# Packing Cues for Health

## Understanding the Effects of Explicit and Implicit Package Design Cues on Food Evaluation

Conjoint study Clymbol



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## ABSTRACT

Individual attributes that appear on packaging of food products daily effect numerous decisions consumers make and their food choices. This selection often leads to the unconscious unhealthy food choice and subsequently leads to consumers' weight gaining. To avoid such a situation, it is necessary to determine the effect of cues appearing on the front side of package of food product on the perception of the product by consumers. This paper considers two types of cues in this work: E*xplicit* which clearly communicate the message to consumer, mostly in verbal manner and *implicit* where the main message is not cclearly displayed and not directly told what the message is communicating. The aim of this work was to determine whether the interaction of implicit and explicit cues on the product packaging has an impact on the perception of health, indulgence, naturalness and satiety of consumers and whether between those cues arises certain synergistic effect or not. For this purpose, we conducted an online survey in which we investigated how various attributes and their levels work together by showing the examples of packaging of coffee biscuits which had varied four attributes - colour, picture (both implicit) and claim and logo (both explicit). The research suggests that in case of healthiness (dependent variable) there is on evident interaction and congruence within the implicit and explicit cues, but not congruence between them. Conversely, indulgence was found that people strongly perceive congruence between implicit and explicit cues indulgent cues, which dramatically increases the perception of indulgence of food product. In the case of naturalness it was shown that people perceive more explicit (textual) cues on the packaging of products whose synergy increases perceptions of naturalness of food product. For satiety was shown no significant two-way interaction of any cues. In this study, we reveal very significant effects of congruence of implicit or explicit cues (within or between them) to the perception of consumers. In the discussion is described how this study relates to already published sources, where its weaknesses and limitations are and is implied the direction that future research should take. Given that there is not a large amount of research aimed at both - implicit and explicit - cues, it is necessary to explore this issue further and make multiple testing in various conditions.



**Key words**: explicit cues, implicit cues, health, indulgence, naturalness, satiety, consumer, food choice, congruency

# 1. INTRODUCTION

Convincing consumers to eat healthy has become a key topic of interest across a variety of stakeholders . Unhealthy eating habits have lead to negative health consequences such as cardiovascular disease, cancers of various kinds, degenerative joint disease, and diabetes (WHO, 2014). All these diseases burden the health system of the countries and have lead to higher mortality rates worldwide.

Marketing strategies are one of the factors whcih heavily influence the decision-making process when selecting foods (Coelho et al, 2008). Given that obesity is a world-wide trend and has become a one of the most discussed topics, marketers have sought out opportunities in this issue (Kessler, 2009). Companies have started to develop products which better meet the nutritional requirements of the human body (Wansink & Huckabee, 2005). Food packages are important communication vehicles to inform consumers about the healthiness of a food. Chandon (2013) suggests that the best way to help and educate consumers in the fight against obesity, is by communication of nutritional information through product packaging. A food package can be defined as the container that holds, protects preservers and identifies the product, and which also facilitates its handling, storage and commercialization (Ares and Deliza, 2010). At the point of purchase, the package of the product is the only mean for the food company to communicate with its consumer. Increasingly, purchasing decisions are made in front of the supermarket shelves and the package can make the difference. A food packages can influence purchase decision and the amount of food eaten by altering product expectations and attracting attention.

When making purchasing decisions, consumers consider various factors, such as sensory features, price, brand and increasingly consumers consider also healthfulness of a product (Finkelstein and Fishbach, 2010). For the majority of consumers, the process of selecting a product is done effortlessly through their own intuition. They infer a product's credence attributes such as the healthiness where they have two belief formation processes at hand (Fishbein and Ajzen, 1975): informational belief formation and inferential belief formation. In informational belief formation, consumers base their beliefs about a product on information provided by relevant and trusted others. This can be advice from peers or relatives, but also from trusted institutions. In the context of health perception the latter would relate to the explicit information that is communicated in the form of claims and logos, the use of which is typically regulated by law. However, consumers also infer beliefs from health claims and other package design cues on the basis of their own rules of thumb, a process known as inferential belief formation. For example, it has been shown that sometimes consumers 'overprocess' information in the sense that they build associations that would not be justified by the literal or intended meaning of the nutritional claim or logo (Van Trijp, 2009). The healthiness of foods is conveyed by putting health claims and nutrition logos on the food package. However, this way of communication does not always lead to positive resulting effects on consumer behaviour. The so-called health halo effect refers to the effect of labels that if consumers judge the food to be performing well on one aspect, this positive evaluation extends too far to other aspects. As a result, a label may influence how much consumer infers to be a reasonable amount to eat, and how much consumption pleasure and guilt feeling person anticipates by eating that amount (Chandon & Wansink, 2007). For example, foods that are labelled as "healthy" or "fruity" have been shown to result in overeating Koeningstorfer et al., 2013). Similarly, green colors on a package can be an indication that the product is fresh or organic (Bone and France, 2001).

The context in which health claims and logos appear is crucial to understanding the effects they have on consumers. A matter that has been largely ignored in the marketing industry is that health claims and symbols are perceived in the context of more implicit package cues. Implicit cues such as pictures, package colour or pictorials have been shown to have a strong impact on expectations. These "soft" packaging cues such as the colour of the pack and the portrayal of ingredients may lead to an inference making process based on existing knowledge, and previous experiences and associations (Grunert et al., 2011)

A question of *how implicit cues interact with more explicit health claims on a food package is unclear. N*utrition information in the form of a logo or claim is processed by consumers in constant interaction with other package cues (e.g. brand name, images) and with knowledge and associations already in memory (Grunert et al., 2011). It could be caused by large amount of effects among which belongs the congruency effect; thus a certain level of conformity between different factors or features of the particular stimuli (Krishna, Elder and Caldara, 2012). Certain combinations have more effect together than separate. This might be strongly related to a certain type of fluency in information processing. Aim of this study is therefore to understand how consumers value product package design cues (explicit and implicit) and how combinations of cues (and possible congruence between them) can influence perceptions and choice.

We will conduct a conjoint analysis as this method allows the analysis of the influence of individual attribute levels on the overall healthiness and indulgence perception. As a control dependent variable, we included perception of satiety and naturalness since these variables can have very similar effect on consumers perception and evaluation of product as healthiness and indulgence and thus the trade-off can be seen also in these variables. In this conjoint study, two types of factors will be included: informational (i.e. verbal claims, logos) and inferential (i.e. colour, illustrations of ingredients or persons). Our key dependent variables are healthiness, indulgence, naturalness and satiety ratings of the food in the package.

Moreover, claims and logos on food packages influence not only consumer perceptions, but also the amount of food they eventually eat (Albarracin, 2009) hence satiety of consumers. Additionally we will also measure attractiveness of package design and willingness to purchase certain product with specific combinations of cues.

This study can significantly help in the fight against overeating and its contribution to overweight – both to consumers and to policymakers who make regulations dealing with this topic. It can also educate and create awareness about the risky impact of appealing, yet misleading packages on overeating.

In the next chapter a conceptual model will be presented in accordance the theory behind this issue and also introduced studies that have been already published, and are related to this topic. In the third chapter is methodology, which illustrates our progress in creating a pilot and main study of this thesis as well as introduce sbujects, stimuli and procedure. The fourth chapter is devoted to the results of the experimental part of the work and in the lasly, discussion, conclusion, recommendations and limitations of this work .

# 2. THEORETICAL FRAMEWORK

Many factors affect the final process and overall perception, evaluation and willingness to purchase the product by the consumer. Some studies deal specifically with the influence of implicit or explicit design cues. Gap in knowledge is seen in the interactions of these two types of design cues and how they work if the consumer is exposed to their action simultaneously. These processes are independent of each other and will vary in different situations for different consumers. Therefore, in the research process, we restrict to us important phase, which can be found in Figure 1. This graph therefore indicates what process we go through in understanding, purchase and consumption behaviour. Each part of this conceptual model is explained using published literature and other available and reliable sources. The numbers behind the names of each box in the model identifies the number of the chapter, which is devoted to that specific topic.

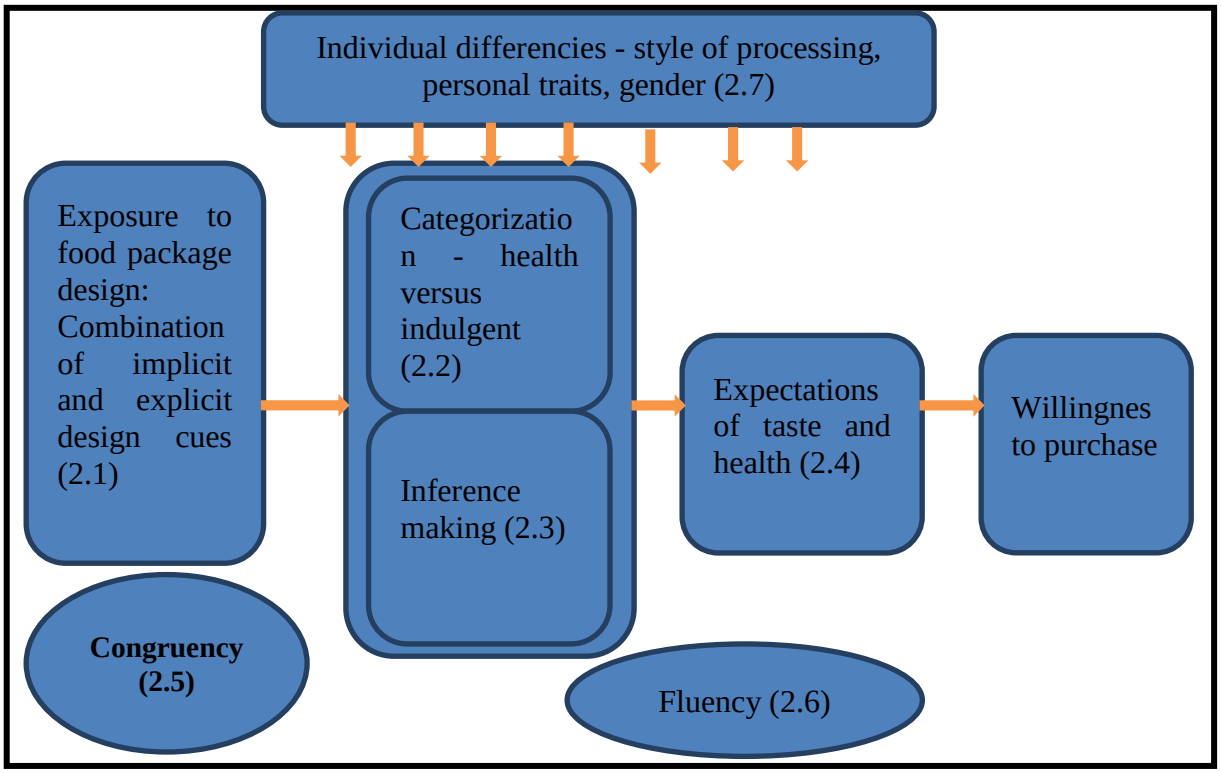


**Figure 1: Conceptual model of conjoint study**

## 2.1 Explicit and Implicit design cues, their effects on perception and suggested mechanisms explaining the effects

In this chapter, we explain the basic very fundamental notions of implicit and explicit cues. Also we will try to explain what effects these cues can have separately on the perception and evaluation of product and suggest the underlying mechanisms of these effects.

### 2.1.1 Explicit design cues

Explicit design cues of a package can be defined as cues that clearly communicate a message in a verbal manner (Dillard and Shen, 2005). It relates to the degree of certainty in the language that is used to communicate the message, and depends mainly on the clarity of

expression for the recipient of this information. According to Dillard and Shen, a message is explicit when it is clearly and explicitly expressed using words such as "should" or "must", and excluding less explicit expressions such as "could" and "would" (Miller et all., 2007). Hodkings et al. (2012) used the word "directive-ness" when discussing explicitness of health claim information. This term determines how much consumers are guided through the cues to the conclusion that the product is healthy. It was demonstrated that if the value of "directive-ness" information is high, this information will most likely accepted by consumers (Hodkings et al., 2012). It is possible to find many studies that hypothesized that explicit expressions and cues are generally more powerful than implicit. This was also proved in O'Keefe´s study in 1997, which confirmed that the formulated signs facilitate understanding and thus strengthen the perception of such a cues. In this thesis, claims and logos are considered as explicit design cues.

#### *2.1.1.1 Effects of explicit information at food packages on healthiness perceptions and food consumption*

##### Empirical evidence to how health claims and logos influence perceptions and intake

As we mention already in previous chapter food which contain “health claim” is perceived as healthier and containing less fat (Provencher et al., 2009). On the other hand certain words or statements can be perceived as too aggressive and therefore the overall effect can be opposite. Due to the fact that the product bearing slogans such as “healthy" are these products considered as less caloric (Gravel et al, 2012). When it comes to the second attribute of explicit design cues, logo is defined as a possible combination of graphic and verbal expression. A study shows that appearance of logo proclaiming health in one of two absolutely identical products caused that this product is immediately perceived as a healthier (Steenhuis, et al., 2010). To avoid this undesirable effect and at the same time meet the demands of consumers for simplicity and intuitiveness, was proposed the solutions in the form of a clearly-defined resolution graphic of a healthy (red)/unhealthy (red) amount of a product or essential nutritional components (salt, fet, saturated fet, sugar) of this product in form of traffic light method (green colour of traffic light displayed on the package means low or healthy level of one of the keys component of this food product) (van Herpen, van Trijp, 2011). In this study was also discusses the so-called GDA (guideline daily amount), which can consumer find on some food products packages. With GDA consumer sees a percentage of nutritional ingredients like fat and sugar, contained in the product of a total of 100%, which should get up in the body in average for one day, but the real information about the healthiness/unhealthiness of product this information does not provide.

#### *2.1.1.2 Suggested underlying mechanisms and theories explaining effects*

##### Attention

One of the prerequisites in the overall consumer decision-making process in term of choice is attention. Attention is first behavioral process that will determine the subsequent behavior of the consumer. If a product does not attract the attention of consumers, this product will not emerge in the next stage of the decision-making process and will not be purchased. If the product gets the consumer's attention, we can expect that the consumers will focus on information about the nutritional values only in case they have the tendency to buy healthy food (van Herpen, van Trijp 2011). As for the graphic design packages, the most attention attractive packages that are simple, with a large sign (double letters) and uniform color. Furthermore, Schuldt (2013), Bialkova and van Trijp, (2010) argue that color matters.

Different colors can differently attract consumers attention and thus evoke in the consumer different feelings and tendencies to perceive the food product. The level of consumers attention may be conditional on the colors that are used in various parts of the package (see implicit cues and color psychology).

