The effect of language on food attractiveness

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Abstract

Obesity has become a prevalent issue world-wide and is mainly caused by the lack of a good diet. This study aimed to analyse the effect of language on product packaging for healthy and unhealthy food. Previous research indicated that unhealthy food options are often described or portrayed in a more appealing manner, which causes people to activate mental simulations of the consumption of the food. This process of mental eating simulations has been linked with the desire to eat food. Healthier food options are in turn more often described in a less appealing manner with a focus on health and long-term benefits, which often leads to a lower purchase rate or selection rate of healthy products. However, research indicated that when people focus on the outcome of eating a particular food, their preferences lean towards healthier food options. This study investigated to what extent labelling on food packaging influences the food choices of students. This was done by asking students questions in a survey about the expected tastiness, desirability and purchase intention of three healthy and unhealthy products. They had to rate the healthy and unhealthy products where the product descriptions were manipulated in three ways to include neutral (snack van verschillende soorten vlees), indulgent (verrukkelijke warme snack uit de frituur) and outcome-simulation (geeft je kort een vol gevoel) focused language in the product descriptions. The results indicated that there were no significant differences between the description types, but unhealthy products were always preferred over unhealthy products. These results indicated that as hypothesized, unhealthy products would have a higher rating on each of the variables. The overall conclusion of this study indicated that there was no significant effect of language on food attractiveness.

Introduction

In modern-day society obesity has become an increasingly more prevalent issue. Being excessively overweight is not only unhealthy, it is dangerous as well. One of the main risk factors of diabetes, cardiovascular diseases or cancer is being excessively overweight. Around three million deaths across the globe are caused by these diseases (Finucane et al., 2011). According to research carried out by the Dutch bureau for statistics (CBS) in 2018, around 14% of the Dutch population aged 20 years or older have a form of obesity. Furthermore, around 20.8% of the young adults (18-24) are moderately overweight, whereas 3.3% of that group is severely overweight (Statistics Netherlands, 2019). From these statistics one could see that people in the Netherlands, and more specifically, young adults might not have been living a very healthy lifestyle. Diets can have a serious impact on reducing or causing obesity.

Understanding how people think about food in their minds plays a major role in understanding the relationship that people have with food. An interesting group is that of students, since most people develop their healthy or unhealthy eating habits during their student years (Blichfeldt & Gram, 2013). The way in which students represent food in their minds is intriguing because they are a group that often live by themselves for the first time in their life, and would have to think about what food to buy and eat by themselves. This decision making process is not easy when it is the first time in their lives that these choices have to be made, and often leads to students making bad choices on what to buy and eat (Blichfeldt & Gram, 2013). The eating habits of young adults is very volatile to change from the moment they leave their home, and when it comes to students, the choices of eating habits often focus on convenience (Deshpande, Basil & Basil, 2009). Marquis (2005) collected data on students' food motivation and behaviour, and found that the most important motivation for students was that of convenience, followed by price, pleasure, health and concern about weight. This variable of convenience indicated that students often do not pay careful attention to which products they buy, but rather just purchase products that are easy to cook and are not time consuming. The findings also showed that there might be a negative correlation between convenience and health (Marquis, 2005). In the results it was shown that the more convenience-oriented students are, the more difficult it is for them to have a varied and healthy diet. This negative correlation was a motivation for investigating how a student's perception of food could potentially be changed, and in turn get them to establish and maintain a more varied and healthier diet.

The food preference of students could be influenced by how unhealthy products are advertised in comparison to healthier alternatives. A study by Scully et al (2012) investigated the association between food marketing exposure of students and their food choices and eating behaviours. Additional research suggested that a large number of young adults are constantly exposed to unhealthy food advertising through a variety of platforms such as, internet television, social media, magazines, and product packaging (Scully et al., 2012). For point of sale marketing, product packaging is the most important medium to encourage and convince potential customers to purchase a product. This is done by communicating information about the product such as product descriptions, nutritional values, health claims or other promotional purposes (Hebden, King, Kelly, Chapman, & Innes-Hughes, 2011). The importance of product packaging appears to be substantial with regard to the encouragement of potential customers to purchase a product. Previous research indicated that students' often make bad choices when it comes to purchasing food. By utilising product packaging as a medium to influence their purchasing behaviour, their bad choices could potentially be influenced to make better choices.

