

# UNIVERSITY OF TWENTE.

## **Packaged versus unpackaged food: The perceived healthfulness and other consumer responses**



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## Abstract

Unpackaged food is a solution for the growing environmental concerns nowadays. However, since a product package itself communicates a lot of things, the question raised what product benefits can still be communicated when there is no package. Therefore, this study examined to what extent unpackaged food compared to two different types of packages (plastic and paper) have an influence on consumer responses (perceived healthfulness, perceived freshness, product liking and purchase intention). Besides, the influence of the presence of a health label is examined. Consumers' general health interest and environmental interest were included as moderating variables.

The study utilized a 3 (package material associated with healthiness vs package material associated with unhealthiness vs unpackaged food) by 2 (health label vs no health label) between subjects design. The study is executed for two different products: a healthy product (nuts) and an unhealthy product (jelly beans). 150 Dutch adults participated in the experimental study, which was conducted by means of an online questionnaire.

The results of the study showed that unpacked foods and paper packages have positive effects on perceived healthfulness, perceived freshness and product liking, as opposed to plastic packages. This study also proved that unpackaged foods are as good as packaged foods in terms of communicating product benefits. However, when it comes to behavioral intentions, more persuasion is needed to stimulate consumers to choose unpackaged food. The presence of a health label did not affect consumer responses. In addition, no evidence was found for interaction effects of the moderating variables.

**Keywords:** *perceived healthfulness, unpackaged food, package material, health label, purchase intention, environmental concerns*

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# 1 Introduction

Packaging disposal is a growing concern of governmental agencies, environmental organizations as well as consumers (Koutsimanis et al., 2012). Society increasingly wants to get rid of product packages. Therefore, unpackaged food products are an upcoming trend. Nowadays, several stores appear that sell unpackaged products. These stores provide a wide range of containers with all kinds of foods, such as pasta and nuts, but also liquid food such as olive oil. Consumers can bring their own containers or can pick a recycled bag from the store, and pay based on the weight of the products. However, not only these special stores make use of such containers. More and more supermarkets take such containers in use. For example, several supermarkets already provide the possibility to scoop your own peanuts. Selling unpackaged products has several advantages: it is environmentally sustainable and it reduces waste by allowing consumers to purchase exactly how much they need. However, unpackaged food raises questions. For instance, what about health communication, that is now done on the package? How will consumers know about the benefits of a product when there is no package?

An increasing amount of consumers are concerned with healthy eating nowadays. According to Lähteenmäki (2013) consumers use health as an important quality criterion for product choice. However, while shopping for food, consumers pay little attention to health labels (Grunert et al., 2010). Instead, they evaluate the products based on sensory properties of food packages. All features that are present in the design of a food package, like color, material, shape, font and labeling communicate certain symbolic meanings like for example healthfulness (Hekkert, 2006). Therefore it may be assumed that packaging elements can influence or even shape consumers' perceived healthfulness of the product, which in turn may lead to purchase intention. Since a product package itself communicates a lot of things, which symbolic meanings can still be communicated when there is no package at all?

Communication without a product package might occur due to a 'health halo' effect. A halo effect occurs when consumers assume that because a product is good or bad on one product characteristic it is also good or bad on another product characteristic. For example, people might assume that when a product (package) is good for the environment, then it is also good for their health. In addition, the transparency and natural appearance of food containers might be associated with freshness, and thus with healthfulness (Zhang, Lusk, Miroso & Oey, 2016).

Therefore, this study aims at examining to what extent unpackaged food compared to two different types of packages (plastic and paper) have an influence on consumer responses (perceived healthfulness, perceived freshness, product liking and purchase intention). Besides, the influence of the presence of health labels will be examined. The study will be executed for two different products: a healthy product (nuts) and an unhealthy product (jelly beans). The following research questions are formulated:

*R1: To what extent does unpackaged food compared to two different types of packages influence consumer responses?*

*R2: To what extent does the presence of a health label influence consumer responses towards a food product?*

## **2 Theoretical framework**

In this chapter, the most important theoretical concepts will be discussed. First, healthy food choices in general and the effect of health benefits on purchase intention are explained. Furthermore, the factors package material and health labels are examined. Finally, general health interest and environmental concerns are discussed.

### **2.1 Healthy food choices**

People are faced with food choices every day. These food choices are influenced by several factors; consumers consider various sensory and non-sensory factors when making their everyday food choices (Jaeger, 2006). According to Cohen and Babey (2012) 2/3 of the purchase decisions are made in store. The decisions are based on two factors: the “attention that a product display attracts”, and the “inferences a consumer makes about the quality of the product itself”.

When consumers have to make their food choices in store, vision is the most important factor. The first contact between the consumer and the food is when they see the food package (Shepherd, Sparks, & Raats, 1991). Packaging is therefore an important aspect of a product. According to Crilly, Moultrie, and Clarkson (2004) and Fenko, Schifferstein and Hekkert (2010) consumers make their food choices mainly based on the packages’ appearance. Consumers draw important cues about the product from the package information and design (Moskowitz, Reisner, Lawlor, & Deliza, 2009), which in turn induce sensory and hedonic expectations and perceptions of the product (Chiou, Yeh, & Chang, 2009; Shepherd, Sparks, & Raats, 1991; Young, 2004).

Based on packaging features such as material, color, shape and health labels, consumers draw conclusions about its content even though the product attributes may be unrelated to the package’s appearance (Becker, Van Rompay, Schifferstein & Galetzka, 2011). All features that are present in the design of a food package communicate certain symbolic meanings, like for example healthfulness (Hekkert, 2006). Therefore it may be assumed that packaging elements can influence or even shape consumers’ perceived healthfulness of the product.

### **2.2 Health halo effect**

People make inferences when evaluating food products (Peloza, Ye & Montford, 2015). They often assume that if a product is good on one aspect, it is also good on another aspect – even though this is not the case. This is called a “health halo” effect. For example, people might assume that when a product (package) is good for the environment, then it is also good for their health. The Cornell University Food & Brand Lab discovered that consumers perceive organic labeled products as having fewer calories and better taste than non-organic products. In addition, a study of Lee et al. (2013) found that cookies labeled as ‘organic’ were perceived as more nutritious than cookies labeled as ‘regular’.

It is known that consumers tend to perceive organic foods as healthier than conventional products (Magnusson et al., 2003). Concern for human health and environmental considerations are the primary reasons for consumers to buy organic food; they consider it as insurance and/or investment in health (Yiridoe, Bonti-Ankomah & Martin, 2005; Hack, 1993; Schifferstein and Oude-Ophuis, 1998; Grunert and Juhl, 1995; Davies et al., 1995). Consumers’ preference for organic food might be explained by the fact that they interpret naturalness per se in products as being good for them (Rozin et al., 2004). Naturalness is a valued attribute in food products and closely linked with perceived healthiness (Margetts et al., 1997). Thus for consumers, naturalness

might be one piece of information they use when assessing the products' potential benefit for them – e.g. the perceived healthfulness. Also here a health halo effect might occur. When a food product is packaged with material associated with naturalness, like cardboard paper, these packages might give the assumption that the product is also natural, and thus healthful.

### **2.3 Health perception and purchase intention**

Health is 'the most significant trend and innovation driver in the global food and drinks market' (Meziane, 2007). According to Lähteenmäki (2013) consumers use health as an important quality criterion for product choice. The research of Magnusson (2003) shows that perceived health benefits are better predictors of the purchase of foods than perceived environmental benefits. For many consumers healthfulness is an important criterion for purchase and a parameter of quality (Magnusson et al., 2001; Wandel and Bugge, 1997). However, while shopping for food, consumers pay little attention to health labels (Grunert et al., 2010). Instead, they evaluate the products based on sensory properties of food packages, such as colors, materials, and health labels.

It is stated earlier that the features of a product package can shape consumers' attitude towards the product and their decision making (Becker, Van Rompay, Schifferstein & Galetzka, 2011). For example, a study from Kozup, Creyer and Burton (2003) showed that health claims on a package generate more favorable consumer attitudes toward the product, nutrition attitudes and even purchase intentions. However, other authors have noted that even if consumers know about health benefits, that does not imply that the food will be eaten (Aikman, Min & Graham, 2006). Research from Verbeke (2005) proves that while information about health benefits can influence food acceptance, the actual behavior depends on the knowledge and beliefs of the consumer.

Limited research has been conducted that links perceived healthfulness to purchase intention and the findings so far divers. Therefore further research about the effects of health perception on purchase intention is needed. The following hypothesis is formulated:

***H1: A consumer's health perception of a product positively influences its purchase intention.***

### **2.4 Material of the product package**

As discussed before, the experience and evaluation of a product can be affected by the sensory features of a package (Schifferstein, 2009). The material of a package is one attribute which can influence consumers' choice (Becker et al., 2011). The study of Rokka and Uusitalo (2008) shows that consumers prefer environment-friendly packages (e.g. recyclable carton package) and resealable packages. Therefore, it can be argued that environment-friendly packaging and labeling should be considered in product development and marketing.

The material of a product package can also affect consumers' perceptions about the product. A study of Lith (2015) for example proved that chocolate with package material associated with healthiness (cardboard paper) was perceived more healthy than chocolate with package material associated with unhealthiness (plastic). In addition, a study of Brown (1958) proved that the perceived freshness of bread increased when it is wrapped in paper with a crispy sound. According to Zhang, Lusk, Miroso and Oey (2016) freshness is related to an overall notion of health and natural. Therefore it can be assumed that freshness is linked with natural ingredients and health. Package material can thus affect consumers' perceived freshness and healthfulness of a product.

Furthermore, the material of a package also influences the attitude towards a product and the way a food product is experienced (Schifferstein, 2009). A study from Krishna and Morrin (2008) showed that water in a flimsy cup was perceived to be of lower quality, as opposed to water in a firm cup. Thus, package appearance influences product evaluations (Becker, Van Rompay, Schifferstein & Galetzka, 2011). The Theory of Planned Behavior states that the attitude towards a subject is a determinant of behavioral intention (Ajzen, 1985). Therefore, in this study consumers' attitude towards a product might influence their purchase intention. Research of Rokka and Uusitalo (2008) proved that product packaging is an important product attribute in the consumer choice. In their study most consumers valued environment-friendly packaging as the most important criteria in their product choices, compared to the other product characteristics price, package resealability and brand. They preferred the environment-friendly package (carton paper) more than the plastic packages when making their product choice.