### Goal accessibility and activation

Another described attribute of food are goals of consumption. The goal can be defined as a kind of future final state, which we want to achieve by our action (Aarts & Dijksterhuis, 2000). There are two main goals: the goals covering the enjoyment of food and goals, that are rather focused at the weight control of consumers (Stroebe, 2002). These two objectives are basically forcing consumers to choose between long-term satisfaction in the form of a healthy lifestyle and therefore strong health, or an immediate and also short-term enjoyment of very tasty but unhealthy food (Fishbach, Shah, 2006). Of course, given the previous definition of goals it is certain that the majority of consumers stated that their goal the long-term health (Fishbach, Friedman, Kgruglanski, 2003), but unfortunately not in all cases this means the actual outcome in the form of self-regulation and a healthy lifestyle. For example Fishbach and Dhar (2005) found that unfulfilled goals become more important, while the filled and well managed ones enhance desire for our secondary goals.

### Priming and liberating effect

Furthermore, very related fact is how consumers create their goals and what it can affect. In particular priming may at some point influence our goal (Aarts, 2007) and hope that the health claims at the food labels can prime people to act according the weight control goal (Papies, 2012) therefore long-term health maintenance. Priming refers to the process of increasing the accessibility of schemata, concepts or stored information by recent and repeated exposure to similar schemata, concepts and information (Rotenberg et al., 2005). This tendency can disrupt the liberating effect, which indicates a situation where the consumer consumes far more product only because it is classified as healthy and also for the reason that this choice may refuse the second alternative - to consume a product that is tasteful and very often classified as unhealthy (Fishbach & Dhar 2005).

### Licensing effect

Wansink and Chandon (2006) describes in their work so-called licensing effect in which the food consumption again rises due to reduced feelings of guilt, which is caused by misleading health claims (e.g. the "low fat" claims on the packaging of chips) on product packaging. This behavior consumers are trying to reduce the feeling of guilt that they have in case they eat conventional regular type of products.

### Health Halo effect

Overall, there is evidence that people are affected in the process of inference making by health claims and that they perceive products containing health claims as much healthier than products without healthy claims (Lahteenmaki, 2013). At the same time it was proven that health claims often cause misleading, which can result in negative effects such as Health hallo effect (Grunert et all, 2011). Consumers regularly underestimate the caloric intake of a food product labeled with health claims (Oakes, 2004). Provencher et al (2009) in their study showed that health claims can increase consumption up to 35%.

### Food compensation

Health claims and subsequent inference making can also lead to food compensation. This effect is partially explained in the study of Werle et al. (2011), who suggests that mental effort we put into thinking about physical activity is associated and highly connected with subsequent actual physical consumption of food. In other words, if the packaging is highlighted with the word "active", our mind is immediately engaged with the idea of physical activity and we feel like we can consume far more food. Food compensation can be related also to implicit cues which was confirmed by e.g. a study of Albarracin et al. (2009), who hypothesized that if a person is exposed to an image or inscription, which is in some sense related to a physical activity, that consumer then automatically consumes more food.

## 2.1.2 Implicit design cues

Implicit information allows message recipients to understand communication in different ways. In other words, recipients may interpret the information differently. Implicitness is defined as a degree of uncertainty in communication, something that is not directly said but is included in the information. Miller et al. (2007) believe that implicitness is a somewhat indirect expression of the message. In the case of implicit messages there is a certain space for independence in terms of explanation of the cues by each separate individual.

There is evidence that implicit design cues are perceived as more powerful (Paek et al., 2010), since these cues are easily processed and stored in human brain (Chrysochou, Grunert, 2014). This effect is clearly proved by Paek et al. (2010) which conducted a study where were verbal claims substituted by different colors or pictures which eventually caused easier processing and therefore higher level of persuasion. In this thesis colour and image are considered as implicit cues. Both package colour and images on the package may be a source of extrinsic information, which helps to create an overall intrinsic impression (Underwood, Klein, 2002).

### *2.1.2.1 The effect of implicit cues on perceptions and food consumption*

#### Empirical evidence on how color influence perceptions and intake

Color is one of the attributes in which, the effect of implicit packaging cues is. Such information is commonly seen in specific colors or images on the packaging containers. Chrysochou, Grunert (2014) and Peak (2010) suggest that visual cues on food packaging have a powerful effect in influencing consumer behavior. This example demonstrates the experiment, which was created by Chrystochou and Grunert (2014) in their study, which consisted of the evaluation of 12 products (5 yoghurts, 5 cheeses and 2 indeterminate products only with a specific ad). Study participants were asked to rate these 12 products in terms of healthiness and a tendency to purchase the product. The result showed that the largest effect on the overall evaluation had health images that were displayed in different contexts. The human brain can remember visual graphical cues much faster and easier than explicit verbal ones (Chrysochou, Grunert, 2014). Color can also significantly effect consumer behavior and choice. Different colors have different effects on consumers. This is evident from Schuldt´s (2013) studies, where it is claimed that e.g. consumers perceive green as the color of health. In this study was conducted an experiment in which participants were exposed to red or green label, which contained information about calories. On both labels on a candy bar were displayed the same amount of calories. Participants were asked about the healthfulness perception, caloric judgment and healthfulness judgment. It turned out that candy bar was considered as healthier if a label with calories was green. Therefore while the packaging is decorated in green, consumer subconsciously perceive the product as a healthier than other products with other colors, regardless of the actual number of calories that this particular food

product has. Also Bilman (2014) carried out a similar study, where was found that if the biscuit is wrapped in bright packaging, is immediately perceived as a type of lighter snacks and also have a fresher taste.

### The effect of pictorials on perceptions and food consumption

Other implicit elements that can change our perception of the product are pictorial cues and pictorials on product packaging. The account should be taken not only the image content, but also the type of picture if it is a photo or graphically designed/painted image as was shown in study by Deliza, MacFie, Hedderley (2003) where were participants exposed to a different kinds of pictures. At the end was shown different evaluation about sensory expectation. Pictures on the packaging of the products can significantly improve the overall perception and evaluation of consumer (Underwood, Klein 2002). Cardello (2007) states the visual and photographic reproduction on the packaging of products is very important in terms of sensory expectations as figures provide clear information on the expected product shape, color, size, and texture. Also pictorials are categorized as implicit design cues, which is an integral part of communication through packaging. Albarracin et al. (2009) showed that if the food packaging will display the exercising cues such as slim silhouette or famous athletes it immediately increases the consumption of the product. Albarracin conducted a study that included two ads: The first one was was shown printed advertising with exercise cues, in the second case was presented an action word. Participants were asked to rate the appeal and efficacy of ads. At the same time the participants were given a bag that contained raisins and were told that they could eat how many of them they want. At the end of the experiment it was shown that participants who were exposed with exercise message ate significantly more raisins. Also Wagner et al. (2014) argues that implicit indications in the form of pictures or other graphic representations are more potent if we want customer to be guided to the preference of a healthy product instead of unhealthy one. Specifically, in an experiment carried out by Wagner (2014) was conducted during a conference as a part of which was also served food in several baskets. One of the baskets also contained apples. Participants who register for the conference saw these baskets and nearby demonstrated messages which were every once in a time changed. The messages were of two types: explicit (sign Healthy Choice) and implicit (picture of heart with a white check - universally known symbol for healthy products). Participants who were registering themselves at the time when next to the baskets has been shown implicit message of red heart more inclined to eat apple (healthy food) after the conference. According to a recent study of Chrysochou and Grunert from 2014 are sports figures considered as the most powerful cues which are most affecting consumers.

### The effect of sensory descriptions on perceptions and food consumption

Consumers can be influenced through sensory perception, which can cause different perceptions of the product. This part is very closely associated with consumers' expectations. E.g. Yeomans with colleagues (2008) demonstrated that the labels on food products may play a crucial role if we infer and create expectations based on visual contact with the product. If the label is in conflict with the real taste or flavor of food, consumers often describe such products as inappropriate and do not like them. On the other hand, it is shown that consumers prefer if a taste is marked with "the name of food" (e.g. coffee jelly or caramel candy) (Okamoto et al., 2009). Subsequently, these consumers strongly prefer congruence between name of the product and its true taste. Other cases again demonstrate the importance of the use of descriptive adjectives that often evoke a feeling that food tastes better then in the case of basic labels (e.g. Chicken Parmesan versus Homestyle Chicken Parmesan). The second sign was appreciated much more and also the actual taste was evaluated much higher than in case of the first name (Wansink, van Ittersum, Painter, 2005).

Consumers can also be affected by sensory cues, which can shape the overall decision. In the study by Aarts et al. (2000), it was showed that people can be influenced cognitively without being consciously aware of the cues through three different experiments. First experiment included the situation where the participants in the experimental group were exposed to a citrus scent. The results revealed that their thoughts were focussed more on the cleaning tasks and cleanliness, determined by a faster choice of words related to cleanliness. In the second experiment, the participants were asked what their plans were for the rest of the day. The participants who were exposed to the scent had a higher rate of reporting cleaning related activities than the rest (control group). Finally, in the last experiment, the participants were examined while they were eating a biscuit. Those who were exposed to the citrus scent had a higher frequency in cleaning their surroundings than the ones who were not. In sum, the study showed that some actions taken by people are rather involuntary and could be easily manipulated by their surrounding and sensory input.

#### *2.1.2.2 Suggested underlying mechanisms and theories explaining effects of implicit cues*

##### Color psychology

The colors have been considered not only as a means of aesthetics, but are used also as a communication means communicating a specific message to recipients. It is clear that the color can change the final consumer behavior (Paul & Okan 2011). It is very important that the colors are dependent on the context in which they appear. As for colors on product packaging, it has been demonstrated that the red color is associated with luxury goods or status (e.g. a car) (Bottomley & Doyle 2006). On the other hand, the blue color in the consumer associates the water content in the product, and products that are focused on functionality. When the context is changed, these colors can mean something diametrically different. E.g. in relation to food products people tend to assume flavor based on product packaging color (e.g. red color is immediately associated with strawberry or cherry flavor, green color with lime, apple flavor or mint - Shankar et al., 2010). At the same time, our expectations regarding the taste of the product are often consistent with the intensity of color on packaging of food product - e.g. M&Ms candies in brown packaging, are rated as more chocolate (Hoegg & Alba, 2007). In general, the red color associated with blood flow in our body and aggressive behavior, green is compared to nature and fertility and positive emotions, blue is the color of heaven and lightness (Eliot & Mayer, 2014). Schuldt (2013) hypothesized there is a clear relation between green colour and healthiness perception where more green colour of package or on calorie label is perceived as more healthy or containing adequate amount of important components (traffic light system - salt, sugar, fat, saturated fat).

## 2.2 Categorization - Health and indulgence as two key choice criteria in food purchasing

The current situation indicates an increasing number of obese people worldwide (nearly doubled over the last 30 years) (WHO, 2014). This fact put consumers before a crucial decision when choosing food products. Despite the fact that the trend of obesity as a disease of modern population is widely known, people in many cases, still prefer to choose products indulgent than healthy.

It may be also caused by the fact that we are surrounded by plenty of elements that may affect our final choice. Although health product is available in shop, our selection seeks indulgent product (Friedl et al, 2014). Consumers have to trade-off health and indulgence in making food decisions. The problem is, however, that in today's society, consumers have the idea that taste and health are inversely related. That means, the more fat, salt or sugar a food contains, the less healthy it is perceived to be (Wansink, Huckabee, 2005). Oaks and Slotterback (2005) showed that consumers distinguish two basic categories when it comes to healthy eating - either the food is tasty and indulgent, or not very tasty and healthy (Lahteenmaki et al., 2010). Such categorization is very general and can often mislead consumers.

The trade-off between health and indulgence is at the heart of self-control. In most cases, the high degree of self-control is a kind of precursor for subsequent healthy choices (Schwarzer, 2008), which may be affected by impulsive behavior (Vohs, Baumeister, 2004). Self-control typically involves efforts to resist temporary or short-term preferences in order to uphold longer-term preferences (Karlsson, 2003). It is also defined as the process of overriding or inhibiting automatic, habitual, or innate behaviors, urges, emotions or desires that would otherwise interfere with goal directed behavior (Muraven et al., 2008). Consumers are forced to choose between long-term satisfaction in the form of a healthy lifestyle and therefore strong health, or an immediate and also short-term enjoyment of very tasty and indulgent food (Stroebe, 2002; Fishbach, Shah, 2006).

Nowadays companies try to find and produce more and more products that combine these two categories (healthy and tasty at the same time) to form fulfillment of the consumers objectives (Palmer, 2008). This gave rise to the so-called health-full indulgences. Examples of such products include, in principle, products generally regarded as unhealthy, but containing also the improved part, for example claims referring to the contents of something healthy e.g. low fat chips, vanilla muffins enriched with vitamins, low fat cookies and so on. It is therefore an addition of healthy ingredients, or the disappearance of these which are unhealthy (Belei et al., 2012).

## 2.3 Inference making processes and the role of expectations

### 2.3.1 Informational and inferential inference making

When consumers make an inference about the different kinds of food products, they often use two kinds of belief formation processes. The theory about belief formation processes was presented already in 1975 (Fishbein and Ajzen). The central premise of the theory is that information processing can be divided in two parts: an informational and an inferential part. Informational refers to the process where consumer processes the information based on others, such as the opinion from friends or relatives.

On the other hand, there is inferential belief formation process which is characterized by the fact that consumers process information based on the information they already have, or based on their own experience. Inferential belief formation has been explained by association processes in the brain of people. People have structures of knowledge in their brain that they use as a basis of interpreting new information and for making inferences. For example, studies from Zinkhan and Martin (1987), which examines the influence of brand name on the overall evaluation of the product by the consumer. This study tested two products - ice cream and cameras. It has been shown that the typical logos or brand names are immediately considered by consumers as more positive and have a more positive attitude towards them. It is evident

that the consumer uses the process of inferential belief formation in the categorization of typical brand names. Brand names can significantly affect the overall perception and attitude regarding the product.

Informational processes are closely connected with the explicit information cues given on the packaging such as claims and logos. Inferential belief formation processes are more likely to occur when food package cues are implicit, such as the colour or image. Of course for some consumers may be some explicit cues perceived as implicit and other way round (for example in case of logo is difficult to determine the explicitness or implicitness due to the fact that the majority of logos contains both – text and graphical representation. It is therefore evident that this information cannot be completely generalized and thus does not apply to all cases.

