



Organic look, healthier product?

An experimental study on the influence of organic illustrations and typeface on the perceived healthiness, taste expectation and purchase intention

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Abstract

With the huge amount of products in supermarkets, it is challenging for consumers to find the healthy options. To distinguish between the healthy and unhealthy products, packaging design can play a vital role. Plenty of studies show that an organic origin is associated with health. However, little is known about how organic visual cues could affect the consumer responses. Therefore, this study aimed to examine whether organic illustrations and organic typeface affect the perceived healthiness, expected nutritional value, taste expectation and the purchase intention. The main study used a 2 (organic versus inorganic illustrations) x 2 (organic versus inorganic typeface) x 2 (high versus low general health interest) experimental design to test four conditions of a smoothie package. The general health interest looks hereby at the people's interest to eat healthy, and when people score high on this scale, they have a higher preference for healthy products. Participants (N=212) were randomly exposed to one of the smoothie packages and, in addition, had to answer questions related to the dependent variables. Results reveal that organic illustrations positively affect the perceived taste liking and the purchase intention. Moreover, an inorganic typeface leads to an increase of the perceived healthiness, but only for people with a low general health interest (GHI). The study contributes to the research field of packaging design and gives a new insight of how the perceived healthiness of products can be increased, and thereby, increasing the purchase of healthy products.

Keywords: *organic perception, perceived healthiness, taste expectation, purchase intention, illustrations, typeface, general health interest*

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1. Introduction

You enter the supermarket, deciding to go only for healthy products. But where do you find them? With all the different options, differing in labels, claims and appearance, stating “better for you” or “low in calories”, it is hard to distinguish what the most healthy option is.

According to Ruhlman (2017) in the period 1990-2017, the number of products in grocery stores in the United States has increased from 9,000 products to approximately 40,000 to 50,000 products. As a result, the diversity of products has increased (Ruhlman, 2017). To the best of the author’s knowledge there is no data available about the development of the number of products in Dutch supermarkets, the focus area of this study. However, the average number of square meters of Dutch supermarkets has increased by approximately 24 percent in the period 2005-2019 (Statema & van der Weerd, 2019), which indicates that the number of products in Dutch supermarkets has also increased and consequently, the diversity of products as well.

The increasing diversity of products does not only result in more healthy products. According to Ruhlman (2017), the number of harmful products were never this high in the United States. Moreover, according to the World Health Organization 39 percent of the people aged above 18 years were overweight in 2016 (WHO, 2020). In the Netherlands even half of the adults suffered with overweight in 2019 (Volksgezondheidszorg.org, 2020). It is of importance to motivate people to live healthier. However, with the huge amount of products, it is challenging to find the healthy products in the supermarkets. According to Ahmad et al. (2012) over 70 percent of the purchase decisions of consumers are made at the shelf, whereby the packaging has a major impact on the consumers buying decision. Consequently, the product package can play a vital role to communicate healthiness, consciously and unconsciously.

One of the cues that affects the consumer response, especially the perceived healthiness, is the organic origin. It is acknowledged that an organic origin of a food product positively influences the consumers’ perceived healthiness. Consumers often tend to see organic food as

healthier than the conventional products (Magnusson et al., 2003; Schuldt & Hannahan, 2013; Fenko, 2019). However, the effect of implementing organic visual cues for packaging, besides the textual visualisations like labels, is understudied. Therefore, this study investigates the effect of organic illustrations and organic typeface on the perceived healthiness, the taste expectation and the purchase intention.

The illustrations and the typeface were selected, due to the fact that less research has been done regarding these attributes. Prior research about the effect of packaging elements on the healthy food choices mainly focused on colour (Fenko et al., 2015; Spence et al., 2015; Foroni et al., 2016), shape (Van Ooijen et al., 2017; Van Rompay et al., 2017; Machiels, 2018) and material (Fenko et al., 2015; van Rompay & Groothedde, 2019a). Little research is conducted regarding typeface and illustrations, while it is proven that both attributes can influence the consumer evaluation (e.g. Baik et al., 2011, Velasco et al., 2014; Rebollar et al., 2019). Velasco et al. (2014) found for instance, by testing various elements of a general product packaging, that round typefaces were associated with sweetness, while angular typefaces with other tastes. Furthermore, Rebollar et al. (2019) concluded that consumers tend to associate the images they see on the food packaging with the main product inside. These findings provide evidence that both visual attributes influence the consumer evaluation.

Given that organic visual cues for packaging are understudied, this study aims to investigate this by testing the effect of organic illustrations and organic typeface on the perceived healthiness, expected nutritional value, taste expectation and the purchase intention. Hence, the research question for this study is as follows:

To what extent do organic illustrations and an organic typeface affect the perceived healthiness, expected nutritional value, taste expectation and the purchase intention of consumers?

The study uses a 2 x 2 x 2 experimental research design to analyse these effects. The research is carried out by using four different manipulations of a smoothie package. Participants will be exposed to one of the conditions in an online questionnaire and have to answer several questions linked to the dependent variables. Results will contribute to research field of packaging design, and gives a new insight on how to increase the perceived healthiness of products, and thereby, increasing the purchase of healthy products.

2. Theoretical Framework

Product packaging design can affect the perception of a product. In this study the focus lies on the effect of illustrations and typeface. In this section the most important theoretical angles are discussed. First, the connection between packaging design and perceived healthiness and the general assumption of organic food being healthier are explained. Furthermore, the influence of illustrations and typeface are discussed, including a possible congruency effect. Finally, the moderator of this study, the general health interest, is described.

2.1 Packaging design and perceived healthiness

Packaging design can be applied to communicate attributes of a product and provoke certain consumer responses. Consumers base their food choices mainly on the appearance of the packages (Fenko et al., 2010), and packages features can create product perceptions (Schifferstein et al., 2013). Becker et al. (2011) concluded, for instance, that the packaging shape and colour saturation can affect the product attitude and price expectation. They exposed participants to an image of a yoghurt package, which was rather round or angular and with a high or low colour saturation. Furthermore, Rebollar et al. (2017) investigated the effect of visual and verbal cues conveying a message, and the additional consumer expectation. With the use of a bag of crisps as a stimuli, results show that material (paper vs. metallized), images (ready vs. in process) and how additional information (visual vs. verbal) is presented all affect the consumer perception. Hence, these two studies show that the visual cues of product packages can affect the consumer responses towards products.

One of the messages packaging can convey, is healthiness. Health has become an important criterium which consumers take in mind when purchasing food (Lähteenmäki, 2013). There are different ways to communicate the healthiness of a food product, both explicitly and implicitly. Claims and labels are examples of explicit packaging cues which can convey the

health message. Nevertheless, several studies in the literature (e.g. Vermeer et al., 2011; Vyth et al., 2011; Benson et al., 2018) show that there is not always an effect of nutrition labels and health claims. Benson et al. (2018) examined, for instance, the effect of different claims (nutrition, health and satiety) on the perceived healthiness and tastiness. Via an online questionnaire it was found that these claims had little influence on these factors. In addition, the research of Rebollar et al. (2017) also concluded that the visual cues (material and image) used in their experiment are more effective in transmitting a message than the verbal cues (text).

Prior research proved that the implicit cues (e.g. colour and material) of packaging design can affect the perceived healthiness of products. Van Ooijen et al. (2017) compared packages symbolising a slim and a wide body. Results show that the package with a slim body is a cue for the healthiness of a product, but only when people have a health-relevant goal, which is when people are actively looking for healthier products. Fenko et al. (2016) also concluded that the shape of packaging influences the perceived healthiness. They compared two product types, butter and muesli cookies, and found that cookies in the angular packages were seen as more healthy than the ones in round packages.

Moreover, Tijssen et al. (2017) showed that the colour of packaging also affects the perceived healthiness. In their research, they investigated the effect of colour by combinations of hue, brightness and saturation on a yoghurt drink package and a sausage package. It was concluded that a less vibrantly, watered-down package (like whitish blue) is stronger associated with health. They also observed that healthier products in the Netherlands, like yoghurt, are packaged in cool colours (green, blue), while the 'normal products' in warmer colours, like red (Tijssen et al., 2017). In line with this result, Schuldt (2013) concluded that when the calorie label of a candy bar was green, rather than red, the perceived healthiness was higher. Hence, these results show that packaging design elements affect the perceived healthiness of food products.

