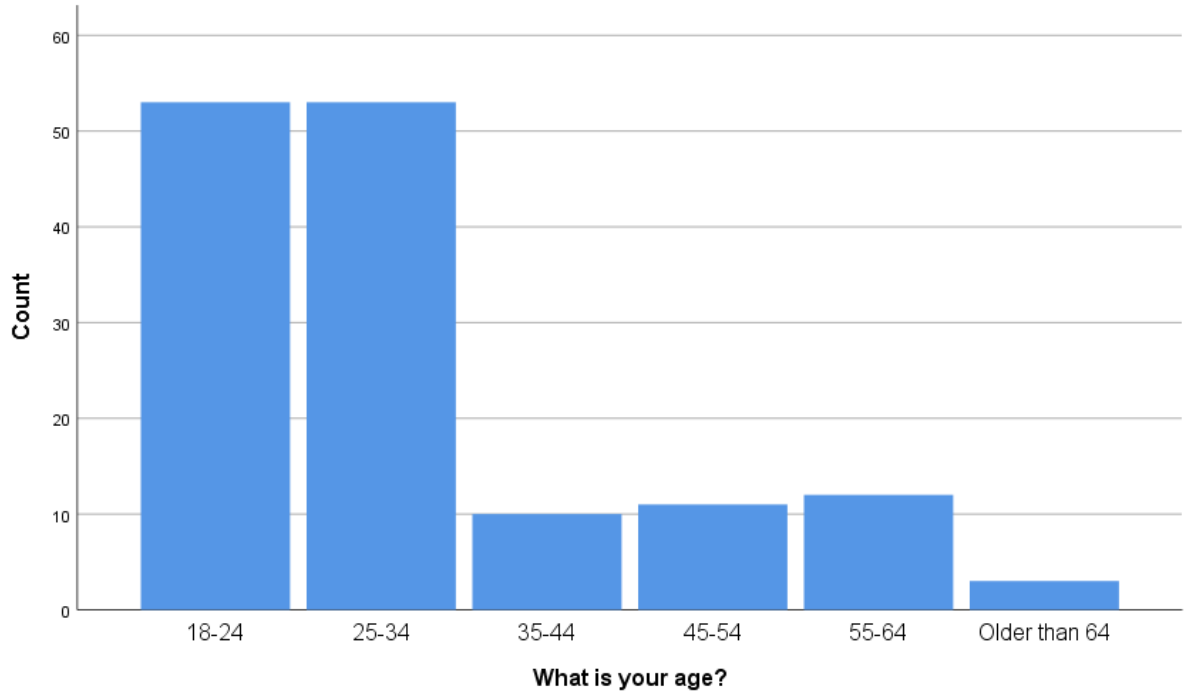

Figure 11: Bar chart showing the respondents' age

In figure 11 above can be seen that most respondents are between 18-24 and 25-34 years old. From the 142 respondents, 53 were aged between 18-24, 53 were aged between 25-34, 10 were aged between 35-44, 11 were aged between 45-54, 12 were aged between 55-64 and 3 were aged older than 64.

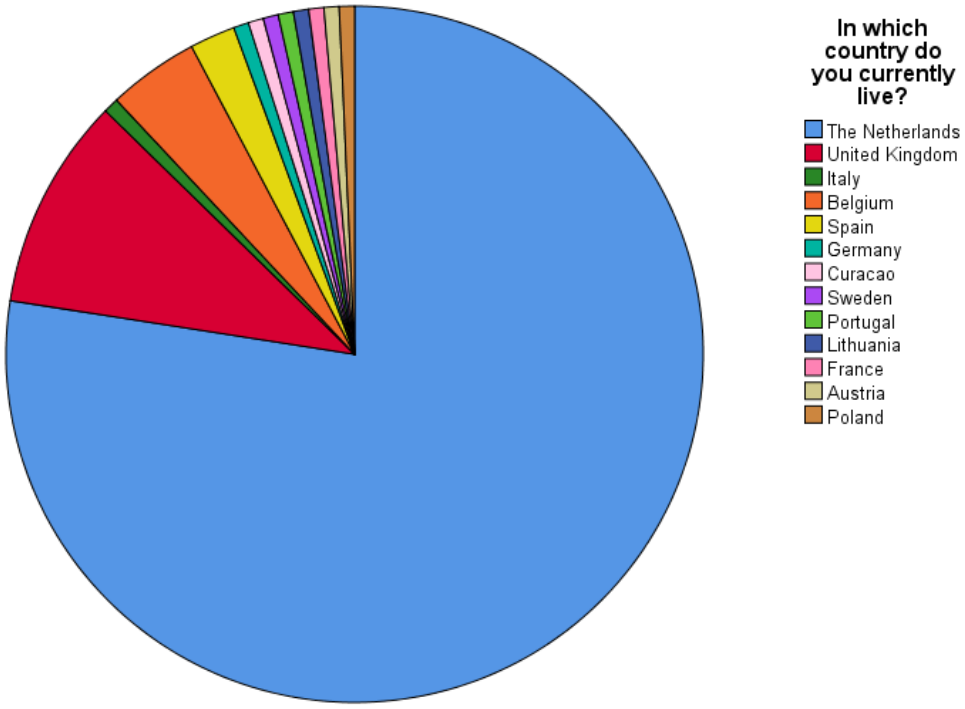

Figure 12: Pie chart showing in which country the respondents live

In figure 12 above can be seen that most respondents are from The Netherlands, namely 110. Furthermore, 14 respondents live in the UK, 1 in Italy, 6 in Belgium, 3 in Spain, 1 in Germany, 1 in Curacoa, 1 in Sweden, 1 in Portugal, 1 in Lithuania, 1 in France, 1 in Austria and 1 in Poland.

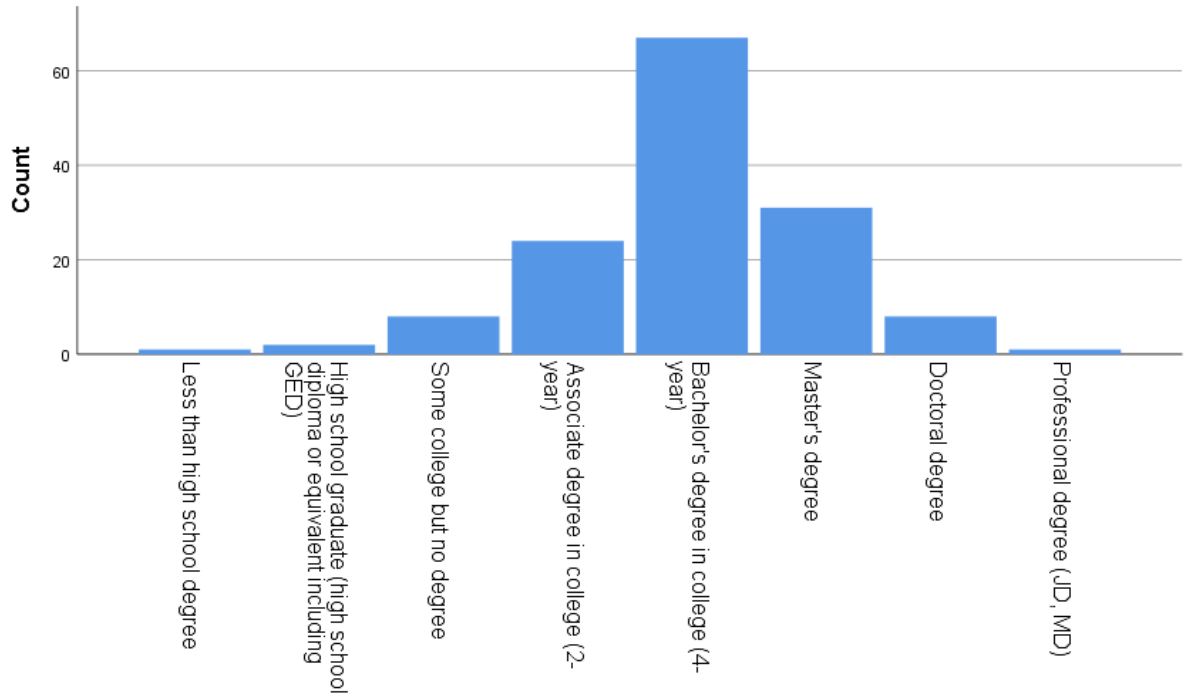

Figure 13: Bar chart showing the the highest level of school completed or which respondents received a degree from

Figure 13 above shows the distribution of the highest level of school respondents have completed or received a degree from.

5.2 Friedman test

For the question where respondents were asked to rate a packaging on a Likert-type scale the Friedman test is used. The reason for this is because the Friedman test can compare ordinal variables and calculate if there is any significant difference. The Friedman test also shows between which two groups the significant difference is found using pairwise comparisons. The null hypothesis for this test is always the distributions of cookie 1 till 4 are the same and when p is smaller or equal to 0.05 the null hypothesis is rejected. In the following paragraphs the tests refers to cookie 1, 2, 3 and 4. Below in figure 14 till 17 can be seen which food package correlates to which cookie number.

Figure 14: Cookie 1 (general packaging)

Figure 15: Cookie 2 'sugar free' claim

Figure 16: Cookie 3 green leaf symbol

Figure 17: Cookie 4 'sugar free' claim and green leaf symbol

5.2.1 Familiar

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product looks familiar to me. Figure 18 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is no significant difference found in the statement 'I think this product looks familiar to me', p-value is 0.935.