## 2.4 Expectations and consistency theories

Expectations may significantly affect our judgment and the final behaviour. Our expectation is strongly associated with how our brain processes incoming information. Expectations are very closely associated with a certain amount of experience that we have from previous experiences. Consumers often assume what will be their future experiences and thus create certain expectations (Spence, Piqueras-Fiszman, 2014). For food products we may have expectations for instance about the taste, aroma, and flavour. Most of the expectations we create based on our level of experience or familiarity with the product. The resulting experience, however, may be different from the expected experience. In this case very often occurs one of following consistency theories effects - *assimilation, contrast, generalise negatively* or a combination of the first two mentioned thus *assimilation/contrast*. The *assimilation* occurs particularly in cases where consumers adjust their perception of the product on the basis of what to expect beforehand from the product with the clear purpose in order to avoid a split between expectations and subsequent experiences. In *contrast* case, if it comes to a situation where the actual discrepancy appears consumer evaluate it as a positive effect. *Negative generalization* will appears when the product is negatively perceived by consumers as they did not meet initial expectations of consumers regardless of whether the final product is rated as better or worse than expected. The final effect is *assimilation/contrast*, within which depends on the size of the deviations that occurred during the formation of expectations. If the discrepancy is just little, assimilation occurs, when the discrepancy is huge contrast occurs (Deliza, MacFie, 1996).

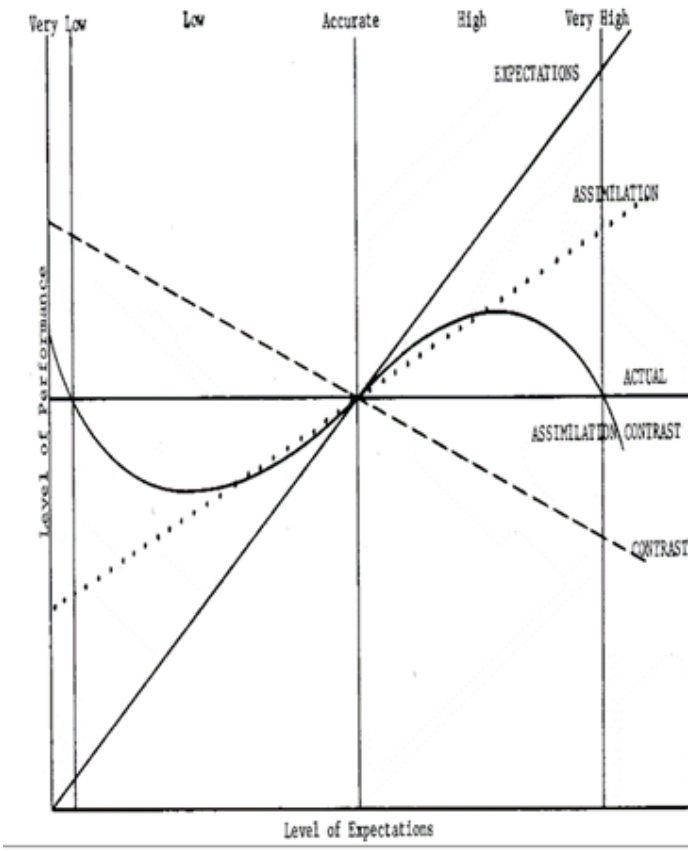


**Figure 2: Assimilation-contrast theory**

Our expectations may be strongly influenced by packaging of food product. It often affects the quantity of consumption of the food product (Vadiveloo, Morwitz, Chandon, 2013), hence, our perception of satiety. Expected saturation can be affected by weight, shape, colour, drawings, size and shape of fonts and content of claims on food labels because the consumer has tendency considered these elements as stimuli that made up the expectation of satiety (Becker et al., 2011). Expectations are particularly important for this work because it is good for high-quality prediction of calories amount of our portions size (Brunstrom, Collingwood, Rogers, 2010).

As has been written above, familiarity of the product can highly effect our expectations. As Sakai (2011) indicated it is a known product for and at the same time is somehow different from our expectations, this often leads to negative effects on hedonic evaluation, but also can catch consumer attention. However, if the deviation from the normal (and expected) becomes too large, it may caused the feelings of disgust (Pliner, Hobden, 1992). The more we know the product, the more confident our expectations are (Ludden, Schifferstein, Hekkert, 2009).

## 2.5 Congruency among packaging cues

### What is congruency and what has been found regarding this concept?

Consumers do not perceive the product on the basis of one attribute, but sees it as a whole, i.e. as a set of elements, which together form and affects its resulting perception, formation of inferences and overall attitude (van Rompay & Pruyn, 2011). Congruency term implies a certain level of conformity between different factors or features of the particular stimuli (Krishna, Elder and Caldara, 2012). In our case, congruency can occur in three main dimensions - claim, symbol and package. In case of match between these two or all three attributes, it is possible that the overall evaluation of the product will be faster and more positive (Spangenberg et al., 2006). Further more, Schwarz (2004) proved that the products which have the same cues are also assessed as more credible. In the case where the attributes are inconsisten, and the overall process of reasoning regarding the product is prolonged and therefore there is more time to deeply elaborate on the overall decision making (Oppenheimer, 2008). Arvola and Lahteenmaki (2003) also stated that if the nature of packaging (design) is in accordance (congruency) with the actual contents (food), it will be far easier for target consumers to achieve a healthy lifestyle and good eating habits. It is therefore abundantly clear that it is very important to communicate accurate and legible information on food labels in order to avoid increasing number of obese.

Based on the above information, the following hypotheses were made regarding health and indulgence:

H1: Congruency between implicit health cues and implicit health cues will increase perceptions of healthiness.
H2: Congruency between explicit health cues and explicit health cues will increase perceptions of healthiness.
H3: Congruency between implicit health cues and explicit health cues will increase perceptions of healthiness.

H4: Congruency between implicit indulgent cues and implicit indulgent cues will increase perceptions of indulgence.
H5: Congruency between explicit indulgent cues and explicit indulgent cues will increase perceptions of indulgence.
H6: Congruency between implicit indulgent cues and explicit indulgent cues will increase perceptions of indulgence.

## 2.6 The role of fluency in information processing

### Fluency in information processing

Another expression that is necessary to define is fluency. We distinguish between processing and conceptual fluency. First, we look at the processing fluency that describe how difficult or easy is to perceive the particular cue. Following that, we can say that in 1993 Whittlesea confirmed that, if the product is somehow known or familiar for consumer, the process of judgment and evaluation of the product is much faster and easier than the same process but with the product with which the consumer encountered for the first time. In relation to this, in his study, it is stated that if a given stimuli simple and consumer is repeatedly exposed to its action, it may caused faster and better storage in memory and thus this cues become a familiar to this particular consumer. This can help guide consumers to choose a healthy food. So fluency of the process can influence consumers reasoning about certain information (Schwarz,

2004). On the other hand there is the so-called conceptual fluency, which is rather focused on ease of perception and understanding of the meaning of particular stimulus.

## 2.7 Individual differences in information processing of packaging cues

### 2.7.1 Verbal or visual processing strategies

The process of how consumers process the messages and cues on packaging may vary. As indicated in Bagozzi´s (2008) study, consumers can mostly be attributed to one of two groups of processing strategies – either visual or verbal. Regarding food packaging and their initiative is therefore clear that consumers with predominant verbal strategies of processing will probably be more inclined to perceive claims and logos on the packaging, while consumers at prevailing visual processing strategies will perceive more graphical site of the food cover.

### 2.7.2 Personal traits

Furthermore, there are some personal factors that may influence the processing. For instance one of the distracting effects can be cognitive state of consumer. Already in 1999 (Shiv, Fedorikhin) it has been shown that people who are not fully focused on the purchase or are otherwise cognitively engaged are more likely to aim their choice impulsively and therefore very often towards unhealthy food (in this study towards the chocolate cake instead of healthy fruit salad). Koenigstorfer et al. (2013) suggested in his study that the final effect of information processing may differ for athletes or for people whom are called restrained eaters. Also Albarracin (2009) suggested including the BMI in the next studies as a possible differentiating sign. Also possible individual differences in the form of self-concept between dieters and non-dieters may moderate different final effect of control behaviour on food intake (Rotenberg et al., 2005).

Self-control management is another personal trait in which can influence final information processing of packaging cues. It is clear that each person tries to make good decisions about their eating habits. However, it is also clear that every day is consumer expose to diverse cues that may affect this decision quite significantly. Very often than their ongoing behavior does not match with their previously stated personal goals (see section 2.3.) they want to achieve. Kleef et all (2011) argues that people know very well that the actual physical activity is very necessary in the case of weight loss. In this case therefore offers two options - either the consumer will be far more cling at the control food consumption or will have to spend more time by physical activity. In this case, however, personal traits, that can be very individual, play a major role. It also supports Koeningstorfer et al. (2013) in his work, in which suggests that the strategy consumer chooses also depends at the its current state (athlete vs. restrained eater).

### 2.7.3 Gender

It has been shown that women and men can go through the process of perception of package cues differently. In a study from Killgore and Yurgelun-Todd (2001) can be seen visible diversity between brain activity of women and men. It may in fact depend on many other factors such as on mood. On the other hand, both genders showed longer processing time information in the event that for them visual stimulus was unfamiliar (Wyer, Hung, Jiang, 2008).

# 3. METHODOLOGY

The following chapter is devoted to explanation of the pilot and main study. In a pilot study, we asked the participants to create their own product design of biscuits in relation to four dependent variables (health, naturalness, indulgence, satiety – we used also control varibales in all our follow analysis to see possible similarities in evaluation of product), so we were able to reduce the possible number of attribute (colour, picture, logo, claim) levels for the main study. In the main study, we have already worked out an online questionnaire where main components of design package of cookies were pre-defined, which were evaluated in terms of four dependent variables plus two additional variables in the form of attractiveness of products and a willingness to purchase. Additional informtion as a style of processing were asked. The main study of this thesis will serve as a pilot study of the project Clymbol, which will have very similar form and design utilizes cookies from a major study of this thesis. The difference is most likely seen in particularly large number of participants with specific features, which will be obtained through the services of marketing research agency.

## 3.1 Pilot study

The pilot study was designed and constructed in order to find the correct and justified levels of each attribute of cookies packaging designs, which were later used in the main study. These attributes and the resulting designs should show us how people perceive the product packaging as a whole and how individual attributes and their levels can affect overall evaluation and perception of the product as well as the effect of synergy (congruence)/disparity (incongruence) of attributes to evaluate the product by the consumer.

### 3.1.1 Subjects

The study involved 52 participants (27 males, 25 females, mean age 22,9 years) who were asked to create their own packaging design of cookies. A pilot study was carried out on the Wageningen University, in one of the computer classrooms. That is why almost all of the participants were students.

### 3.1.2 Stimuli and procedure

Participants were asked to create a design of a cookie package, which they perceived as the most *healthy, indulgent, natural and satiating* (see Annex 2). Each participant has created 4 different designs of biscuits package. Tasks were distributed to participants gradually to avoid possible interference with one design over another. Therefore, participants in this research formed various designs independently. Participants received the hard copy of the tasks (one by one) where they were asked to use a Photoshop program, in which the packaging design supposed to be created by them, and the manual with instructions which facilitate the understanding of how the program works. On the screen was visible just the frame and shape of the package of biscuits, all other attributes had to be added by respondents. Program offered predefined 4 attributes and each attribute contained 6 levels (see. Table 1). Each participant was asked to designing their own packaging designs according to the given task. For each attribute could be used one attribute level or participant could decide not to use the attribute at all.

**Table 1: Product attributes and levels included in pilot study**

| Product attribute | Attribute level |
|---|---|
| Packaging colour | 1. Green |
| | 2. Red |

| | |
|---|---|
| | 3. White<br>4. Pink<br>5. Brown<br>6. Blue |
| Visual imagery | 1. Fitness image<br>  **(family)**  **(couple)**<br>2. Nature image<br>  **(grain)**  **(cookie)**<br>3. Consummatory image<br>  **(man)**  **(girl)** |
| Verbal claim | 1. Nutrient content claim:<br>Rijk aan vezels (fibre) (rich in fibre)<br>Minder suiker (sugar) (less sugar)<br>2. Health claim:<br>Verlaagd cholesterol (cholesterol) (lowers cholesterol)<br>Energie voor de hele dag (energy) (energy all day long)<br>3. Taste claim:<br>Verbeterde receptuur (recipe) (improved recipe)<br>Verbeterde smaak (taste) (improved taste)<br>4. Combined claims:<br>Lekker vetarm tussendoortje (fat) (a tasty low-fat snack)<br>50% minder suiker net zo lekker (50%) (50% less sugar, as tasty) |
| Symbol | 1. Logo<br>  **(100%)**  **(stevia)** |


**(choice green)**


**(choice blue)**

**(eu)**


**(eko)**

2. No logo

### 3.1.3 Questionnaire

Upon completion of the design task participant was asked to complete a short printed questionnaire (see Annex 1) concerning particular demographic data and information on possible allergies or intolerances of respondents. The questionnaire also included questions about consumer preferences regarding Naturalness, Indulgence, Healthiness and Satiating of cookies. Their preference could be expressed on seven-point scale where 1 meant not at all and 7 very much. The results of packaging designs were saved after completion of both parts of the research (designing + printed questionnaire).

### 3.1.4 Results of pilot study

The results showed that the test was attended by 52 participants of whom 25 were women, (mean age 23.6 years) and 27 men (mean age 22.1 years). We received complete and properly saved designs from 51 participants. One participant handed in only two (healthy and satiating design) out of four (indulgent and natural design were missing) required designs per person. It has been shown that the majority of participants considered as an essential preferential factor of biscuits its good taste (indulgence factor) (mean on the seven-point scale is 6.27). This trend occurs in both gender - men (mean = 6.52) as well as women (mean = 6.04). On the other hand it was shown that the least preferred factor for participants is satiating (mean on a seven-point scale is 4.21).

#### *3.1.4.1 Healthiness*

The packaging that was perceived as the healthiest contained the color blue with a picture of running couple and green “Choice logo" with claim informing about reduction of fat content in the product . However, when we look closely to the Figure 3 to each package design cue separately, paradoxically, users in this task most liked green colour - up to 44% of participants (23 people - 12 men, 11 women). Conversely pink colour wasn’t used by a single participant. In 58% (30 people) of cases was chosen image of pairs doing sport as a healthy-looking figure (figure 5). Regarding claims, we can see from Figure 4 that almost 30% of the participants voted for "50% fat, just as tasty" as the most effective in this task. If we distinguished claims in terms of gender – most of the men used "Excellent low-fat snack," on the other hand, women already mentioned above claim about 50% fat. In choosing a logo up to 60% (13 men, 18 women) of participants choose green "choice logo" (Figure 6).