How people think about food can partially be explained by research about mental simulations. Mental simulations can be characterised as images or can be embodied, as a complete experience, including body sensations, feelings and images (Muñoz-Vilches, van Trijp, & Piqueras-Fiszman, 2019). The human mind has a function where it imagines taking a specific action, like eating a slice of pizza, and simulating the probable results of this action before the action has actually been done. These mental simulations play a major role in how people think about and how they select types of food. Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2019, described two types of food, vices and virtues. Food that falls under the category "vices" are a type of food that focuses on short-term goals and the moment of consumption, which typically is something enjoyable like ice cream. Food that belongs to the category "virtues" are foods that are more focused on long-term outcomes, like the careful consideration of being healthy (e.g., fat-free yogurt, Muñoz-Vilches, van Trijp, & Piqueras-Fiszman, 2019). In the research that was carried out, two mental simulations were distinguished. The first mental simulation is process-simulation, which is the moment of consumption. The other mental simulation is outcome-simulation, which is post-consumption. Process-simulation focuses on the step-by-step process of consuming a product, while out-come simulation focuses on the balance of benefits and consequences of consuming a product (Muñoz-Vilches, van Trijp, & Piqueras-Fiszman, 2019). This study suggested that the manipulation of the mental simulations had substantial effect on the wanting and preferring

between a vice or virtue product. The results showed that when the participants imagined the consumption of a product increased the wanting for the vice products. When the participants focused on the post-consumption of the product, the wanting for the virtue products was increased. The same results were found for the preferences for a product. What can be concluded from this study is that the mental simulation process plays a role in aiding people to decide on purchasing healthier foods compared to the unhealthy counterparts.

One way in which mental simulations can be activated is through the use of tempting food words: words that refer to features of food such as the taste, texture, temperature, the situation in which you consumed the food (Papies, 2013). The effect of tempting food words on mental simulations was researched by Papies (2013). The participants in the study were given a feature listing task for tempting (e.g., cookies, chips) and neutral, healthy (e.g., rice, cucumber) food concepts. Participants were asked to describe properties of the concept that was presented to them, and were instructed to write down at least five features. From the results of this study, the conclusion was that the use of eating simulation features was significantly higher for tempting food concepts compared to neutral, healthy food concepts. The findings suggested that tempting food words activated eating simulations. The results of the study showed that there was a positive correlation between eating simulations and the desire to eat the products. This indicated that there was a link between mental eating simulations and the desire for food.

This link between mental simulations and desire for food can be explained by the grounded cognition theory of desire (Papies, Barsalou & Rusz, 2019). The grounded cognition theory of desire explains how external cues lead to desire and motivated behaviour, using basic cognitive and memory processes (Papies, Barsalou & Rusz, 2019). The theory suggests that every time we consume food or drink something, we establish a memory of the experience. This concept is also referred to as “situated conceptualisation”. These conceptualisations can include information about experiences with the food or drink, such as the taste and texture of the food, visual information, or the setting in which it was consumed. When someone encounters one of these cues from a previous experience, they re-activate a memory that matches the current situation the best. Consequently, this person then remembers memories that were established previously about the experience. This theory gives substantial insight into how mental simulations and desire for food are connected to each other.

A study that researched the role of sensory modalities was carried out by Tiggeman and Kemps (2005). This study aimed to investigate the role mental imagery plays in food cravings and the experiences that come with these cravings. In this study participants were

tasked to recall and rate a previous food craving experience. Additionally, the participants were asked to imagine themselves eating their favourite food and to rate the involvement of different sensory modalities. The sensory modalities used in this study were visual, auditory, tactile (touch), gustatory (taste) and olfactory (smell). The results showed that the sensory modality that was most involved in the intensity of food cravings was that of the visual, followed by gustatory and olfactory. It is interesting to investigate whether the results found in this study could be translated to a research that focuses on the use of language.