2.2 Organic is healthy

Besides the visual attributes of packaging design, prior research proved that an organic origin has a positive effect on the perceived healthiness of products (Magnusson et al., 2003; Schuldt & Hannahan, 2013; Apaolaza et al., 2016; Prada et al. 2017). Organic products are sustainably produced and aim to protect the biodiversity and the natural resources (Nadricka et al., 2020; Voedingscentrum, n.d.). Advantages of organic products are that they are not genetically modified and produced without the use of chemicals, like pesticides (Chen, 2007). However, organic food is in general more expensive than conventional food (Hjelmar, 2011), and the price of organic products is one of the main reasons people do not purchase organic food (Ascheman-Witzel & Zielke, 2017)

Schuldt and Swartz (2010) found that when cookies are described as organic, it is perceived that they consist less calories, and Lee et al. (2013) concluded that organic-labelled food was seen as more nutritious, low in fat and calories, and higher in fibre. Moreover, Nadricka et al. (2020) investigated the effect of an organic label on a neutral food product (rice) and found that it is perceived as more healthy than a product without a label. Furthermore, Hoefkens et al. (2009) concluded that organic vegetables were perceived as healthier and were expected to have more nutrients than conventional vegetables. Stolz and Schmid (2008) investigated the attitudes of consumers towards organic wine, and concluded that, in comparison with conventional wine, organic wine is perceived as healthier. Hence, these results give the assumption that organic food appears to be perceived as healthier by the consumers, while in reality there is no evidence found that organic food is healthier than conventional food (Voedingscentrum, n.d.).

According to Chrysochou and Festila (2019) the design elements of packages differ between organic and conventional products. They investigated via a content analysis the effect of packaging design for organic products, and found support that the addition of certain package

design elements can convey the organic character of the products. For the product packaging of organic products more paper and less plastic is used, are the colours green and white used more often, and do images of nature appear more frequently on organic products than on conventional products.

2.3 Influence of illustrations

Images and illustrations on packaging are commonly used by designers to convey information. Product images on packaging result in a greater production differentiation (Ampuero & Vila, 2006), and can shape the judgement of people regarding the product (Chrysochou & Grunert, 2014; Delivett et al., 2020). Chrysochou and Grunert (2014) tested if health-related information (claims and imagery) affect the perceived healthiness and purchase intention of the product showed in an advertisement. They found that consumers rely more on the healthy imagery used for packaging add, than the functional claims. The addition of health imagery has a stronger positive effect on the perceived healthiness and purchase intention, than the functional and practical claims. This is supported by Carrillo et al. (2014), who concluded that the illustrations showed on a package were more important than the verbal cues on a package for the overall appeal and the convincingness.

Specifically focusing on the shape of illustrations, Westerman et al. (2013) concluded in their research that there is a preference for round graphics. Via an experiment whereby round and angular graphics on a vodka and water bottle were compared, it was concluded that for bottles with round graphics, the purchase likelihood was greater, and the bottle was more appealing and pleasing. Furthermore, the shape of the package self also positively affects the perceived healthiness of a product. When the shape of the package resembles a slim body shape (van Ooijen et al., 2017) or has an angular shape (Fenko et al., 2016), the product was perceived as healthier, and additionally, also the purchase intention was higher for those shapes.

Regarding taste, research shows that angular shapes are in general linked to bitter, salt and sour, while round shapes are linked to soft and sweetness (Velasco et al., 2014; Fenko et al., 2016; Velasco et al. 2016). Becker et al. (2011) concluded for instance that a stronger and more intense taste of yoghurt was associated with an angular package. Moreover, in the experiment of Ngo et al. (2013), British and Columbian participants tasted different fruit juices. The results reveal that sweet tasting juices were matched to round shapes and sour tasting juices to angular shapes.

For this study the focus lies on the organic and inorganic illustrations. Organic shapes can be a representation of nature (Mesquita et al., 2016). Research like Spence and Ngo (2012) also associate round shapes with organic shapes, and placed them as an opposite shape to angular shapes. That round shapes are linked to organic shapes, gives the impression that the taste expectation will be higher for a product package with organic illustrations, due to the fact that round shapes are linked to a soft and sweet taste. Hence, the following hypotheses are formulated, thereby also testing the effect of illustrations on the perceived healthiness, expected nutritional value and the purchase intention:

H1a: A product package with organic illustrations is perceived as more healthy than a product package with inorganic illustrations.

H1b: A product package with organic illustrations is expected to have a higher nutritional value than a product package with inorganic illustrations.

H1c: A product package with organic illustrations has a higher taste expectation than a product package with inorganic illustrations.

H1d: A product package with organic illustrations positively influences the purchase intention.

2.4 Influence of typeface

Typeface is a ‘family of related fonts in a series of sizes’ (Wang et al., 2020, p.1118). It includes characteristics like weight, curvature, and regularity (van Leeuwen, 2006; Velasco et al., 2018). It has been acknowledged that typeface gives meaning, besides the words that are showed (Garfield, 2011). Typeface has two levels of communication; the literal meaning of the words (denoted), and symbolic and implicit meaning of the words (connoted), based on the visual characteristics (Childers & Jass, 2002; van Rompay & Pruyn, 2011).

For this study an organic typeface and an inorganic typeface are compared. Henderson et al. (2004) identified a list of typeface design characteristics, and the belonging consumers’ impressions. With assistance of professional graphic designers, they indicated that organic typefaces are irregular, unplanned and/or natural. Therefore, to resemble an organic character of a product via typefaces, a handwritten typeface is one of the cues that could be suitable. Additionally, Schroll et al. (2018) investigated the effect of handwritten and machine-written typefaces on the product evaluation of consumers. Results show that handwritten typefaces enhance the purchase intention and lead to a higher perception of human presence, which consequently, results in a more favourable product evaluation.

Previous research shows that visual cues of typefaces can convey implicit meanings (Celhay et al., 2015). A bold typeface expresses, for example cheapness, and an italic typeface femininity (Davis & Smith, 1933). Typeface on packages and the influence on the perceived healthiness is understudied. To the best of the author’s knowledge, only Karnal et al. (2016) investigated the relation between typeface and the perceived healthiness of products. In their research, they tested the effects of colour and typeface on the consumers’ perception of healthiness. With the use of different food products they compared a light typeface with a heavy typeface. Results show that typeface alone does not affect the perceived healthiness. It depends on the person’s healthy regulatory focus (Karnal et al., 2016), which distinguishes between

health promotion-focused people, who actively want to improve their health, and health prevention-focused people, who protect their healthiness and avoid unhealthy food. People with a health promotion focus perceived a product as healthier when there was a less heavy typeface used, which also led to a higher purchase intention.

In the literature the effect of typeface on taste was also investigated. According to Velasco et al. (2014), who tested the effect of various elements on the product packaging, round typefaces are associated with sweetness, while angular typefaces with sourness. Later, Velasco et al. (2015) tested the same effect by comparing 12 different variations of a text on a cup. Results showed, likewise, that the rounder typefaces were associated with sweet tastes and angular typefaces with other tastes. A reason Velasco et al. (2015) give is that rounder typefaces might be easier to process and are more likable. Contrary to this result, de Sousa et al. (2020) found that angular typefaces were associated with tastes like sour and bitter, but their results did not reveal an association between a round typeface and a sweet taste, which is also supported by Machiels (2018).

To conclude, not much research has been done regarding the relation between typeface and the perceived healthiness of products. For this study the influence of an organic typeface, in comparison to an inorganic typeface, is investigated. Also taking the taste expectation, the expected nutritional value and the purchase intention into account, the following hypotheses are proposed:

H2a: A product package with an organic typeface is perceived as more healthy than a product package with an inorganic typeface.

H2b: A product package with an organic typeface is expected to have a higher nutritional value than a product package with an inorganic typeface.

H2c: A product package with an organic typeface has a higher taste expectation than a product package with an inorganic typeface.

H2d: A product package with an organic typeface positively influences the purchase intention.

2.5 Congruency effect

Not only the individual design cues of product packages are important. The congruency between attributes (e.g. round typeface and round shape) can also positively influence consumer responses (Becker et al., 2011; Velasco et al., 2018; Li et al., 2020). Previous research found different congruency effects between visual elements of packaging. Van Rompay and Pruyn (2011) tested in several studies the shape-typeface congruence with the use of water bottles. The overall result shows that when the shape and typeface connoted the same meaning, it positively influences the rated brand credibility, brand aesthetics and the price expectation. Moreover, Li et al. (2020) observed that people prefer products with a round shape and round typeface, and likewise, products with an angular shape and an angular typeface. It should be noted that this effect was only observed for hedonic food products (products for luxury purpose, to feel pleasure), and not for the utilitarian food. Furthermore, Fenko et al. (2016) found a congruency effect for brand names and package shapes on the product evaluation. The angular cookies with a brand name that associated with healthy (Asahi), and the round cookies with a brand name (Ramune) that is associated with unhealthy were evaluated better.

That products with congruence elements are evaluated more positive than incongruence product packages, could be explained by the processing fluency theory. According to this theory, stimuli that are easy to take in, can influence the consumer response in a positive and favourable way (Reber et al., 2004). Fluent stimuli are in general more favourable evaluated, seen as more credible, and are more aesthetically pleasing than stimuli which are not fluent

(Reber et al., 2004). Stimuli that are seen as congruent are easier to process than the stimuli that are incongruent.