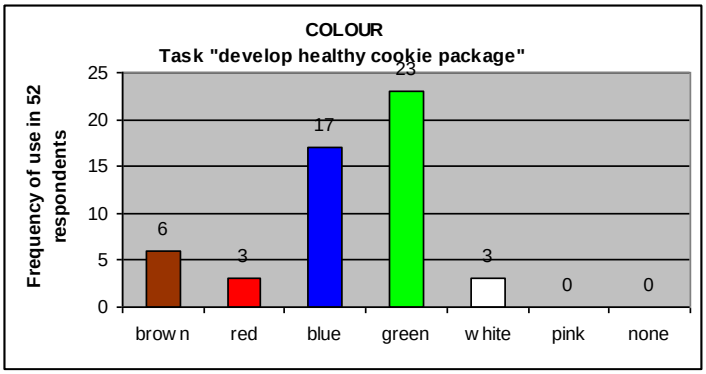


Figure 3: Health task - colour

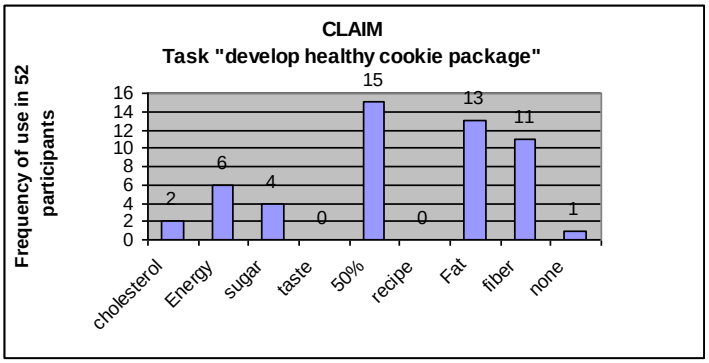


Figure 4: Health task - claim

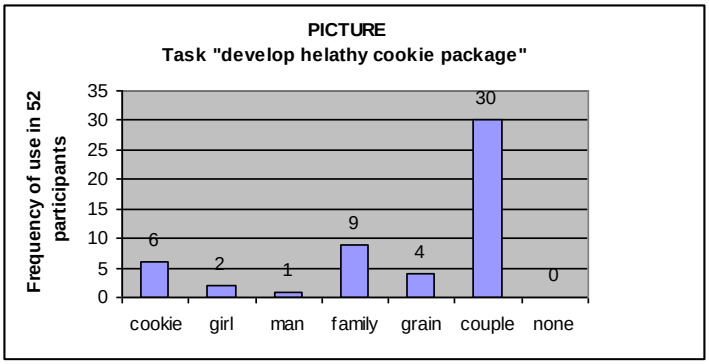


Figure 5: Health task - picture

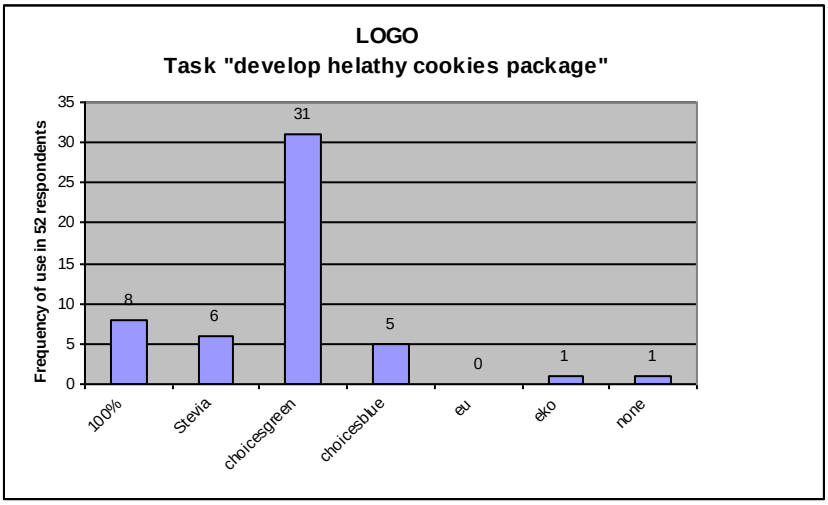


Figure 6: Health task - logo

### *3.1.4.2 Indulgence*

Among the 51 participants, there were three people who chose exactly the same design with all the same attribute levels; red colour, the image of woman holding a mug of coffee, the claim proclaiming "improved taste" and blue "choice logo." Overall, most people have chosen the red colour - in up to 25 (49%) cases (13 men and 12 women) which is obvious from Figure 7. 30 (59%) people from a total of 51 participants chose picture of a woman (Figure 8). As the most suitable claims for this kind of design were rated "Improved taste" (41%) and "Improved Recipe" (33%)(Figure 9). It is interesting, as you can see in Figure 10, that in most cases, participants chose to use no logo (13 participants = 25% of cases) and in 11 cases selected blue "choice logo".

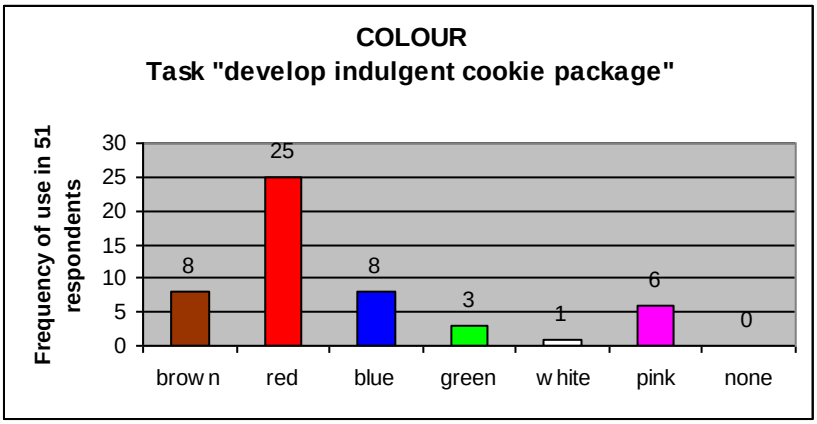


**Figure 7: Indulgent task - colour**

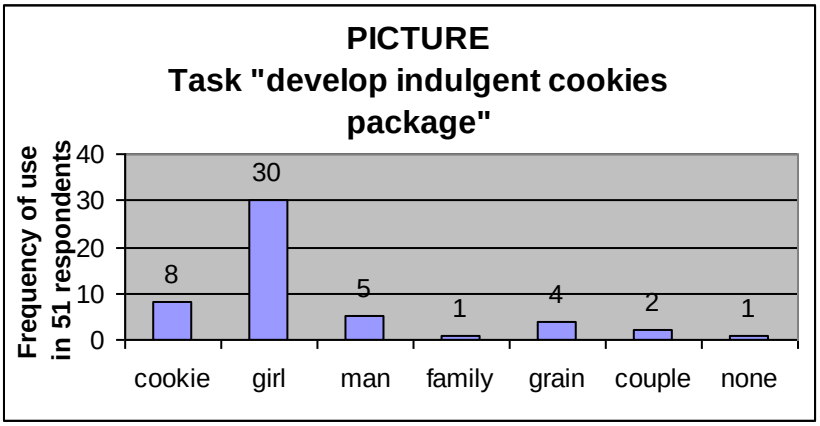


**Figure 8: Indulgent task - picture**

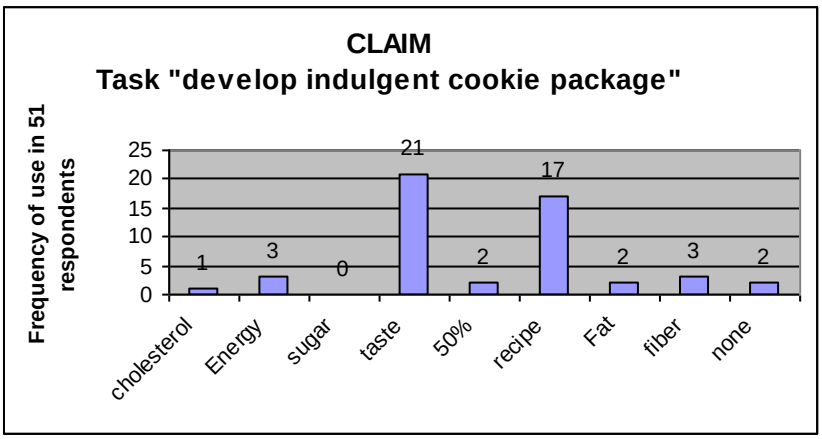


**Figure 9: Indulgent task - claim**

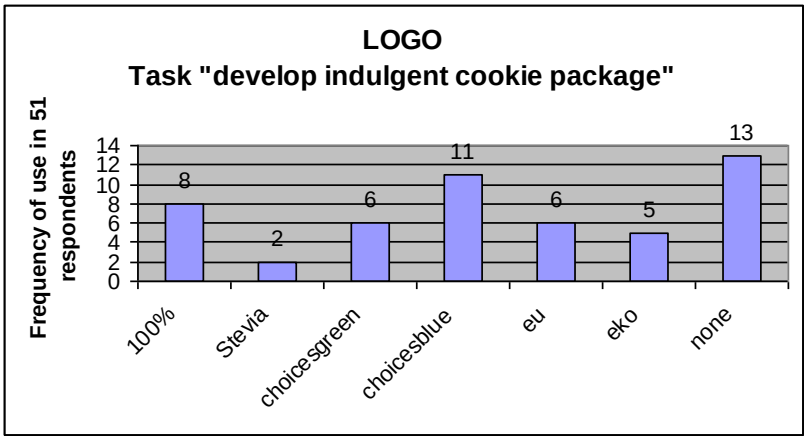


Figure 10: Indulgent task - logo

### *3.1.4.3 Naturalness*

Overall, most of identical designs were met at the designing of packaging biscuits perceived as natural. 10 people from a total of 51 participants, who created their package design, set as the most suitable colour green with image of grain, claim "high in fibre" and the logo that says "100% organic, 100% natural". Most participants in this task used the green colour (25 people - 12 men and 13 women, Figure 11). Conversely, the red colour has been used only by three people and pink colour used only by one person. In Figure 12 we can see that in 29 cases, an image of grain and in 17 cases the image of a blossoming meadow with a plate of cookies. Logo proclaiming "increased amounts of fibre," marked as the most satisfying 55% of participants (13 men and 15 women) and 69% of participants said that the best logo for this kind of design is "100% organic, 100% natural" (Figure 13) and the best claim is “rich in fibre” (Figure 14).

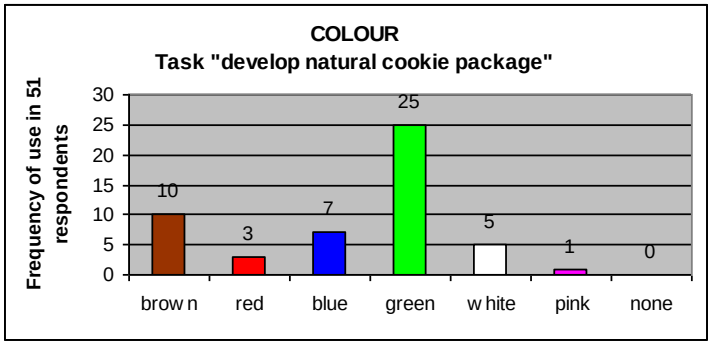


Figure 11: Natural task - colour

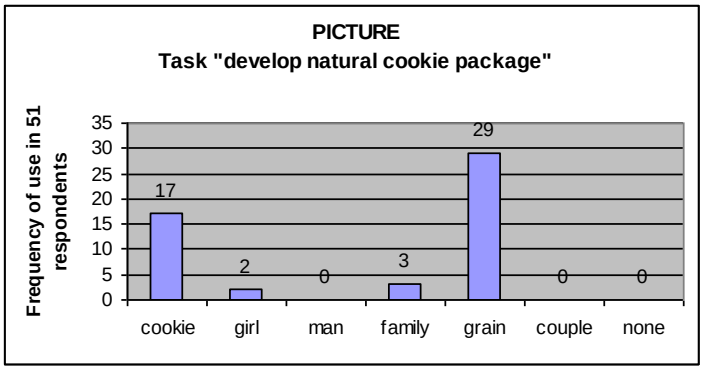


Figure 12: Natural task - picture

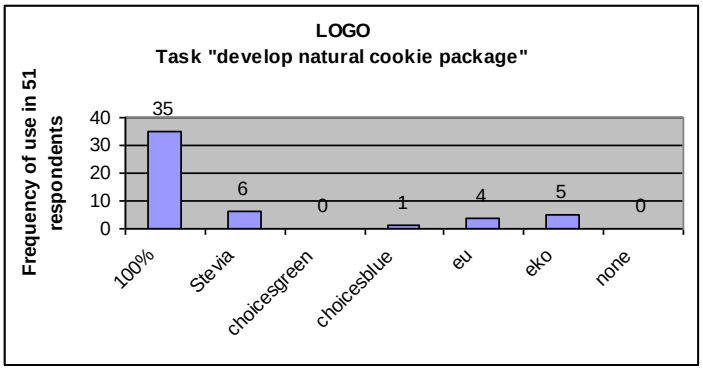


Figure 13: Natural task – logo

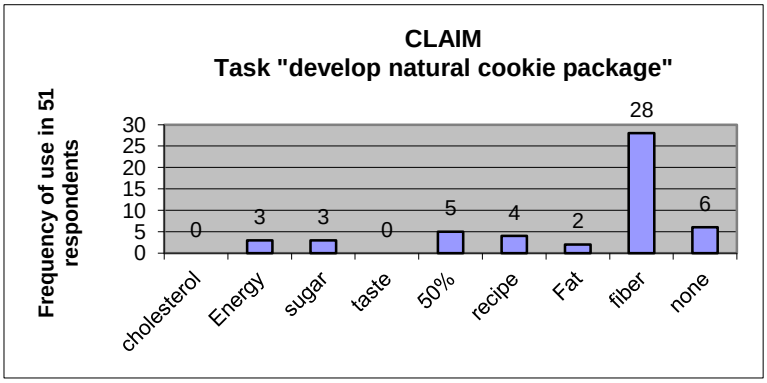


Figure 14: Natural task - claim

### *3.1.4.4 Satiating*

The most commonly used overall design of biscuits which participants seen as satiating was the design with the red colour and a picture of a girl. Mostly the "energy for whole day" claim was chosen and blue "choice logo". 22 packages out of a total 52 designs in this type of task which were properly stored were characteristic by red colour (14 men, 8 women) which can be seen in Figure 15. The second most frequently chosen colour for the design representing "satiating biscuits" was brown (20% of cases - 9 men, 11 women). In Figure 17 is possible to see that picture of a woman drinking coffee was used in 16 cases, as the second most widely used image was grass with the plate full of biscuits (25% of participants = 13 people). 26 (50%) participants said they like the most claim "energy for whole day" (Figure 16). Most people chose blue "choice logo" (18 participants - 9 men, 9 women) (Figure 18).