Language could potentially play a role in how food is perceived; this is often due to the descriptions given to certain foods, which can activate the food cravings or desire to eat the food. An interesting example of the role of language, is a study that investigated how food was described on menus of popular American chain restaurants (Turnwald, Jurafsky, Conner & Crum, 2017). In this study they looked at several themes in which food could be described, and to what extent there was a difference in the way healthy items were described compared to the standard item sections. What became evident from the results was that the healthy item section on menus of restaurants were described in a significantly different fashion than the standard item section on menus. The healthy item section was described in a less appealing manner with more health-related themes such as, foreign, simple, macronutrient, deprivation, thinness, and nutritious. Meanwhile the standard item section contained significantly more themes that are appealing to customers such as, exciting, fun, traditional, textured, provocative, American regional, tasty, spicy hot, and artisanal. Describing the healthy item section in a less appealing manner could negatively affect the perceptions that people have of healthy foods, whereas unhealthy foods are perceived as tasty (Raghunathan, Naylor & Hoyer, 2006). This suggests that describing healthy food in a different manner could increase people's perception of healthy food and positively influence our eating behaviour.

The study by Turnwald, Jurafsky, Conner, and Crum (2017) found that healthier foods were described in an extremely different manner compared to standard foods. The difference in the descriptions given to healthy food compared to standard food options could be used to investigate how people respond to the difference in descriptions. A study carried out by Turnwald, Boles, and Crum (2017) examined whether the descriptions given to healthy food affected their selection rate. The aim of the research was to investigate the association between indulgent descriptions and vegetable consumption. The study had four different labels, indulgent (e.g., twisted citrus-glazed carrots), basic (e.g., carrots), healthy restrictive (e.g., carrots with sugar-free citrus dressing), and healthy positive (e.g., smart-choice vitamin C citrus carrots). The study measured the selection rate of each of the four differently labelled

foods for each weekday lunch for the entirety of the academic quarter. Each day they randomly labelled one featured vegetable in one of four ways. Results from this study showed that labelling food as "healthy" may be counter-effective, as people perceive foods that are healthier as less tasty. The results indicated that labelling vegetables as indulgent increased their selection rate by students compared to labelling them as basic, healthy restrictive, and healthy positive by 25%, 41%, and 35% respectively. This shows that food labelling plays a role in how students perceive food and influences their purchase intention of food.

This abundance of previous research is important to understand how people think about food and how the incorrect perceptions people have of healthy food could potentially be changed. Mental simulations were investigated to establish that they play a role in when we prefer a certain type of food over the other. However, mental simulations do not often get activated without any activation cues and this is why food descriptions and tempting food words should be investigated. The language use for food could positively influence peoples' eating behaviour and thus the role of language on food should be investigated. It has been shown that there is a correlation between the descriptions that are given to food and the activation of simulations of eating food, which in turn establishes cravings for food (Papies, 2013). Furthermore, the way in which food gets described also has a connection with whether people decide to eat something or to go for an alternative option that better suits their cravings (Turnwald, Boles, & Crum, 2017). In restaurants, food labelling is one way in which large disparities can be seen between descriptions given to food types (Turnwald, Jurafsky, Conner, & Crum). These labels affect the perceptions of food and influence the taste that is expected to come with a certain type of label. Consequently, this could encourage or discourage people from ordering a certain type of food. Most of the previous research investigated the influence of indulgent labelling with their focus on food descriptions at restaurants, university cafeterias and diners. It has not been researched if the results found in previous research could be translated to product packaging in supermarket.

Researchers often have their focus on a variety of age groups, but students are rarely the point of interest in research. Students are a crucial group to investigate because of how they develop eating habits in their student years. Since students are in the process of developing eating habits (Blichfeldt & Gram, 2013), the potential influence of language use on product packaging could further influence the perceptions of students on food. Additionally, the potential influence could further promote healthier eating options. The study by Turnwald, Boles, and Crum (2017), had some a form of indulgent and outcome-focused language scope in their study. But previous research also suggested that there will be an effect

of indulgent and outcome-focused language compared to neutral language (Turnwald & Crum, 2019; Papies et al., 2020). This study aimed to test the effect of neutral, indulgent, and outcome-simulation language use on both healthy and unhealthy food and how students responded to the varying use of language on product packaging. Three variables were measured in the study to gain an understanding of students' food choices. The first dependent variable was expected tastiness, this variable showed the expectations of the taste of a product that the respondents have after reading the product descriptions. The next variable was desirability, this variable indicated how much people wanted to eat a certain product type after reading the product descriptions. The last variable, purchase intention, displayed the influence of the product descriptions on purchasing behaviour of students.

To test the effect of language on the perception of students on food packaging the following research questions has been formulated:

RQ: To what extent does indulgent labelling versus health-outcome labelling on food packaging influence students' food choice?