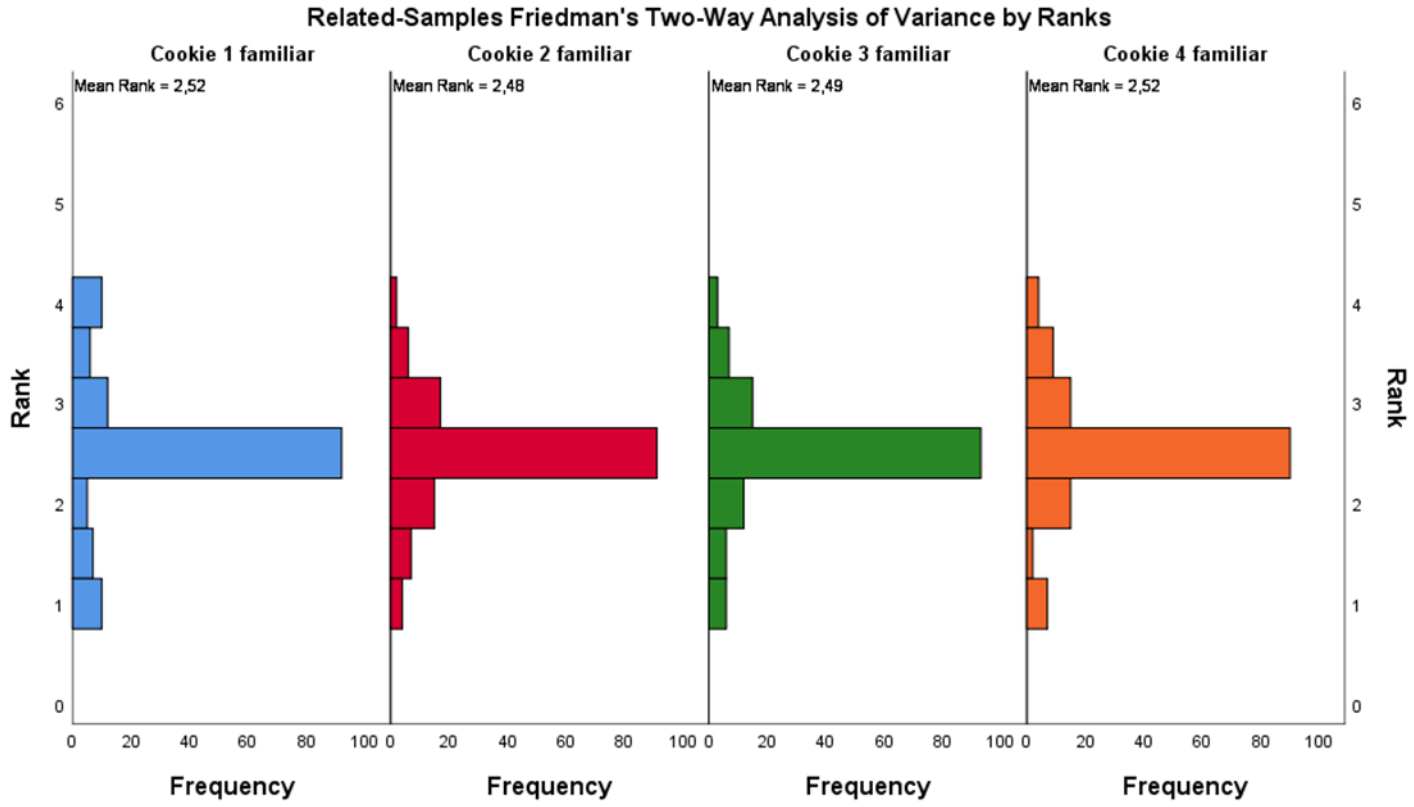

Figure 18: Overview ranking 'I think this product looks familiar to me' for cookie 1 till 4

5.2.2 Healthy

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product is healthy. Figure 19 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is a significant difference found in the statement 'I think this product is healthy', p-value is 0.000. Pairwise comparisons shows that a significant difference is found between cookie 1 and cookie 2: p-value is 0.007, between cookie 1 and cookie 4: p-value is 0.000, and between cookie 3 and cookie 4: p-value is 0.029. When looking at the mean of each cookie, cookie 2 is rated healthier than cookie 1: 2.60 versus 2.19. Cookie 4 is rated healthier than cookie 1: 2.77 versus 2.19 and cookie 4 is rated healthier than cookie 3: 2.77 versus 2.44.

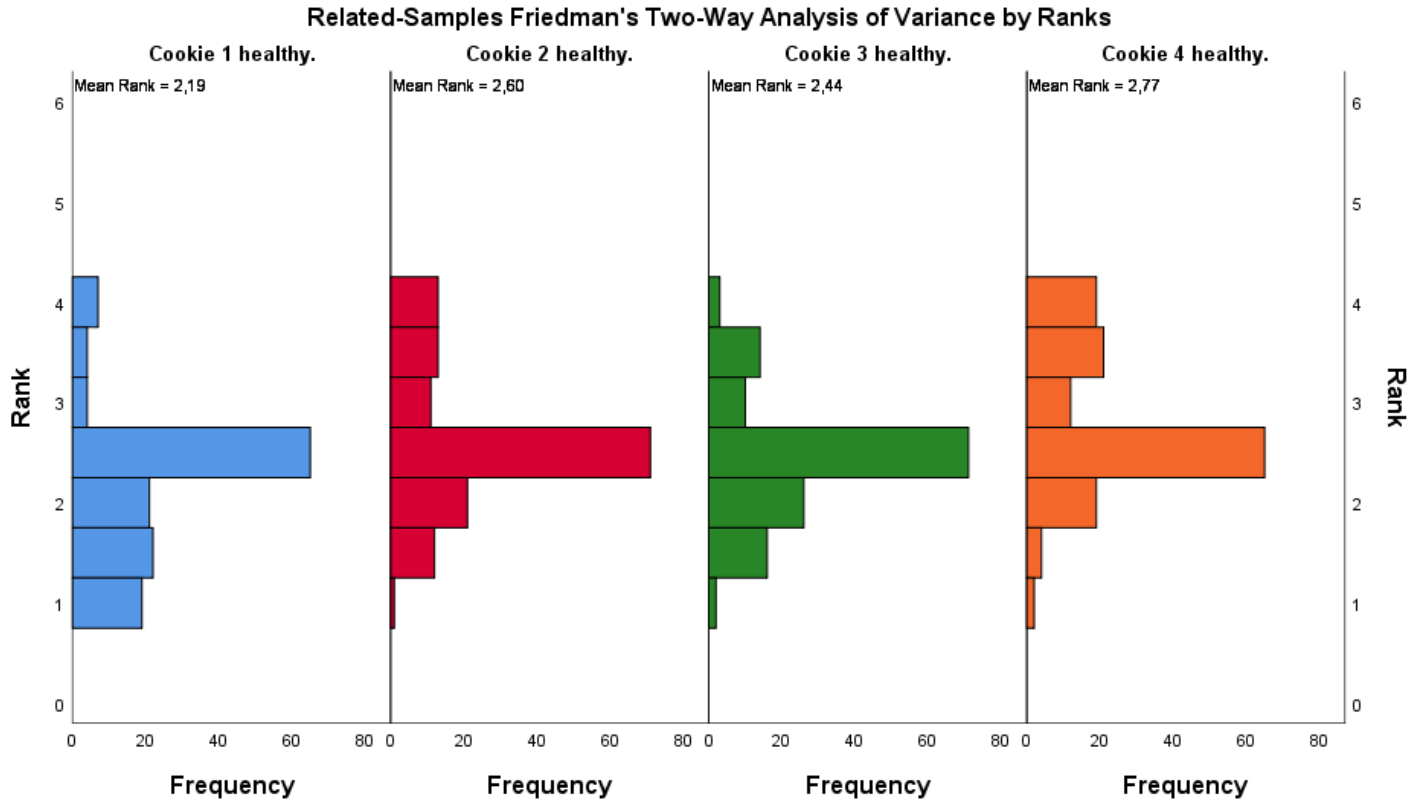

Figure 19: Overview ranking 'I think this product is healthy' for cookie 1 till 4

5.2.3 Natural

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product is natural. Figure 20 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is a significant difference found in the statement 'I think this product is natural', p-value is 0.000. Pairwise comparisons shows that a significant difference is found between cookie 1 and cookie 3: p-value is 0.001, between cookie 1 and cookie 4: p-value is 0.002, between cookie 2 and cookie 3: p-value is 0.004 and between cookie 2 and cookie 4: p-value is 0.007. When looking at the mean of each cookie, cookie 3 is rated as more natural than cookie 1: 2.75 versus 2.23. Cookie 4 is rated as more natural than cookie 1: 2.72 versus 2.23. Cookie 3 is rated as more natural than cookie 2: 2.75 versus 2.30 and cookie 4 is rated as more natural than cookie 2: 2.72 versus 2.30.

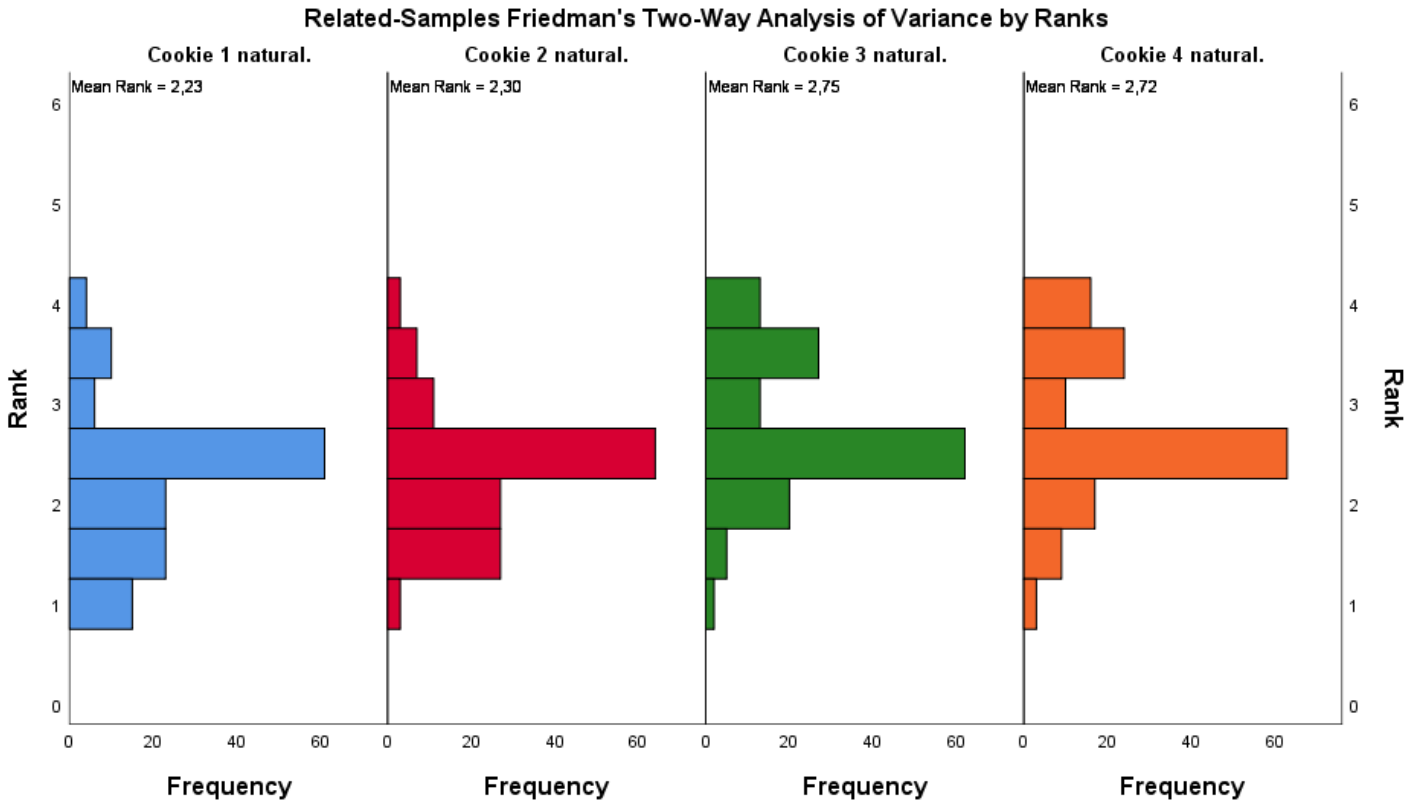

Figure 20: Overview ranking 'I think this product is natural' for cookie 1 till 4

5.2.4 Medicine-like

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product is medicine-like. Figure 21 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is a significant difference found in the statement 'I think this product is medicine-like', p-value is 0.000. Pairwise comparisons shows that a significant difference is found between cookie 1 and cookie 3: p-value is 0.005, between cookie 1 and cookie 4: p-value is 0.007. When looking at the mean of each cookie, cookie 3 is rated as more medicine-like than cookie 1: 2.65 versus 2.22 and cookie 4 is rated as more medicine-like than cookie 1: 2.63 versus 2.22.