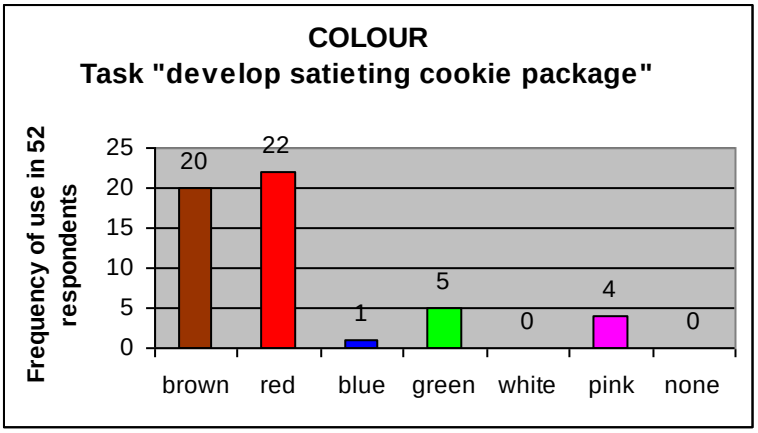


Figure 15: Satiety task - colour

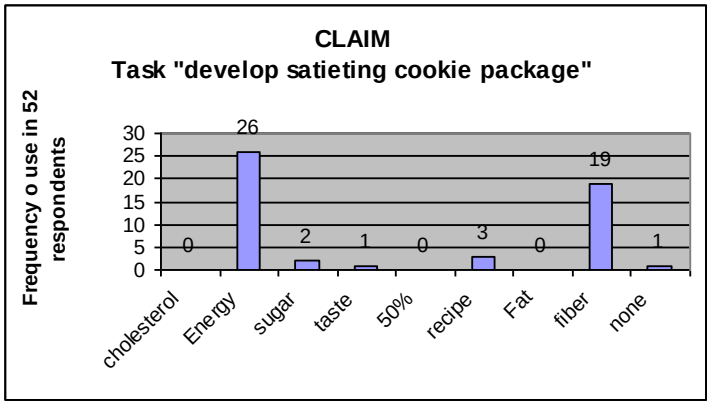


Figure 16: Satiety task - claim

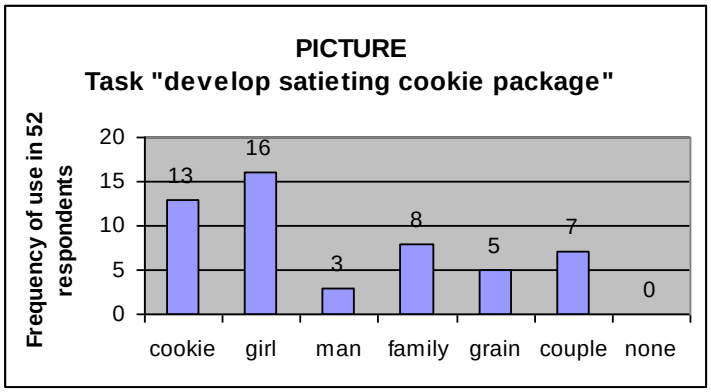


Figure 17: Satiety task - picture

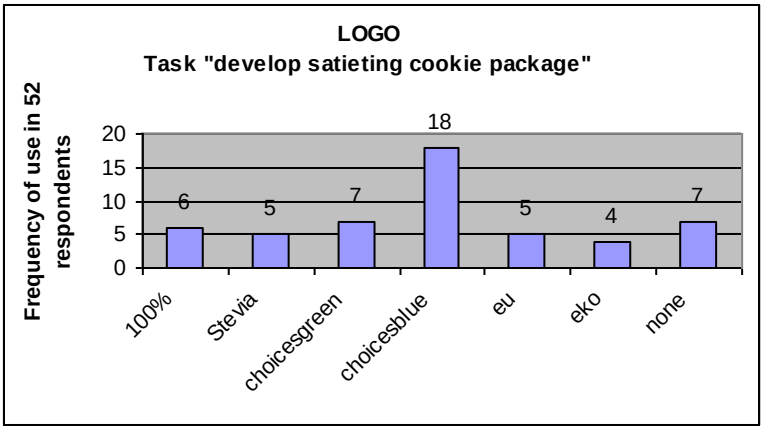


Figure 18: Satiety task - logo

Table 2: Recapitulation - results of pilot study – highest frequency of use of each attribute in each task

| | health | indulgence | natural | Satiating |
|---|---|---|---|---|
| **Colour** | green | red | green | Red |
| **Claim** | 50% less sugar | taste | fibre | Energy |
| **Picture** | couple | girl | grain | Cookies |
| **Logo** | choice green | no logo | 100%organic | choice blue |

The results where attribute levels still quite different for each task, we decided to select for the main study those levels which are in each task placed either on top or at least among the first. By this we achieve a reduced number of attribute levels and thus lower the number of possible

combinations for the main study so that we are able to process data after testing and deduce conclusions.

## 3. 2 Main study

### 3.2.1 Subjects

The main study was attended by 96 participants (80 female and 16 male) with very variable age ranging from 18 to 70 years (mean age 22.6). As is evident from the size of the mean of age, although main study showed a large age range, most of the participants were students around 23 years old. The sample was randomly selected so as to ensure the greatest variability of research participants in terms of age, education, and gender. All participants are Dutch permanently living in the Netherlands. Participants were invited to participate in the research through e-mail or social network. The research was conducted online (Qualtrics) and was thus possible to join it anytime and anywhere.

**Table 3: Background information about participants**

| Information about | | | Frequency |
|---|---|---|---|
| **Gender** | Male | | **16.7 %** |
| | Female | | **83.3 %** |
| **Age** | Mean | | **22.6** |
| | Standard Deviation | | **6.74** |
| | Range | | **19 – 70 years** |
| **Education** | Low and middle education level | | **5** |
| | High education level | | **91** |
| **BMI** | < 18,50 | underweight | **6** |
| | 18,51 – 25 | normal weight | **81** |
| | 25,1 – 30 | overweight | **6** |
| | **> 30** | **obese** | **3** |

### 3.2.2 Stimuli

The main stimulus for this study was again a fictional packaging of coffee biscuits, as well as in the pilot study. This package has been created for the pilot study under a hypothetical brand "OM", which is not present in the Dutch market. The package was created in Photoshop program. Cover again, as in the pilot study, had several different attributes. The amount of attributes as well as individual attribute levels are in comparison with the pilot study (where the system was slightly different) narrowed down. In the main study were used only packages of cookies with following attributes and their levels: (1) *Colour* - (a) green and (b) red, (2) *Claim* - (a) no claim, (b) rich in fiber, ( c) improved taste, (3) *Logo* - (a) no logo, (b) choice green logo, (c) 100% organic logo and (4) *Picture* - (a) girl, (b) couple. These attributes and their levels, we decided to use in the main study, are based on the results of the pilot study. Thanks to the results of the pilot study, we were able to reduce the original total number of combinations of all the attributes and their levels (see. Pilot study) to acceptable 36 possible combinations.

**Table 4: Product attributes and levels included in main study**

| Product attribute | Attribute level |
|---|---|
| **Packaging colour** | 1. Green<br>2. Red |
| **Visual imagery** | 1. Fitness image  <br>2. Consummatory image  |
| **Verbal claim** | 1. Nutrient content claim:<br>Rijk aan vezels (fibre)<br>2. Taste claim:<br>Verbeterde smaak (taste)<br>3. No claim |
| **Symbol** | ○ Logo   <br>○ No logo |

### 3.2.3 Procedure

Before the actual start of the main study it was important to define the term congruence and incongruence for the purposes of our study, and given the above hypotheses. This step was crucial with respect to the evaluation of results of the data collection and for the final reasoning behind the conclusions of this study.

#### *3.2.3.1 Congruency scoring system*

As the above shows congruence hypothesis will be tested on three bases - within explicit cues, within implicit cues and between explicit and implicit cues. For this purpose, we have created scoring system containing all 36 combinations which appear in the main study. Each combination of attributes was separately judged with respect to the four steps. Whether are

attributes congruent or not is based on the results of the pilot study, where was clearly measured, which attributes together cooperate and which not. In the first step, was assigned a specific value to each attribute level based on the results of the pilot study. This means that for each task (healthiness, indulgence, naturalness, satiety) are assigned different values of attribute levels for all 36 packages separately (see. Table 5) and in different ranges so that it is possible to clearly distinguish which package is within given task more congruent and which is less congruent. Evaluation of attribute levels took on the following values: Colour (1 for high score in the pilot study, otherwise -1) Picture (the same system as in case of colour), Claim (1 for high score in the pilot study, 0 for medium score in the pilot study , -1 for the low score in the pilot study), Logo (1 for the high score in a pilot study, 0.5 for a medium score in the pilot study, 0 for the low score in a pilot study). Packaging was considered as congruent if within a given task appears on the first five highest rated positions in our scoring system.

**Table 5: Congruency scoring system**

| TASK | ATTRIBUTE | ATTRIBUTE LEVEL | EVALUATION |
|---|---|---|---|
| **Health** | Colour | Green | **1** |
| | | Red | **-1** |
| | Picture | Couple | **1** |
| | | Girl | **-1** |
| | Logo | Choice | **1** |
| | | Organic | **0,5** |
| | | No | **0** |
| | Claim | Fibre | **1** |
| | | Taste | **-1** |
| | | No | **0** |
| **Indulgence** | Colour | Green | **-1** |
| | | Red | **1** |
| | Picture | Couple | **-1** |
| | | Girl | **1** |
| | Logo | Choice | **0,5** |
| | | Organic | **0** |
| | | No | **1** |
| | Claim | Fibre | **0** |
| | | Taste | **1** |
| | | No | **-1** |
| **Naturalness** | Colour | Green | **1** |
| | | Red | **-1** |
| | Picture | Couple | **-1** |
| | | Girl | **1** |
| | Logo | Choice | **0,5** |
| | | Organic | **1** |
| | | No | **0** |
| | Claim | Fibre | **1** |
| | | Taste | **-1** |
| | | No | **0** |
| **Satiety** | Colour | Green | **-1** |
| | | Red | **1** |
| | Picture | Couple | **-1** |

| | | |
|---|---|---|
| | Girl | **1** |
| Logo | Choice | **1** |
| | Organic | **0** |
| | No | **0,5** |
| Claim | Fibre | **1** |
| | Taste | **-1** |
| | **No** | **0** |

In a second step we summed up the points we have gained through the above system of values (each package 4 values - one value for each relevant present attribute level on the package) for each of the 36 packages.
In third step we formed the matrix to compare all attributes (implicit and explicit) in between each other. Thanks to this matrix we found which implicit and explicit attributes are consistent (congruent) with each other in each of the 36 combinations and which ones are incongruent for each variable (healthiness, indulgence, naturalness, satiety). Each 4x4 matrix contains 6 results of comparing each attribute with each by multiplying values addressed to the attribute levels in a first step (we did not take into account for example the colour comparison with the colour and turned upside down side of matrix).
Thanks to the latest fourth step, we were able to specify the level of congruence. In this last step we basically just summed up congruent (1) and incongruent (-1) pairs and divided them by number of pairs that indicate (in)congruence. To confirm congruence between different kinds of cues, we determined that the case should reach first top five positions in the scoring system with the greatest number of points obtained.

After this clarification of the term "congruence" we were able to fully focus on the real tasks of the main study. The main part of this study was consisted of visual tasks. This task concerns visualization of the package of biscuit. The participant was exposed to one image at a time (with random combinations of attributes from the range of 36 combinations after the pilot study), and each respondent was asked to evaluate the package in terms of health / indulgence / naturalness / satiating on the seven-point scale, where 1 = not at all healthy / indulgent / natural / satiety and 7 = extremely healthy / indulgent / natural / satiety.
For each combination of attributes (for each package) was further investigated attractiveness of the product as a whole, as well as the potential willingness to buy this product due to the visual side of the package again on the same seven-point scale (1 = not at all attractive/willing to purchase and 7 = extremely attractive/willing to purchase).

Each respondent had to evaluate 11 or 12 packages and was asked above mentioned questions including the evaluation task about each of these packages. Overall, there were 7 blocks containing 11/12 packaging. Each block contains seven packages, which were selected based on 7x7x7 design which substantially comply with the condition so that each of the 36 possible combinations of attributes was used at least once within 7 possible blocks, and 5 packages, which were common for each of the seven blocks and thus all 96 respondents had to evaluate these 5 packages from common set. These packages were deliberately chosen in order to include in each questionnaire 1) a highly congruent health package, 2) a highly congruent indulgent package, 3) two packages that were in line with health task either only in 2 explicit cues (claim, logo) or 2 implicit cues (color, picture ) and the other two cues were absolutely incongruent and 4) fifth package was selected as completely congruent in implicit part of cues and explicit cues of that package were missing (see Table 6).

**Table 6: 5 packages for common set**

| | | Explicit cues (claim and logo) | | |
|---|---|---|---|---|
| | | Explicit cues are healthy (Fibres claim and Choices logo) | Explicit cues are not healthy (taste claim and organic logo (or no logo) | No explicit cues (no claim and no logo) |
| Implicit cues (color and picture) | Implicit cues are healthy (green colour, couple fitness picture) | ***Most congruent on health***   | ***Very incongruent on health***   |   |
| | Implicit cues are not healthy (red colour, woman eating picture) | ***Very incongruent on health***   | ***Most congruent on taste***   | |

### *3.2.4 Additional measures*

In addition to the key dependent variables, a number of potential moderating and process variables were included in the questionnaire to reveal possible personal specifics, which could affect the overall results of research.
Consumers can differ in the style and preference of information processing (visual versus verbal processing). Also interesting can be to observe the chronic salience of health goals in consumers' life and explicit belief in the unhealthy=tasty intuition. Both these variables can strongly influence the results of this study. We have also investigated the possible preference of respondents in the healthiness and naturalness of individual products within their consumption.

Furthermore, socio-demographic characteristics such as age, gender and education will be obtained. At the same time we do our research also included a question on BMI (weight and height) of individual respondents. This indicator can significantly influence consumer behaviour of participants.

## 3.2.4 Measures

### *3.2.5.1 Dependent measures*

The main dependent measurements could be considered especially as a perception of *healthiness / indulgence / naturalness* and *satiety*. The perception of each participant in the study is expressed through the seven-point Semantic Differential scale with boundary points "not at all" and "extremely". Participants were each asked a question like, "How healthy is this package for you?" (Similarly for indulgence, naturalness and satiety).

Similarly, for each package of cookies was measured attractiveness (Please indicate on a scale from 1 ("not at all") to 7 ("extremely") how attractive for you this package of cookies is?), and the willingness to buy a given product (How much would you be willing to buy this package of cookies? Please indicate on a 7 point scale).

### *3.2.5.2 Moderating variables*

*Style of processing* can according to the theories influence the overall results and thus was measured. Style of processing shows the individual's disposition to process certain information visually or verbally. It was measured through 12 items test suggested by the original SOP (Style of Processing) scale developed by Childers, Houston and others (1985). In this study participant had the opportunity to evaluate individual statements on a scale ranging between "always true/usually true/usually false/always false".