In order to answer the research questions several statements were hypothesised.

H1: Indulgent labelling will be more effective than both outcome simulation or neutral labelling.

Previous research indicated that there should be an effect of indulgent language use compared to outcome-simulation or neutral language use (Turnwald & Crum, 2019; Papies et al., 2020). In research by Turnwald, Boles, & Crum (2017) it was shown that the use of health labelling had a negative correlation with the purchase and selection rate of the items that were described in that manner.

H2: Unhealthy food is expected to be rated lower on the scales of expected tastiness, desirability, and purchase intention compared to healthy food for the outcome-simulation focused language.

Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2019) found that mental simulation plays a role in the preferences and the wanting of a healthy or unhealthy product. Their research suggested that there should be higher ratings for the expected tastiness, desirability and purchase intention of healthy products compared to unhealthy products. It is therefore expected that the unhealthy products will score lower on the scales of expected tastiness, desirability and purchase intention.

H3: There will be an interaction between food labelling and food healthiness.

Methodology

Materials

Two independent variables were used in this study, product descriptions (indulgent, outcome simulation, neutral) and healthiness (healthy, unhealthy). For the first independent variable, product descriptions, the three different types of product descriptions were operationalised as follows. An indulgent product description was a description that focused on the flavour of the food, and was fun and exciting to read (e.g., rich buttery roasted corn) (Turnwald, Boles, and Crum, 2017). The operationalisation of outcome simulation description focused on promoting the nutritional value of the product and on the long-term benefits of eating the product (e.g., Vitamin B rich Corn). The final product description, neutral, simply mentioned the food inside the package (e.g., corn from the farm). The second independent variable, the expected healthiness of a product, was initially measured through the use of a pre-test. In this pre-test participants were asked to indicate which products they perceived to be healthy, and which ones were perceived as unhealthy. The respondents were asked to rate the product on how healthy they perceived the product to be on a 7-point Likert scale where 1 = very healthy and 7 = very unhealthy. On the basis of the results from the pre-test six products were selected for the main study, three of the products were considered healthy, and three were unhealthy. The three selected healthy products were rye bread (roggebrood, *M =2.20*), rice waffles (rijstwafels, *M* = 2.25) and yogurt (yoghurt, *M* = 2.65). The three selected unhealthy products were a type of deep-fried snack (frikandellen, *M* = 6.30), a type of sweet cake (roze koeken, *M* = 6.45) and pizza (*M* = 6.20). All these products were displayed in a similar fashion, in a clear or white background, with the logo of the brand removed, and without any other legible text. This was done to avoid any biases to interfere with the results on the basis of brand preferences. Images of the manipulated product packaging were used, with the name of the product and the product descriptions on the packaging. Because this study aimed to observe the impact of linguistic features, none of the pictures were modified between the three conditions (indulgent, outcome simulation, neutral). All of the descriptions were approximately the same length, regardless of the condition that was presented to the participants. To ensure strong indulgent labelling, a database created by Speed and Brysbaert (2020) was used, from this database words with a high score for taste were selected.

Subjects

Participants were students aged between 18 and 25 years old. The pre-test required 20 participants and they were tasked with determining which products were seen as healthy, and which were seen as unhealthy. For the main study Dutch-speaking students aged between 18 and 25 years old were needed. To be included in the target group of students, a minimum education level of MBO was required. For this study 115 respondents, of which 24 were male, 87 were female, one was non-binary and three people preferred not to answer this question, were included in the analysis of the results. All 115 participants were in the age range of 18 to 25 years old (M = 21, SD = 1.78). The majority of respondents were university students (72), followed by HBO students (38) and MBO students (5). Out of the 115 respondents, 54 lived with the parents or family, 11 people lived with a partner, 9 people lived by themselves, 40 people lived in a form of student housing, and 1 person said they lived in a student housing throughout the weekdays and at home with parents during the weekends.

Design

The independent variables of this study were product descriptions (indulgent, outcome simulation, neutral) and healthiness (healthy, unhealthy). The dependent variables were desirability, purchase intention, and expected tastiness. The design of the study followed a 2x3 within-subjects design.