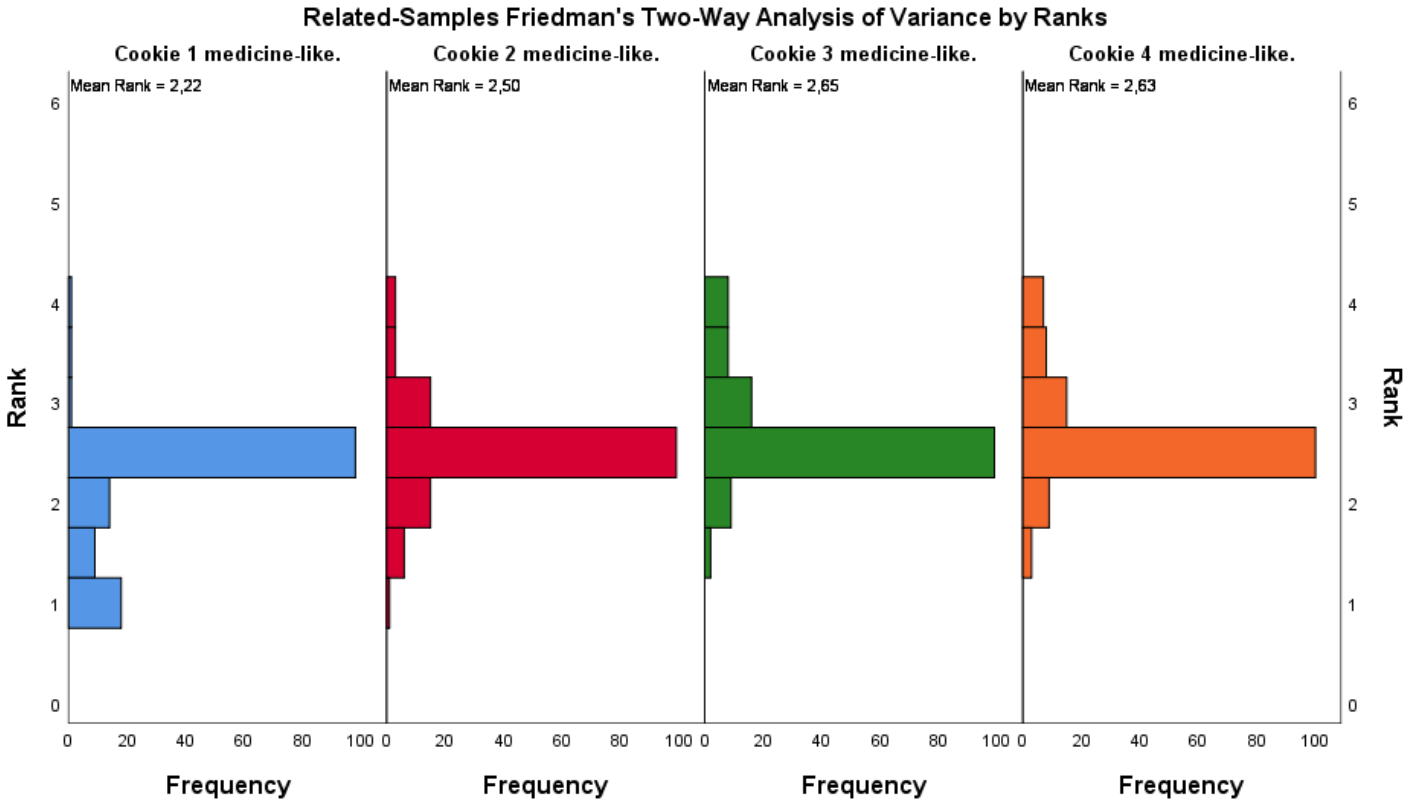

Figure 21: Overview ranking 'I think this product is medicine-like' for cookie 1 till 4

5.2.5 Trustworthy

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product is trustworthy. Figure 22 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is no significant difference found in the statement 'I think this product is trustworthy', p-value is 0.685.

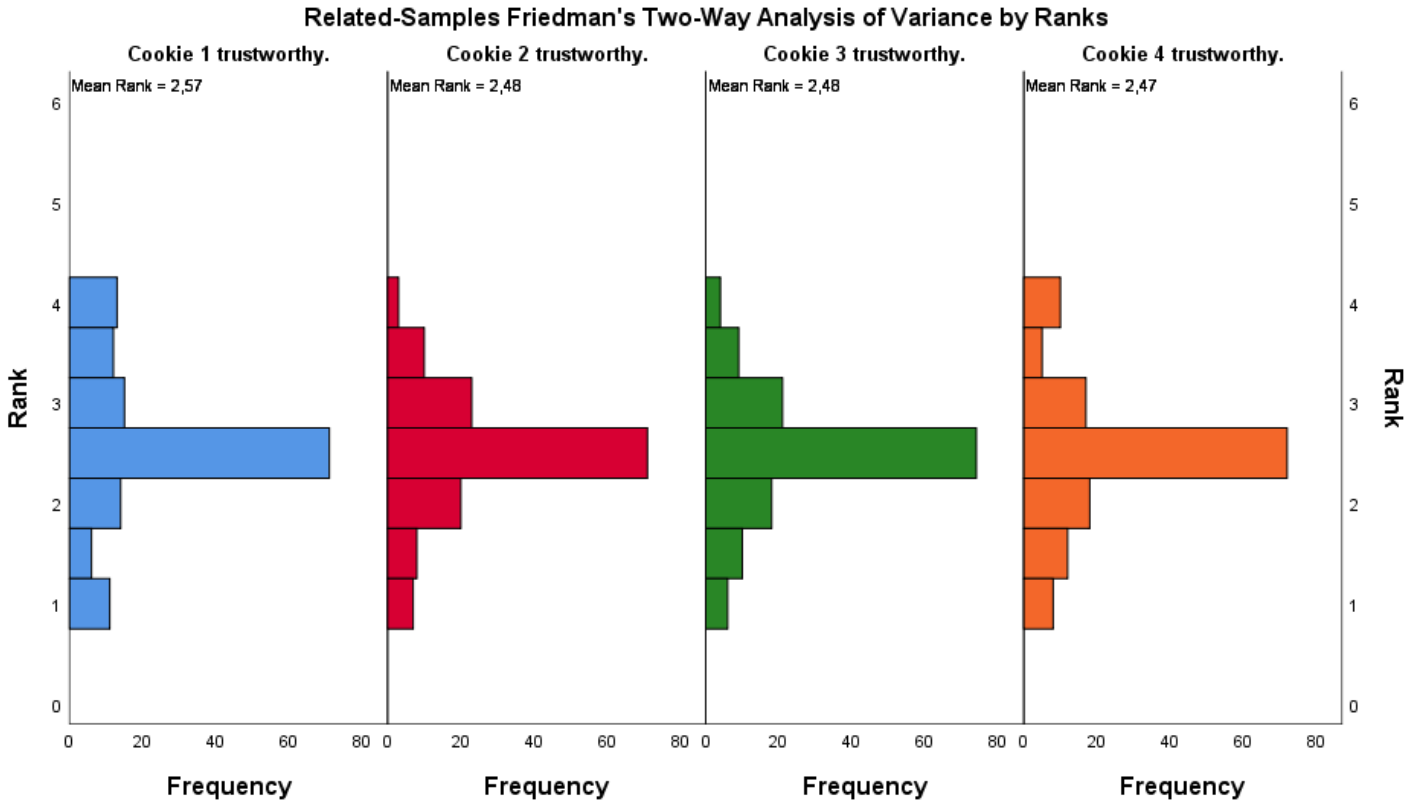

Figure 22: Overview ranking 'I think this product is trustworthy' for cookie 1 till 4

5.2.6 Wellbeing

The Friedman test calculates and compares the mean ranks for cookie 1 till 4 on the following statement: I think this product is good for my wellbeing. Figure 23 below gives a visual overview how the different cookies are ranked and where the differences in rankings can be found. On the Y-axis the number of rank is shown and on the X-axis can be seen how many times the given rank occurs. Also the mean rank for each cookie is shown. There is a significant difference found in the statement 'I think this product is good for my wellbeing', p-value is 0.000. Pairwise comparisons shows that a significant difference is found between cookie 1 and cookie 3: p-value is 0.041 and between cookie 1 and cookie 4: p-value is 0.034. When looking at the mean of each cookie, cookie 3 is rated as more good for my wellbeing than cookie 1: 2.58 versus 2.27 and cookie 4 is rated as more good for my wellbeing than cookie 1: 2.60 versus 2.27.

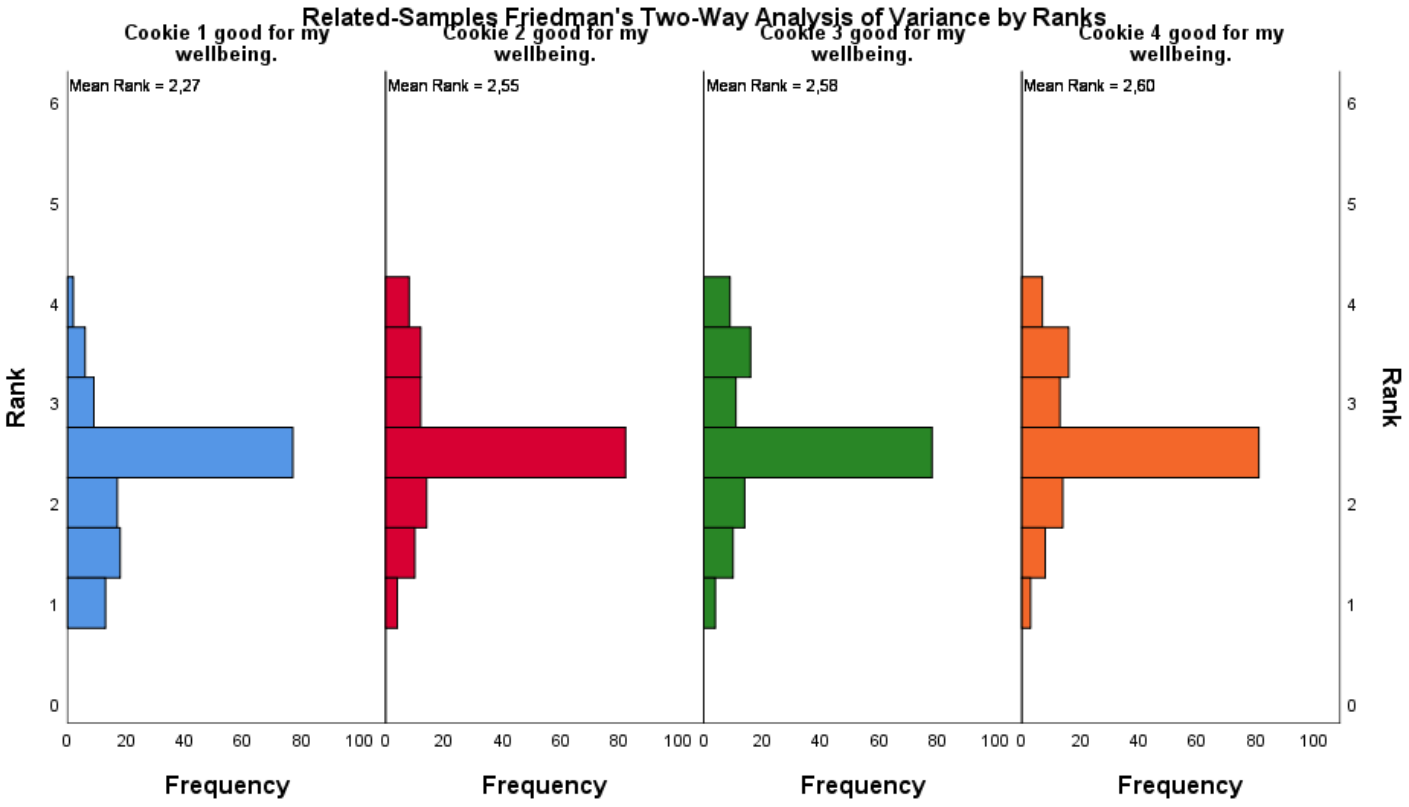

Figure 23: Overview ranking 'I think this product is good for my wellbeing' for cookie 1 till 4

5.3 Words mentioned

Respondents were asked to fill in the first three properties they think of when seeing cookie 1 till 4. Words were counted and words with the same meaning are seen as the same property. See table 1 below for the results. See appendix 1 for the detailed words.