*The chronic salience of health goals in consumers' life* was measured by the General Healthy Eating Interest scale of Roininen and colleagues (1999) (e.g. 'The healthiness of food has little impact on my food choices', 'It is important for me that my diet is low in fat'). This part of the research was measured on a five-point Likert scale, where the extreme border points were "strongly disagree" and "strongly agree".

*The explicit belief in the unhealthy=tasty intuition* was also measured by eliciting participants' agreement to the following items (1=strongly disagree; 7=strongly agree): (1) 'Things that are good for me rarely taste good'and (2) 'There is no way to make food healthier without sacrificing taste' (Raghunathan et al., 2006).

*Health motivation and preference for nature choice* is additional information that we collected in the questionnaire. For this purpose very well serve already published questionnaire called Food Choice Questionnaire (Steptoe, Pollard, Wardle, 1995), in particular different parts of this complex questionnaire. More specifically, we focused on the questions under the heading "Health", "Sensory appeal" and "Natural content". In the questionnaire appeared the questions such as. "It is Important to me that the food I eat on a typical day (a) Keeps me healthy (health), (b) Looks nice (sensory) or (c)Contains natural ingredients (natural). Each statement was evaluated by participants on a 4 point scale - not at all important, a little important, moderately important and very important.

#### *3.2.5.3 Independent variables*

The main independent variables in this study are examined attributes. It is therefore a colours, claims, logos and pictures (see Table 4). All these attributes are displayed in a various combinations as a part of coffee cookies package.

### 3.2.5 Data analysis

In order to be able to evaluate our hypotheses ANOVA was performed. With this method we were able to detect how the attributes and their levels are significant within each of task and thus if these attributes, their levels and interractions could influence the decision making of consumer towards healthy food. Optionally significant interactions were identified between each two attributes. In case interaction was significant between two attributes, we performed Simple Effect Analysis. This analysis was performed mainly because we could see what kind of interactions between a pair of attributes takes place, therefore, it was all about, to see the effect of one independent variables on specific levels of another independent variables. With this step, we can determine the effects of different levels of the attribute to other attributes. For significant interactions we have also conducted a post-hoc analysis in the form of Turkey's HSD test, thanks to which we could compare all of means and that helped us to find the means, which are significantly different from each other.

We deliberately did not include Moderating Variables into the data analysis. With these variables, we will work later in the main study of this project, which will be attended by over 500 participants. Thanks to this large sample will be possible to deduce conclusions about the possible impact of these variables, such as styles of processing on consumer decision making.

# 4. RESULTS

In order to achieve the goal of this thesis and to get closer to answering our main research question, therefore how implicit cues interact with more explicit health claims at food package or in other words, how nutrition information in the form of a logo or claim is processed by consumers in constant interaction with other package cues, we determined and tested our hypotheses.

The following section is divided into six parts, in which is describe the progress and results of ANOVA test for each of the four variables. From the results of this analysis, which are compared with the hypotheses (and consequently with the results of scoring system regarding the congruence) can be inferred conclusions on this research. Additionally also willingness to purchase a certain package of cookies and its attractiveness is presented. All described data are standardized on the basis of the results of common set, which was the set of 5 packages for all participants, so to exclude extreme or untrustworthy values and to prevent the manipulation with results.

**Table 7: Results of ANOVAs for 4 dependent variables: healthiness, indulgence, natural, satiety**

| | Healthiness | | Indulgence | | Natural | | Satiety | |
|---|---|---|---|---|---|---|---|---|
| | Sig. | Partial Eta Squared | Sig. | Partial Eta Squared | Sig. | Partial Eta Squared | Sig. | Partial Eta Squared |
| **Colour** | .000 | .051 | .000 | .022 | .000 | .052 | .720 | .000 |
| **Claim** | .000 | .067 | .007 | .016 | .000 | .031 | .000 | .076 |
| **Picture** | .000 | .063 | .000 | .138 | .601 | .000 | .591 | .000 |
| **Logo** | .000 | .045 | .358 | .003 | .000 | .165 | .110 | .007 |
| **Color * claim** | .236 | .005 | .739 | .001 | .569 | .002 | .456 | .003 |
| **Claim * logo** | .048 | .015 | .516 | .005 | .052 | .015 | .522 | .005 |
| **Claim * picture** | .217 | .005 | .785 | .001 | .656 | .001 | .157 | .006 |
| **Color * logo** | .962 | .000 | .482 | .002 | .250 | .004 | .736 | .001 |
| **Color * picture** | .060 | .006 | .113 | .004 | .584 | .000 | .129 | .004 |
| **Picture * logo** | .179 | .005 | .014 | .014 | .353 | .003 | .594 | .002 |

## Healthiness

As shown in Table 7 for the task healthiness all four main effects of variables are significant and thus considerably affect the behavior of the consumer in choosing a healthy product. From the size of Partial Eta Squared, we can deduce the effect size of each attribute in the overall decision-making. From the table again, we see that the greatest effect of these attributes is followed by the claim of picture and color. Obviously, the smallest effect on the perception of a healthy product has logo. When comparing the effect of the interactions between two individual variables, we can observe a significant interaction between the claim and logo (ie explicit cues, $p = .048$) which is first step towards confirmation H2. Very close to significant interaction is also combination of color and picture (implicite cues, $p = .060$) which would be in line with H1 therefore hypothesis about congruence between two implicit cues. Other possible 2-way interactions are not significant. Also it can be said that the

variability in our conditions is about the same (they are not significantly different - p-value in Levenes test >.050).

**Table 8: Simple effect analysis of claim at different levels of logo.**

| Logo | | F | Sig. |
|---|---|---|---|
| **choice** | Contrast | 4.749 | .009 |
| **organic** | Contrast | 2.951 | .053 |
| **No** | Contrast | 24.340 | .000 |

To break down and learn more about these interactions between two variables we also performed a Simple effect analysis for two significant interactions. In table 9 we can look at significance values for simple effects of this interaction. Very interesting is that almost all levels of logo have an significant effect at individual levels of claim. Only non-significant is difference between individual levels of claim at second level of logo (organic), p=.053. In the case of other two levels (choice and no logo) we can see a very significant difference among individual levels of claim at „choice"(p=.009, f=4.479) and „no" (p=.000, f=24.34) level of logo. From the plot (Figure 18) it is obvious that the mean for „no"logo is lower than other two individual levels of this independent variable. Also we can see that respondents were evaluating package as healthy in term of „fibre" claim no matter what kind of logo was present, which corresponds with strength of effect of logo on the whole package ($\eta^2$ part.= .045) . In the interaction between "taste" claim and "no" logo the perception of health dropped rapidly and very similar situation occurred in case of interaction between "no" claim and "no" logo displayed on the package of cookies. Turkey's HSD (Table 9) confirmed that only non-significant level of difference between claims means is between "taste" and "no" claim and in case of logo the non-significant results are seen only in case of difference between "choice" and "organic" logo. Both these phenomenon are already clear from the Figure 18.

**Table 9: Post-hoc Tukeys HSD for simple effects**

| (I) Claim | (J) Claim | Mean Difference (I-J) | Sig. | (I) Logo | (J) Logo | Mean Diference (I – J) | Sig. |
|---|---|---|---|---|---|---|---|
| **Fibre** | taste | ,7584* | ,000 | **Choice** | Organic | ,1422 | ,449 |
| | no | ,9014* | ,000 | | No | ,7151* | ,000 |
| **Taste** | no | ,1429 | ,380 | **Organic** | No | ,5728* | ,000 |

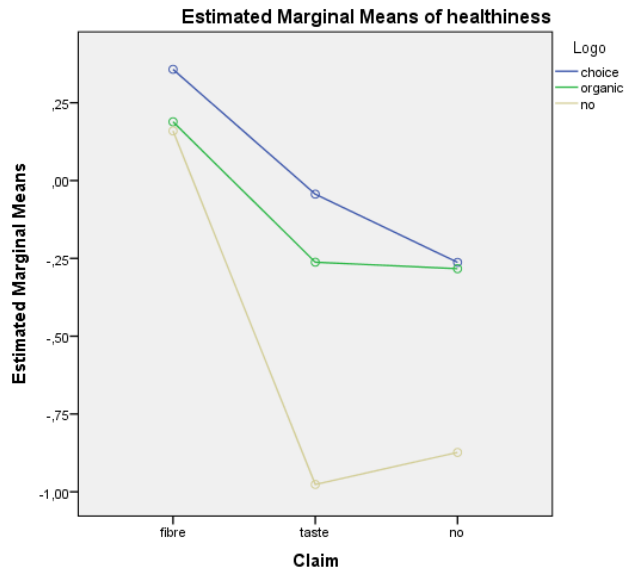


**Figure 19: Estimated marginal means of healthiness task for Logo and Claim**

**Table 10: Simple effect analysis of Picture at different level of colour**

| Color | | F | Sig. |
|---|---|---|---|
| **Green** | Contrast | 9.919 | ,002 |
| \ | | | |
| **Red** | Contrast | 40.303 | ,000 |

Also interactions between implicit cues are almost significant (p=.060). From table 10 we can clearly see that picture has an significant effect on both individual levels of colour. It basically means that there is a significant difference between "girl" and "couple" picture at both levels of colour in health perception task. This phenomenon is also easily visible form graph. The difference in perception of health is very large when we compare for example package with "red" and "girl" attribute levels and "red" and "couple" attribute levels.

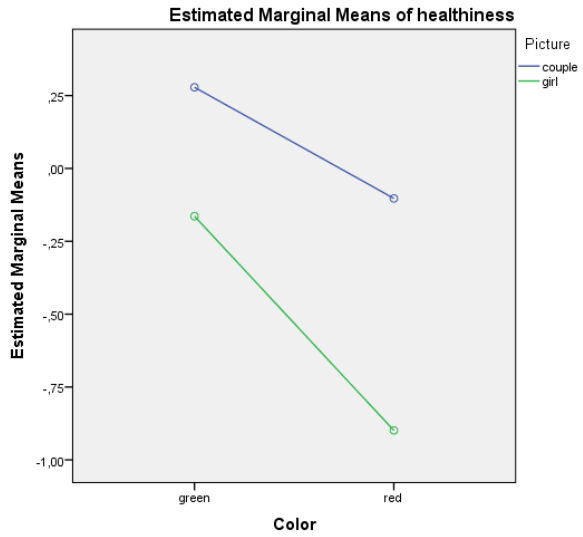


**Figure 20: Estimated marginal means of health for Picture and Colour**

## Indulgence

When look at the ANOVA results for Indulgence variable we again see a similar effect as in the previous case. The colour and picture appear to be significant (p = .000) attributes in the process of consumers´ perception of packaging. Compared to the previous case, we can say that claim has less influence (p = .007, $\eta^2$ part.= .016 ) but is still significant for overall evaluation. Absolutely insignificant in the case of evaluation of Indulgence happened to be Logo (p = .358), which in this case is obviously the least effect on the overall perception of the respondents ($\eta^2$ part =. 001). Conversely, the biggest effect in this case has Picture ($\eta^2$ part. =. 138). When looking at individual attributes significance of cooperation we can see that there is only one significant two-way interaction and congruency between Picture and Logo (thus Implicit and Explicit cues which is related to hypothesis H6, p = .014).

**Table 11: Simple effect analysis of logo at different levels of picture**

| Picture | | F | Sig. |
|---|---|---|---|
| **couple** | Contrast | 1.565 | .210 |
| **Girl** | Contrast | 4.476 | .012 |

To determine the effect of the interaction between the logo and picture in the case of Indulgence task, we made Simple effect analysis. It showed that there is no significant difference in perception of indulgence among logo levels when "couple" picture appears which is also very easily visible at the graph 3 (p = .210, f= 1.565). On the other hand "girl" picture can very significantly change reception of different individual levels of logo (p = .012 f=4.476) in case of indulgence task. It is also displayed in graph 3 that combination of "no" logo and "girl" picture is mostly considered by respondents as indulgent combination of attributes appearing on package.

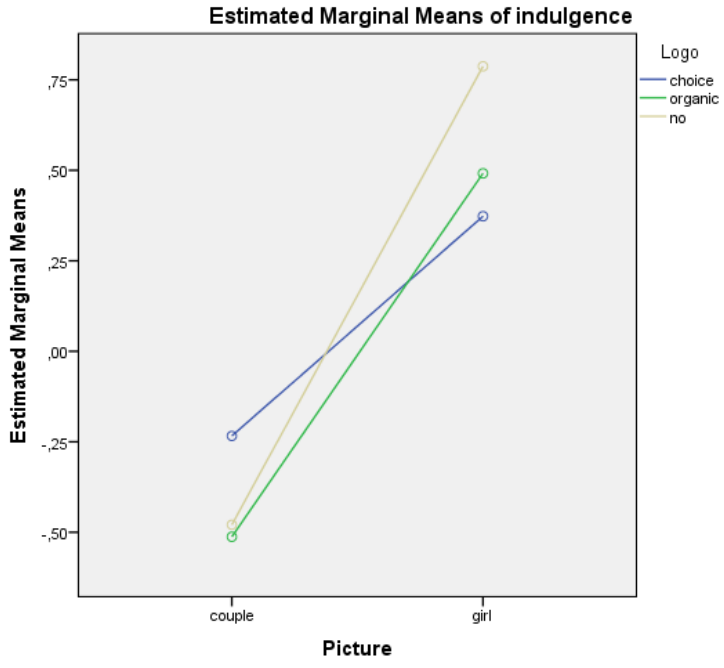


**Figure 21: Estimated marginal means of indulgence for Logo and Picture**

| (I) Logo | (J) Logo | Mean Difference (I-J) | Sig. |
|---|---|---|---|
| **Choice** | organic | ,0572 | ,882 |
| | no | -,2891* | ,023 |
| **Organic** | no | -,3463* | ,005 |

**Figure 22: Post-hoc Tukeys HSD for simple effect**

In case of logo, we can see that there is a significant difference between group means when it comes to comparison between „no“ logo and „choice“ logo as well as between „no“ logo and „organic“ logo. From the graph is obvious that more significant difference between means is in case of „no“ logo and „choice“ logo. Respondents were evaluating package as more indulgent when picture with girl (in combination with “no” logo) occurred which corresponds with the results of power of effect of picture which was highest among other attributes ($\eta^2$ part = .138). Overall effect of indulgence perception is lower when “couple” picture is displayed on package no matter what individual level of logo is present.

## Naturalness

From the ANOVA testing of another variable in the form of naturalness is evident again considerable influence of all attributes (sig. greater than .050) except of Image, on which has a total evaluation and perception of the product in terms of naturalness almost no effect (p = .601, η2 part. = .000). Overall, the biggest effect on the overall perception of the product has logo (η2 part. = .165), followed by colour (η2 part = .052). Regarding the two-way interactions between individual attributes ANOVA test shows that there is not any single significant interactions, although interactions between the claim and logo (explicit cues) seems to be very strong (p = .052), Based on this I decided to carry out a Simple Effect Analysis, to see what impact the interaction of these two attributes, and their levels has on overall perception of the product packaging due to the naturalness.