Instruments

The variable of expected tastiness was measured by utilising a scale developed by Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2020.) Participants were asked "what do you think of the product?" and this question was measured on two 7-point Likert scales ranging from 1 = not tasty at all, to 7 = very tasty, and 1 = no taste, and 7 = full of taste. To measure the reliability of the expected tastiness, a Cronbach's alpha was calculated, and the reliability for expected tastiness was good: $\alpha = .94$. The mean of these two items were used to calculate a compound variable called "expected tastiness of product" which will be used in the analysis of the main study.

Desirability was measured with a scale developed by Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2020). Respondents were asked "how much would you want to eat the product now?" and "how much would you like to taste this product?". These questions were measured on a 7-point Likert scale where 1 = not at all and 7 = very much. A Cronbach's Alpha was calculated to measure the reliability of the scales. The reliability of the desirability was good: $\alpha = .91$. The mean of the two items was used to calculate a compound variable "desire of product" which was used in the analysis of the main study.

The variable purchase intention was measured with the use of scales developed by Zeng (2008). The respondents were given the statements "I would like to buy this product next time I go grocery shopping", "If I find this product next time I go grocery shopping, I will buy it" and "I would make a special effort to buy this product". All three statements were measured using a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Additionally, two more statements were given on purchase intention "The likelihood of purchasing this product is…" and "My willingness to buy this product is …". These statements were measured using a 7-point Likert scale with 1 = very unlikely and 7 = very likely. The reliability of purchase intention was calculated using a Cronbach's Alpha, and the reliability of purchase intention was good: $\alpha = .95$. Consequently, a mean of the five statements was utilised to calculate a compound variable "intention to purchase product", which was used in the analysis of the main study.

Some additional questions were asked on the following demographics: age, gender, nationality, mother tongue, education level and living situation.

Procedure

This study required respondents to fill out an online survey via Qualtrics. This survey was distributed and shared over social media in order to acquire a sufficient amount of respondents. The survey started off with a short introduction on the topic and a declaration of ethical research. It stated that participation in the survey was voluntary and that all answers were confidential and anonymous. This was followed by a consent form that required participants to agree with their answers being used for the research. The respondents were not informed on the actual aim of the study so that they could not manipulate or skew the results. Initially the respondents were asked to fill out some demographic questions about their age, gender and education level.

The second part of the survey included questions and statements about the food descriptions. In the survey program, Qualtrics, different groups were made in order for a participant to only see each product only once, in one description condition. The participants all received a random order of presentation per participant which eliminated any bias on the basis of when a certain product or product description was encountered in the survey. After seeing a product description, the respondents were asked to rate the product on the variables of expected tastiness, desirability and purchase intention. After having rated the product on those variables, they were asked to rate how much they like the product.

At the end of the survey the respondents were asked a few more questions about their living situation, for who they buy food and how long it has been since they have last eaten

something. These questions were asked in order to see whether they had any influence on the results of the survey questions. These questions were asked at the end of the survey to prevent respondents from figuring out the aim of the study before filling out the questions. After these questions all of the respondents got a screen that thanked them for their participation in the research and given an explanation of the purpose of the study.

Statistical treatment

In order to analyse the data of the survey, various statistical analyses were utilised. To determine whether the scales were reliable, a Cronbach's Alpha had to be calculated for the scales. To analyse the effects of product descriptions and food types on the variables expected tastiness, desirability and purchase intention, repeated measures two-way ANOVA tests were used.

Results

The purpose of this study was to discover whether the type of descriptions on food packaging in supermarkets had an effect on the expected tastiness, desirability and purchase intention of healthy and unhealthy foods.

In order to research both the hypotheses three separate two-way repeated measures ANOVAs were utilised to test the effect of healthiness and product descriptions on the variables expected tastiness, desirability and purchase intention.

Expected tastiness

A repeated measures analysis for expected tastiness with food type (healthy and unhealthy) and product description (neutral, indulgent and outcome) as within-subject factors showed a significant main effect of food type ($F(1, 114) = 18.54$, $p < .001$). Unhealthy food ($M = 4.24$, $SE = 0.11$) was perceived as having a higher expected tastiness than healthy food ($M = 3.65$, $SE = 0.08$). Additionally, there was no significant main effect of product description ($F(2, 228) < 1$, $p = .977$). There was also no significant interaction between food type and product description ($F(2, 228) < 1$, $p = .825$).