Table 1: Words mentioned to the question 'What are the first 3 attributes you think of when seeing this product?'

Words	Cookie 1 Mentioned (times)	Cookie 2 Mentioned (times)	Cookie 3 Mentioned (times)	Cookie 4 Mentioned (times)
Unhealthy	52	33	33	21
Chocolate	46	40	41	38
Sweet	39	26	31	17
Tasty	37	17	23	15
Snack	31	24	20	15
Cookie	27	32	29	26
Sugar	24	11	16	5
Cheap	21	14	14	12
Childish	15	11	7	5
Take-away package	14	17	19	9
Calories	11	6	4	3
Crunchy	10	7	8	2
Fattening	6	5	2	x
Sugar free	x	27	1	23
Not trustworthy	x	16	14	15
Sweeteners	x	11	3	10
Healthier/healthy	x	8	2	11
Less tasty	x	8	3	8
Low calorie	x	5	1	5
Unnatural	x	2	1	2
Good for diabetics	x	2	x	1
Natural	x	X	7	2
Green leaf	x	X	8	3
Mint/different flavour	x	X	6	1
Organic	x	X	7	3
Green	x	X	7	3
Environmental friendly	x	X	4	2
Plant based	x	X	2	x
Suitable for vegan/vegetarians	x	X	2	2
Diet	x	X	x	2

17 respondents described cookie 1 till 4 with the same words, namely:

- tasty, chocolate, unhealthy
- chocolate, colourful, childish
- sugar and carbs
- chocolate, biscuits, calories
- sugar, sweet, chocolate
- cookie, chocolate, take-away package
- cookies, chocolate, sweet
- childish, sweets, unhealthy
- cookie, chocolate, snack
- waffle, chocolate, cookie
- fattening, tasty, moreish
- sweet, crunchy, take-away package
- unhealthy, sweet, sugary
- tasty, snack, sweet
- chocolate, snack, cookie
- chocolate, grain, cookie
- cookie, chocolate, snack

Furthermore 5 people indicated they thought the same about all of the pictures, where 2 specifically stated that all pictures are identical.

5.4 Noticing green leaf and claim

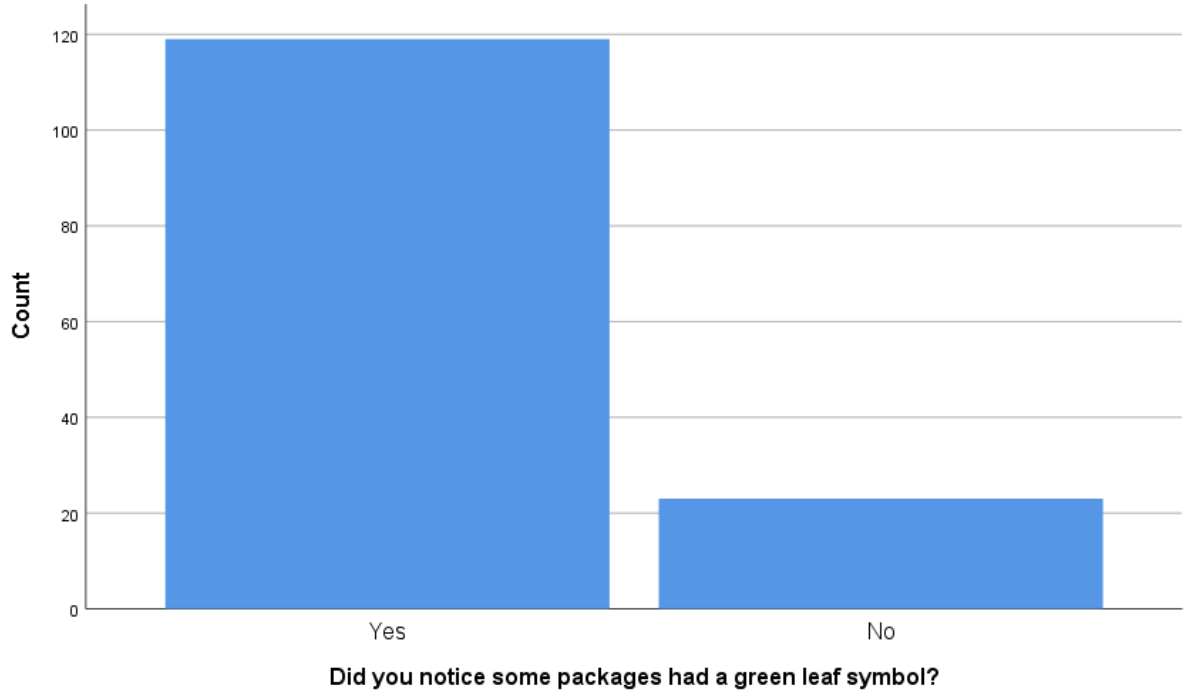

Figure 24: Bar chart showing the answers to the question 'Did you notice some packages had a green leaf symbol?'

Figure 24 above shows the answers to the question 'Did you notice some packages had a green leaf symbol?'. 119 respondents answered yes and 23 respondents answered no. Figure 25 below shows the answers to the question 'Did you notice some packages had the claim 'sugar free'?'. Where 127 respondents answered yes and 15 respondents answered no. 12 people answered no to both questions.

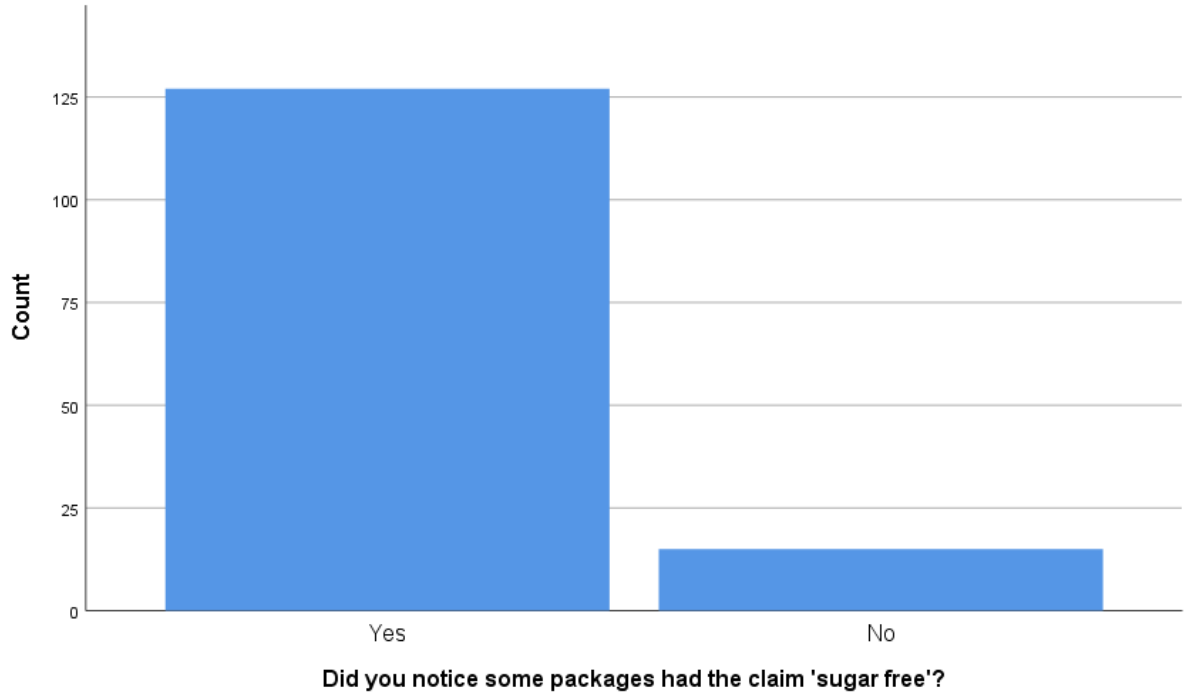

Figure 25: Bar chart showing the answers to the question 'Did you notice some packages had the claim 'sugar free'?'

5.6 Choosing between packaging

Cookies 1

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 26: First option cookie 1 versus cookie 2

In figure 26 above the answers to the first question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 57 people chose cookies 1 and 85 people choose cookies 2.
In figure 27 below the answers to the second question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 81 people chose cookies 1 and 61 people choose cookies 2.

Cookies 1

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 27: Second option cookie 1 versus cookie 2

Cookies 1

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 28: Third option cookie 1 versus cookie 2

In figure 28 above the answers to the third question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 79 people chose cookies 1 and 63 people choose cookies 2.
In figure 29 below the answers to the fourth question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 62 people chose cookies 1 and 80 people choose cookies 2.

Cookies 1

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 29: Fourth option cookie 1 versus cookie 2

Cookies 1

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 30: Fifth option cookie 1 versus cookie 2

In figure 30 above the answers to the fifth question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 57 people chose cookies 1 and 85 people choose cookies 2.
In figure 31 below the answers to the sixth question 'Imagine being in a supermarket and you want to buy some cookies. Which of the following cookies would you choose?' are shown. Here 62 people chose cookies 1 and 80 people choose cookies 2.