There are relatively few studies about package material influencing health perception, consumer attitudes and purchase intention. Therefore further research is needed. Based on the associations mentioned above, the following hypotheses are formulated:

**H2a :** *A product package with material associated with healthiness (cardboard paper) is perceived as more healthful than a product package with material associated with unhealthiness (plastic).*

**H2b :** *A product package with material associated with healthiness (cardboard paper) is perceived as more fresh than a product package with material associated with unhealthiness (plastic).*

**H2c :** *A product package with material associated with healthiness (cardboard paper) has higher product liking than a product package with material associated with unhealthiness (plastic).*

**H2d :** *Purchase intention is higher for a product package with material associated with healthiness (cardboard paper) compared to a product package with material associated with unhealthiness (plastic).*

Although it is stated that package material can affect consumer responses, hardly any studies have been done that explain the influence of unpackaged products on consumer responses. This means that this topic must be approached with further research and implies the novelty and importance of this study. In this study, unpackaged products will be displayed as a container of the material glass. The transparency of glass allows consumers to see the product. According to Sioutis (2011), consumers prefer visual contact with a food product through transparency. His study proved that visibility of the product through the package increased consumers' healthiness expectations of the product. Besides, glass is known to maintain product freshness for a long period of time. Hence, a health halo effect might occur: people might assume that because the glass maintains freshness, the product will be fresh. In addition, a study of Zhang, Lusk, Miroso and Oey (2016) showed that a glass bottle was perceived as healthier than a plastic bottle, because glass does not produce harmful compounds. Based on these studies it might be assumed that unpackaged products (i.e. the container) are perceived as healthful and fresh.

Furthermore, there is one researcher who studied consumer responses towards packaged versus unpackaged food. The study of Bailey (2015) examined whether exposure to direct food cues, as opposed to indirect cues, in advertisements influences consumer responses toward food during exposure to these advertisements. She found that individuals rated the products more favorable and that they had a higher purchase intention when the food products in advertisements are portrayed as unpackaged and ready-to-be-eaten, compared to packaged and not ready-to-be-eaten portrayed foods.

However, when it comes to purchase intention, there are more factors that play a role in consumer choices. Especially for this study where unpackaged products are included, other factors should be taken into account. For example, convenience and time pressure are two factors that might influence purchase intention. Consumers have to take a paper bag, fill it with the food of choice and then have to weigh it. That requires more effort and time than taking a packaged product from the shelf. A study from McCarty and Shrum (1994) showed that the perception of inconvenience had a greater influence on peoples actions than the perception of importance to behave ecologically conscious. Thus, even though consumers perceive an unpackaged product as more environmentally friendly or as more healthy, they still might decide to buy a packaged product instead of an unpackaged product due to inconvenience or a lack of time. Based on the associations mentioned above, the following hypotheses are formulated:

***H3a:** Unpackaged products are perceived as more healthful than packaged products.*

***H3b:** Unpackaged products are perceived as more fresh than packaged products.*

***H3c:** Unpackaged products have higher product liking than packaged products.*

***H3d:** Purchase intention is higher for packaged products compared to unpackaged products.*

## **2.5 Health labels**

The benefits of food products are often communicated through health-related information on packages (Lähteenmäki, 2013). Due to the growing interest in health and wellbeing, the food market has reacted by adopting terms such as “healthy food”, which are communicated through claims on the package. The European regulation makes a distinction between “nutritional claim” and “health claim”: a nutritional claim “states, suggests or implies that a food has particular beneficial nutritional properties due to presence, absence, increased or reduced levels of energy or of a particular nutrient or other substance”, while a health claim “states, suggests or implies that a relationship exist between a food category, a food or one of its constituents and health”.

Information on the packages is not only for marketers a way to communicate food benefits through claims, but also for consumers to infer hedonic expectations (Carrillo, Varela & Fiszman, 2012). Some studies note that because consumers generally understand the link between food and health, the use of food labels would positively influence the intention to choose healthier products. In a study that investigated how consumers respond to health claims on food products, the researchers found that consumers develop an attitude to the claim, which in turn may affect the attitude to the product bearing the claim (Wills et al., 2012). Research from Kozup, Creyer and Burton (2003) showed that health labels generated more favorable consumer attitudes toward the product, nutrition attitudes and even purchase intentions. However, according to Barreiro-Hurlé, Gracia & Magistris (2010) and Grunert and Wills (2007) the degree of interest differs between different consumers, situations and products. Health-related information on a package influences consumer behavior and can be used to stimulate people to consume healthy food (Grunert, 2002; Tudoran, Ottar-Olsen & Dopico, 2009). Furthermore, viewing products with a health label as healthier may cause a halo effect, which can discourage consumers from looking for nutrition information to review the health label (Williams, 2005). Also in the field of health labels influencing consumer perceptions research is limited and the findings so far diverse. Based on the associations mentioned above, the following hypotheses are formulated:



***H4a:** Health labels on product packages increase consumers' perceived healthfulness of the product.*

***H4b:** Health labels on product packages increase consumers' product liking.*

***H4c:** Health labels on product packages increase consumers' purchase intention.*

Although it is stated that health labels can affect consumers' perceptions of a product, no previous studies have been done about the influences of the presence of a health label on/next to unpackaged products. Therefore, this must be approached with further study. This gap implies the novelty and importance of this research. In this study, the containers will contain an information label on the front. This label includes information about the product (e.g. the product price). For this study the health label can also be placed on this information label.

To examine the influence of health labels on unpackaged products, the following hypotheses are formulated:

***H5a:** Health labels on unpackaged products increase consumers' perceived healthfulness of the product.*

***H5b:** Health labels on unpackaged products increase consumers' product liking.*

***H5c:** Health labels on unpackaged products increase consumers' purchase intention.*

## **2.6 General health interest**

General health interest (GHI) is a good predictor of food choices (Roininen & Tuorila, 1999). According to Zandstra, De Graaf and Van Staveren (2000), general health interest is related to a more healthy food consumption pattern. Their study showed that general health interest is associated with a higher consumption of vegetables and fruit, a lower intake of fat and a lower consumption of high-fat savoury snacks. A study of Vyth et al. (2010) found that there was a relationship between consumers' motives for food choice and the use of the healthy choices logo 'Ik kies bewust'. These authors stated that health-conscious consumers (consumers with a high GHI) were more likely to purchase food products with a healthy choices logo.

Since the general health interest of people could affect their product choice, general health interest is used as a moderator to examine to what extent consumers' interest in eating healthily affects their purchase intention. Roininen, Lätheenmäki, and Tuorila (1999) developed a general health interest scale to measure the importance of health and taste attributes regarding to consumer's food choice. This scale is used for this study. The following hypothesis is formulated:

***H6a:** Consumers with high general health interest have a higher purchase intention for unpackaged food compared to consumers with low general health interest.*

***H6b:** Consumers with high general health interest have a higher purchase intention for food products with health label compared to consumers with low general health interest.*

## **2.7 Environmental concerns**

Concern for the environment is linked to consumer behavior (Rokka & Uusitalo, 2008). Ecologically conscious consumers try to protect the environment in different ways, for example by recycling or checking that a package is made of recycled material (Suchard and Polonski, 1991). Regarding environmental concerns, importance and inconvenience are the two most studied attitudes in the literature. Amyx et al. (1994) defined importance as "the degree to which one expresses concern about ecological issues" and inconvenience as "the extent to which one thinks behaving in an ecologically favorable way is inconvenient". A study of Schwepker and

Cornwell (1991) proved that people who are concerned about litter, who believe there is a pollution problem, and who have a favorable attitude towards ecologically conscious living are more inclined to purchase ecologically packaged products. They also stated that environmental concerns might cause a change in attitude and purchase intentions.

However, Uusitalo (1990a) noted that although consumers do value environment-friendly products, the daily buying behavior of consumers is often inconsistent with this. She found that the relationship between attitudes and behavior is much weaker than expected. According to this researcher, a reason for the inconsistency between attitudes and behavior is that consumers have to trade off between several product attributes and might have conflicting preferences between environmental and other product characteristics (Uusitalo, 1990a). However, a study of Rokka and Uusitalo (2008) showed that the majority of consumers valued environment-friendly packaging as the most important criteria in their product choices, compared to the other product characteristics price, package resealability and brand.

Since concern for the environment is linked to consumer behavior, consumers' environmental interest is used in this study as a moderator to examine to what extent consumers' interest in environmental sustainability affects their purchase intention. The following hypothesis is formulated:

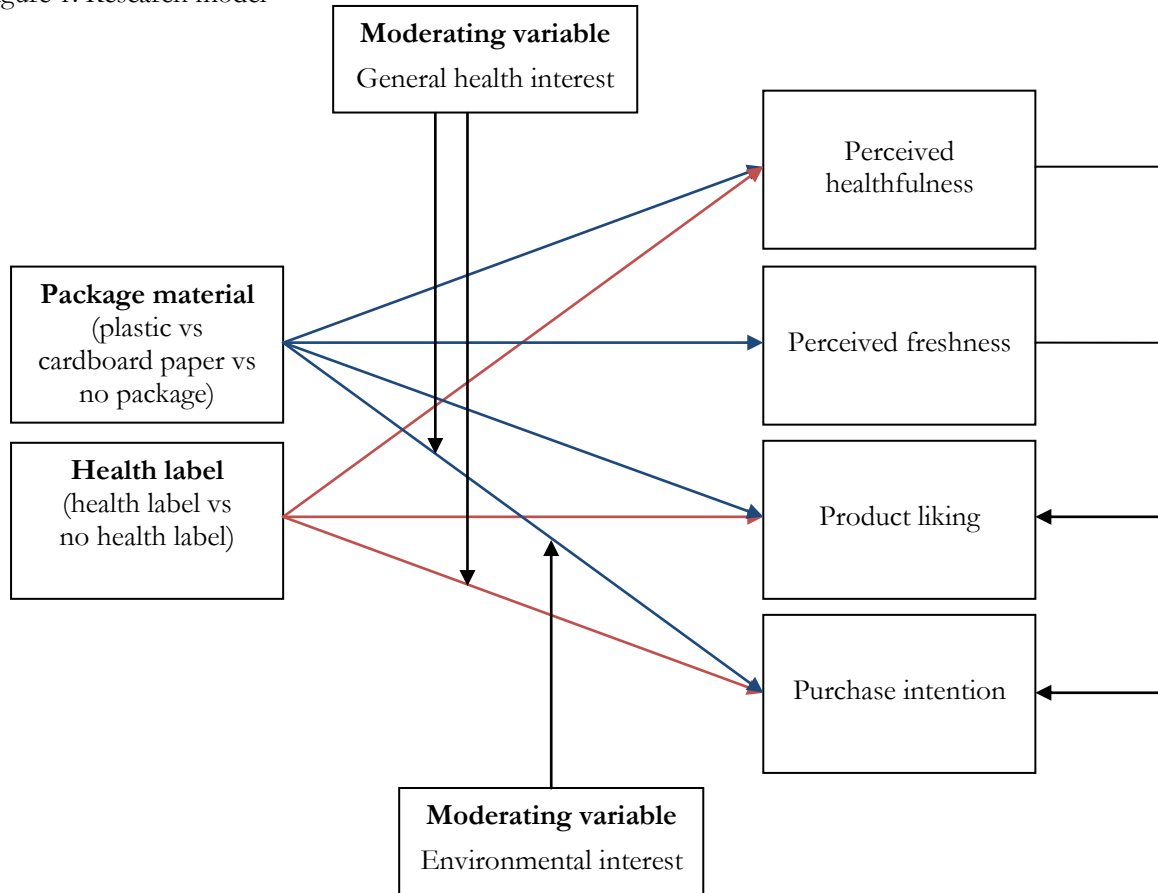
***H7:** Consumers with high environmental interest have a higher purchase intention for unpackaged food compared to consumers with low environmental interest.*

### 3 Research methodology

This chapter first elaborates on the pre-test, subsequently the main study will be explained.