**Table 12: Simple Effect Analysis of claim at different levels of logo**

| Logo | | F | Sig. |
|---|---|---|---|
| **Choice** | Contrast | 4.581 | ,011 |
| **Organic** | Contrast | .512 | ,599 |
| **No** | Contrast | 11.684 | ,000 |

Results Simple Effect analysis confirmed that there is a significant effect of one independent variable on the individual levels second independent variable. Specifically, in this case, we tested the influence of claims and logos on individual levels. The results show that there is no significant difference between the individual levels of claim when the packaging shows "organic" logo. This is also evident from the graph consisting of the estimated marginal Means of naturalness results where the "organic" logo curve is placed above the others and is almost horizontal. Conversely, we can observe a truly significant impact on the perception of individual levels of claim when these will appear on the packaging together with the "choice" or "no" logo. The graph shows that the greatest difference in the perception of naturalness between "no" logo and "choice" logo appears in the case where the product packaging displays "taste" claim.

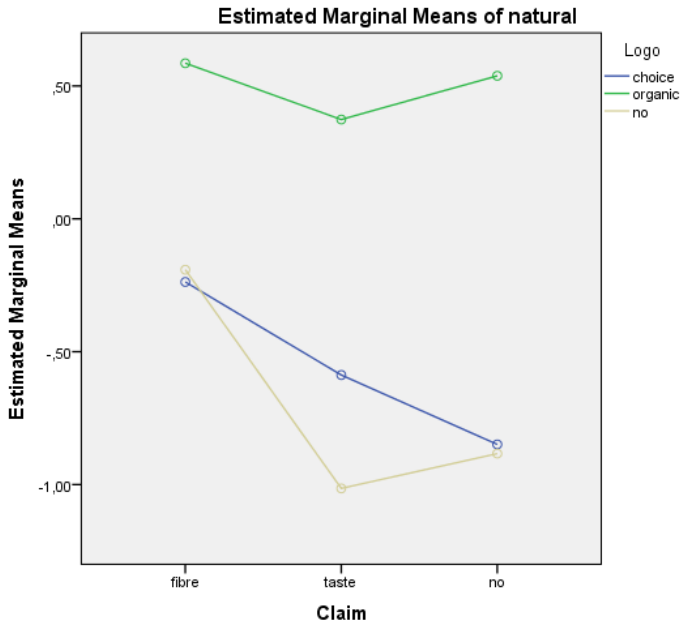


Figure 23: Estimated marginal means of natural for Logo and Claim

Table 13: Post-hoc Tukeys HSD

| (I) Claim | (J) Claim | Mean Difference (I-J) | Sig. | (I) Logo | (J) Logo | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|---|---|---|
| **Fibre** | taste | ,4616* | ,000 | **Choice** | organic | -1,1082* | ,000 |
| | no | ,5208* | ,000 | | no | ,1210 | ,489 |
| **Taste** | no | ,0592 | ,842 | **Organic** | no | 1,2292* | ,000 |

In case of Claim we can observe only a non-significant difference between group means in case of "taste" claim and "no" claim (p = .842). For the other combinations, the difference in comparison of group means is significant (p< 0.001). Regarding Logo occurs a similar situation, except that only non-significant difference between group means appears in case of "choice" logo and "no" logo (p=.489). Other combinations of attribute levels show significant differences in the group means (p< 0.001).

## Satiety

The results of the ANOVA test shows that as regards Satiety task only attribute picture became significant (p< 0.001, η2 part. = .076). Given the results other attributes have not clearly determinable effect on the perception of satiety of consumers (η2 part. = .000-.007). Very similarly also fell 2-way interaction between individual attributes. None of the interactions have proved to be significant and all have very little influence on the final assessment of respondent's perception of satiety on product packaging.

## Attractiveness of product and willingness to purchase

**Table 14: ANOVA for attractiveness and willingness to purchase**

| | Attractiveness | | Willingness to purchase | |
|---|---|---|---|---|
| | Sig. | Partial Eta Squared | Sig. | Partial Eta Squared |
| **Colour** | ,594 | ,000 | ,197 | ,003 |
| **Claim** | ,099 | ,007 | ,008 | ,017 |
| **Picture** | ,000 | ,027 | ,014 | ,011 |
| **Logo** | ,732 | ,001 | ,220 | ,005 |
| **Color * claim** | ,120 | ,007 | ,140 | ,007 |
| **Claim * logo** | ,393 | ,006 | ,312 | ,008 |
| **Claim * picture** | ,983 | ,000 | ,951 | ,000 |
| **Color * logo** | ,680 | ,001 | ,870 | ,000 |
| **Color * picture** | ,342 | ,001 | ,802 | ,000 |
| **Picture * logo** | ,218 | ,005 | ,525 | ,002 |

Results of ANOVA analysis to determine the effect on the perception of attractiveness of individual attributes of product packaging to the consumer and willingness to purchase the product did not proof any significant effects. In the case of attractiveness Picture is the only significant attribute that can affect the level of the packaging attractiveness perception ($p< 0.001$, $\eta 2$ part. =. 027). Other attributes are not significant as well as two-way interaction between the individual attributes. Not a very different situation is in the case of willingness to buy a given product. Even this test showed that only two attributes may affect the consumer´ willingness to purchase the product – it is Claim ($p = .008$, $\eta 2$ part. =. 017) and again Picture ($p = .014$, $\eta 2$ part. =. 011). Even in testing of 2-way interactions between individual attributes wasn't found a combination that would outcome in significant results or otherwise had a significant effect on the perceived attractiveness of that product or increase willingness to buy the product.

Based on the above results could be acknowledge three out of six hypotheses which we set at the beginning of our work. When we take a closer look at the assumptions associated with the perception of healthiness, we can confirm two out of the three health related hypotheses - H1 and H2 which means that there is significant influence between health cues – specifically congruence between two implicit cues health will increase the perception of healthiness and congruence between two health explicit cues will increase the perception of healthiness. The high degree of congruence is also confirmed by congruence scoring system for each of the four tasks. Under this system, we can observe the level of congruence. Since the scoring system was developed based on the results of the pilot study, we can say that in this case, we can see a clear consensus between highest rated combinations of attribute in the scoring system (first and second most congruent health package) in term of congruency and the results of main study where were very significant interaction (claim + logo and color + picture) supporting perception of healthiness confirmed. Health hypothesis combining implicit and explicit cues had no significant results in our testing and, therefore, cannot be confirmed.

In case of hypotheses associated with perception of indulgence is due to testing and comparison with scoring system possible to confirmed H6 thus congruence between implicit

indulgent cues and explicit indulgent cues will increase perceptions of indulgence. ANOVA test results proved that there is a significant two-way interaction between the logo (explicit) and picture (implicit) cues specifically picture of “girl” and “no” logo. When comparing these results of main study with the scoring system we can again see clear consensus where the combination of these attributes levels (“girl” picture and “no” logo) ranked as highest congruent considering Indulgent task. Based on this comparison, it is possible to say that the congruence between indulgent implicit and indulgent explicit cues increase the perception of indulgence. With regard to the results, H4 and H5 were not confirmed.

**Table 15: Results**

| Hypothesis | Confirmed? |
|---|---|
| H1: Congruency between implicit health cues and implicit health cues will increase perceptions of healthiness. | Yes |
| H2: Congruency between explicit health cues and explicit health cues will increase perceptions of healthiness. | Yes |
| H3: Congruency between implicit health cues and explicit health cues will increase perceptions of healthiness. | No |
| H4: Congruency between implicit indulgent cues and implicit indulgent cues will increase perceptions of indulgence. | No |
| H5: Congruency between explicit indulgent cues and explicit indulgent cues will increase perceptions of indulgence. | No |
| H6: Congruency between implicit indulgent cues and explicit indulgent cues will increase perceptions of indulgence. | Yes |

Other analysed variables beyond the hypothesis were naturalness and satiety. Although these variables do not appear within our hypotheses, but rather serve as a control variable in this work, the results of the analysis can be found on the following lines. These variables are, like health and indulgence, observed in the context of congruence between two implicit, two explicit or between implicit and explicit cues.

In the perception of the product as natural, we concluded that it is possible to confirm the argument that the congruence between the two explicit natural cues enhances the perception of the product as natural. From the ANOVA test indicates a noticeable impact of logo and claim, specifically the logo "organic" with "fiber" or "no" claim. When looking into our scoring system, we again see that this combination of explicit cues (“organic” logo and “fibre” or “no” claim) in the case of a natural product evaluations, assessed as very congruent. These kinds of attribute level combinations are included in the scoring system of packaging as top ones.

In case of evaluation of the products from the viewpoint of satiety it wasn’t found any significant interactions between attributes. This may be caused mainly by a small amount of each attribute levels. It can be also caused by fact that our original goal was to determine only effect of the perception of healthiness and indulgence. Other colours like brown (Hoegg & Alba, 2007), or other claims, might increase the perception of satiety.

Additionally, we did a basic analysis of the background variables such as Style of processing (range from 1= always true to 4=always false) where we discovered that most of the research participants slightly incline to more visually orientation . On the other hand, however, we

cannot say that participants are purely visually focused. The results show that verbal style of processing also plays an important role.

**Table 16: SOP - Visual - Mean and St. Deviation**

| | There are some great moments in my life that I want to revive by looking back at how everything looked P | I like to picture how I could fix up my apartement or room if i could buy anything i wanted P | I like to daydream P | I find that it often helps to think in pictures P | When I have forgetten something, I often try to form a mental picture in my mind to remember P |
|---|---|---|---|---|---|
| Mean | 1,75 | 1,72 | 1,73 | 2,59 | 1,96 |
| Std. Deviation | ,681 | ,867 | ,688 | ,865 | ,893 |

**Table 17: SOP - Verbal - Mean and St. Deviation**

| | I like to work with words W | I like to read a lot W | I like to work with words W | I like to learn new words W | My preference is for activities that do not require much reading W |
|---|---|---|---|---|---|
| Mean | 2,19 | 1,97 | 1,78 | 1,96 | 2,76 |
| Std. Deviation | ,638 | ,827 | ,728 | ,724 | ,830 |

**Table 18: Unhealthy-tasty intuition results**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Food which is good for me rarely taste good | 96 | 1 | 6 | 2,21 | 1,337 |
| -There Is no way to make food healthier without sacrificing taste | 96 | 1 | 6 | 1,97 | 1,100 |
| Valid N (listwise) | 96 | | | | |

41.7% of participants absolutely disagree with the statement that there is no way to make food healthier without sacrificing taste and they have the same negative opinion about the point that the food is good for me, has rarely good taste. In this regard, it is apparent education of research participants in the issue "unhelathy=tasty intuition" (range from 1=totally disagree to 6=totally agree) and therefore they do not succumb to the established stereotypes.

**Table 19: Correlations between dependent variables**

| | | healthiness | natural | indulgence | satiety |
|---|---|---|---|---|---|
| healthiness | Pearson Correlation | | | | |
| | Sig. (2-tailed) | | | | |
| | N | 658 | | | |
| natural | Pearson Correlation | ,434** | | | |
| | Sig. (2-tailed) | ,000 | | | |
| | N | 651 | 665 | | |
| indulgence | Pearson Correlation | -,260** | -,090* | | |
| | Sig. (2-tailed) | ,000 | ,024 | | |
| | N | 637 | 637 | 644 | |
| satiety | Pearson Correlation | ,170** | ,262** | ,054 | |
| | Sig. (2-tailed) | ,000 | ,000 | ,182 | |
| | N | 616 | 623 | 609 | 623 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Eventually we also sought to determine whether there is a correlation between the dependent variables, respectively between the sizes of means within each dependent variable which were gained by evaluating of each product design (combination of attributes and their levels). From Table 19 it is obvious that there are considerable correlation. Regarding healthiness appears positive and significant correlation mainly with naturalness (r = .432) and a lower level of correlation can be seen also with Satiety (r = .170). A negative correlation is evident in the case of healthiness and Indulgence (r = -. 260), which could be assume due to almost exact opposite designs of packages and thus oposite evaluations. Negative almost zero (ie, none) correlation also occurs at the Naturalness and Indulgence (r = -. 090), as well as in Indulgence and Satiety, which is still positive one nevertheless very close to zero (r = .054) and due to the results in the table can be said that this result is not significant (p = .182). Positive correlation is also seen in case of Naturalness and Satiety (r = .262). All these results imply that ANOVA testing gave us a very complex look at this whole issue.

# 5. GENERAL DISCUSSION

## 5.1 Conclusion

This research examined the effect of two explicit and two implicit cues appearing on the front packaging of the products on the perception of final consumer behaviour and consumer choice. In the experimental part of this study, we manipulated various versions of picture, colour, logo and claim. Our aim was to determine how these four attributes can modify or create perception of healthiness, indulgence, naturalness and satiety. Basically, we hypothesized that the combination of two attributes (two implicit, two explicit, but also implicit and explicit at the same time), which in their essence and content support the feelings of health and indulgence, enhance the final overall effect and thus foster the perception that could affect the final choice. We include in our work also naturalness and satiety as a control dependent variable which we analysed but did not include in hypothesis. However, not all hypotheses examining all of these perception positions could be after this research confirmed.

Based on the hypothesis testing, it was confirmed that there are many interactions between the cues within our dependent variables. Certain congruence appeared at first tested variable Health, where it was possible to confirm based on the results of the ANOVA compared to the results of the scoring system that congruence exists between two implicit health cues and congruence between the two explicit health cues that enhance perception of healthiness. In case of testing for variables related to indulgence it was confirmed that there is a certain degree of congruence between implicit and explicit indulgent cues that increases the perception of overall indulgence. For testing of the control dependent variable in the form of naturalness it was proved that clearly exist interaction between two explicit natural cues, which increased the possibility of the perception of naturalness of a product. For testing of satiety has not been confirmed significant interaction between the dependent variables.

Given the above, it can be confirmed that the package and its individual attributes in the form of implicit and explicit cues and their interactions can strongly affect the overall behaviour of consumers and lead to a very specific perception of the product as well as to final product selection. Based on the results, it is very essential that the products are clearly communicated through the packaging. Private enterprises producing food goods, as well as relevant government organizations controlling market can commit to this goal. On the other hand, I think is very crucial that people are aware about this issue and they can obtain as much information as they need to adopt this behaviour in their daily life and thus they could spread their knowledge to the younger generation. Based on the results of this study young people should be educated from an early age, so that they are ready to resist possible marketing coercion and so that they know that despite the fact that for instance there are two congruent healthy design cues present on the package, the product may not necessarily be healthy. This could prevent the spreading trend of obesity, which often results in severe disease devastating our society.