Cookies 1

Nutritional values	per 100g
Energy (kJ)	2056kJ
(kcal)	491kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	33.0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Cookies 2

Nutritional values	per 100g
Energy (kJ)	1469kJ
(kcal)	351kcal
Fat	23.3g
of which Saturates	11.5g
Carbohydrate	60.8g
of which Sugars	0g
Fibre	5.1g
Protein	7.1g
Salt	0.74g

Figure 31: Sixth option cookie 1 versus cookie 2

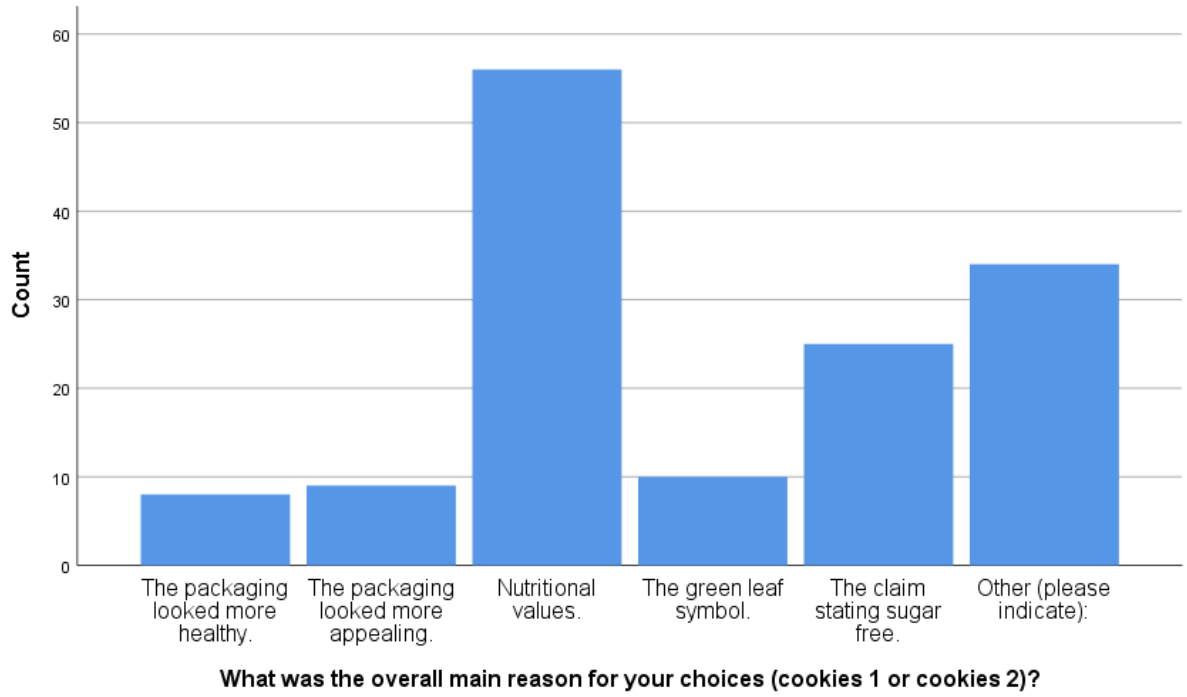

Figure 32: Bar chart showing the reasons for choosing cookie 1 or cookie 2

In figure 32 above can be seen what the overall main reason was for choosing cookie 1 or cookie 2. In the list below can be seen which things the respondents indicated by other. In brackets is shown how many respondents had this particular reason.

- When buying cookies I'm unhealthy anyways so I'd rather just buy them with sugar./I buy cookies for the taste which is better with sugar. (6)
- When buying cookies I'm unhealthy anyways so I'd rather just buy them with sugar. However I was influenced by the green leaf symbol. (4)
- I don't like the taste of sugar substitutes/I just buy them for the taste. (3)
- I choose this option because of the calories. (3)
- I'm repelled by claims and green leaves. (1)
- With such claims the cookies probably contains a lot junk, so I'd rather just buy them with sugar. (1)
- I'm repelled by the claim sugar free. (4)
- I don't like sweeteners/sugar substitutes. (3)
- I'm not influenced by the claim nor the green leaf. (1)
- First option. (1)
- Just the top one. (1)
- Just normal. (1)
- The package looked more appealing. (1)
- I choose this option because of the green leaf and the sugar free claim. (1)
- I don't trust sweeteners. (1)
- Normally I wouldn't choose these cookies at all, because they look like like mass-production sugary food products. (1)
- I'm allergic for sweeteners. (1)

5.7 General statements

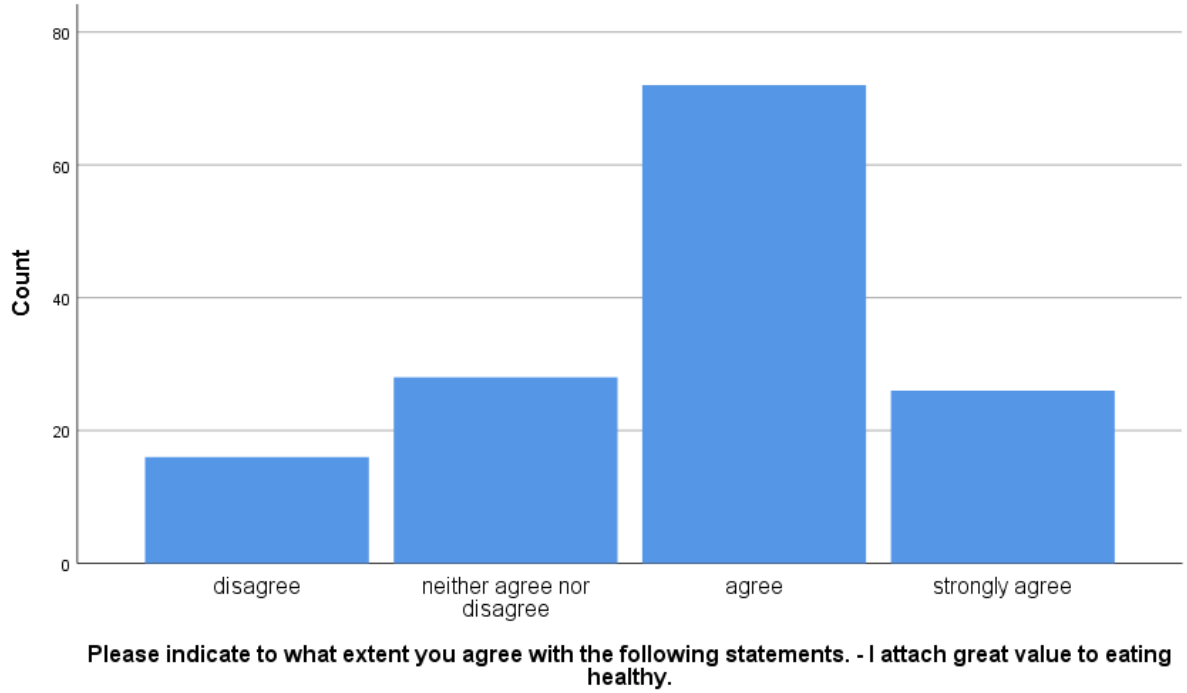

Figure 33: Bar chart showing the answers to the following statement 'I attach great value to eating healthy'

In figure 33 above is shown to which extent the respondents agree with the following statement: I attach great value to eating healthy.
In figure 34 below is shown to which extent the respondents agree with the following statement: When buying food products I look at symbols.

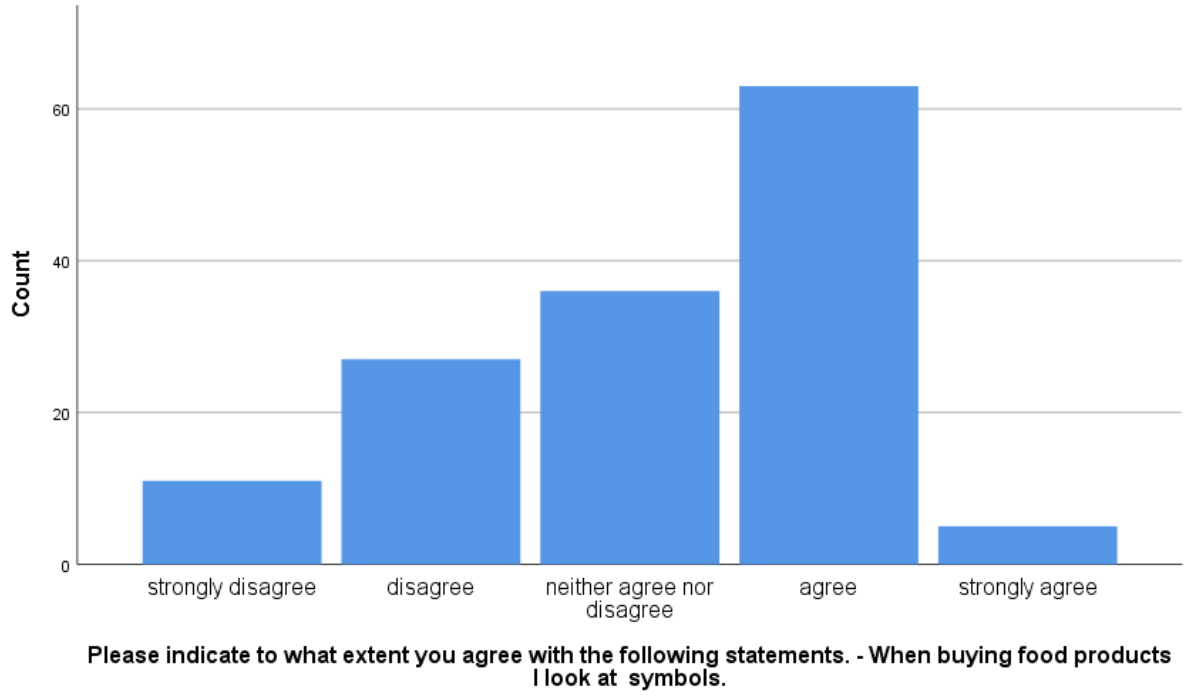

Figure 34: Bar chart showing the answers to the following statement 'When buying food products I look at symbols'

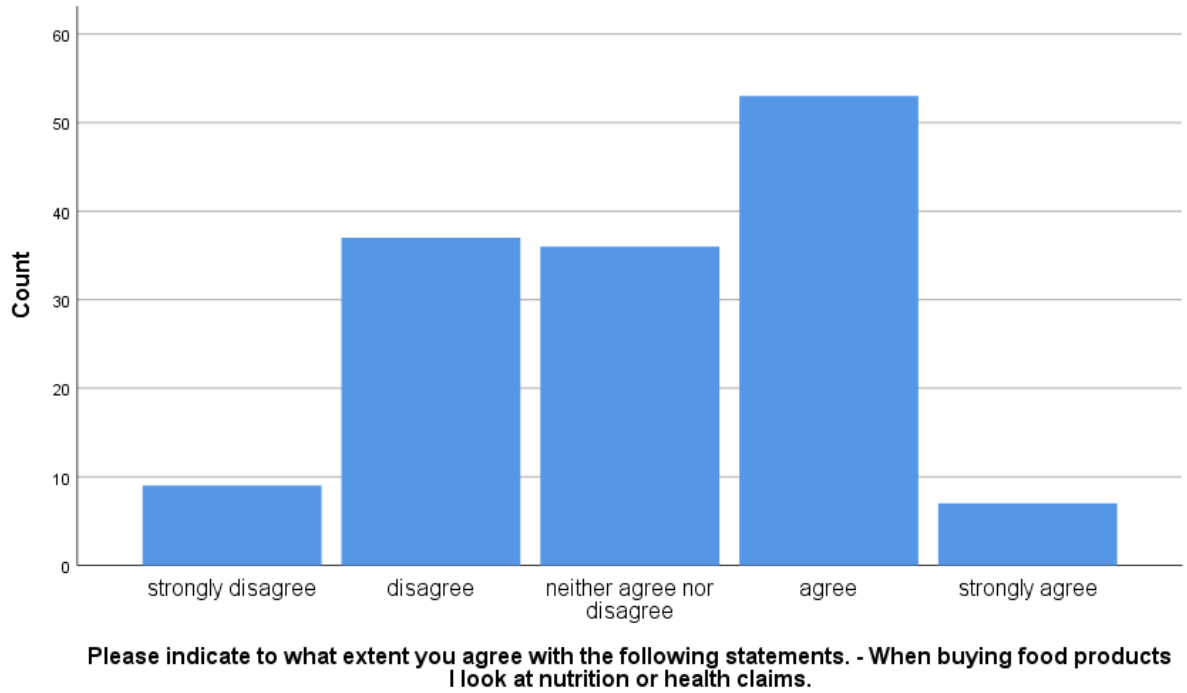

Figure 35: Bar chart showing the answers to the following statement 'When buying food products I look at nutrition or health claims'

In figure 35 above is shown to which extent the respondents agree with the following statement: When buying food products I look at nutrition or health claims.
In figure 36 below is shown to which extent the respondents agree with the following statement: When buying food products I look at the nutrition values.