Hence, prior research shows that a congruence between visual elements can positively influence the consumer evaluation. Therefore, this study also considers a possible congruence effect between the typeface and illustrations of the packaging. It is expected that the two visual attributes strengthen each other when they are connoting a similar meaning. Hence, the following hypothesis is proposed:

H3: A illustration-typeface congruency (organic illustrations combined with an organic typeface or inorganic illustrations combined with an inorganic typeface) will lead to a more positive consumer evaluation, compared to illustration-typeface incongruency (organic illustrations combined with an inorganic typeface or inorganic illustrations combined with an organic typeface)

2.6 General health interest

Previous research shows that the general health interest (GHI) contributes to the healthy food choices of consumers. This scale, developed by Roininen et al. (1999), looks at the people's interest for eating healthy. When people score high on this scale, it means that there is a preference towards purchasing healthy products. People with a higher GHI are more likely to base their food decisions on health benefits rather than on hedonic benefits (Lähtenmäki, 2013), and have more positive attitude towards healthy food (Zandstra et al., 2001). Hence, people with a higher GHI might be less affected by the visual cues of a package. Fenko et al. (2016) concluded, for instance, that consumers with a high GHI were not influenced by the sound symbolism of the brand name of a cookie. Therefore, it is expected that for people with

a high GHI, the modifications of illustrations and typeface will be less effective. This gives the following hypothesis:

H4a: Effects of organic illustrations are less pronounced for consumers with a high (rather than low) general health interest.

H4b: Effects of an organic typeface are less pronounced for consumers with a high (rather than low) general health interest.

2.7 Research design

The study aims to investigate the effect of organic illustrations and typeface on the perceived healthiness, the expected nutritional value, the taste expectation, and the purchase intention. The general health interest serves hereby as a moderator. The research design that is used is a two (organic vs inorganic illustrations) by two (organic vs inorganic typeface) by two (low vs high general health interest) experimental design. This gives the following design, showed in Figure 1.

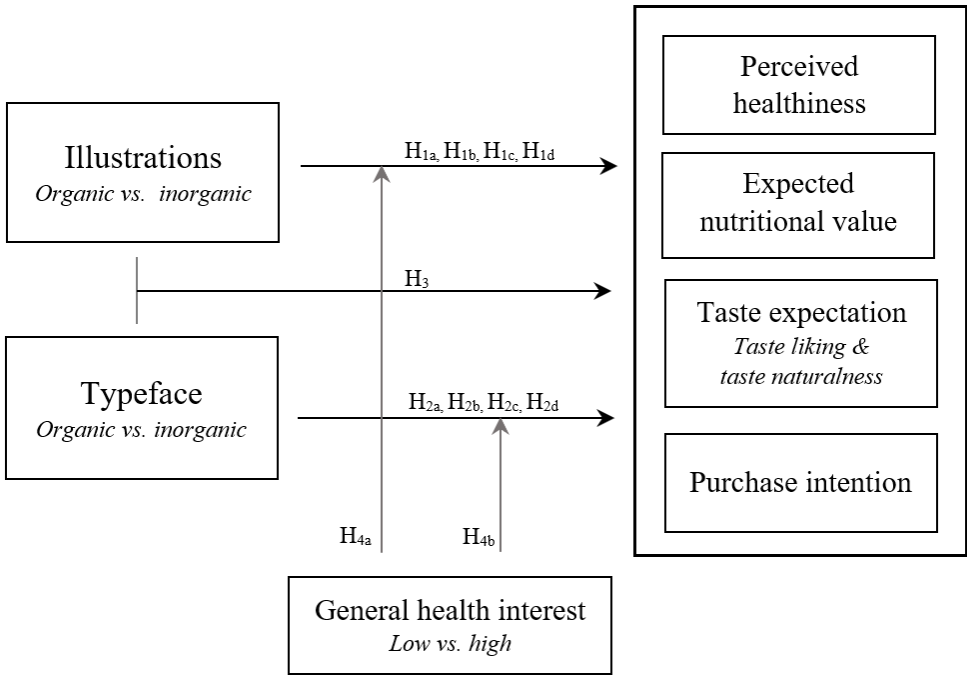


Figure 1. Research design with independent and dependent variables

3. Pre-test

A pre-test was conducted to select the stimuli for the main study. The pre-test tested whether the organic stimuli for the main study are perceived as organic, and the inorganic stimuli as inorganic. In a small questionnaire the participants were exposed to ten different illustrations and ten different typefaces. For each design they had to evaluate to what extent they perceived the illustrations or typeface as organic, natural and attractive. For organic two different items were used, namely “*organisch*” and “*biologisch*”, due to the fact that in the Dutch language both words can be considered as a translation for organic. Each item was measured with a 5-point Likert scale, ranging from “strongly disagree” to “strongly agree”.

The participants were reached via social media. Participants were asked to spread the questionnaire further, to create a snowball sampling. Eventually, 27 people participated, of which were 19 female and 9 male. The participants were between 21 and 65 years old ($M=39.78$).











3.1 Results

3.1.1 Illustrations

For the illustrations ten different conditions were created, of which five had an organic character and five an inorganic character. For all the questions a 5-point Likert scale was used, ranging from “strongly disagree” to “strongly agree”. The total mean of the three items that measured the organic perception (“*organisch*”, “*biologisch*”, “*naturalness*”) were in general higher for the organic illustrations than for the inorganic illustrations. The overall result (see Appendix 3) shows that the means of illustration 4 were the highest for the organic items ($M=3.78$ and $M=4.07$), where for the naturalness and attractiveness the means of illustration 5 were the highest ($M=4.11$ and $M=4.00$). The total mean, showed in Table 1, revealed that the mean for illustration 4 is the highest ($M=3.91$).

For the inorganic illustrations, the means differ between the items. Illustration 8 (see Table 1), for example, had the lowest means for the organic items ($M=1.96$ and $M=1.63$), while Illustration 7 scores the lowest on the naturalness ($M=1.78$). Comparing the total mean of the three items, it was revealed that illustration 8 had the lowest mean ($M=1.89$).

Table 1. Total mean Illustrations

	1	2	3	4	5	6	7	8	9	10
										
N	27	27	27	27	27	27	27	27	27	27
Mean	3.88	2.75	3.63	3.91	3.85	1.91	1.91	1.89	2.00	2.02

3.1.2 Typeface

Ten different typefaces were tested, of which five typefaces had an organic character and five typefaces an inorganic character. For the examples of typeface the words ‘lorem ipsum’ were used, which made it unlikely that participants would associate the words itself with organic or inorganic. The total means of the three items together that measured the organic perception were in general higher for the organic typefaces than for the inorganic typefaces. The overall results (see Appendix 3) show that, of the organic typefaces (1-5) the means of typeface 3 were the highest for the organic (“*biologisch*”) item, the naturalness and the attractiveness ($M=3.52$, $M=3.89$, $M=3.93$). Only for the organic (“*organisch*”) item, typeface 1 had a higher mean ($M=3.63$). The means of the three items combined (see Table 2) showed that the mean for typeface 3 was the highest ($M=3.63$).

For the inorganic typefaces, typeface 8 had the lowest mean for the organic (“*biologisch*”) item ($M=1.74$) and the naturalness ($M=1.81$), while typeface 10 scored the lowest on the organic (“*organisch*”) scale ($M=1.81$). The means of the different items together (see Table 2) revealed that the mean of typeface 8 was the lowest ($M=1.80$).

Table 2. Total mean typefaces

	1	2	3	4	5	6	7	8	9	10
	<i>lorem ipsum</i>	LOREM IPSUM	<i>lorem ipsum</i>	<i>lorem ipsum</i>	LOREM IPSUM	LOREM IPSUM	LOREM IPSUM	LOREM IPSUM	LOREM IPSUM	LOREM IPSUM
N	27	27	27	27	27	27	27	27	27	27
Mean	3.88	2.75	3.63	3.91	3.85	1.91	1.91	1.89	2.00	2.02

3.2 Conclusion

In general, it can be seen that the stimuli designs created for both organic and inorganic illustrations and typefaces were perceived by the participants as intended. The organic conditions had a higher total mean than the inorganic conditions.

Based on the outcome of the pre-test, it was decided to use illustrations 4 and illustrations 8 as the organic and inorganic stimuli for the main study. For typeface it was decided to use typeface 3 and typeface 8 as the organic and inorganic stimuli for the main study.

Given that the chosen organic illustrations resemble clear shapes of, for instance, an apple, it was decided to adjust the inorganic illustrations. The fact that the organic illustrations were resembling existing objects and the inorganic illustrations not, could possibly bias the results of the main study. Therefore, it was decided to adjust the inorganic illustrations to create an abstract resemblance of an apple. In Figure 2 the illustrations and typefaces that are used in the main study are shown.