#### 3.1 Research design

Figure 1. Research model



#### 3.2 Pre-test

The aim of the pre-test was to select two products for the main study: one healthy product and one unhealthy product. The pre-test examined which products are perceived as relatively healthy and relatively unhealthy.

##### 3.2.1 Stimuli material

In order to find a healthy product and an unhealthy product, seven products were rated by the participants. The products are chosen based on their possibility to be sold as unpackaged products. The products used in the pre-test were jelly beans, pasta, rice, nuts, dried fruit, chocolate and muesli (see Appendix A).

##### 3.2.2 Participants

A small sample of 8 respondents was requested to participate in the pre-test. Within this sample, 6 participants were female (75%) and 2 were male (25%). The age ranged from 22 to 53 ( $M=30.50$ ,  $SD=13.331$ ). 1 respondent studied a Lower General Secondary Education (mavo), 2 respondents studied a Secondary Vocational Education (mbo), 3 respondents studied a Higher Professional Education (hbo), and 2 respondents studied a University Education (wo).








### 3.2.3 Measures and procedure

A small questionnaire was created and sent to the participants via email. The questionnaire started with general questions about gender, age and education. Subsequently, the participants were asked to evaluate seven different products on healthfulness. Just one item was used for healthfulness with a 7-point Likert scale (1=Very unhealthy; 7=Very healthy). The questionnaire used for the pre-test is shown in Appendix A.

### 3.2.4 Analysis and results

The data was analysed in SPSS. The means for the item healthfulness were calculated. Based on the scores, the products perceived as most healthy and most unhealthy are selected for the main study. Results show that nuts were considered to be the most healthy product (M=5.63; SD=0.916) and jelly beans the most unhealthy product (M=1.50; SD=0.756). A Paired Samples T-Test shows that the difference between these extremes is significant ( $p < 0.001$ ). An overview of the results is given in Figure 2.

Figure 2. Results of the pre-test

<b>Jelly beans</b>		Mean = 1.50 SD = 0.756
<b>Pasta</b>		Mean = 4.38 SD = 0.744
<b>Rice</b>		Mean = 5.25 SD = 0.463
<b>Nuts</b>		Mean = 5.63 SD = 0.916
<b>Dried fruit</b>		Mean = 4.50 SD = 1.195
<b>Chocolate</b>		Mean = 1.88 SD = 0.991
<b>Muesli</b>		Mean = 5.00 SD = 1.309

### 3.3 Main study



After determining which product is perceived as most unhealthy and which as most healthy, the main study was performed.

#### 3.3.1 Stimuli material

As a result of the pre-test, nuts are used as a healthy product and jelly beans are used as an unhealthy product. For both products, six conditions were created: (1) Plastic package without health label; (2) plastic package with health label; (3) cardboard paper package without health label; (4) cardboard paper package with health label; (5) container (unpackaged) without health label; (6) container (unpackaged) with health label. With the use of photoshop the same nuts and jelly beans are used for every condition. Keeping this constant helped to ensure that differences were caused by the independent variable manipulations rather than incidental factors. Regarding unpackaged products, a distinction can be made between a bin from where people can scoop the food and a food container. According to Argo, Dahl and Morales (2006) consumers react negatively to products if they believe that the products have already been touched by others. Since the food in bins can be touched by people, for this study a food container was chosen. The healthy choices logo 'Ik kies bewust' was used as health label on the packages. Table 1 shows the independent variable manipulations.

Table 1. Independent variable manipulations

Nuts	Without health label	With health label
Plastic package		
Cardboard paper package		

No product package		
--------------------	--	--

<b>Jelly beans</b>	Without health label	With health label
Plastic package		
Cardboard paper package		





### 3.3.2 Participants

A total of 247 consumers participated in the research. However, 91 questionnaires were uncompleted and therefore useless for analysis. From the remaining 156 responses, 3 had to be removed due to intolerances that prohibits eating nuts or jelly beans, and 3 were removed since the participants were younger than 18. The final data set therefore consists of 150 responses.

Considerably more females (76%) than males (24%) participated in this experiment. The age ranged from 18 to 74 years, with a mean age of 33.19 (SD = 13.30). Table 2 provides an overview of the demographic characteristics of the participants in each experimental condition.

Table 2. Characteristics of participants per condition

Condition	Participants	Age	Gender		Education*	
	N	Mean (SD)	Male %	Female %	Low %	High %
No health label						
Plastic	25	29.9 (12.57)	24.0	76.0	16.0	84.0
Paper	27	31.4 (11.98)	22.2	77.8	18.5	81.5
Unpackaged	26	34.2 (14.01)	42.3	57.7	26.9	73.1
Health label						
Plastic	24	30.7 (11.49)	20.8	79.2	37.5	62.5
Paper	24	35.5 (16.15)	25.0	75.0	37.5	62.5
Unpackaged	24	37.7 (12.72)	8.3	91.7	54.2	45.8
Total	150	33.2 (13.30)	24.0	76.0	31.3	68.7

\* Low: vmbo/mavo, havo, vwo, mbo

High: hbo, wo, gepromoveerd

### 3.3.3 Measures

Perceived healthfulness, perceived freshness, product liking and purchase intention served as the dependent variables. General health interest and environmental interest served as moderators. All items were measured by a 5 point Likert scale, ranging from totally disagree to totally agree. The questionnaire was developed in English, but is translated into Dutch to ensure construct validity. Appendix B shows both questionnaires in English and Dutch.

A reliability analysis was performed to test the internal consistency of the constructs by computing their Cronbach's alpha scores. Since all the constructs have alpha scores above .70, it can be concluded that the measurements have acceptable reliability (Tavakol & Dennick, 2011). Table 3 presents an overview of the constructs, items and the reliability scores of the different constructs.

*Perceived healthfulness.* The scale measuring perceived healthfulness consisted of eleven items ( $\alpha = .84$  for nuts;  $\alpha = .77$  for jelly beans). The scale was developed by previous research from Fenko, Lotterman and Galetzka (2016). Five items were added by the researcher.

*Perceived freshness.* Only one item was used to measure the perceived freshness, namely "These nuts/jelly beans look fresh". This item was devised by the researcher.

*Product liking.* The attitude towards the product was measured using a four-item scale ( $\alpha = .73$  for nuts;  $\alpha = .77$  for jelly beans). The scale was constructed by the researcher.

*Purchase intention.* Purchase intention was assessed using a three-item scale ( $\alpha = .94$  for nuts;  $\alpha = .95$  for jelly beans). All items were measured by a 5 point Likert scale from totally agree to totally disagree. The scale was adopted from a study from Fenko, Lotterman and Galetzka (2016).

*General health interest.* The moderating variable general health interest was measured with an eight-item scale ( $\alpha = .82$ ). All items were measured by a 5 point Likert scale from totally agree to totally disagree. The scale was adopted from a study from Roinen et al. (1991).

*Environmental interest.* The scale measuring environmental interest consisted of eight items ( $\alpha = .71$ ). All items were measured by a 5 point Likert scale from totally agree to totally disagree. Items were derived from studies from Strannegård and Nyrinder (2013) and Corral-Verdugo et al. (2008).

Table 3. Constructs, items and reliability

Construct	N	Items	Cronbach's Alpha
Product liking	4	This product is appealing to me. This product looks tasty. I like this product. This product looks natural.	Nuts: $\alpha = .73$ Jelly beans: $\alpha = .77$
Perceived healthfulness	11	I expect this product to be healthy. I would consider this product as good for me. This product looks high on artificial additives. The product looks healthy. This product looks low on calories. I have an impression that this product is healthy.	Nuts: $\alpha = .84$ Jelly beans: $\alpha = .77$



		This product looks high on fat. These nuts/jelly beans look healthier than similar nut/jelly bean products. This product looks high on vitamins and minerals. This product looks high on fiber. This product looks high on added sugar.	
Perceived freshness	1	These nuts/jelly beans look fresh.	
Purchase intention	3	I would like to try this product. I would seriously consider buying this product. I would buy this product.	Nuts: $\alpha = .94$ Jelly beans: $\alpha = .95$
General health interest	8	The healthiness of food has little impact on my food choices. (R) I am very particular about the healthiness of food I eat. I eat what I like and I do not worry much about the healthiness of food. (R) It is important for me that my diet is low in fat. I always follow a healthy and balanced diet. It is important for me that my daily diet contains a lot of vitamins and minerals. The healthiness of snacks makes no difference to me. (R) I do not avoid foods, even if they may raise my cholesterol. (R)	$\alpha = .82$
Environmental interest	8	I always think about how my actions affect the environment. Humans are abusing the environment. We must reduce our consumption levels to ensure well-being of the present and future generations. People should worry more about harming the environment. Preserving nature now means ensuring the future of human beings. I sort my garbage. I try to reduce food waste. I try to avoid the use of plastic bags.	$\alpha = .71$

### 3.3.4 Procedure

The experiment was conducted by means of an online questionnaire in Qualtrics. Dutch adults were recruited via convenience sampling on social network sites Facebook, Twitter and LinkedIn. Additionally, people were asked to share the survey link within their own network. After a short introduction that explained the basic concepts of the study, the participants were randomly assigned to one out of six conditions. Each participant saw only one condition and all conditions were equally distributed. An equal distribution is important in relation to firmness of drawing conclusions. Each participant evaluated the condition for two products: the healthy product and the unhealthy product, respectively. Respondents were asked to take a look at the product and to answer the questions with the depicted product in mind. After evaluating the perceived healthfulness, perceived freshness, product liking and purchase intention, respondents had to answer questions about their general health interest and environmental interest. Finally, some socio-demographic questions were asked, such as age, gender and level of education. Afterwards they were thanked for their participation. Since two products had to be evaluated, completing the questionnaire took approximately ten minutes.