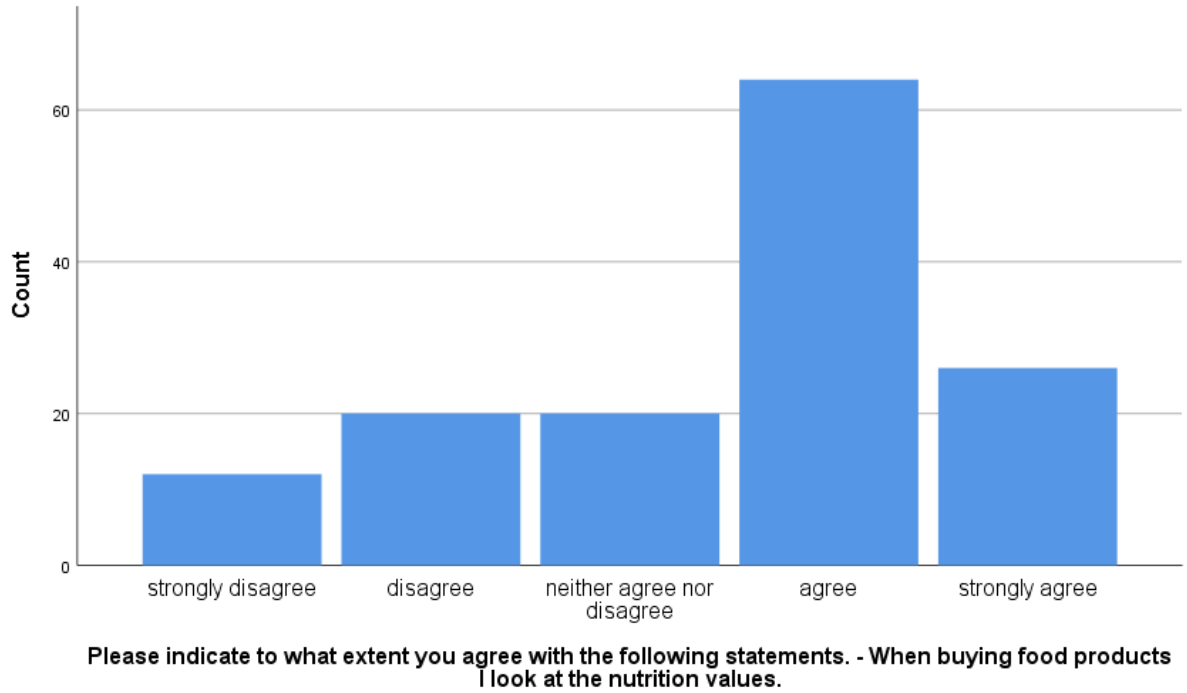

Figure 36: Bar chart showing the answers to the following statement 'When buying food products I look at the nutrition values'

6. Conclusion

In order to answer the main research question, first the sub questions will be answered.

What is already known about consumer behaviour regarding to NHCs/symbols on packaging?
In general products with claims are perceived as healthier than products without claims. Furthermore several studies suggest that visual representation, such as symbols have a greater influence than verbal messages.

Which symbols do consumers associate with health?
The following symbols used in the EU on food packaging are associated with health: the Choices logo, the Keyhole logo, the Toothfriendly logo, the Finnish Heart Symbol, whole grain logo, a slim female waist and an arrow (illustrating digestive health).
In addition research showed different symbols associated with health, like: olives, a person walking to the sun, a heart symbol with a stethoscope, a person in an active posture, a picture of a plant leaf, a picture of a cross (which you would for example see on a first aid kit), a picture that could be interpret as a slim female waist and an arrow (illustrating digestive health).

What is the underlying aim of the way Regulation (EC) No 1924/2006 on nutrition and health claims made on foods is formulated?
The main goal of regulation 1924/2006 is consumer protection and providing the right information. The information given can help consumers eat more healthy.

How do consumer perceive symbols?
According to the survey the packaging with symbol is not perceived more or less familiar and trustworthy compared to the other packaging. It is also not perceived healthier or less healthier compared to general packaging and packaging with a claim. The packaging with symbol is rated more natural compared to general packaging and packaging with a claim. Furthermore it is rated more medicine-like and good for my wellbeing compared to general packaging. The word unhealthy is mentioned less times compared to general packaging, 33 times versus 52 times, and the same amount of times compared to packaging with a claim. It is also perceived as less tasty. The word tasty is mentioned less time compared to the general packaging, 23 times versus 37 times, and the words less tasty are mentioned 3 times. In addition the words not trustworthy are mentioned 14 times and the word healthy 2 times. The word sugar free is mentioned 1 time.

How do consumers perceive NHCs?
According to the survey the packaging with a claim is not perceived more or less familiar, trustworthy, good for my wellbeing and medicine-like compared to the other packaging. The packaging with claim is rated healthier than the general packaging. Also the packaging with claim is rated as less natural than the packaging with symbol and the packaging with symbol and claim. The word unhealthy is mentioned less times compared to general packaging, 33 times versus 52 times, and the same amount of times compared to packaging with a symbol. The word tasty is mentioned less time compared to the general packaging, 17 times versus 37 times, and the words less tasty are mentioned 8 times. In addition the words not trustworthy are mentioned 16 times and the word healthy 8 times. The word sugar free is mentioned 27 times.
When looking at the packaging with a symbol and NHC it is found that this packaging is rated healthier than general packaging and packaging with a symbol. It is also rated as more natural than general packaging and packaging with a claim. Furthermore it is rated as more medicine-like and

good for my wellbeing than general packaging. No differences are found in the perceiving of familiar and trustworthy compared to the other packaging. The word unhealthy is mentioned the least amount of times, namely 21 times and the word healthy 11 times. Also the word tasty is mentioned the least amount of times, namely 15 times. The words less tasty are mentioned 8 times. The words not trustworthy are mentioned 15 times. The word sugar free is mentioned 23 times.

Which product (NHCs vs symbol) and for what reason will consumers buy?
In the survey respondents chose the following packaging: claim, general, claim, claim, claim and symbol and claim and symbol. The main reason indicated for choosing this packaging was nutritional values.

Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with NHCs?
There is no clear definition for pictorial, graphic or symbolic claims. It is also unknown when these claims are regarded as misleading or not. In general 'the average consumer' benchmark is used in order to conclude if something is misleading or not. However the average consumer does not take into account the dual process system of our brain and the fact that not all consumers act the same. Looking at the Choices Logo it could be questioned if this problem has not already occurred.

The Friedman test showed that the packaging with a symbol is not perceived healthier than the general packaging or the packaging with claim. The word unhealthy is mentioned less times than the general packaging, but the same amount of times as the packaging with claim. The word healthier is mentioned but a less amount of times than the packaging with a claim. Therefore H2a People will perceive products with a symbol as healthier than products with a claim is rejected and $H2_b$ People will *not* perceive products with a symbol as healthier than products with a claim is accepted.

The packaging with claim is rated healthier than the general packaging, also the word unhealthy is mentioned less times than the general packaging and the word healthier is mentioned. Therefore $H1_a$ People will perceive products with a claim as healthier than products without a claim is not rejected.

The packaging with claim and symbol is rated healthier than the general packaging and the packaging with a symbol, also the word unhealthy is mentioned the least amount of times and the word healthier the most amount of times.

According to the survey there is no evidence found that packaging with a symbol is perceived healthier than packaging with a claim and thus in this case it can be concluded that it does not cause consumer misleading.

7. Discussion

This thesis used a survey in order to answer the research question *"Does the way of how pictorial, graphic or symbolic claims are regulated in the current Regulation (EC) No 1924/2006 on nutrition and health claims made on foods lead to consumer misleading by making it possible for them to think that a product with a symbol is healthier than a product with NHCs?"* . The survey was filled in by 142 respondents and looking at the demographics it could be questioned if the results of this survey would be the same when repeated. Most respondents were female, from the Netherlands, between 18-34 years old and obtained a bachelor degree which results in an inaccurate representation of the EU region. Research shows that people from different countries perceive packaging differently (Madden, Hewett & Roth, 2000). It would be recommended to create a bigger diversity of respondents. Also this survey has used packaging from America to make sure respondents were not familiar with it and thus would be biased. However this resulted in many respondents disliking the packaging and mentioning words about it. This could influence the results of the question to fill in the first three properties you think of.

Furthermore the answer to the research question is not in line with what was expected. Literature stated that visual representation, such as symbols have a greater influence than verbal messages. The reason for this could be that respondents were more aware of the visual representation than in this survey. The survey was changed because respondents thought they kept seeing the same picture. A progress bar and numbering of the questions was included, however I still received messages from people they could not complete my survey because they got 'stuck'. When reviewing the responses 73 had to be deleted, because the survey was only partially filled in. All these responses stopped within the first 4 questions. For next time it would be better to maybe test this via A/B testing or interviews.

However it is also a result that people do not see a difference between packaging. 23 people stated that they did not see the green leaf symbol and 15 people state that they did not see the claim 'sugar free'. 12 people answered no to both questions indicating they did not see any differences between the packaging. When looking at words mentioned 17 people described each packaging with the same words and 5 people indicated they thought the same about all of the pictures, where 2 specifically stated that all pictures are identical. These 22 people differ some from the people who stated that they did not see the green leaf or sugar free claim indicating that if people do see the difference that does not mean people perceive the packaging differently.

Another difficult aspect with open text questions in surveys is that according to WUR Qualtrics it takes a lot of mental energy from respondents, so it could also be that these people could not take the effort to come up with new words.

This research only has focused on one symbol and one claim. It could be that the answer to the research question was yes when different symbols and claims were analyses. There is also a stigma around the claim 'sugar free' which was not taken into account. When people could choose between two packaging they choose 5 out of 6 times for a packaging with at least a claim. The 6th time the option was between general packaging and packaging with a symbol, so it was impossible to choose one with a claim. The main reason for this was nutritional values, indicating that people this time did use system 2 of the brain. It is also a different result than the research of Roe, Levy & Derby in 1999. This could be ascribed to the fact that this research is fairly old and it is reasonable to think that the perception of the claim 'sugar free' has changed through the years.