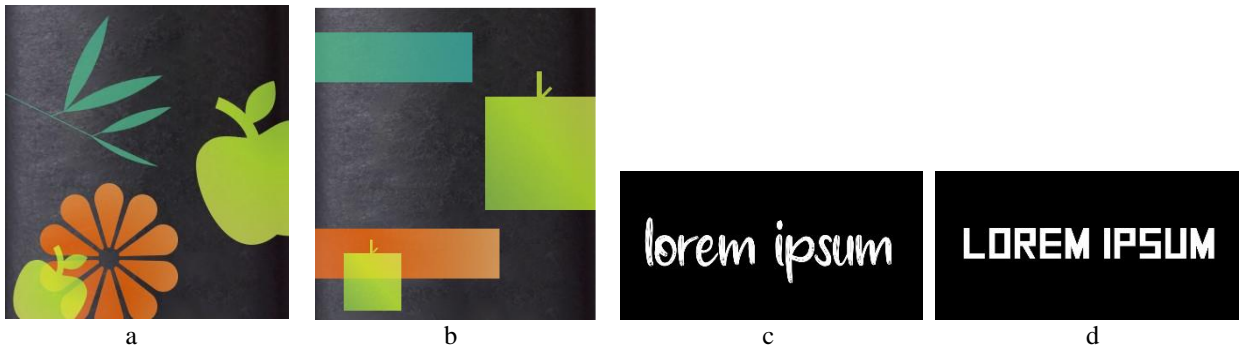


Figure 2. stimuli for main study (a) organic illustrations, (b) inorganic illustrations, (c) organic typeface, (d) inorganic typeface

4. Main study

The study had a 2 (organic illustrations vs. inorganic illustrations) x 2 (organic typeface vs. inorganic typeface) x 2 (low vs. high GHI) experimental design. This resulted in four manipulated conditions. Based on the outcome of the pre-test, the designs for conditions of the main study were created. All four conditions resemble the same smoothie, but differ in the illustrations and typeface. Figure 3 shows the four conditions of the smoothie, as they were used in the questionnaire. A smoothie was selected, due to the fact that it is in general seen as a healthy product, consisting of blended vegetables and/or fruit.

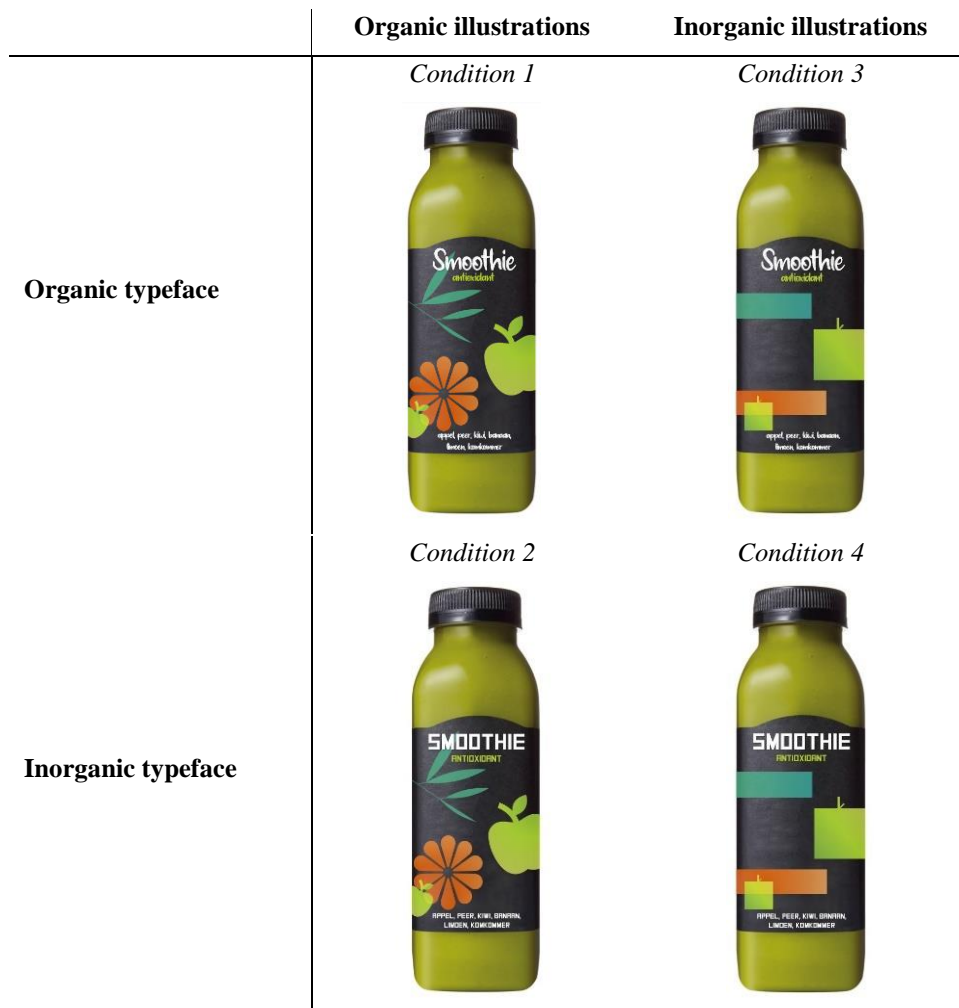


Figure 3. Stimulus materials for main study

4.1 Procedure

The data for the study was collected via an online questionnaire (see Appendix 4), which was designed in Qualtrics. The participants were approached via social media, and were asked to spread the link, creating an snowball sampling. When the participants started the questionnaire, there were randomly assigned to one of the four conditions, exposing them to one of the smoothies. In addition, the participants were asked questions related to the dependent variables. The questionnaire ended with demographical questions.

The actual purpose of the study was withheld from the participants at the start, to assure the validity. Furthermore, the participants were assured that the questionnaire would be anonymously and confidentially. Before the participants could continue to the questionnaire, they had to agree on the terms and conditions.

4.2 Participants

The participants had to have a Dutch nationality and be at least 18 years old. Eventually, 323 people participated in the experiment. After the manipulation check, which will be discussed in paragraph 4.6, and deleting participants who did not finish the questionnaire, a total of 212 participants were selected.

The participants were between 18 and 67 years old ($M=29.6$, $SD=29.71$). From the 212 respondents, 76.4% were female and 23.6% were male. Furthermore, the demographical information showed that half of the respondents were students (50.5%), and 25.9% had a full-time job. Most respondents were either living with their parents (33%) or with a partner (29.2%). A full overview of the demographics can be found in Appendix 5.

An overview of the spread of gender and age between the different conditions is showed in Table 3. A Chi-square test showed that there were no significant differences between the four conditions for gender ($X^2(3,N=212)= 2.01$, $p= 0.571$). Moreover, a one-way univariate analysis was performed to test if there was a difference between the conditions for the age. The analysis

revealed that there were no significant differences between the conditions for age ($F(3,210)=0.353, p=0.787$).

Table 3. Gender and age of participants in conditions

	N	Gender		Age	
		Female	Male	M	SD
Condition 1	54	38 (70.4%)	16 (29.6%)	30.70	13.04
Condition 2	48	36 (75%)	12 (25%)	30.15	13.20
Condition 3	53	43 (81.1%)	10 (18.9%)	28.28	12.18
Condition 4	57	45 (78.9%)	12 (21.1%)	29.33	13.11

4.3 Measurement

The questionnaire used for the main study measured the effect of the independent variables (illustrations and typeface) on the dependent variables (perceived healthiness, expected nutritional value, taste expectation, purchase intention), and the effect of the general health interest as a moderator. The questionnaire can be found in Appendix 4. In the following paragraphs the constructs for the dependent variables and the moderator are explained. All of the items were measured with a 7-point Likert scale, ranging from “strongly disagree” to “strongly agree”.

4.3.1 Perceived healthiness

To measure the first dependent variable “perceived healthiness”, a set of five items were used, based on previous research of Fenko et al. (2016). This construct measured to what extent the respondents perceived the smoothie as healthy, with items such as “I expect this product to be healthy” and “I would consider this product as good for me”. The Cronbach’s alpha of this scale is 0.77.

4.3.2 Expected nutritional value

To measure the second dependent variable “expected nutritional value”, a construct with 7 items was created. Participants had to evaluate to what extent they thought the smoothie contained certain nutrients like “fibre”, “E-numbers”, “vitamins”, and “sugars”. The Cronbach’s alpha of this scale is 0.68.

4.3.3 Taste expectation

The third dependent variable “taste expectation” was measured via two constructs: taste liking and taste naturalness.

Taste liking was measured with four items, with items such as “I expect the smoothie is tasty” and “I expect the smoothie is delicious”. The items measured to what extent the participants expected to like the taste of the smoothie, and were based on research of Rompay et al. (2019). The Cronbach’s alpha of this scale is 0.80.

Taste naturalness was measured with 4 items. The participants had to evaluate to what extent they expect the smoothie would taste “natural”, “pure”, “chemical” and “artificial”. The Cronbach’s alpha of this scale is 0.86.