### 3.3.5 Manipulation check

A manipulation check was conducted in order to ensure that the independent variable *health label* has been effectively manipulated. The participants were asked whether they had noticed the health label on the products that were shown before. A chi-square test was used to check whether the manipulation was effective. From the 78 participants who were not exposed to the products with health label, 76 (97.4%) indicated that they had not noticed a health label and 2 (2.6%) indicated that they had noticed a health label. From the 72 participants who were exposed to the products with health label, only 43 (59.7%) indicated that they had noticed a health label and 29 (40.3%) indicated that they had not noticed a health label. Thus, in total 31 participants failed the manipulation test. However, the results of the chi-square test show a significant difference for the manipulation of health label ( $X^2 = 58.247, p < .001$ ).

In order to find out if the outcomes of the analyses were affected by the participants who failed the manipulation check, the analyses were first conducted using the dataset including these participants and thereafter the analyses were conducted using a dataset excluding these participants. Since no strong differences were found between the outcomes, the complete dataset including the participants who failed the manipulation check was used. However, it must be mentioned that not all participants perceived the manipulation correctly.

## 4 Results

The data collected in the experimental setting were analyzed statistically and the results of this study are presented in this chapter. First, a multivariate analysis of covariance (MANCOVA) was performed to indicate the effects of the package manipulation and the health label manipulation on perceived healthfulness, perceived freshness, product liking and purchase intention. Second, the effects of general health interest and environmental interest as covariates were measured. Pairwise comparisons with Bonferroni adjustments were then used to analyze the differences between the means. These results are shown per product in paragraph 4.1. Paragraph 4.2 shows the results of regression analyses and paragraph 4.3 gives an overview of the results.

### 4.1 Multivariate analysis of covariance

The main effects of the independent variables were measured using a multivariate analysis of covariance, with product package (plastic, paper and unpackaged) and health label (with and without) as the factors and *perceived healthfulness*, *perceived freshness*, *product liking* and *purchase intention* as the dependent variables. General health interest and environmental interest served as moderators. To test the moderating effects of these variables, the variables were transformed from continuous to categorical variables through a median split. Participants could either have a low or high general health interest (median = 3.50, SD = .61), and a low or high environmental interest (median = 3.63, SD = .50). Then, two different MANOVAs were conducted that included one of the two categorical variables as factors in addition to type of product package and health label. The dependent variables were *perceived healthfulness*, *perceived freshness*, *product liking* and *purchase intention*. MANCOVA was performed for both products (nuts and jelly beans) separately.

For nuts, Wilks' Lambda value showed significant results for main effects of package material ( $F(8, 278) = 7.756, p < .001, \eta^2 = .182$ ). No significant result was found for main effects of health label. In addition, a significant difference was found between people with a high and low general health interest ( $F(4, 139) = 3.157, p = .016, \eta^2 = .083$ ). No significant difference was found between people with a high and low environmental interest. Furthermore, the interaction effects were studied. However, no interaction effect was found between package material and health label.

For jelly beans, Wilks' Lambda value showed significant results for main effects of package material ( $F(8, 278) = 3.77, p < .001, \eta^2 = .098$ ). No significant result was found for main effects of health label. In addition, a marginally significant difference was found between people with a high and low general health interest ( $F(4, 139) = 2.39, p = .054, \eta^2 = .064$ ). No significant was found between people with a high and low environmental interest. Furthermore, the interaction effects were studied. However, no interaction effect was found between package material and health label.

The results of the multivariate analysis of covariance are presented in Table 4. The results will be further explained per product.

Table 4. Results of the multivariate analysis of covariance

Product	Effects		df	F	p	$\eta^2$
Nuts	Package material	Product liking	2, 142	10.02	.000	.124
		Perceived healthfulness	2, 142	20.75	.000	.226
		Perceived freshness	2, 142	8.40	.000	.106
		Purchase intention	2, 142	2.66	.074	.036
	Health label	Product liking	1, 142	3.23	.075	.022
		Perceived healthfulness	1, 142	.28	.597	.002
		Perceived freshness	1, 142	1.43	.234	.010
		Purchase intention	1, 142	.90	.345	.006
	General health interest	Product liking	1, 142	10.00	.002	.066
		Perceived healthfulness	1, 142	.47	.495	.003
		Perceived freshness	1, 142	.35	.557	.002
		Purchase intention	1, 142	9.98	.002	.066
	Environmental interest	Product liking	1, 142	2.48	.117	.017
		Perceived healthfulness	1, 142	.73	.393	.005
		Perceived freshness	1, 142	.00	.990	.000
		Purchase intention	1, 142	.36	.546	.003
Jelly beans	Package material	Product liking	2, 142	2.83	.062	.038
		Perceived healthfulness	2, 142	6.16	.003	.080
		Perceived freshness	2, 142	8.91	.000	.111
		Purchase intention	2, 142	.26	.769	.004
	Health label	Product liking	1, 142	1.73	.191	.012
		Perceived healthfulness	1, 142	.13	.719	.001
		Perceived freshness	1, 142	2.20	.140	.015
		Purchase intention	1, 142	.10	.750	.001
	General health interest	Product liking	1, 142	5.07	.026	.034
		Perceived healthfulness	1, 142	.63	.431	.004
		Perceived freshness	1, 142	.30	.583	.002
		Purchase intention	1, 142	9.37	.003	.062
	Environmental interest	Product liking	1, 142	.49	.486	.003
		Perceived healthfulness	1, 142	.15	.696	.001
		Perceived freshness	1, 142	.29	.591	.002
		Purchase intention	1, 142	.03	.860	.000

#### 4.1.1 Nuts

In this subparagraph, the results of the multivariate analysis of covariance for the healthy product will be explained per dependent variable.

##### *Perceived healthfulness*

Results showed a significant main effect of package material on perceived healthfulness ( $F(2, 142) = 20.75, p < .001, \eta^2 = .226$ ). Participants rated the product with a paper package ( $M = 3.50, SD = .044$ ) as more healthy than the product with a plastic package ( $M = 2.96, SD = .59$ ). Also the unpackaged product ( $M = 3.55, SD = .40$ ) was rated as more healthy than the product with a plastic package ( $M = 2.96, SD = .59$ ). The difference between the unpackaged product and the product with a paper package was not significant. Furthermore, the results did not show a significant main effect for health label on perceived healthfulness. In addition, no significant main effects were found for general health interest and environmental interest on perceived healthfulness. Figure 3 shows the combined means for package material.

##### *Perceived freshness*

The results showed a significant main effect of package material on perceived freshness ( $F(2, 142) = 8.40, p < .001, \eta^2 = .106$ ). Participants rated the product with a paper package ( $M = 3.49, SD = .86$ ) as more fresh than the product with a plastic package ( $M = 2.76, SD = 1.13$ ). Also the unpackaged product ( $M = 3.52, SD = 1.05$ ) was rated as more fresh than the product with a plastic package ( $M = 2.76, SD = 1.13$ ). The difference between the unpackaged product and the product with a paper package was not significant. Furthermore, the results did not show a significant main effect for health label on perceived freshness. In addition, no significant main effects were found for general health interest and environmental interest on perceived freshness. Figure 4 shows the combined means for package material.

##### *Product liking*

The results showed a significant main effect of package material on product liking ( $F(2, 142) = 10.02, p < .001, \eta^2 = .124$ ). Participants rated the paper package ( $M = 3.73, SD = .65$ ) significantly higher than the plastic package ( $M = 3.19, SD = .74$ ). Also the unpackaged product ( $M = 3.68, SD = .58$ ) was rated significantly higher than the plastic package ( $M = 3.19, SD = .74$ ). The difference between the unpackaged product and the paper package was not significant. Furthermore, the results showed a marginally significant main effect of health label on product liking ( $F(1, 142) = 3.23, p = .075, \eta^2 = .022$ ). Participants rated the product with health label ( $M = 3.63, SD = .67$ ) higher than the product without health label ( $M = 3.45, SD = .72$ ). In addition, a significant main effect was found for general health interest on product liking ( $F(1, 142) = 10.00, p = .002, \eta^2 = .066$ ). However, further analysis did not show any moderating effects of general health interest. No significant main effect was found for environmental interest on product liking. Figure 5 shows the combined means for package material.

##### *Purchase intention*

The results showed a marginally significant main effect of package material on purchase intention ( $F(2, 142) = 2.66, p = .074, \eta^2 = .036$ ). Participants rated the product with a paper package ( $M = 3.52, SD = .85$ ) a little bit higher than the product with a plastic package ( $M = 3.16, SD = 1.09$ ) and the unpackaged product ( $M = 3.19, SD = .96$ ). The results did not show a significant main

effect for health label on purchase intention. In addition, a significant main effect was found for general health interest on purchase intention ( $F(1, 142) = 9.98, p = .002, \eta^2 = .066$ ). However, further analysis did not show any moderating effects of general health interest. No significant main effect was found for environmental interest on purchase intention.

#### 4.1.2 Jelly beans

In this subparagraph, the results of the multivariate analysis of covariance for the unhealthy product will be explained per dependent variable.

##### *Perceived healthfulness*

Results showed a significant main effect of package material on perceived healthfulness ( $F(2, 142) = 6.16, p = .003, \eta^2 = .080$ ). Participants rated the product with a paper package ( $M = 1.74, SD = .47$ ) as more healthy than the product with a plastic package ( $M = 1.50, SD = .35$ ). Also the unpackaged product ( $M = 1.74, SD = .37$ ) was rated as more healthy than the product with a plastic package ( $M = 1.50, SD = .35$ ). The difference between the unpackaged product and the product with a paper package was not significant. Furthermore, the results did not show a significant main effect for health label on perceived healthfulness. In addition, no significant main effects were found for general health interest and environmental interest on perceived healthfulness. Figure 3 shows the combined means for package material.