Looking at the way the general statements it could be questioned if this is a accurate representation of the way people in the EU region really act when buying food products. To fill in these statements respondents had to think about it, however literature shows that when buying food products this can happen through system 1 of the brain. At last people who suffer from diabetes or knows somebody

in their environment suffering from diabetes could be biased when looking at a sugar free claim. This bias is also not taken into account.

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Appendixes

Appendix 1

Cookie 1

1. Lekker, genieten, lekker tussendoortje, Delecious Lekker, tastyLekker,Lekker,wel lekker.Lekker,Lekker koekje voor bij de koffie lekker Lekker,Lekker lekker chocola, wel lekker lekker Lekker, lekker, Lekker,Lekker, Lekker, yummy,Lekker,lekker, lekker Lekker Lekker, te lekker, Lekker, tasty, Tasty, delicious Delicious, delicious, tasty
2. Chocola, Chocoladesmaak, chocola, Chocola, chocola, chocola, chocolate, chocolade chocola, chocolate, chocola, chocolade, Chocolate, chocolate, Chocolate chocolade, chocolade chocolade Chocolade, chocolade Chocolade chocolade Chocolate, chocolate, chocola, Chocolate Chocolade, chocola, chocola chocola chocolate Chocolat chocolate, Chocolaty, Chocolate, Chocola, , chocola, chocolate, chocolade chocolade, chocolade Chocola choco,biscuit, Chocola, chocola chocolade
3. Ongezond, ongezond ongezond unhealthy, unhealthy, Ongezond, unhealthy, Ongezond, unhealthy ongezond ongezond ongezond, ongezond, ongezond, Ongezond, ongezond, ongezond, ongezond ongezond, ongezond Ongezond, ongezond, unhealthy,niet erg gezond, ,unhealthy unhealthy, unhealthy ongezond, ongezond Ongezond, ongezond, unhealthy, Ongezond, ongezond Ongezond, unhealthy Ongezond, ongezond Ongezond, niet gezond Ongezond, unhealthy, unhealthy, Ongezond, ongezond, ongezond, unhealthy, unhealthy, ongezond, ongezond, Unhealthy, ongezond
4. zoet, Zoet, Zoet zoet, zoet, zoet, zoet Zoet, sweet Zoet, zoet, Zoet, Zoet, Zoet, Zoet, zoet zoet, Zoet, zoet, Zoet zoet, Zoet, Zoet, Zoet, zoet, Sweet zoet, Sweet, zoet,Zoet, sweet, sweet, zoet sweet, Zoet Sweet zoet sweet, zoet
5. niet lekker
6. chaotisch Overzichtelijk,
7. hysterisch, loud design, schreeuwerig logo,
8. Koek, koekjes, koek, buiscuits, koek, cookies, Koek, Cookies, Koek, Koek, Schoolkoek koekje meeneem koek cookie Suikerkoek Koek, Koek cookies, koek koek koek Chocoprinskoek Koek, Biscuits, wafel, Biscuit
9. blauw,
10. Attractive, aantrekkelijk verleidelijk eye-catching
11. Interesting,
12. calories calorierijk calorieën , calorieën caloryfull calories calorie calories calorierijk, caloric calorierijk
13. veel kleur, kleur, kleurrijk, colour, colors colorful, colourful,
14. kinderlijk, kinderen For young audience Voor kinderen, Kinderen voor kinderen,, kinderlijk kinderen, , Voor kinderen, kinderlijk, childish, , kinderen Kinderen Kids kinderen
15. Verborgen suikers, suiker, Veel suiker, Suiker, suiker sugar suikerbom, suiker, , Suiker, suiker, Suiker, veel suikers, suikerbom sugary sugar, suiker, te veel suiker, Suiker High sugar, suiker, sugar, sugar, suiker, sugar,
16. Amerikaans, Amerikaans
17. koolhydraten
18. snoep, snoep, Sweets,
19. tussendoortje snack, snack Snack snack, snack. in between food snack, snelle hap, snack, snack food break tussendoortje, a snack with dinner, , tussendoor, fast food snacks snack, tussendoortje, Snacks tussendoortje, snack snack tussendoor snack, snack snack, snack quick

20. lui
21. lust
22. meeneemverpakking meenemen, handig verpakt, convenience, , , kleine verpakking, makkelijk mee te nemen meeneembaar handig verpakt handig verpakt makkelijk om mee te nemen 6 x 2 pack Makkelijk Convenient Convenient,
23. zomer,
24. B-merk, een B merk, brand (copy) Namaak merk, na maak
25. rare naam, strange, weird,
26. onduidelijk wat voor koek het is.
27. Ugly packaging,
28. outdated,
29. bad, slecht
30. niet duur, goedkoop goedkoop goedkoop Goedkoop, Goedkoop, goedkoop, Goedkoop, Goedkope uitstraling, cheap goedkoop, goedkoop, Cheap, Cheap, goedkoop Goedkoop,
31. junk, troep, junk food,
32. Dikmaker Dikmakend, dikmakend, dik, Dikmakend, dik,
33. Tandarts
34. Granen, graan
35. knaperig, krokant, knapperig, knapperig, crunchy, crunchy , crunchy crunchy, knapperig, Krokant,
36. Buitenlands,
37. Onbekend, onbekend merk Onbekend,
38. Brrr
39. Namaak
40. Koffie
41. Vet, vet fat
42. hongermakend naar meer lekkers
43. vrolijk Vrolijk,
44. kruimelig kruimelig,
45. niet aantrekkelijk ugly pack not appealing Lelijk,
46. go
47. British
48. mass produced, manufactured
49. droog , droog
50. flavor, ,
51. smaakloos,
52. huge
53. brand
54. hearty
55. suspicious
56. a treat,
57. vezels
58. Comfort food comfort
59. Avond
60. Fel, fel, bright
61. too much packaging,
62. chemicals,
63. energieboost

64. Verpakking
65. Produkt
66. Informatie
67. boring

Cookie 2

1. Lekker, Delecious, lekker, ziet er lekker uit, lekker chocola, genieten, wel lekker, lekker, lekker, yummy, lekker, lekker, lekker, lekker, te lekker, lekker, lekker
2. chocola, chocoladesmaak, Chocola, chocola, Chocola, chocolate, chocola, chocolate chocolate chocolade chocola, chocolade, chocolade, chocolade, chocolade choco, chocolate, chocolate, chocolate, chocola, chocolate, chocolate, chocolade, chocolade, chocolaty chocola, chocolat, chocolate, chocola, chocolade, chocola, chocola, chocolade, chocolade, chocolade, chocola, chocola, chocolade, chocolate, chocolate
3. Suikervervanger, nep suikers
4. ongezond Ongezond, unhealthy, ongezond ongezond, unhealthy, ongezond, ongezond, ongezond, ongezond, ongezond, ongezond, ongezond, ongezond, unhealthy, unhealthy, unhealthy, unhealthy, ongezond, unhealthy, ongezond, ongezond, unhealthy, unhealthy, ongezond, ongezond, niet zo gezond, ongezond, not health, unhealthy, ongezond, ongezond, bad health
5. Suikervrij, sugar free, Suiker vrij, suikervrij geen suiker suiker vrij suiker vrij, suiker vrij, geen suiker toegevoegd, suikervrij, suikervrij, gelukkig suikervrij, suikervrij, suikervrij, sugar free, suikervrij, zonder suiker, suikervrij, suikervrij, suikervrij, sugar free, sugar free, suikervrij, suikervrij, suikervrij, suikervrij, suikervrij
6. Zoet zoet,zoet, zoet, zoet, zoet, sweet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, sweet, zoet, zoet, sweet, zoet, sweet, sweet, zoet, zoet
7. chaotisch, crowded, onoverzichtelijk
8. hysterisch, still loud design, schreeuwerig, lawaai kleuren, schreeuwerige verpakking
9. nasmaak,
10. tussendoortje snack snack, snack snack, snack snack snack, snack snelle hap, tussendoortje, tussendoortje, snack, tussendoor, als tussen doortje, snack, tussendoortje, tussendoortje, good snack, tussendoor, snack, snack, snack
11. Koek, koekjes, buiscuits koek, koek, cookies schoolkoek koek koekjes waffles, koek, koek, wafel, schoolkoek, koekje, cookie, koek, koek, koekje, koek, cookies, koek, koek, koek, chocoprins, koekje, koek, biscuit, waffles, koekjes, biscuits, biscuit
12. Oranje
13. Is het wel echt suiker vrij? leugenachtig not trustworthy, misleidend, nep, pasop!, misleiding, false advertisement, huh, nep, onbetrouwbaar, totally not sugar free, onbetrouwbaar, not convinced, fake, lies
14. Colorful veel kleur, colour, colors,
15. Healthy, healthier, gezond, less unhealthy, gezonder, healthier, healthier alternative, thinking it is slightly more healthy
16. Marketing,
17. kinderlijk Kinderen, childish, , still for young audience, kinderen, voor kinderen, kinderlijk, kinderen, kinderlijk, kids, kinderen
18. verborgen suikers, Veel suiker Suiker sugar, suikerbom, , suiker, , sugar, sugary, sugar, sugary, sugar,
19. amerikaans
20. stevia

21. koolhydraten
22. strange
23. zelfde, dat sugar free daar trap ik niet..., zelfde, no differences compare to other
24. calories, calorierijk, calorieën, calorierijk, veel callorieen, calorierijk
25. Minder lekker, less tasty, mogelijk minder lekker, vies, minder lekker dan met suiker, Suikervrij lijkt mij niet lekker, niet zo lekker, vieze smaak,
26. possibly more convenient for diabetics or kids, good for diabetes
27. lust,
28. meeneemverpakking Meenemen, handig, to go handig verpakt, gemak, individueel (per 2) verpakt, handig, kleine verpakking, meeneem koek, makkelijk mee ten nemen, meeneembaar, goed verpakt, convenient, makkelijk om mee te nemen, makkelijk, convenient
29. Caloriearm, less calories, low calory, light, light
30. Zoetstoffen, gezoet met zoetstoffen, zoetstof, zal wel veel zoetstoffen in zitten, zoetstoffen, zullen wel zoetstoffen inzitten, with sweeteners
31. waar maken ze het dan zoet mee?
32. niet duidelijk genoeg
33. krokant, knaperig, crunkie, knapperig, crunchy, crunchy, crunchy
34. slecht
35. cheap redelijk goedkoop, goedkoop, goedkoop, goedkope uitstraling, goedkoop, goedkoop, goedkoop, cheap,
36. nice
37. junk,
38. Burger
39. Snoep
40. Trendy
41. Verleidelijk, attractive,
42. Dikmaker, dikmakend, dik, dikmakend, fattening
43. Drog, droog, droog
44. Onbekend, onbekend merk
45. Ongewild, onaantrekkelijk, onooglijk, niet aantrekkelijk, ugly, ugly pack, lelijk
46. Geen voedingswaarde
47. Lijkt op een b-merk, namaak, namaak, namaak, namaak
48. Hartig
49. 123
50. Welke suikers dan
51. Vet, fat,
52. Hongermakend naar meer lekkers, moreish
53. Vrolijk, vrolijk
54. Annoying
55. Unethical
56. Plastic waste
57. Flavor
58. Kruimelig
59. Buitenlands
60. Chemical
61. Brand, branded,
62. Unnatural, Artificial