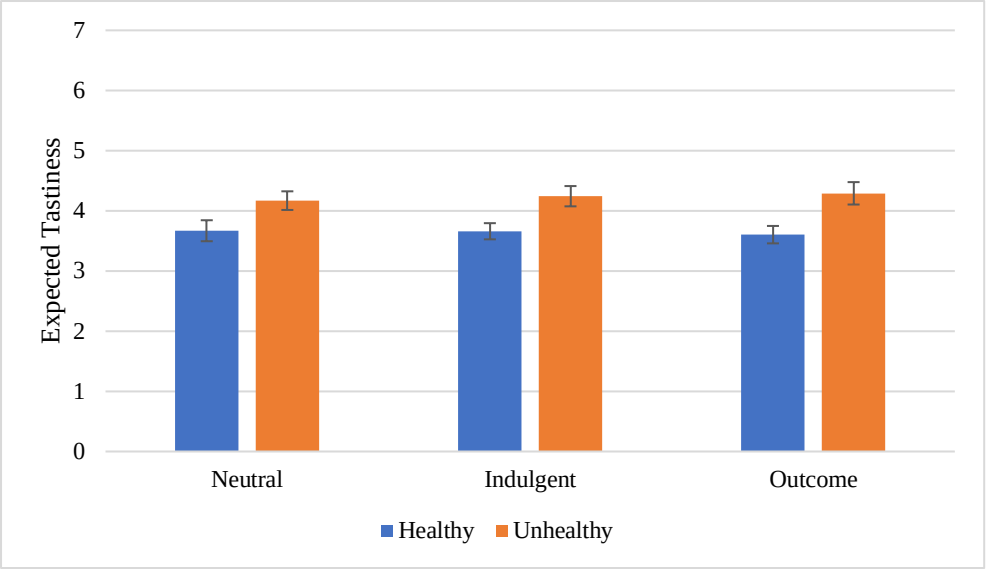

Figure 1. Means and standard error for expected tastiness

Desirability

A repeated measures analysis for desirability with food type (healthy and unhealthy) and product description (neutral, indulgent and outcome) as within-subject factors showed a significant main effect of food type ($F(1, 114) = 13.92$, $p < .001$). The desirability for unhealthy food ($M = 4.32$, $SE = 0.11$) was higher than for healthy food ($M = 3.75$, $SE = 0.09$). There was no significant main effect of product description ($F(2, 228) < 1$, $p = .431$). Additionally there was no significant interaction between food type and product description ($F(2, 228) = 1.53$, $p = .219$).