4.3.4 Purchase intention

The fourth dependent variable “purchase intention” was added to measure if participants were willing to buy the smoothie. The three items used, “I would like to try this product”, “I would seriously consider buying this product” and “I would buy this product” were adapted from research of Fenko et al. (2016). The Cronbach’s alpha of this scale is 0.85

4.3.5 General health interest

The general health interest, the moderating variable, is an adoption of the scale of Roininen et al. (1999). This scale measures to what extent people have an interest in eating healthy and the original scale of Roininen et al. (1999) exists of 8 items, with items such as “The healthiness of food has little impact on my food choices”, “I always follow a healthy and balanced diet” and “It is important for me that my diet is low in fat”. The participants were divided into a low GHI group and a high GHI group, via a median’s split (*Median=4.75*). The Cronbach’s alpha of this scale is 0.80.

For an overview of all the items that were used for each scale described above, see Table 4 on the next page.

Table 4. Constructs, items and reliability

Construct	Items	N	α
Perceived healthiness	1. I expect this product to be healthy 2. I would consider this product as good for me 3. The product looks healthy 4. The product looks low on calories 5. This smoothie looks healthier than similar smoothies	5	0.77
Expected nutritional value	1. I expect the smoothie contains a lot of fibre 2. I expect the smoothie contains a lot of food additives <i>(reversed)</i> 3. I expect the smoothie contains a lot of vitamins 4. I expect the smoothie contains a lot of fat <i>(reversed)</i> 5. I expect the smoothie contains a lot of antioxidants 6. I expect the smoothie contains a lot of minerals 7. I expect the smoothie contains a lot of sugar <i>(reversed)</i>	7	0.68
Taste liking	1. I expect the smoothie is tasty 2. I expect the smoothie is delicious 3. I expect the smoothie will be disappointing <i>(reversed)</i> 4. I expect the smoothie will taste better than similar smoothies	4	0.80
Taste naturalness	1. I expect the smoothie tastes natural 2. I expect the smoothie tastes artificial <i>(reversed)</i> 3. I expect the smoothie tastes pure 4. I expect the smoothies tastes chemical <i>(reversed)</i>	4	0.86
Purchase intention	1. I would like to try this product 2. I would seriously consider buying this product 3. I would buy this product	3	0.85
General health interest (GHI)	1. The healthiness of food has little impact on my food choices <i>(reversed)</i> 2. I am very particular about the healthiness of food I eat 3. I eat what I like and I do not worry much about the healthiness of food <i>(reversed)</i> 4. I always follow a healthy and balanced diet 5. The healthiness of snacks make no difference to me <i>(reversed)</i> 6. It is important for me that my diet is low in fat 7. It is important for me that my daily diet contains a lot of vitamins and minerals 8. I avoid food, if it may rise my cholesterol	8	0.80

4.4 Manipulation check and control variable

To test whether the respondents actively scanned the smoothie package they were exposed to at the start of the questionnaire, a control question was asked at the end. In this question the participants saw the four different manipulations of the smoothie and had to choose the one they had seen at the start. Participants who did not pick the same smoothie, were excluded from the experiment.

Moreover, the construct “organic perception” was created to test if the organic manipulations indeed resulted in a higher organic perception of the smoothie package. The participants had to indicate to what extent they agreed on the following four items: “The smoothie looks organic”, “The smoothie looks natural”, “The smoothie looks pure” and “This smoothie looks more organic than similar smoothies”. All items were measured on a 7-point Likert scale (ranging from “strongly disagree” to “strongly agree”). The Cronbach’s alpha of this scale is 0.84.

5. Results

In this section the results of the main study are described. To test the effects of the independent variables, the ANOVA test is used. The significance level used is 0.05. For all constructs a 7-point Likert scale (1=totally disagree, 7=totally agree) was used. Table 5 gives an overview of the results of the ANOVA's analysis of each dependent variables. In the following paragraphs the outcome is described further.

Table 5. main and interaction effects

Dependent variables	Independent variables	F	p
Perceived healthiness	Illustrations	0.781	0.378
	Typeface	0.366	0.546
	GHI	0.011	0.917
	Illustrations * Typeface	0.005	0.946
	Illustrations * GHI	0.963	0.328
	Typeface * GHI	6.920	0.009
	Illustrations * Typeface * GHI	1.049	0.307
Expected nutritional value	Illustrations	0.251	0.617
	Typeface	1.190	0.277
	GHI	0.189	0.664
	Illustrations * Typeface	0.265	0.607
	Illustrations * GHI	0.160	0.690
	Typeface * GHI	0.854	0.356
	Illustrations * Typeface * GHI	1.914	0.168
Taste liking	Illustrations	5.209	0.024
	Typeface	0.028	0.866
	GHI	1.200	0.275
	Illustrations * Typeface	0.530	0.468
	Illustrations * GHI	0.065	0.800
	Typeface * GHI	0.177	0.674
	Illustrations * Typeface * GHI	1.236	0.267
Taste naturalness	Illustrations	1.106	0.294
	Typeface	0.901	0.344
	GHI	0.018	0.892
	Illustrations * Typeface	0.000	0.992
	Illustrations * GHI	0.620	0.432
	Typeface * GHI	0.056	0.813
	Illustrations * Typeface * GHI	0.227	0.634

Purchase intention	Illustrations	6.605	0.011
	Typeface	0.006	0.938
	GHI	2.253	0.135
	Illustrations * Typeface	0.005	0.942
	Illustrations * GHI	0.118	0.731
	Typeface * GHI	0.000	0.996
	Illustrations * Typeface * GHI	2.075	0.151

5.1 Organic perception

The construct “organic perception” was created to test if the manipulations of the organic illustrations and typeface were perceived as intended by the participants. Contrary to the expectations, the ANOVA showed no main effects for the illustrations ($F(1, 204)=1.807$, $p=0.180$), typeface ($F(1, 204)=1.636$, $p=0.202$) and GHI ($F < 1$). Moreover, no interactions were found.

5.2 Perceived healthiness

Results of the ANOVA show that there are no significant main effects of illustrations and typeface on the perceived healthiness (both F 's < 1). For the moderator, general health interest (GHI), the ANOVA did not show a significant difference either ($F < 1$). However, an interaction effect was found between typeface and the general health interest ($F(1, 204)=6.920$, $p=0.009$). This interaction effect is visualized in Figure 4. For the participants with a low GHI, the Pairwise comparisons show that the smoothies with an inorganic typeface were perceived as healthier than smoothies with an organic typeface ($M=5.40$, $SD=0.62$, versus $M=4.99$, $SD=0.84$; $p < 0.05$). On the other hand, the Pairwise Comparisons show that there is no significant difference between the organic typeface ($M=5.32$, $SD=0.97$) and the inorganic typeface ($M=5.08$, $SD=1.00$) for the participants with a high GHI ($p=0.147$).

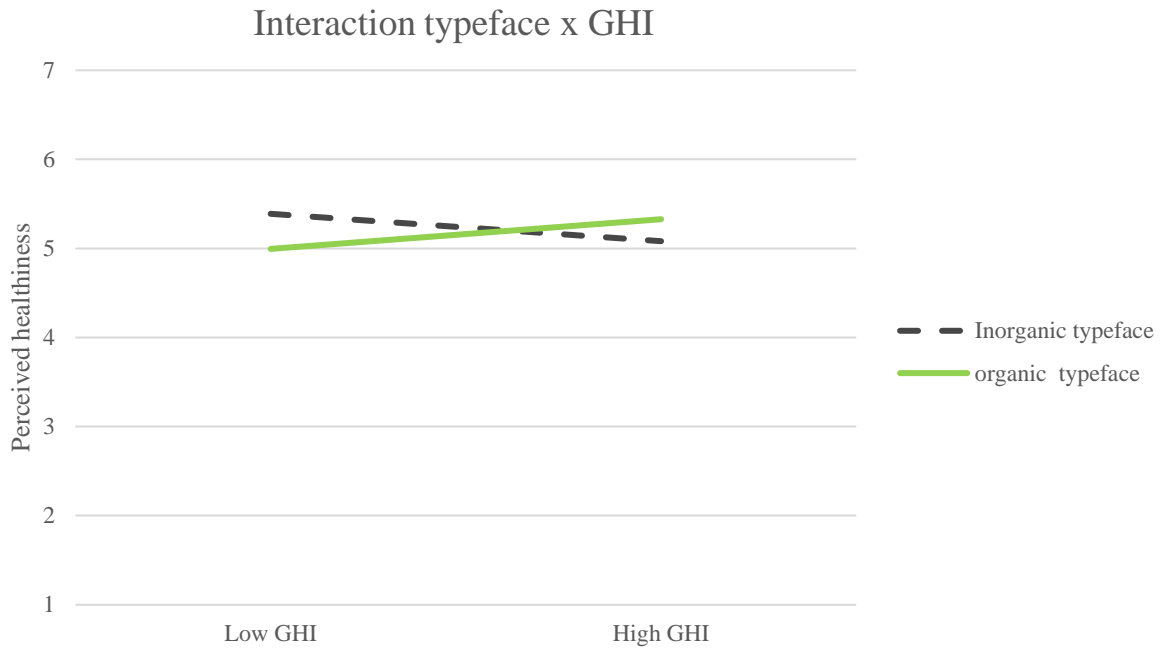


Figure 4. Interaction effect typeface * GHI on the perceived healthiness

5.3 Expected nutritional value

For the dependent variable “expected nutritional value”, the ANOVA did not obtain main effects of illustrations ($F < 1$), typeface ($F(1,204)=1.190, p=0.277$) and GHI ($F < 1$). In addition, no significant interaction effects were found, as it can be seen in Table 5.