63. Pointless
64. Vezels
65. Energie, energieboost
66. Eten
67. processed food, massproduction
68. Less sweet, minder zoet
69. Diet
70. Minder suiker
71. Duur
72. Comfort
73. Blauw
74. Raar
75. Graan
76. Verpakking
77. Plain
78. Luchtig
79. Sweets

Cookie 3

1. Lekker, lekker, delicious, lekker, lekker, lekker, lekker chocokoek, lekker, lekker chocola, lijkt me wel lekker, lekker, lekker, lekker, lekker, yummy, tasty, tasty, lekker, heerlijk, good taste, lekker, te lekker, Genieten,
2. Chocolade, chocoladesmaak, chocola, chocola, chocolate, chocolade, chocolade, chocolate, chocolade, chocola, chocolade, chocolade, met schokolade, chocolade, chocolade, choco, chocolade, chocolade, chocolate, chocolate, chocola, chocolade, chocola, chocola, chocolat, chocolate, chocolate, chocola, chocola, chocola, chocolate, chocolate, chocolate, chocola, chocolade, chocola, chocola, chocolade, chocolate, chocolade, chocolate, chodolade,
3. Ongezond, ongezond, ongezond, unhealthy, unhealthy, ongezond, ongezond, ongezond, ongezond, ongezond, ongezond, unhealthy, ongezond, ongezond, ongezond, ongezond, unhealthy, unhealthy, ongezond, ongezond, unhealthy, ongezond, ongezond, ongezond, unhealthy, niet gezond, ongezond, ongezond, ongezond, unhealthy, unhealthy, unhealthy, not healthy,
4. Plant,
5. Zoet, zoet, zoet, zoet, zoet, zoet, zoet, sweet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, sweet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, sweet, sweet, zoet, zoet, zoet
6. Snelle trek, snack, snack, snack, snack, snack, snelle hap, tussendoortje, tussendoortje, snack, tussendoor, tussendoortje, tussendoortje, snack, tussendoortje, snack-like, tussendoor, snack, snack
7. Natuurlijk, natuur, natural, natuurlijk, natuurlijk, natuurlijk, natural,
8. Biologisch, biologisch, organic, biological ingredients, organic, biologisch, biologisch,
9. Verantwoord
10. Koek, koekjes, buiscuits, koek, cookies, koek, koek, gewoon koekje, koek, wafel, schoolkoek, koekje, koekje, cookie, koek, biscuit, koek, cookies, koek, koek, koek, koekje, koek, normal chocolate biscuit, biscuit, koekjes, biscuit, biscuits, biscuits
11. 6x
12. Groen blaadje
13. Waar komt dat blaadje vandaan (geen toegevoegde waarde) Why is there a leaf on the package, what does the leave mean, Why is there a leaf on my cookie?

14. Bargain
15. Green, groen, groen, groen, groen, green label, groene label
16. Duurzaam
17. Marketing
18. Veel kleur,
19. Kinderlijk, kinderen, kinderen, kinderen, kinderlijk, kids, kinderen
20. New pack maar zelfde ingredienten, Herhaling
21. Amerikaans, Amerikaans
22. pretendeert natuurlijk te zijn, poorly trying to be natural
23. Veel suiker, suiker, suikerbom, suikerbom, suiker, sugary, sugary, teveel suiker, sugar, suiker, sugar, rijk aan suiker, sugary, sugary, suiker, sugar
24. Veel koolhydraten
25. Healthy, healthy
26. Pleasing
27. New
28. Groen bloempje is beter
29. Leuk!
30. Calories
31. Unappealing, boring
32. Lui
33. Lust
34. Meeneemverpakking, meenemen, apart verpakt, handig, convenient, to go, handig verpakt, apart verpakt, kleine verpakking, meeneem koek, quick and easy on the go, makkelijk mee te nemen, travel package, mee nemen, snel, makkelijk, convenient, packaged, take away
35. Tarwe of granen, granen, flour, granen, graan
36. Geen originele verpakking
37. Onduidelijk, confusing, confusing
38. Ugly packaging, ugly, lelijk
39. untrustworthy Misleidend, untrustworthy, onbetrouwbaar, ongeloofwaardig, onbetrouwbaar Vreemd Nep, nep, nep(kan niet gezond zijn maar probeert de indruk te wekken), Gek, raar
40. Duur, duur, duur
41. Vies, vies, vies
42. Kleur, kleurrijk
43. Stevia, stevia, zal wel stevia inzitten
44. Cheap, redelijk goedkoop, goedkoop, goedkoop, goedkoop merk, goedkoop, goedkope uitstraling, goedkoop, cheap, goedkoop,
45. Bad
46. Its the same picture? Alle afbeeldingen , zijn, hetzelfde no-difference
47. Sanwich
48. Krokant, knapperig, knapperig, crunchy, crunchy, crunchy, knapperig
49. Snoep, snoepen, sweets, sweets
50. Stom blaadje
51. Calorieën, callorieen bom, calorierijk
52. Dikmaker, dikmakend
53. Verleidelijk
54. Tandarts
55. Onoverzichtelijk, rommelig, onrustig

56. Drog, droog, droog
57. Rond
58. Irritant
59. Opdringen
60. Verslavend
61. Lijkt op een huismerk
62. Hartig
63. Mmm
64. Namaak, namaak merk
65. Uitstraling
66. Hongermakend naar meer lekkers, moreish
67. Vrolijk, vrolijk
68. Kruimelig
69. Vegan product, suitable for vegetarians
70. Rustiger logo
71. Minder onaantrekkelijk
72. Goed voor milieu, milieubewust, environment, environmental friendly
73. Plastic waste
74. Non consistent
75. Zelfde, zelfde als vorige 2, zelfde
76. Huge
77. Brand, branded,
78. Mint-flavored, mint, mint flavour, chocolate mint favour,
79. Unnatural
80. Eten
81. Fel
82. Vet, fat
83. Nice
84. Herb
85. Fair trade
86. mass production
87. Latest
88. New favor
89. Zou het niet kopen, not convinced
90. Fiber rich
91. Energieboost
92. Familiar
93. Verpakkingen
94. Suikervrij
95. don’t like green symbol

Cookie 4

1. Lekker, Lekker, lekker, lekker Lekker, Lekker lekker chocola lijkt me wel lekker Lekker lekker, lekker Lekker, lekker te lekker, smakelijk,
2. Chocola Chocoladesmaak, chocola Chocola chocola chocolate chocolade chocolate chocolate Chocolate chocola chocolade Met schokolade Chocolade chocolade choco chocolade chocolate chocola Chocolade Chocolat chocolate chocola chocolade, chocola Chocolate,

chocola, chocolade Chocola, Chocolade, chocolade chocolate, Chocolade, Chocolate, chocolade, chocolade, chocola, chocolate

3. Ongezond ongezond, ongezond, ongezond, ongezond Ongezond, , ongezond, ongezond, ongezond Ongezond, unhealthy, Unhealthy, unhealthy, Ongezond Ongezond, ongezond, Ongezond, ongezond unhealthy,, not good for the health, niet per se gezond
4. suikervrij, suikervrij, sugar free Suikervrij, Suikervrij, Suikervrij, Suiker vrij, ,suikervrij Suikervrij, suikervrij, Suikervrij, SuikervrijSugar free, Suikervrij, Sugar free, Suikervrij rotzooi, suikervrij, sugar free, Suikervrij, suikervrij, suikervrij, surger free, geen toegevoegde suiker,
5. plant
6. dieet, suitable for specific dietaries
7. traktatie
8. gezond Healthy, healthy, potentially healthy healthier than other chocolate, healthy, healthy healthy, healthier alternative, gezond koekje, gezond
9. Koek, koekjes , buiscuits, koek, koek cookies, koek Cookies Koek , Koek, wafel,, koekje cookie, koek, cookies Koek, koek, koekie koek, , chocolate biscuit Koekjes, biscuit biscuit, waffle, schoolkoek, biscuit
10. Beter dan de andere, Beste versie
11. Bargain
12. Vegan, vegan product
13. Duurzaam
14. Advertentie
15. Veel kleur, te kleurrijk, colourful
16. Kinderlijk, kinderen, voor kinderen, kinderen, kids
17. Suikers, veel suiker, veel suiker, sugar, sugar
18. chocola en een groen plantje gaan nooit samen
19. Amerikaans, Amerikaans
20. Geef mij maar een Nederlandse stroopwafel
21. Veel koolhydraten
22. New
23. Organic, biologisch, organic
24. Calories, calorieën, calorrieen bom,
25. Zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, zoet, sweet, zoet, sweet, zoet, sweet, sweet, zoet
26. Minder lekker, vies, vieze smaak, vies, vies, doesn’t taste good, niet zo lekker, minder lekker
27. Unattractive, ugly packaging, onooglijke verpakking, niet aantrekkelijk Rommelig, too much on packaging, distracting, overwhelming, lelijk, ugly pack
28. Leugenachtig, not trustworthy, is echt niet suikervrij, nep, misleidende informatie, pasop!, , leugen, don't believe is sugar free, probeert gezond over te komen (suikervrij ‘natuurlijk’) maar lijkt mij niet zo, cheap way to do try to be healthy, for poorly informed people, klopt het wel, wantrouwen
29. Gemakszucht, meeneemverpakking, apart verpakt, convenient, to go, handig verpakt, kleine verpakkingen, meeneem koek, convenient, makkelijk
30. Zoetstoffen Gezoet met zoetstof, stevia, stevia, zal wel vol zoetstoffen zitten, sweeteners, stevia?, zoetstoffen
31. Snack, tussendoor, snack, snack, snack, snack, snack, snack, snack, tussendoor, snack, snacks, tussendoortje, snack,
32. Geen originele verpakking
33. Onduidelijk

34. B-merk, namaak, lijkt op een huismerk, namaak
35. School, school
36. Groen, groen, groen
37. Nice
38. Good
39. It's the same picture? Alle afbeeldingen 1 tot 4, zijn, hetzelfde
40. Redelijk goedkoop, goedkoop, goedkope uitstraling, goedkoop, goedkope uitstraling, cheap, goedkoop, goedkoop
41. Krokant
42. Snoep, snoep
43. Trendy
44. Vreemd, raar
45. Light, light, light, low caloric
46. Verleidelijk
47. Tandarts
48. Natuurlijk, natural
49. Waarom een groen blaadje erop? what does the leave mean
50. Drog, droog
51. suikervervangers
52. Onbekend, onbekend merk
53. Irritant
54. Onnatuurlijk, niet naruurlijk ondanks het blaadje
55. Weinig voedingswaarde
56. Hartig
57. Geen idee
58. Slecht voor je
59. Welke suiker
60. Duur, duur, duur
61. Dikmakend
62. Hongermakend naar meer lekkers, moreish
63. Vrolijk
64. Kruimelig
65. maybe try
66. minder zoet,
67. trying to Appeal to weightloss
68. karakterloos, plain
69. slechte kwaliteit, junkfood
70. environmentally friendly, miliebewust
71. verpakking
72. urging
73. graan
74. diabetes product
75. mass-production
76. chemicals
77. mint flavour,
78. fat
79. cruncy