##### *Perceived freshness*

The results showed a significant main effect of package material on perceived freshness ( $F(2, 142) = 8.91, p < .001, \eta^2 = .111$ ). Participants rated the product with a paper package ( $M = 2.78, SD = 1.01$ ) as more fresh than the product with a plastic package ( $M = 2.00, SD = 1.02$ ). Also the unpackaged product ( $M = 2.70, SD = .99$ ) was rated as more fresh than the product with a plastic package ( $M = 2.00, SD = 1.02$ ). The difference between the unpackaged product and the product with a paper package was not significant. Furthermore, the results did not show a significant main effect for health label on perceived freshness. In addition, no significant main effects were found for general health interest and environmental interest on perceived freshness. Figure 4 shows the combined means for package material.

##### *Product liking*

The results showed a marginally significant main effect of package material on product liking ( $F(2, 142) = 2.83, p = .062, \eta^2 = .038$ ). There was no main effect of health label on product liking. In addition, a significant main effect was found for general health interest on product liking ( $F(1, 142) = 5.07, p = .026, \eta^2 = .034$ ). However, further analysis did not show any moderating effects of general health interest. No significant main effect was found for environmental interest on product liking. Figure 5 shows the combined means for package material.

##### *Purchase intention*

The results did not show any significant main effects of package material on purchase intention. There was also no significant main effect of health label on purchase intention. A significant main effect was found for general health interest on purchase intention ( $F(1, 142) = 9.37, p = .003, \eta^2 = .062$ ). However, further analysis did not show any moderating effects of general health interest. No significant moderating effect was found for environmental interest on purchase intention. All means and standard deviations are presented in Table 5 in Appendix C.

Figure 3. Mean scores effect package material on perceived healthfulness

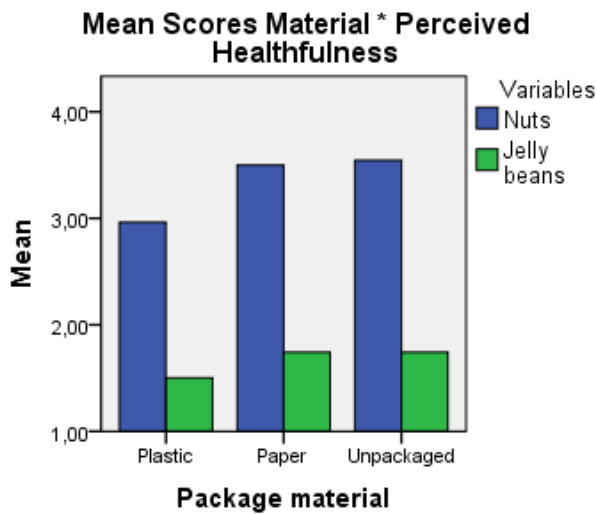


Figure 4. Mean scores effect package material on perceived freshness

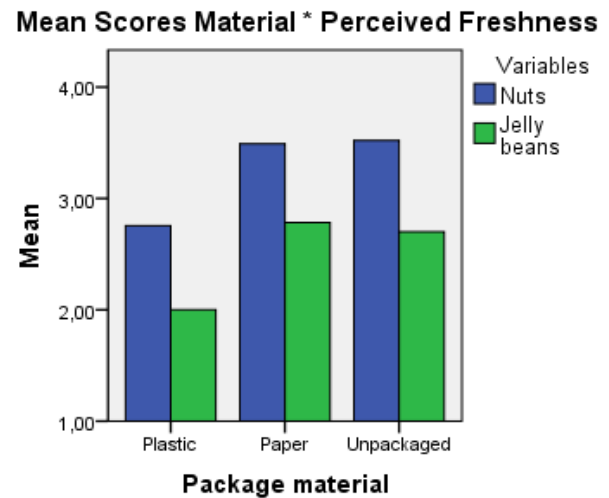
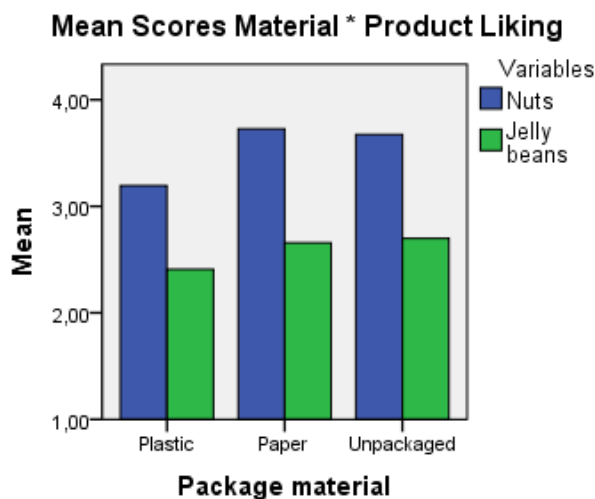


Figure 5. Mean scores effect package material on product liking



#### 4.1.3 Packaged versus unpackaged products

A multivariate analysis of covariance was also performed to indicate if there are differences between packaged and unpackaged products. Therefore the independent variable 'package material' was recoded from three values (plastic, paper and unpackaged) into two values (packaged and unpackaged).

For nuts, Wilks' Lambda value showed significant results for main effects of package material ( $F(4, 141) = 5.80, p < .001, \eta^2 = .141$ ). The results showed a significant main effect of package material on perceived healthfulness ( $F(1, 144) = 9.30, p = .003, \eta^2 = .061$ ). Participants rated the product without package ( $M = 3.55, SD = .40$ ) as more healthy than the products with package ( $M = 3.24, SD = .58$ ). Furthermore, the results showed a marginally significant main effect of package material on perceived freshness ( $F(1, 144) = 3.84, p = .052, \eta^2 = .026$ ). Participants rated

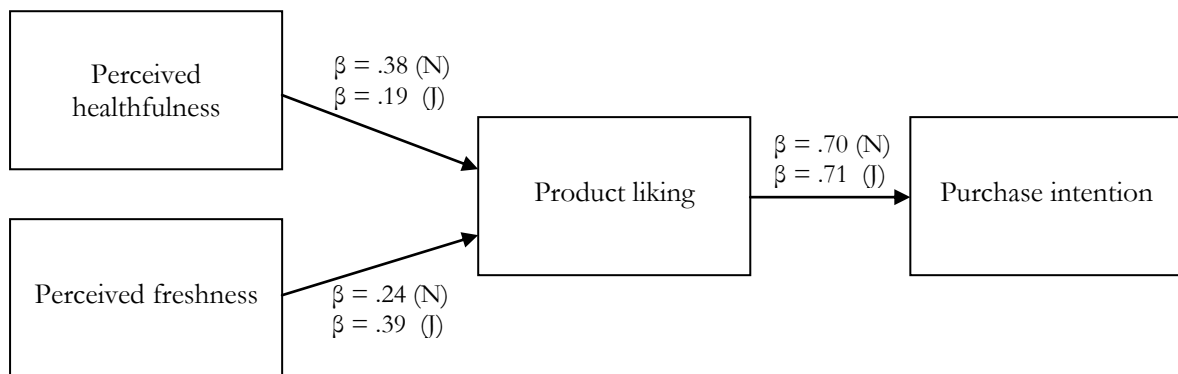
the product without package ( $M = 3.52$ ,  $SD = 1.054$ ) as more fresh than the products with package ( $M = 3.13$ ,  $SD = 1.06$ ). No significant main effects were found for package material on product liking and purchase intention.

For jelly beans, the results showed a marginally significant main effect of package material on perceived healthfulness ( $F(1, 144) = 3.29$ ,  $p = .072$ ,  $\eta^2 = .022$ ). Participants rated the product without package ( $M = 1.74$ ,  $SD = .37$ ) as more healthy than the products with package ( $M = 1.63$ ,  $SD = .43$ ). No significant main effects were found for package material on product liking, perceived freshness and purchase intention.

## 4.2 Regression analysis

A stepwise multiple regression was run to indicate how much variability in purchase intention can be explained by perceived healthfulness, perceived freshness and product liking. Only product liking was a statistically significant predictor for purchase intention, for both nuts ( $F(1, 148) = 144.94$ ,  $p < .001$  with an  $R^2$  of .495) and jelly beans ( $F(1, 148) = 147.80$ ,  $p < .001$  with an  $R^2$  of .500). Perceived healthfulness and perceived freshness did not enter into the equation. In turn, product liking is significantly explained by perceived healthfulness and perceived freshness, for both nuts ( $F(2, 147) = 32.36$ ,  $p < .001$  with an  $R^2$  of .306) and jelly beans ( $F(2, 147) = 21.37$ ,  $p < .001$  with an  $R^2$  of .225). See Figure 6 for the regression coefficients. All regression coefficients and standard errors can be found in Table 6 and Table 7 in Appendix C.

Figure 6. Significant regression coefficients



In addition, the relations between the moderators *general health interest* and *environmental interest* on one hand, and the dependent variables *perceived healthfulness*, *perceived freshness*, *product liking* and *purchase intention* on the other hand are measured with single linear regression analyses.

### *General health interest*

For nuts, a significant regression equation was found for product liking ( $F(1, 148) = 8.41$ ,  $p = .004$ ,  $R^2 = .054$ ) and for purchase intention ( $F(1, 148) = 8.41$ ,  $p = .003$ ,  $R^2 = .059$ ). Thus, general health interest is a significant predictor of product liking ( $\beta = .23$ ) and purchase intention ( $\beta = .24$ ).

For jelly beans, a significant regression equation was found for product liking ( $F(1, 148) = 5.61$ ,  $p = .019$ ,  $R^2 = .037$ ) and for purchase intention ( $F(1, 148) = 11.29$ ,  $p = .001$ ,  $R^2 = .071$ ). Thus, general health interest is a significant predictor of product liking ( $\beta = -.19$ ) and purchase intention ( $\beta = -.27$ ).



#### *Environmental interest*

Several single linear regressions were calculated to predict the dependent variables *perceived healthfulness*, *perceived freshness*, *product liking* and *purchase intention* based on environmental interest. No significant regression equations were found for the dependent variables.