5.4 Taste expectation

The dependent variable taste expectation is divided in two constructs, “taste liking” and “taste naturalness”. For both variables an ANOVA was conducted.

5.4.1 Taste liking

For the taste liking, the ANOVA did not reveal a significant main effect for both typeface ($F < 1$) and GHI ($F(1,204)=1.20, p=0.275$). However, the ANOVA showed that there is a significant influence of illustrations on the taste liking ($F(1,204)=5.209, p=0.024$). The taste liking for the smoothie packages with organic illustrations was higher than for the smoothie

packages with inorganic illustrations ($M=4.75$, $SD=1.07$ versus $M=4.41$, $SD=1.11$). In addition, no further significant interactions were obtained.

5.4.2 Taste naturalness

For the taste naturalness no significant main effects were observed for illustrations ($F(1,204)=1.106$, $p=0.294$), typeface and GHI (both F 's <1). Furthermore, the ANOVA did not show any significant interactions (all F 's <1 , *ns*).

5.5 Purchase intention

The ANOVA showed no significant main effect for typeface ($F<1$) and the GHI ($F(1,204)=2.253$, $p=0.135$). However, the ANOVA shows a significant main effect for the illustrations on the purchase intention ($F(1, 204)= 6.605$, $p=0.011$). The smoothie packages with organic illustrations ($M=4.46$) results in a higher purchase intention than the smoothie packages with inorganic illustrations ($M=3.96$). No further interaction effects were found.

6. Discussion

This study aimed to analyse the influence of organic illustrations and an organic typeface on food packaging on the consumer responses (perceived healthiness, expected nutritional value, taste expectation, purchase intention). In addition, the general health interest (GHI) was tested as a moderator.

6.1 General Discussion

First, the results of this study have shown that the addition of organic illustrations partly affects the taste expectation. Although no effect was found for the perceived taste naturalness, results show that the perceived taste liking was higher for the packages with organic illustrations. This result can be explained using research of Velasco et al. (2014) and Fenko et al. (2016), who showed that round shapes are linked to soft and sweet tastes, and angular shapes to a salt, bitter and sour taste. In this study a smoothie was used, which is most often associated with a sweet flavour. The organic illustrations had a round character, which is linked to sweet tastes, according to Velasco et al. (2014) and Fenko et al. (2016). It could be the case that participants were expecting a sweet taste and that the round shapes have enhanced this expectation, resulting in a higher perceived taste liking. This is also in line with research of Ngo et al. (2013). They used a similar food product in their study, namely fruit juices, and found that sweet tasting juices were matched with round shapes.

Thus, there is the expectation that products with the addition of organic illustrations will be more tasteful than with inorganic illustrations. This is an opposing result to the overall accepted intuition of Raghunathan et al. (2006). This intuition states that unhealthy food is tasty, while healthy food is not. This finding can be explained by the distribution of the participants in this study. They are overall highly educated, and research of Divine and Lepisto (2005)

showed that people who are highly educated are more focused on a healthy lifestyle, which could also mean that they perceive healthy food as tasteful.

This research also focused on the influence of illustrations on the purchase intention of people. Results show that a higher purchase intention was noted for the packages with organic illustrations. This is in line with research of Bauer et al. (2012), who concluded that organic claims can positively affect the purchase intention of consumers. Additionally, Westerman et al. (2013) also found that round graphics result in a higher purchase intention. Hence, the combination of organic (round) shapes and the organic character had led to a higher purchase intention.

Furthermore, results show an interaction effect between the typeface and GHI. It was found that participants with a low GHI, people who are less interested in a healthy lifestyle (Roininen et al., 1999), perceived the smoothies with inorganic typefaces as healthier than the smoothies with an organic typeface. This result is in line with the expectation that for people with a low GHI the effect of the modifications on packaging would be more pronounced than for people with a high GHI, like Fenko et al. (2016) also concluded in their study. Fenko et al. (2016) showed that people with a low GHI were more affected by the modifications on packaging. People with a high GHI already have a positive attitude towards healthy (Zandstra et al., 2001) and read the health labels on packaging more often (Fenko et al., 2018). Moreover, Karnal et al. (2016) showed that the effect of typeface on the perceived healthiness is moderated by the health regulatory focus of people, a similar scale to the GHI. This scale distinguishes between health promotion-focused people, who actively want to improve their health, and health prevention-focused people, who protect their healthiness and avoid unhealthy food. Hence, the result found in the study indicates that the effect of typeface depends on the general health interest of people.

Nevertheless, it is a surprising effect that the inorganic typeface leads to a higher perceived healthiness. The results show an opposing effect to what is found in the literature, where it was stated that organic origin is associated with healthiness (e.g. Schuldt & Schwartz, 2010; Nadricka et al, 2020). Possibly, this effect is caused by the finding that the organic and inorganic typeface was not perceived as intended. Results of this study show that participants did not perceived a difference between the organic and inorganic typeface regarding the organic perception, which measured to what extent the product was perceived as organic, pure and natural. Hence, this could have affected the results and therefore, led to this contradicting finding.

Furthermore, the influence of illustrations and typeface on the perceived healthiness was examined. Although literature from Lee et al. (2013) and Nadricka et al. (2020) show that an organic label can increase the perceived healthiness of food products, no similar effect was found for the organic illustrations and organic typeface. It could be the case that the green colour of the smoothie package used in the study has affected this outcome. According to Schuldt et al. (2013) and Riley et al. (2015) a green colour on a package increases the perceived healthiness of a product. In general, the smoothie was probably already perceived as healthy due to the green colour, whereby the effect of the illustrations and typeface on the label was minimized.

The effect of typeface on the taste expectation was also investigated in this study. While Velasco et al. (2018) and de Sousa et al. (2020) show that different tastes are associated with round and angular typefaces, in this study no difference was found between the inorganic and organic typeface for the taste expectation. This could be explained by the category of the product used in this study. Wang et al. (2020) show that the effect of a round typeface was only found when hedonic products were used. A smoothie can be seen as an healthy and utilitarian product, which consequently, could indicate that the typeface did not affect the taste expectation.

Finally, a congruency effect between illustrations and typeface was expected. Van Rompay and Pruyn (2011) and Li et al. (2020) showed that there can be a congruency effect between shape and typeface. However, a similar effect was not found in this study. This could be explained by results of the study of Li et al. (2020), who noted that a congruency effect between the shape and the typeface was only observed for hedonic food products, and not for the utilitarian products. Possibly, a congruency effect would have been found when a luxury product was used, rather than the healthy smoothie.

Moreover, this result could also have been caused by the fact that the organic illustrations and organic typeface were not perceived as intended. No difference was found between organic and inorganic cues regarding the organic perception. Hence, this could have caused that the proposed congruent combinations (organic illustrations and organic typeface, inorganic illustrations and inorganic typeface) were not perceived by the participants as that they connoted the same meaning (organic or inorganic).

6.2 Implications

This study adds value to the existing literature in packaging design. Furthermore, food producers and marketers can benefit from this research. Although results show that participants did not experience any differences between the organic and inorganic visual cues regarding to what extent they perceived the product as organic, this research can still give a contribution and can be anticipated on in practice. The study showed that the perceived taste liking and the purchase intention are higher for a product package with organic illustrations. Hence, the addition of organic illustrations on food packaging can result in an increase in products purchased, and people are more likely to expect that the product is tasteful. This might especially be useful for healthy products, where the intuition of Raghunathan et al. (2006) is still applicable for certain groups of the society (like low educated people).

Furthermore, an inorganic typeface could be adjusted on the packages or promotion material of healthy products to communicate that the product is healthy. Marketeers could use this finding to increase the purchase intention of people who are not directly interested in a healthy lifestyle and do not have a lot of knowledge about eating healthy either. In this way, this group could make better (unconscious) healthy food choices in the supermarkets.

Nevertheless, it should be taken into account that the addition of these visual cues on packaging can also be misleading. Packaging elements can create specific associations and can convey certain messages (Schifferstein et al., 2013). It can lead to greenwashing, which is “a practice followed by organisations in which unsubstantiated or misleading claims are made of the environmental and social attributes of a product, service or the company as a brand” (Aggarwal & Kadyan, 2014, p.22). Companies can apply organic elements on their food products to create certain associations, like the organic origin or health, which the products are in reality not.

More research is needed to know what the effect of these kind of visuals on packaging are. Still, policy measures can be taken to prevent that consumers are misled by the packaging. It was not the intention of the author to make it possible to pretend that products are organic or healthy, when they are in reality not. It is therefore hoped, and advised, that the results of this study will only be applied for the good cause, like making more clear which products are healthy.