## 5.2 Discussion

Our results are essentially in conflict with Peak (2010), which argues that the implicit cues are more powerful in comparison with explicit. Our research shows, however, that most of our

confirmed significant interaction occurs between explicit cues which apparently lead consumers better to a particular perception. It could be said that in this regard, our research results more inclined to O'Keefes´ study (1997). Our results also show noticeable effect of logo on the overall perception of healthiness whereby we agree with Steenhus et all. (2011). In the case of logo, however, is rather vague overall definition mainly due to the fact that logo itself is essentially part of the implicit cues because it is very often also composed of a graphic representation. It is therefore possible that because of our selected and for the whole Netherlands well known ("choice") logo which is clearly associated with a healthy lifestyle on daily basis, was used so many times just because of phenomenon described by Chrystochou and Grunert (2014), who argue that the graphic illustrations are easier to remember and thus were in our experiment easier to apply.

In case of colour we absolutely agree with the study presented by Schuldt (2013), which reminds us that the green colour evoke a sense of the health in consumers, which is our study seen from the results of our experiment.

## 5.3 Limitations and positive contribution of our study

We must realize that respondents had only choice of two very distinct colours in the main study, which could lead to behaviour where participants choose colour which they see rather on the package instead of ideal colour for them. The same phenomenon could occur, however, in the case of for example images. In the main study were only two entirely different pictures - one with a fitness cues and the other one with rather consummatory context. At the same time however, it should be noted that our study is very unique just by examining the impact of implicit and explicit cues for each dependent variable simultaneously.

Regarding the sample of respondents who answered the questionnaire, it is apparent that the sample is not representative. Due to the method of collecting date (via university email or social network), most respondents are students with higher education or university education whose are very aware about healthy lifestyle and they are trying to fight against the "pitfalls" of marketing. At the same time, the majority of research participants are female (80 respondents) and overall sample size is not too revealing (just 96 respondents). The results of sample which would be more representative (ie. less respondents with high education and greater proportion of males) would probably have been less focused on health since most of the current undergraduates has this variable strongly rooted in their lifestyle.

Another problematic aspect of this study could be inappropriateness of the product as well as the possible inappropriateness of the above mentioned levels of selected attributes. The very name "coffee cookies" apparently does not increase perception of a healthy lifestyle even though in terms of the research, we have arrived to significant conclusions. It is possible that in this respect the phenomenon of "fitness cues" in the form of a picture of exercising couple have operated, which according to Koeningsorfer (2013) reduce guilt, and increases feelings of fulfilment of healthy goals. On the other hand, as I have already mentioned above health claims may invalidate the overall impression of the product, as they are often not very well formulated or only causes a decrease in consumer expectations (Wansink, 2004).

Another aspect that could manipulate results can be overwhelming number of respondents who were more inclined to one of two styles of processing - either as a verbal processing type or visual type (Childers, Houston et all, 1985). Style of processing would certainly be fully

assessed in the case that the sample number increase, and thus would be possible to deduce how much the style of processing affects the overall perception of the product packaging. Due to small sample we do not focus on style of processing in this thesis and we leave the already collected information to examine this phenomenon more in depth in a large study that will be conducted over the next two months. The results concerning the style of processing parts can significantly affect the interpretation of the whole study results.

Additionally, it is possible that the way we approached the research participants influenced the results. Since it was an online questionnaire, each participant could fill out a questionnaire anytime and anywhere. On the other hand, however, this has led to a relatively large number of unfinished questionnaires. This may also be possible due to large amounts of products (11-12 products for each respondent), which were needed to be assessed. At the same time the distribution of questionnaire led to the situation where for instance elderly or workers who are in fact very strongly influence buying behaviour throughout the home, did not receive the questionnaire.

Positive contribution of our work is very unique elaboration of pilot study. The experiment that we conducted within this study, was based on bottom-up the system where participants were involved in the dsigning task from the very beginning. They had been asked to create their own package design in Photoshop program by adding individual attribute levels, which very well determined their preferences and perception in consumer behaviour. Another positive is the contribution in clarification of how can package design specifically four attributes (picture, colour, logo, claim) influence overall evaluation of product and consumers behaviour and final decision.

## 5.2 Recommendations

As already stated, there are not too many studies that examined the effect of explicit and implicit cues simultaneously within a single product. It would therefore be interesting to create another study, where would be another product (for instance yoghurt or oatmeal porridge thus food which can be seen as a generally healthy but in their essence they can be very unhealthy) used as well as other attributes (attention can be focussed also on the rear side of the product, namely on a table with nutritional values or logos appearing on the back side of the package) would be manipulated. It would also be very useful to create an experiment that would take place a bit closer to the real situation like in the simulation of supermarket where people can actually check the package of cookie or other products, instead of Internet questionnaire. In that situation also eye tracking research would be interesting because it would be possible to see for example correlation between the results of Style of processing questions and results of eye tracking in the real setting. Given that in this experiment participate only a relatively small number of respondents, it would be appropriate to enhance this to gain information from representative sample size. It would also be very interesting to look at the issue more in terms of psychology and explore mechanisms that precede consumer behaviour as well as variables that can disrupt these mechanisms or on the contrary, that can support them. Interesting would be to change specific conditions of experiment like for instance how participants who haven't been eating for 24 hours react on exposure of food product package with different attribute levels and their evaluation in terms of healthiness or indulgence.

As confirmed by Grunert et all (2010) in his work, it is essential for consumers that important information about the product came from credible sources - whether from our friends or from governmental organizations or even from professional athletes or celebrities in case we want to motivate consumers to healthy dietary habits (Bhaskaranm, Hardley, 2002). This implies, that it is very important that the information that consumer collect through implicit and explicit cues on the packaging of products from these trustful sources are truthful and not misleading and confusing, as in many cases it currently is. For instance Purnhagen, Herpen and Kleef (2015) in their work stressed the high importance of implicit cues, which they consider as being easier to process (system 1 processing in dual processing models in social psychology[1], Kahneman, 2011) by consumer and therefore are more often used by private companies in the form of certain nudges to legally manipulate consumers choice since EU restricts mostly textual (explicit) part of packages (which is processed by consumer with system 2 processing[2] which requires more effort and more extensive processing therefore is used very often in second instance). This work could therefore help in the law restrictions about the product packaging designs in the sense that packaging and its explicit but also implicit parts provide true, honest and meticulous information that would lead consumers to correct and conscious choice of product.

[1] Dual processing system in social psychology distinguishes two types of systems to process information - system 1 and system 2. In case of system 1 are thoughts processed quickly and almost automatically suggesting that this system is easier for the consumer since they do not have to spend that much efforts to achieve final thoughts. The system 1 is most commonly used in conjunction with implicit messages that enable continuous processing (Kahnemann, 2011).

[2] System 2 is essentially opposite system to system 1 within which the consumer handles thoughts slowly and thoroughly. This process can be influenced by subjective feelings of consumers or by the personality differences. With this system we mostly process explicit information, which due to verbal form often requires more time and elaboration (Kahnemann, 2011).

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# ANNEX

## Annex 1 – Questionnaire

**Vragen:**

1. Wat is uw leeftijd?

2. Wat is uw geslacht?
   - man
   - vrouw

3. Zouden er ingrediënten in koffiekoekjes kunnen zitten waar u allergisch voor bent?

4. Geef aan hoe belangrijk de volgende eigenschappen van de verpakking van koffiekoekjes voor u zijn. (1 is helemaal niet belangrijk en 7 is heel belangrijk)

| | helemaal niet belangrijk | | | | | | heel belangrijk |
|---|---|---|---|---|---|---|---|
| Natuurlijk | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Gezond | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Lekker | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Vullend | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. Geef aan hoe je de taak vond (1 is helmaal mee oneens en 7 is helemaal mee eens)

| | Helemaal oneens | | | | | | helemaal mee eens |
|---|---|---|---|---|---|---|---|
| De taken waren leuk om te doen | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| De taken waren lastig | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

6. Mogen we u vanuit de leerstoelgroep benaderen voor soortgelijke onderzoeken? Vul dan hier uw email adres in:

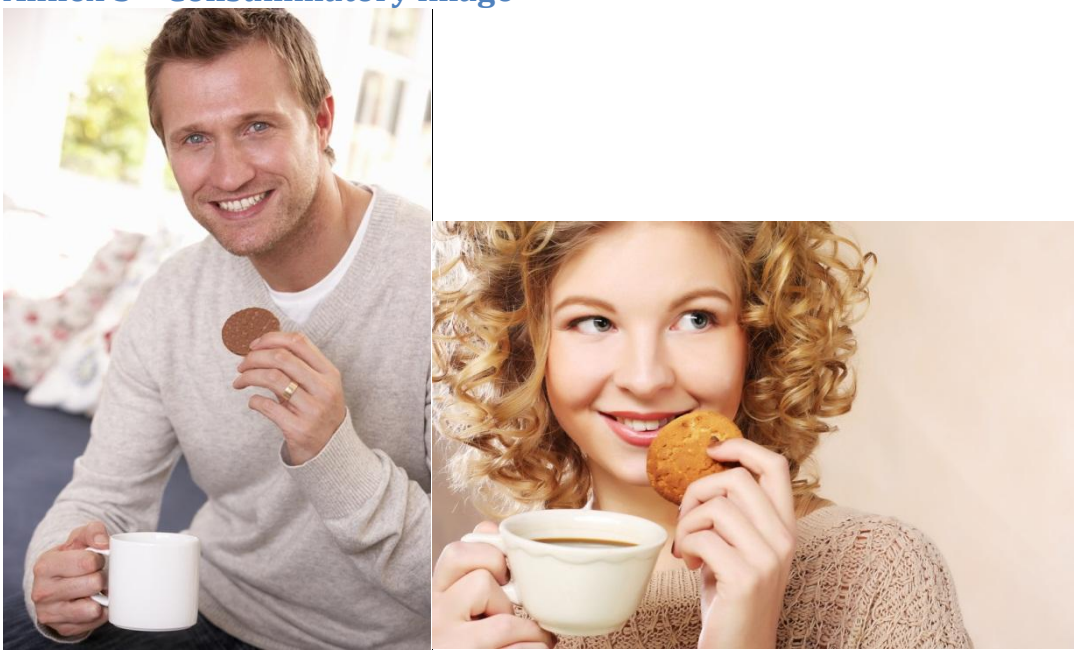
## Annex 2 – Tasks (each task resulted in one design of package)

Ontwerp met behulp van het programma een pak koekjes met een ***gezonde*** uitstraling.
Ontwerp met behulp van het programma een pak koekjes met een ***lekkere*** uitstraling.
Ontwerp met behulp van het programma een pak koekjes met een ***natuurlijke*** uitstraling.
Ontwerp met behulp van het programma een pak koekjes met een ***vullende*** uitstraling.

## Annex 3 – Fitness image

## Annex 4 – Nature image

## Annex 5 – Consummatory image



## Annex 6 – Nutrient content claims

Rijk aan vezels
Minder suiker

## Annex 7 – Health claims

Verlaagd cholesterol
Energie voor de hele dag

## Annex 8 – Taste claims

Verbeterde receptuur
Verbeterde smaak

## Annex 9 – Logo

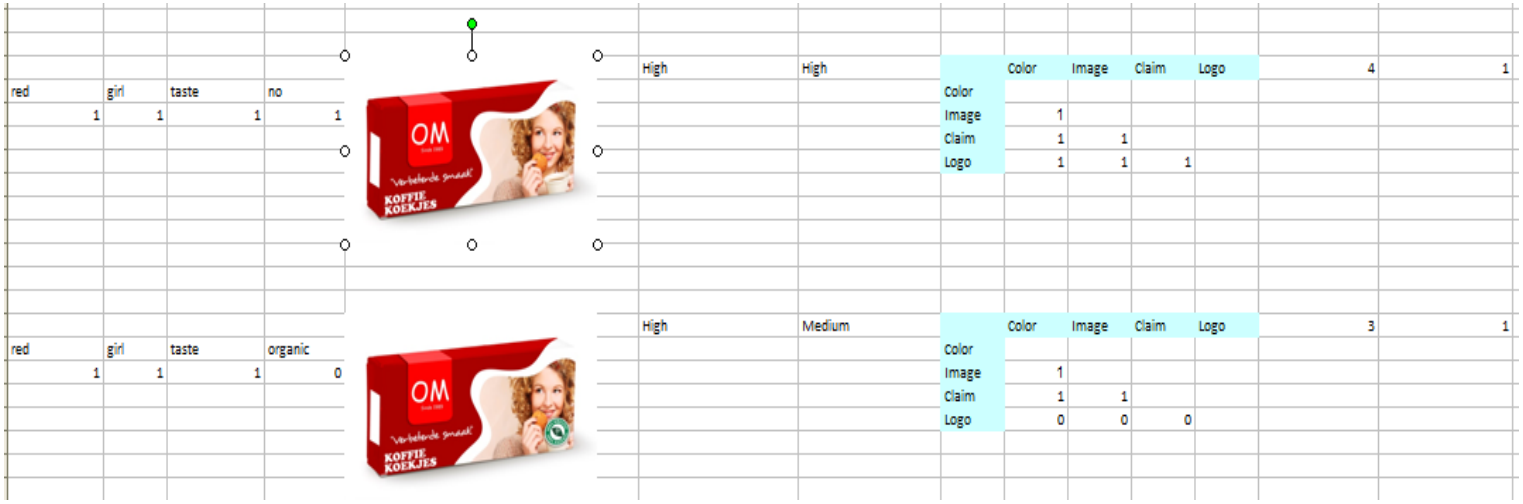



## Annex 10 - Example of Health scoring system

| Combination | | | | Picture | HEALTHY | | | | | | | Healthy | Congruent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Color | Image | Claim | Logo | | IMPLICIT | EXPLICIT (Claim+Logo) | | | | | | Just sum of "health sores" for cues (see columns A, B, C, D) | Sum of congruent (1) and incongruent(-1) pairs divided by number of pairs that indicate (in)congruency (see columns I, J, K, L) |
| | | | | | | | | Color | Image | Claim | Logo | 4 | 1 |
| green | couple | high fiber | choices |  | High | High | Color | | | | | | |
| 1 | 1 | 1 | 1 | | | | Image | 1 | | | | | |
| | | | | | | | Claim | 1 | 1 | | | | |
| | | | | | | | Logo | 1 | 1 | 1 | | | |
| | | | | | | | | Color | Image | Claim | Logo | 3 | 1 |
| green | couple | high fiber | no |  | High | Medium | Color | | | | | | |
| 1 | 1 | 1 | 0 | | | | Image | 1 | | | | | |
| | | | | | | | Claim | 1 | 1 | | | | |
| | | | | | | | Logo | 0 | 0 | 0 | | | |

**Whole scoring system on demand**

## Annex 11 - Example of Indulgent scoring system




**Whole scoring system on-demand**