### 4.3 Overview of the results

The aim of this study was to examine to what extent unpackaged food compared to two different types of packages and the presence of health labels have an influence on consumer responses (perceived healthfulness, perceived freshness, product liking and purchase intention). The results of the experimental study showed that for the healthy product, the type of package (plastic, paper, unpackaged) had a significant main effect on perceived healthfulness, perceived freshness and product liking. No significant effects were found for health label. In addition, no interaction effects were found for the moderating variables, which indicates that consumers' general health interest and environmental interest did not affect the relation between the independent and dependent variables. For the unhealthy product, the type of package had a significant main effect on perceived healthfulness and perceived freshness. As well as for the healthy product, no significant effects were found for health label and no interaction effects were found for the moderating variables. Based on the results of the experimental study it can be concluded whether the hypotheses stated in the theoretical framework are supported or rejected. See Table 8 for an overview of the supported and rejected hypotheses.

Table 8. Overview of supported and rejected hypotheses

Hypothesis		Result
H1	A consumer's health perception of a product positively influences its purchase intention.	Rejected
H2a	A product package with material associated with healthiness (cardboard paper) is perceived as more healthful than a product package with material associated with unhealthiness (plastic).	Supported
H2b	A product package with material associated with healthiness (cardboard paper) is perceived as more fresh than a product package with material associated with unhealthiness (plastic).	Supported
H2c	A product package with material associated with healthiness (cardboard paper) has higher product liking than a product package with material associated with unhealthiness (plastic).	Nuts: supported Jelly beans: rejected
H2d	Purchase intention is higher for a product package with material associated with healthiness (cardboard paper) compared to a product package with material associated with unhealthiness (plastic).	Rejected
H3a	Unpackaged products are perceived as more healthful than packaged products.	Nuts: supported Jelly beans: rejected
H3b		
H3c	Unpackaged products are perceived as more fresh than packaged products.	Rejected
	Unpackaged products have higher product liking than packaged products.	Rejected
H3d	Purchase intention is higher for packaged products compared to unpackaged products.	Rejected
H4a	Health labels on product packages increase consumers' perceived healthfulness of the product.	Rejected
H4b	Health labels on product packages increase consumers' product liking.	Rejected
H4c	Health labels on product packages increase consumers' purchase intention.	Rejected

H5a	Health labels on unpackaged products increase consumers' perceived healthfulness of the product.	Rejected
H5b	Health labels on unpackaged products increase consumers' product liking.	Rejected
H5c	Health labels on unpackaged products increase consumers' purchase intention.	Rejected
H6a	Consumers with high general health interest have a higher purchase intention for unpackaged food compared to consumers with low general health interest.	Rejected
H6b	Consumers with high general health interest have a higher purchase intention for food products with health label compared to consumers with low general health interest.	Rejected
H7	Consumers with high environmental interest have a higher purchase intention for unpackaged food compared to consumers with low environmental interest.	Rejected

## 5 Discussion

This study was aimed at determining the influence of unpackaged food compared to two different types of packages (plastic, paper), and the presence of health labels on consumer responses (perceived healthfulness, perceived freshness, product liking and purchase intention). In addition, general health interest (low vs. high) and environmental interest (low vs. high) were examined as moderators. In chapter 2 several hypotheses were developed, which were tested with the experimental study. In this section the results will be discussed. Thereafter, the practical implications, limitations of this study and directions for future research are described.

The first research question of this study was about examining to what extent unpackaged food compared to two types of packages influence consumer responses. First of all, the effect on perceived healthfulness was measured. The results show that for both the healthy and the unhealthy product, consumers perceive the products as more healthful when they are packed in a paper package or when they are unpackaged than when they are packed in a plastic package. An explanation for this finding might be the transparency of the package, since the transparency of the glass of the container allows consumers to see the product. The paper package was also partly transparent. A study of Sioutis (2011) found that consumers prefer visual contact with the food product through transparency. Visibility of the product through the package increased the consumers' healthiness expectations of the product. Hence, the finding of the research of Sioutis (2011) is in line with the result of this study. Another study of Zhang, Lusk, Miroso and Oey (2016) proved that a glass bottle was perceived as healthier than a plastic bottle, because glass does not produce harmful compounds. In addition, transparency of glass might be associated with naturalness. Naturalness is a valued attribute in food products and closely linked with perceived healthiness (Margetts et al., 1997). The finding that the product in a paper package is perceived as more healthy than the product in a plastic package supports the earlier findings of Lith (2015) where chocolate packed in a paper package was perceived as more healthy than chocolate packed in a plastic package. The difference between the products in a paper package and the unpackaged products was not significant. However, when the plastic and paper package were taken together as 'packaged products', the findings show that for the healthy product, consumers perceive the unpackaged product as more healthy than the packaged product. Nevertheless, this result is probably caused by the difference between the products in a plastic package and the unpackaged products. To draw conclusions about the difference between packaged and unpackaged products, further research is needed.

Second, the effect of unpackaged food versus two types of packages on the perceived freshness of the product was measured. The findings show that for both the healthy and the unhealthy product, consumers perceive the products as more fresh when they are packed in a paper package or when they are unpackaged than when they are packed in a plastic package. This is in line with a previous study from Koutsimanis et al. (2012), where most of the respondents believed that the type of packaging material can affect the quality or performance of a food product. In addition, a possible explanation for the difference between the unpackaged product and the plastic package might be explained by the material of the package-free container. A study of Zhang, Lusk, Miroso and Oey (2016) found that consumers perceived a glass bottle to be more fresh than a plastic bottle and that glass provided a more favorable feeling of quality. Besides, glass maintains product freshness for a long period of time without affecting taste or flavor. This might explain the finding that consumers perceive the unpackaged products (in the

glass container) as more fresh than the products in the plastic package. Furthermore, the difference between the products in a paper package and the unpackaged products was not significant. A possible explanation for this finding might be that, concerning the unpackaged condition, people do not know for how long the product is already in the container. This ignorance may affect their perceived freshness of the product, even though the material glass is known to maintain freshness for a long period. However, when considering the difference between an unpackaged product and a packaged product, consumers perceived the unpackaged product as more fresh than the packaged product (with a significance level of 10%).

Third, the effect of unpackaged food versus two types of packages on product liking was measured. The findings show that for the healthy product, consumers have a more favorable attitude towards the product in a paper package or when it is unpackaged than towards the product in a plastic package. This is in line with previous research describing that a product package can affect how a product is evaluated (Krishna & Morrin, 2008) and that the material of a package has an influence on the attitude towards a product and the way a food product is experienced (Schifferstein, 2009). Again, the difference between the product in a paper package and the unpackaged product was not significant. A possible explanation for this might be that people think they still need a package anyway when using a container with unpackaged food. This actually is the case when it, for example, concerns a container in a supermarket. Supermarkets often provide paper bags that people can fill with their food of choice. Therefore people might not see a big difference between the product in the paper package and the depicted unpacked product. However, entire unpackaged food stores are intended to stimulate consumers to bring their own jars to the stores. Since it is still an upcoming trend in The Netherlands and few people are familiar with this concept, it is possible that participants do not see the benefits of unpackaged products yet. For the unhealthy product, there was no significant difference between the types of packaging. A possible explanation for this might be that the overall mean scores for product liking are lower for jelly beans than for nuts. Hence, people have a less favorable attitude towards jelly beans and as a result it might not matter anymore in which package the product is packaged.

Finally, the effect of unpackaged food versus two types of packages on consumers' purchase intention of the product was measured. The findings show that for both the healthy and unhealthy product, there were no significant effects between the different package materials. Only for the healthy product, there was a significant effect of package material at a significance level of 10%. While a paper package and unpackaged food basically have the same effects on perceived healthfulness, perceived freshness and product liking, for purchase intention consumers prefer a paper package. This is probably because unpackaged food is not convenient. Consumers are often in a rush while shopping in a supermarket and might therefore choose for a packaged product instead of an unpackaged product, since it requires less effort. However, this result was not significant. A possible explanation for the lack of significant effects might be that the package of a product is not the only factor that causes a purchase. Although packaging plays a major role when products are purchased, a purchase decision is based on more factors, like the price and the brand (Underwood et al., 2001). For example, the product packages that were used in this study did not contain a brand. Hence, this might cause a lower intention to buy the product. In addition, before deciding to buy a product consumers first generate expectations about it. These expectations are formed based on the information available at the time of purchase. Packaging plays a major role in generating expectations about a product. However,

expectations are also created by consumers' previous experiences with the product, the price and the store in which the product is bought (Grunert, Bech-Larsen & Bredahl, 2000). In this study a participant might have a bad previous experience with eating nuts or jelly beans. Consequently, this participant probably has decided to never buy that product again and therefore indicated to not have an intention to buy the product. Another explanation might be that participants just did not like to eat the products nuts and jelly beans, because of its flavor for example, and therefore do not have the intention to buy it.

The second aim of this study was to examine if the presence of a health label influences consumer responses. In contradiction to the expectations, the presence of a health label did not influence consumers' perceived healthfulness, perceived freshness, product liking and purchase intention of the product. Only at a significance level of 10% an effect was found of health label on product liking, however, this only applied to the healthy product. Consumers had a more favorable attitude towards the product with health label than towards the product without health label. This is in line with the study of Kozup, Creyer and Burton (2003) which showed that health labels generate more favorable consumer attitudes toward the product. However, the lack of further effects of health labels must be explained. In previous studies health-related claims have resulted in higher ratings of perceived healthfulness of products, but the influence was merely little (Urala et al., 2003; Lyly et al., 2007; Van Trijp and Van der Lans, 2007). Nevertheless, in this study health labels did not increase the perceived healthfulness of the product at all. Verbeke (2005) already stated that while information about health benefits can influence food acceptance, the actual behavior depends on the knowledge and beliefs of the consumer. Even if consumers know about health benefits, that does not imply that the food will be eaten (Aikman, Min & Graham, 2006). This might explain the finding that the presence of a health label did not have an effect on purchase intention. Another explanation might be consumers' lack of interest in nutrition information and health labels. Grunert and Wills (2007) stated that the degree of interest differs between consumers (depending on their knowledge and beliefs), situations and products. For example, jelly beans are already perceived as unhealthy product. Therefore consumers might not pay attention to the health label because they already assume it is not true. In addition, since the use of health labels are discussed a lot in The Netherlands lately, consumers might not believe the information of health labels anymore; they might assume that it is betrayal. Moreover, the Ministry of Health recently decided to abolish the health label 'Ik kies bewust'. Besides the lack of interest and trust in health labels, in this study there were a lot of participants who did not even notice the health label while it was there on the product package. Although the manipulation check was significant, the fact that a lot of participants failed the manipulation check might cause the lack of significant effects of health label.