6.3 Limitations and future research

This research includes some limitations. First, due to the COVID-19 situation, the experiment could not take place in real life and was done via an online questionnaire. People had to evaluate the smoothie via a screen, which made the packages look less realistic, which possibly affected the results. Furthermore, due to the fact that the experiment was online,

participants were not able to really taste the product, and only the taste expectation could be tested. Research of Becker et al. (2011) and Ngo et al. (2013) showed, for instance, that when people were able to taste the products, a difference was found between round and angular shapes. Therefore, it is recommended that a similar future study takes place in a real setting, whereby participants are able to touch and taste the product.

Secondly, the type of product used in this study could have affected the outcome of the research. The participants of this study saw only one smoothie package and did not have any comparable alternatives. As a result, it is possible that the answers of the participants are biased by the product choice. Literature shows that the effect of packaging elements can differ between hedonic and utilitarian products (e.g. Huang & Lu, 2016; Wang et al., 2020). Future research could therefore choose to expose people to more and different food products, both healthy and unhealthy and both hedonic and utilitarian, to test if different products show different effects.

Thirdly, the study took place in the Netherlands and only Dutch people participated in the experiment. Therefore, the findings cannot be generalized to other cultures. Moreover, the distribution of the participants of this study were not completely representative for the Dutch population. The participants of the study were mostly women (76.4%) and half of the participants were students (50.5%). This could have affected the results of the research. Therefore it is recommended for future research to create a more diverse group of participants, including low educated people. These people might be, for instance, more affected by the “unhealthy=tasty” heuristic of Raghunathan et al. (2006).

Finally, the results of this study did not show that participants perceived the manipulations as intended. The organic perception measured to what extent participants perceived the smoothie as organic, pure, and natural. Although the stimuli for the main study were selected based on the pre-test’s results, no difference was found in the main study. In the pre-test the participants were only exposed to the illustrations and typeface. The stimuli were

not displayed on a product package. It is therefore likely that other visual cues of the smoothie package played a bigger role when participants evaluated the smoothie. For instance, Chrysochou and Festila (2019) found that for organic products mainly green and white colours were applied, and the green colour used for the smoothie package could have created a higher organic perception already. Moreover, the characteristics of the product, in this study a smoothie, could also have affected the organic perception. People might perceive a smoothie in general as organic (more than other food products).

Furthermore, the finding that there was no difference for the organic perception, affected the overall result and could have resulted in the finding that people with a low GHI, perceived the smoothie with an inorganic typeface as healthier, which contradicts the existing literature. Due to the limited time, it was not possible to research the exact reason for this finding, and future research could help to explain the exact reason of this finding. Moreover, to prevent this in the future, it could be decided to add a follow-up interview or survey after the pre-test, to investigate why participants perceived certain visuals as organic or inorganic. Hence, the fact that the applied organic visual cues were not consciously observed by the participants should be taken into account when applying the results of this study.

6.4 Conclusion

This study investigated the effect of implicit organic cues on packaging on the consumer responses. By the use of 2 (organic versus inorganic illustrations) x 2 (organic versus inorganic typeface) x 2 (high versus low general health interest) experimental design, the effect of illustrations and typeface was tested, to answer the central research question: *“To what extent do organic illustrations and an organic typeface affect the perceived healthiness, expected nutritional value, taste expectation and the purchase intention of consumers?”*

Prior research already showed that explicit organic visual cues (e.g. an organic label) on packaging can affect the consumer responses, like the perceived healthiness. It was expected that implicit organic cues would create the same effect. Results show that the perceived taste liking and purchase intention were positively affected by the organic illustrations. Moreover, contradicting to the existing literature, it was found that people with a low GHI perceived the smoothies with an inorganic typeface as healthier. Still, more research is needed to investigate the effect of organic cues on product packaging. Even though not all expected effects were found, this study can contribute to the research field of packaging design and the increase of the purchase of healthy products.

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Appendices

Appendix 1	Questionnaire pre-test
Appendix 2	Overview of visuals pre-test
Appendix 3	Tables pre-test
Appendix 4	Questionnaire main study
Appendix 5	Additional tables

Appendix 1 – Questionnaire pre-test

Beste deelnemer,

Bedankt voor uw deelname aan dit korte onderzoek als onderdeel van mijn masterscriptie aan de Universiteit Twente. Het doel van dit onderzoek is om te bepalen hoe verschillende illustraties en lettertypes worden beoordeeld. Binnen dit onderzoek is uw mening belangrijk, er is dus geen goed of fout. Denk niet te lang na over de vragen, het gaat om de eerste indruk.

Het invullen zal ongeveer 5 minuten duren. De gegevens worden anoniem verwerkt en worden enkel gebruikt voor dit onderzoek. U kunt te allen tijde stoppen met het invullen van de vragenlijst.

Met vriendelijke groet,
Marlie Morsink Vollenbroek

toestemming tot deelname

Ik ga hierbij akkoord met de deelname aan dit onderzoek.

- Ja (1)
- Nee (2)

Skip To: End of Survey If toestemming tot deelname Ik ga hierbij akkoord met de deelname aan dit onderzoek. = Nee

Page Break

Op de volgende pagina krijgt u verschillende afbeeldingen te zien waarop illustraties zijn weergegeven. Bekijk deze goed en beantwoord vervolgens de bijbehorende stellingen.

Q1-Q10 Participant is exposed randomly to ten different illustrations. and has to answer, for each illustrations individually, to what extent he/she agrees on the following statements.

Bekijk bovenstaande afbeelding met de illustraties goed. Beantwoord vervolgens onderstaande stellingen.

	Helemaal mee oneens (1)	oneens (2)	53eutral (3)	eens (4)	Helemaal mee eens (5)
De illustraties ogen organisch (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De illustraties ogen biologisch (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De illustraties ogen natuurlijk (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De illustraties ogen aantrekkelijk (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11-20 Participant is randomly exposed to ten different typefaces. And has to answer, for each typeface individually, to what extent he/she agrees on the following statements.

Bekijk bovenstaande lettertype goed. Beantwoord vervolgens onderstaande stellingen.











	Helemaal mee oneens (1)	oneens (2)	53eutral (3)	eens (4)	Helemaal mee eens (5)
Het lettertype oogt organisch (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het lettertype oogt biologisch (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het lettertype oogt natuurlijk (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het lettertype oogt aantrekkelijk (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>











Q21 Wat is uw geslacht?

- Man (1)
 - Vrouw (2)
 - Anders (3)
-

Q22 Wat is uw leeftijd?

Appendix 2 – Overview of visuals pre-test

Illustration 1	Illustration 2	Illustration 3	Illustration 4	Illustration 5
				
Illustration 6	Illustration 7	Illustration 8	Illustration 9	Illustration 10
				

Typeface 1	Typeface 2	Typeface 3	Typeface 4	Typeface 5
				
Typeface 6	Typeface 7	Typeface 8	Typeface 9	Typeface 10
				

Appendix 3 – Tables of the pre-test

Appendix table 1 means and standard deviations illustrations

	N	Organic (organisch)		Organic (biologisch)		Naturalness		Attractiveness	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Illustrations 1	27	3.67	1.11	4.00	1.00	3.96	1.19	3.96	1.02
Illustrations 2	27	2.85	1.20	2.59	1.05	2.81	1.18	3.04	1.13
Illustrations 3	27	3.63	1.15	3.56	1.01	3.70	0.87	3.85	1.06
Illustrations 4	27	3.78	1.09	4.07	0.87	3.89	1.01	3.89	1.05
Illustrations 5	27	3.67	1.14	3.78	0.97	4.11	0.70	4.00	0.83
Illustrations 6	27	2.07	1.04	1.70	0.78	1.96	0.90	2.74	0.98
Illustrations 7	27	2.19	1.18	1.78	0.80	1.78	0.70	2.37	1.04
Illustrations 8	27	1.96	1.02	1.63	0.79	2.07	1.07	2.70	1.23
Illustrations 9	27	2.19	0.92	1.78	0.80	2.04	1.02	2.48	1.12
Illustrations 10	27	2.33	1.11	1.78	0.85	1.96	0.81	2.70	0.82

All scales are measured on a 5-point Likert scale (1=totally disagree / 5=totally agree)

Appendix table 2 means and standard deviations of the typefaces

	N	Organic (organisch)		Organic (biologisch)		Naturalness		Attractiveness	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Typeface 1	27	3.63	1.08	3.11	1.09	3.70	0.91	3.44	1.15
Typeface 2	27	2.63	1.11	2.59	1.22	3.04	1.22	3.37	1.15
Typeface 3	27	3.48	1.16	3.52	1.05	3.89	0.80	3.93	0.78
Typeface 4	27	3.19	1.30	2.93	1.14	3.37	1.15	3.15	1.13
Typeface 5	27	3.26	1.06	2.93	1.14	3.26	1.06	2.81	1.14
Typeface 6	27	2.00	0.83	1.89	0.85	2.41	1.12	2.74	1.13
Typeface 7	27	2.04	0.90	2.00	0.83	2.11	1.01	2.81	1.11
Typeface 8	27	1.85	0.82	1.74	0.76	1.81	0.88	2.56	1.09
Typeface 9	27	2.04	1.09	1.81	0.79	1.96	0.90	2.41	1.05
Typeface 10	27	1.81	0.68	1.78	0.58	2.22	1.01	3.11	1.31

All scales are measured on a 5-point Likert scale (1=totally disagree / 5=totally agree)

Appendix 4 – Questionnaire main study

Welkom!

In het kader van mijn master Communication Studies aan de Universiteit van Twente doe ik onderzoek naar productverpakkingen. U zal straks een afbeelding zien van een smoothie. Kijk hier goed naar. Vervolgens vult u een korte vragenlijst in naar eigen mening. Denk er niet te lang over na. Er zijn geen goede of foute antwoorden.

De vragenlijst duurt 5 tot 10 minuten. Alle gegevens worden anoniem verwerkt en alleen voor dit onderzoek gebruikt. U kunt ten allen tijde stoppen met de vragenlijst, zonder hiervoor een reden te geven.

Alvast bedankt voor uw deelname!

Marlie Morsink Vollenbroek
m.a.morsinkvollenbroek@student.utwente.nl

Ik ga hierbij akkoord met deelname aan dit onderzoek.

Ja (1)

Nee (2)

Skip To: End of Survey If Ik ga hierbij akkoord met deelname aan dit onderzoek. = Nee

Page Break

Op de volgende pagina ziet u een afbeelding van een smoothie. Bekijk de verpakking goed. Ga dan verder naar de vragen.

One of the smoothies is shown

Beantwoord onderstaande stellingen over de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Ik verwacht dat de smoothie gezond is (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie goed is voor mij (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt gezond (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt laag in calorieën (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt gezonder dan andere vergelijkbare smoothies (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Beantwoord onderstaande stellingen over de smaakverwachting van de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Ik verwacht dat de smoothie lekker is (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie smaakvol is (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie zal tegenvallen in smaak (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie beter smaakt dan andere vergelijkbare smoothies (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Beantwoord onderstaande stellingen over de smaakverwachting van de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Ik verwacht dat de smoothie natuurlijk smaakt (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie kunstmatig smaakt (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie puur smaakt (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie chemisch smaakt (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie zoet smaakt (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik verwacht dat de smoothie zuur smaakt (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Beantwoord onderstaande stellingen over de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Ik denk dat de smoothie veel vezels bevat (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel E-nummers bevat (stoffen die worden toegevoegd om eigenschappen van voedingsmiddelen te verbeteren, zoals kleurstoffen en smaakversterkers) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel vitamines bevat (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel vet bevat (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel antioxidanten bevat (verzamelnaam voor stoffen zoals de vitamines E en C) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel mineralen bevat (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik denk dat de smoothie veel toegevoegde suikers bevat (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Beantwoord onderstaande stellingen over de verpakking van de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
De smoothie lijkt biologisch (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt organisch (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt natuurlijk (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
De smoothie lijkt meer biologisch dan andere vergelijkbare smoothies (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Beantwoord onderstaande stellingen over de smoothie.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Ik zou deze smoothie willen proberen (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik zou overwegen om deze smoothie te kopen (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik zou deze smoothie eerder kopen dan andere vergelijkbare smoothies (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Hoeveel verwacht u gemiddeld voor deze smoothie in supermarkten te moeten betalen?

€

Gemiddeld gezien, hoe vaak drinkt u een smoothie?

- Nooit (1)
 - Zelden (2)
 - Maandelijks (3)
 - Wekelijks (4)
 - Dagelijks (5)
-

Hieronder ziet u tien verschillende tussendoortjes. Welk van deze tussendoortjes zou u samen eten met de smoothie?

- Notenreep (1)
 - Chips (2)
 - Handje ongezoute noten (3)
 - Roze koek (4)
 - Snoeptomaatjes (5)
 - Rozijnen (6)
 - Worteltjes (7)
 - Melkchocolade (8)
 - Winegums (9)
 - Chocolate chip cookie (10)
-

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Beantwoord onderstaande stellingen over uw voedingskeuzes.

	Helemaal mee oneens (1)	Oneens (2)	Enigzins oneens (3)	Neutraal (4)	Enigzins eens (5)	Eens (6)	Helemaal mee eens (7)
Hoe gezond een product is, heeft weinig invloed op mijn voedingskeuzes (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik ben gefocust op hoe gezond mijn eten is (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik eet wat ik wil en maak mij geen zorgen om de gezondheid ervan (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik eet meestal gezond en gebalanceerd (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het maakt voor mij niet uit hoe gezond een snack is (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vind het belangrijk dat wat ik eet laag in vetten is (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Het is voor mij belangrijk dat mijn dagelijkse voeding veel vitamines en mineralen bevat (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ik vermijd bepaald eten, omdat het wellicht mijn cholesterol verhoogt (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Welk van de onderstaande smoothies zag u aan het begin van de vragenlijst?

- (1)
- (2)
- (4)
- (3)

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Wat is uw geslacht?

- Vrouw (1)
- Man (2)
- Anders, namelijk ... (3) _____
- Zeg ik liever niet (4)

Wat is uw leeftijd?

Wat is uw hoogst behaalde opleidingsniveau?

- Basisschool (1)
 - VMBO / MAVO / MULO / LTS / huishoudschool (2)
 - HAVO (3)
 - VWO (4)
 - MBO (5)
 - HBO (6)
 - WO (7)
-

Wat is uw huidige werksituatie?

- Student (1)
 - Parttime dienstverband (2)
 - Fulltime dienstverband (3)
 - Zelfstandig (4)
 - Werkloos (5)
 - Gepensioneerd (6)
 - Anders, namelijk ... (7) _____
-

Wat is uw huidige woonsituatie?

- Inwonend (bij ouders) (1)
 - Ik woon met huisgenoten / studentenhuis (2)
 - Ik woon alleen (3)
 - Ik woon met mijn partner (4)
 - Ik woon met mijn partner en inwonende kinderen (5)
 - Ik woon met inwonende kinderen (6)
 - Anders, namelijk ... (7) _____
-

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Dit is het einde van de vragenlijst. Bedankt voor uw deelname!

Het doel van dit onderzoek is om te testen of de toevoeging van biologische elementen op een verpakking invloed heeft op de productverwachting.

Gelieve de inhoud van dit onderzoek niet met iemand die (mogelijk) mee doet te bespreken, om de validiteit van dit onderzoek te garanderen. Mocht u nog vragen en/of opmerkingen hebben, dan kunt u contact opnemen door te mailen naar: m.a.morsinkvollenbroek@student.utwente.nl

End of Block: Question Block

Appendix 5 – Additional tables

Appendix table 3. Demographical characteristics participants

Demographic characteristics		Frequency	Percent
Gender	Male	50	23.8
	Female	162	76.4
Education	Primary school	0	0
	VMBO	9	4.2
	HAVO	12	5.7
	VWO	12	5.7
	MBO	23	10.8
	HBO	75	35.4
	WO	80	37.7
	Unknown	1	0.5
Working situation	Student	107	50.5
	Part-time	31	14.6
	Full-time	55	25.9
	Self-employed	8	3.8
	Unemployed	1	0.5
	Retired	4	1.9
	Other	5	2.4
	Unknown	1	0.5
Living situation	With parents	70	33
	With roommates / student dorm	32	15.1
	Alone	16	7.5
	With partner	62	29.2
	With partner and children	27	12.7
	With children	4	1.9
	other	1	0.5

Appendix table 4. Means and standard deviations conditions

dependent variable	Organic illustrations x Organic typeface	Organic illustrations x Inorganic typeface	Inorganic illustrations x Organic typeface	Inorganic illustrations x Inorganic typeface
Perceived healthiness	M= 5.10 SD= 0.88	M= 5.15 SD= 0.87	M= 5.19 SD= 0.95	M= 5.29 SD= 0.85
Expected nutritional value	M= 4.72 SD= 0.75	M= 4.90 SD= 0.75	M= 4.71 SD= 0.96	M= 4.79 SD= 0.81
Taste liking	M= 4.72 SD= 1.09	M= 4.79 SD= 1.05	M= 4.48 SD= 1.10	M= 4.34 SD= 1.13
Taste naturalness	M= 5.01 SD= 1.06	M= 5.18 SD= 1.11	M= 4.86 SD= 1.14	M= 5.00 SD= 1.03
Purchase intention	M= 4.46 SD= 1.49	M= 4.46 SD= 1.26	M= 3.94 SD= 1.53	M= 3.97 SD= 1.34
Organic perception	M=4.59 SD=1.11	M=4.62 SD=1.22	M= 4.57 SD=1.28	M=4.14 SD=1.36