The third and final aim of this study was to examine whether consumers' general health interest and their environmental interest influence the relation between the dependent variables and the independent variables. For both the healthy and unhealthy product, main effects were found for general health interest on product liking and purchase intention. However, no support was found for interaction effects of this moderating variable, which means that consumers' general health interest had no influence on the relation between the dependent and independent variables. According to several authors, health is for many consumers an important criterion for product purchase (Lähteenmäki, 2013; Magnusson et al., 2001; Wandel and Bugge, 1997). In addition, a

study of Vyth et al. (2010) proved that health conscious consumers were more likely to purchase a food product with a healthy choices logo. However, in the present study no association between consumers' general health interest and purchase intention was found. This is not in line with previous research towards the moderating effects of general health interest. Although the findings did not show any interaction effects, they did show main effects. Consumers with a high GHI have a higher product liking and purchase intention for nuts compared to consumers with a low GHI, and consumers with a high GHI have a lower product liking and purchase intention for jelly beans compared to consumers with a low GHI. A possible explanation for this might be that the product category (nuts versus jelly beans) is more important for the perceived healthfulness of the food than the presence of health labels. Lyly et al. (2007) stated that low-fat foods are often considered to be healthy and therefore a health claim cannot easily make this kind of product even more attractive. In addition, a study of Levy, Derby, and Roe (1997) showed that yoghurt as a product did not benefit from a calcium health claim, because this information was already known by consumers. Therefore it did not provide added value information and as a result did not have any effect on consumers. In this study, people know that jelly beans are unhealthy and therefore adding a health label would not make any sense to them. Thus, a product category can determine the perceived healthfulness of the food, making the effect of health labels less important (Lyly et al., 2007).

Furthermore, no main effects were found for environmental interest, which means that consumers' environmental interest had no influence on their evaluations of perceived healthfulness, perceived freshness, product liking and purchase intention. It was expected that consumers with a high environmental interest would have a higher purchase intention towards the more environmentally friendly packages (paper and unpackaged). However, the findings of the present study do not support this hypothesis. Possible explanations might have to do with importance and convenience, since importance and convenience are the two most important attitudes regarding environmental concerns (Amyx et al., 1994). A study of Schwepker and Cornwell (1991) showed that people who concern about the environment are more inclined to purchase ecologically packaged products. However, Rokka and Uusitalo (2008) stated that many consumers fail to understand the connection between their buying decision and various environmental consequences if there is no environmental information, such as labels, to remind them of it. Unfortunately in The Netherlands the concept of selling unpackaged food is still an upcoming trend which is still in its initial stages. Therefore participants might be unfamiliar with it, which in turn may cause ignorance of its importance and its environmental benefits. However, Schwepker and Cornwell (1991) stated that when people become aware of the solid waste problem, their attitudes and purchase intentions may change. Consequently, even those who currently do not favor environmentally conscious purchasing are candidates for ecologically packaged products if they can be convinced that there are ecological concerns. Hence, even though the findings of this study did not show any moderating effects of environmental interest, further research about package materials and unpackaged products must be done since environmental concerns are becoming more and more important nowadays. Besides importance, convenience might also play a role in explaining the lack of significant effects. A study from McCarty and Shrum (1994) showed that the perception of inconvenience had a greater influence on peoples actions than the perception of importance to behave ecologically conscious. Therefore consumers might choose to pick a packaged product from the shelf even though they know an unpackaged product is more environmental friendly.

### 5.1 Limitations and future research directions

Like every research, this study has its limitations that should be addressed since they might have influenced the results. An important limitation is that this study was conducted online. Using the internet for an experimental study has several disadvantages. For example, lack of control over the test setting is one disadvantage (Ahern, 2005). As a researcher you do not know how serious the respondent is when completing the survey. In addition, it is not ensured that the respondent understands the questions as intended by the researcher. In this study, images of products were used as stimuli. As a result, especially in this research where only one product was shown, a possible risk might be that it was not clear enough that one of the conditions concerned an unpackaged product. In real situations the environment also plays a role. A recommendation for future research is to make the differences between the conditions more obvious. For example by adding scenarios in which one participant should imagine to be in a store with unpackaged products, and one participants should imagine to be in a normal supermarket with packaged products. In addition, it is recommended to verify the results in a laboratory study and then in a field experiment.

A second limitation of this study is the product choice. In this study nuts and jelly beans were chosen as healthy and unhealthy product. Since results might differ for other product categories or other food products, it is recommended to investigate if different products would result into different findings. In addition, in this study participants were not asked to indicate how often they consume the products. However, this may affect consumers' purchase intention. For example, it could be that a participant tried jelly beans one time but did not like it at all. As a result, that participant probably has no intention to purchase the product. A recommendation for future research is therefore to ask participants how often they consume the concerning product.

Another limitation is that participants had to rate both the healthy and unhealthy product. Consequently, participants were able to guess that the researcher would measure a difference between a healthy and unhealthy product. Therefore their answers might be biased. Furthermore, since participants had to rate the same questions about both products, the survey was too long and more time and effort were asked from the participants. As a result, a possible risk is that respondents became demotivated to complete the survey and became less serious in answering the questions. For future research it is therefore recommended that each participant has to assess only one product. For this study a split of the healthy and unhealthy product would mean that not six, but twelve conditions were created.

A fourth limitation is that this study used the healthy choices logo 'Ik kies bewust' as health label. During this research the Dutch Ministry of Health decided to abolish this health label. However, the fact remains that most consumers do not read the extensive nutrition labels (Grunert et al., 2010), and that health claims do influence consumer behavior (Grunert, 2002) and may discourage consumers from looking for nutrition information on the label (Williams, 2005). Therefore, it is recommended to conduct more studies for other types of health labels, like the traffic light label.

Finally, another limitation is that the sample of this study is not completely representative for the population of adults in The Netherlands. In this study, the majority of the participants were women. When replicating the study, an equal distribution of both males and females should be used.

## 5.2 Practical implications

Packaging has become an extremely powerful tool in modern marketing environments. Understanding packaging elements can be an important marketing communications tool. Some marketers believe that packaging is more powerful in influencing consumers than advertising or other marketing tools (Ampuero & Vila, 2006). The reason for this is that all consumers are exposed to packaging when shopping for food products. According to Underwood (2003) packaging is specifically related to the strategic decisions of the marketing mix, and packaging must therefore be taken into account.

Since the findings of this study showed that the differences in package materials affected consumer responses, the choice of material for food packaging has implications for managerial profits. When selling a healthy product, the best choice would be to sell it unpackaged or in a paper package since consumers then have a more favorable attitude and a higher perception of healthfulness and freshness towards the product, compared to when it is sold in a plastic package. Furthermore, the results of this study showed that the product is perceived as more healthful when it is unpackaged compared to when it is packaged. When selling an unhealthy product, also the best choice would be to sell it unpackaged or in a paper package since consumers' then have a higher perception of healthfulness and freshness towards the product, compared to when it is sold in a plastic package.

This study showed that unpackaged foods and packaged foods are equally capable of communicating product benefits. However, when it comes to behavioral intentions, more persuasion is needed to stimulate consumers to choose unpackaged food. The idea of selling unpackaged food is that consumers bring their own jars to the stores to fill them. The question is how people can be persuaded to bring their own jars to the stores and purchase unpackaged foods. Since environmental sustainability is a concern of the whole society, a possible idea is to involve government and policymakers in stimulating people to buy unpackaged foods, for example by means of campaigns. An example of the influence that the government may have, is the recent implementation of the Dutch law which states that consumers have to pay for plastic bags, in order to decrease pollution caused by the large number of plastic bags in the environment. Research of Schwepker and Cornwell (1991) indicated that increased awareness about ecological concerns may result in attitude and purchasing behavior change of consumers. Both marketers and policymakers might use this information by starting to inform the consumer about the environmental problems nowadays and how every consumer can be part of the solution. Increased awareness of the problem may enhance attitude changes which, in turn, may result in behavioral changes such as purchasing unpackaged products.

To stimulate consumers to buy unpackaged foods, it should also be emphasized that consumers are able to purchase the exact amount that they need. For the environment, the advantage of this is the reduction of waste. However, there is also an advantage for consumers, namely the price. Packaged products contain a predetermined amount. But when consumers for example only need half of that amount, they might choose for unpackaged food since they can take how much they need. Consequently, a lower amount comes with a lower price.



### **5.3 Conclusion**

The results of the study showed that unpacked foods and paper packages have positive effects on perceived healthfulness, perceived freshness and product liking, as opposed to plastic packages. Plastic is not associated with health, freshness or environment. This study also proved that unpackaged foods are as good as packaged foods in terms of communicating product benefits. However, when it comes to behavioral intentions, more persuasion is needed to stimulate consumers to choose unpackaged food. More research to unpackaged food is needed before practical implications can be made. Furthermore, this study found that health labels did not affect consumer responses. In addition, no evidence was found for interaction effects of the moderating variables general health interest and environmental interest.

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## Appendices

### Appendix A – Pretest

Wat is uw geslacht?

- ☐ Man
- ☐ Vrouw

Wat is uw leeftijd?

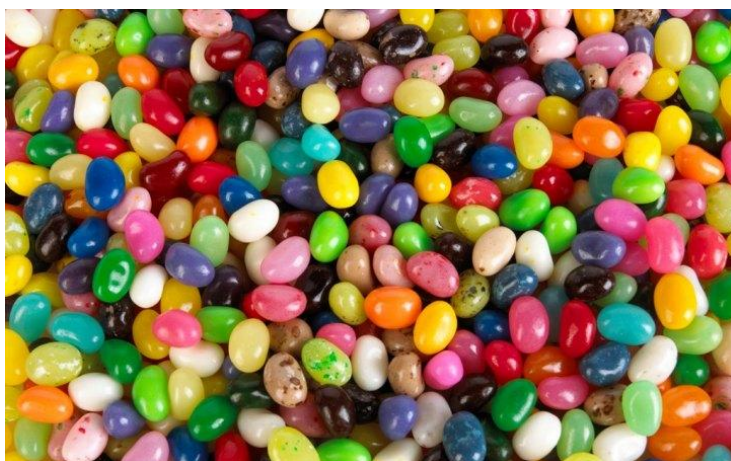
.....

Wat is uw hoogst genoten opleiding? (inclusief huidige opleiding)

- ☐ MAVO
- ☐ HAVO
- ☐ VWO
- ☐ MBO
- ☐ HBO
- ☐ WO
- ☐ Gepromoveerd
- ☐ Anders, namelijk.....

U ziet hierna zeven producten. Kunt u bij elk product aangeven in hoeverre u dit product gezond vindt? (Graag het rondje vervangen door een X)

#### 1. Jelly beans



*Dit product vind ik:*

Heel ongezond

○ ○ ○ ○ ○ ○ ○

Heel gezond

## 2. Pasta



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond

## 3. Rijst



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond



#### 4. Noten



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond

#### 5. Gedroogd fruit



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond

## 6. Chocola



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond

## 7. Muesli



*Dit product vind ik:*

Heel ongezond

☐ ☐ ☐ ☐ ☐ ☐ ☐

Heel gezond

## Appendix B – Questionnaire main study

### Questionnaire English

#### **Product liking (attitude)**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. This product is appealing to me.
2. This product looks tasty.
3. I like this product.
4. This product looks natural.

#### **Perceived product healthfulness (Fenko, Lotterman, Galetzka, 2016)**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. I expect this product to be healthy.
2. I would consider this product as good for me.
3. This product looks high on artificial additives.
4. The product looks healthy.
5. This product looks low on calories.
6. I have an impression that this product is healthy.
7. This product looks high on fat.
8. These nuts/jelly beans look healthier than similar nut/jelly bean products.
9. This product looks high on vitamins and minerals.
10. This product looks high on fiber.
11. This product looks high on added sugar.

#### **Perceived freshness**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. These nuts/jelly beans look fresh.

#### **Purchase intention (Fenko, Lotterman, Galetzka, 2016)**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. I would like to try this product.
2. I would seriously consider buying this product.
3. I would buy this product.

#### **General health interest (Roinen et al. 1991) *Cronbach's $\alpha = 0.89$***

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. The healthiness of food has little impact on my food choices. (R)
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. (R)
4. It is important for me that my diet is low in fat. (R)
5. I always follow a healthy and balanced diet.
6. It is important for me that my daily diet contains a lot of vitamins and minerals.
7. The healthiness of snacks makes no difference to me. (R)
8. I do not avoid foods, even if they may raise my cholesterol. (R)

### **Environmental interest**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. I always think about how my actions affect the environment.
2. Humans are abusing the environment.
3. We must reduce our consumption levels to ensure well-being of the present and future generations.
4. People should worry more about harming the environment.
5. Preserving nature now means ensuring the future of human beings.
6. I sort my garbage.
7. I try to reduce food waste.
8. I try to avoid the use of plastic bags.

### **Stimuli material**

**(totally disagree – disagree – don't disagree/don't agree – agree – totally agree)**

1. This product package looks credible.
2. The packaging is appropriate for this type of product.
3. This product package is not environmental sustainable.

Did you see the health label?                      ☐ yes                      ☐ no

### **Personal questions**

What is your gender?

- ☐ Male
- ☐ Female

What is your age?

.....

What is your highest level of education?

- ☐ Primary school
- ☐ Highschool
- ☐ Intermediate vocational education (MBO)
- ☐ Bachelor (HBO)
- ☐ Master (WO)
- ☐ Other, namely: .....

Have you ever eaten any kind of nuts?                      ☐ yes                      ☐ no

Have you ever eaten any kind of jelly beans?                      ☐ yes                      ☐ no

Do you have allergies/diseases that prevent you from eating nuts and/or jelly beans?

☐ yes                      ☐ no

## **Questionnaire Nederlands**

### **Product liking (attitude)**

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Dit product ziet er aantrekkelijk uit.
2. Dit product ziet er smakelijk uit.
3. Ik vind dit product lekker.
4. Dit product ziet er natuurlijk uit.

### **Perceived product healthfulness (Fenko, Lotterman, Galetzka, 2016)**

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Ik verwacht van dit product dat het gezond is.
2. Ik denk dat dit product goed voor mij is.
3. Ik denk dat dit product veel kunstmatige toevoegingen bevat.
4. Het product ziet er gezond uit.
5. Dit product lijkt weinig calorieën te bevatten.
6. Ik heb het idee dat dit product gezond is.
7. Ik denk dat dit product veel vetten bevat.
8. Deze noten/jelly beans zien er gezonder uit dan vergelijkbare noten/jelly beans producten.
9. Ik denk dat dit product veel vitaminen en mineralen bevat.
10. Ik denk dat dit product vezelrijk is.
11. Ik denk dat dit product veel toegevoegde suikers bevat.

### **Perceived freshness**

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Deze noten/jelly beans zien er vers uit.

### **Purchase intention (Fenko, Lotterman, Galetzka, 2016)**

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Ik zou dit product willen uitproberen.
2. Ik zou serieus overwegen om dit product te kopen.
3. Ik zou dit product kopen.

### **General health interest (Roinen et al. 1991) *Cronbach's $\alpha = 0.89$***

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Hoe gezond een product is heeft weinig invloed op mijn koopgedrag.
2. Ik ben erg gefocust op de mate van gezondheid van mijn eten.
3. Ik eet wat ik wil en ik maak me niet druk om hoe gezond het is.
4. Ik vind het belangrijk dat mijn eten laag in vetten is.
5. Ik probeer altijd gezond en gebalanceerd te eten.
6. Het is belangrijk voor mij ik dagelijks genoeg vitaminen en mineralen binnenkrijg.
7. Of een snack gezond of ongezond is maakt voor mij geen verschil.
8. Ik vermijd bepaald eten niet, ook al verhoogt het mijn cholesterol misschien.

### **Environmental interest**

**(zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. Ik denk altijd aan hoe mijn handelingen invloed hebben op het milieu.
2. Mensen gebruiken het milieu op een verkeerde manier.
3. We moeten minder consumeren om het welzijn van de huidige en toekomstige generaties te waarborgen.
4. Mensen zouden zich meer zorgen moeten maken over het schaden van het milieu.
5. Door nu zuinig met de natuur om te gaan kan een zekere toekomst voor mensen gewaarborgd worden.
6. Ik sorteer mijn afval.
7. Ik probeer voedselverspilling te verminderen.
8. Ik probeer het gebruik van plastic tassen te vermijden.

**Stimuli material (zeer mee oneens – mee oneens – neutraal – mee eens – zeer mee eens)**

1. De verpakking van dit product ziet er geloofwaardig uit.
2. Deze verpakking past bij dit product.
3. Het verpakkingsmateriaal van dit product is slecht voor het milieu.

Heeft u het 'ik kies bewust'-logo gezien? ☐ ja ☐ nee

### **Personal questions**

Wat is uw geslacht?

- ☐ Man
- ☐ Vrouw

Wat is uw leeftijd?

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Wat is uw hoogst genoten opleiding? (inclusief huidige opleiding)

- ☐ Basisonderwijs
- ☐ Vmbo, mavo
- ☐ Havo, vwo
- ☐ Mbo
- ☐ Hbo
- ☐ Wo
- ☐ Gepromoveerd

Heeft u ooit noten gegeten? ☐ ja ☐ nee

Heeft u ooit jelly beans gegeten? ☐ ja ☐ nee

Heeft u een allergie of ziekte waardoor u geen noten en/of jelly beans eet? ☐ ja ☐ nee

## Appendix C – Tables result section

Table 5. Means and standard deviations per manipulation

Product	Manipulation		Product liking M (SD)	Perceived healthfulness M (SD)	Perceived freshness M (SD)	Purchase intention M (SD)
Nuts	Package material	Plastic	3.19 (0.74)	2.96 (0.59)	2.76 (1.13)	3.16 (1.09)
		Paper	3.73 (0.65)	3.50 (0.44)	3.49 (0.86)	3.52 (0.85)
		Unpackaged	3.68 (0.58)	3.55 (0.40)	3.52 (1.05)	3.19 (0.96)
	Health label	Without	3.45 (0.72)	3.32 (0.51)	3.17 (1.10)	3.22 (1.00)
		With	3.63 (0.67)	3.36 (0.58)	3.36 (1.04)	3.37 (0.95)
	General health interest	Low	3.21 (0.81)	3.17 (0.70)	3.08 (1.08)	2.69 (1.18)
		High	3.56 (0.68)	3.35 (0.53)	3.28 (1.07)	3.34 (0.94)
	Environmental interest	Low	3.55 (0.71)	3.33 (0.51)	3.27 (1.00)	3.28 (1.00)
		High	3.51 (0.69)	3.35 (0.59)	3.25 (1.16)	3.30 (0.95)
Jelly beans	Package material	Plastic	2.41 (0.82)	1.50 (0.35)	2.00 (1.02)	2.31 (1.19)
		Paper	2.66 (0.74)	1.74 (0.47)	2.78 (1.01)	2.28 (0.96)
		Unpackaged	2.70 (0.84)	1.74 (0.37)	2.70 (0.99)	2.33 (1.11)
	Health label	Without	2.52 (0.82)	1.66 (0.38)	2.38 (1.05)	2.29 (1.14)
		With	2.67 (0.79)	1.67 (0.45)	2.63 (1.07)	2.33 (1.03)
	General health interest	Low	2.83 (0.82)	1.55 (0.45)	2.50 (1.00)	2.64 (1.36)
		High	2.57 (0.80)	1.67 (0.41)	2.50 (1.07)	2.28 (1.06)
	Environmental interest	Low	2.68 (0.76)	1.69 (0.41)	2.48 (1.06)	2.45 (1.10)
		High	2.48 (0.86)	1.64 (0.42)	2.52 (1.06)	2.13 (1.04)

Table 6. Stepwise multiple regression analysis on purchase intention

Product	Variable	B	Std. Error	$\beta$	p
Nuts	Product liking	.985	.082	.703	.000
Jelly beans	Product liking	.948	.078	.707	.000

$R^2$  nuts = .495,  $p < .001$ ;  $R^2$  jelly beans = .500,  $p < .001$

Table 7. Stepwise multiple regression analysis on product liking

Product	Variable	B	Std. Error	$\beta$	p
Nuts	Perceived healthfulness	.491	.105	.383	.000
	Perceived freshness	.157	.054	.240	.004
Jelly beans	Perceived freshness	.297	.057	.391	.000
	Perceived healthfulness	.362	.147	.186	.015

$R^2$  nuts = .306,  $p < .001$ ;  $R^2$  jelly beans = .225,  $p < .001$