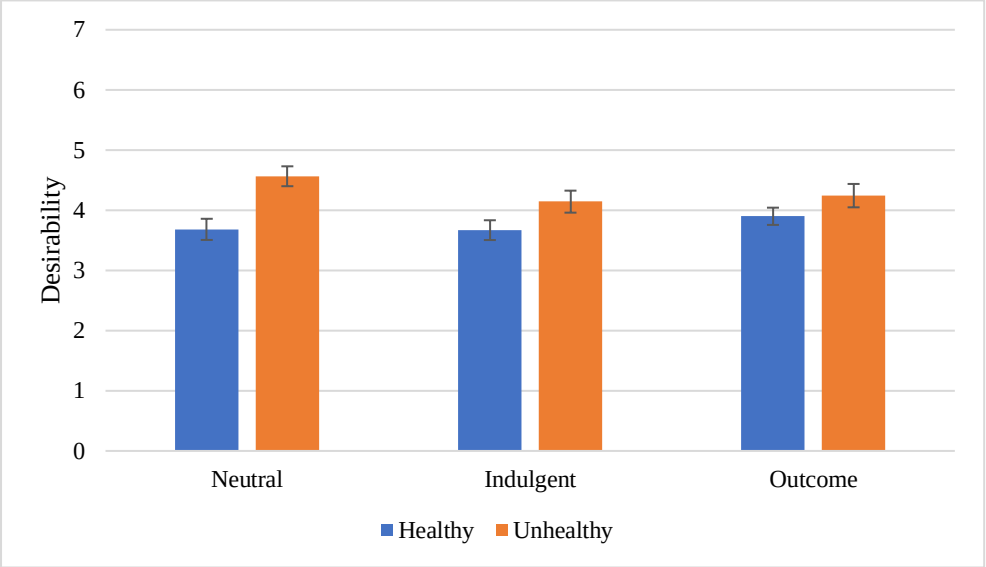

Figure 2. Means and standard error for desirability

Purchase intention

A repeated measures analysis for purchase intention with food type (healthy and unhealthy) and product description (neutral, indulgent and outcome) as within-subject factors showed a significant main effect of food type ($F(1, 114) = 6.00$, $p = .016$). The purchase intention for healthy food ($M = 3.46$, $SE = 0.10$) was lower than for unhealthy food ($M = 3.80$, $SE = 0.10$). There was no significant effect of product description ($F(2, 228) < 1$, $p = .381$). Furthermore, there was no significant interaction between food type and product description ($F(2, 228) < 1$, $p = .974$).

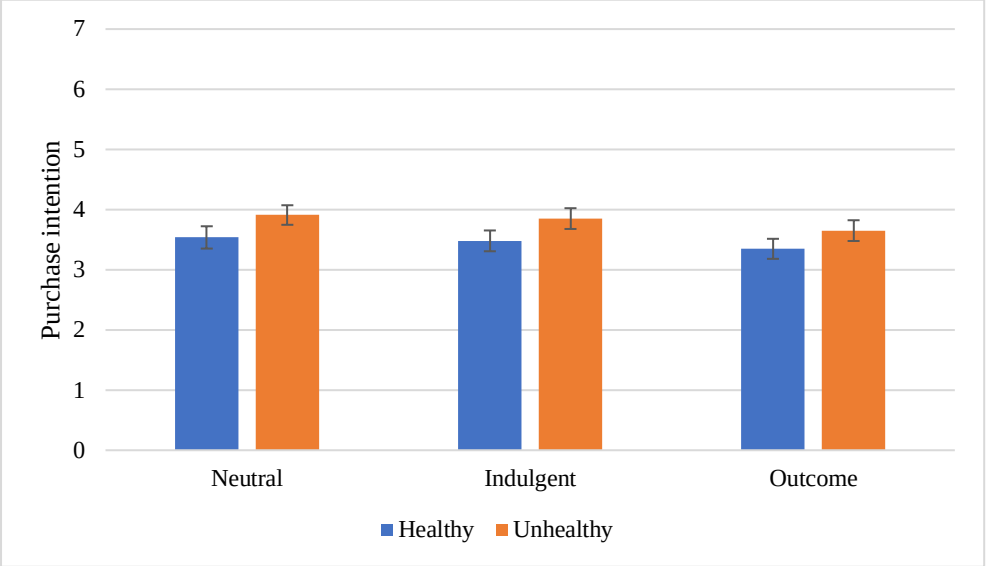

Figure 3. Means and standard error for purchase intention

Conclusion

The aim of this study was to investigate whether product description types would influence students in their perceptions of food. The variables of expected tastiness, desirability and purchase intention were analysed in this research. In order to discover whether there was any significance to this research, food packaging was manipulated by changing the product description on the label of products found in a supermarket. These manipulated product descriptions ranged from neutral language to indulgent and outcome-focussed language. In a survey, respondents were asked to answer questions on the expected tastiness, desirability and purchase intention for three healthy and three unhealthy products.

The results of this research indicated that unhealthy products scored higher on each of the scales for expected tastiness, desirability and purchase intention. These results were the case for neutral, indulgent and outcome-simulation language use in the product descriptions of the product. These results are contradictory with H2, which hypothesised that unhealthy food was expected to be selected more often in the lower rating for each of the conditions

compared to the healthy products when outcome-simulation focused language was used. The results also indicated that there were no significant effects of product descriptions on the conditions of expected tastiness, purchase intention, and desirability. This is contradictory to H1, which stated that indulgent labelling would be more effective than both outcome-simulation and neutral labelling, and therefore cannot be confirmed. The results of the study also indicated that there was no significant interaction effect, these results are contradictory to H3, which stated that there would be an interaction between food labelling and food healthiness. This research showed that students were not significantly influenced in their food choices on the basis of the product packaging.

Discussion

This study attempted to find evidence of the effect of product descriptions on the perception of food by students. Previous research indicated that indulgent labelling of food could have an effect on the increase of desire for healthy food compared to other types of food labelling (Turnwald, Boles, & Crum, 2017; Turnwald & Crum, 2019). This present study did not find a similar effect when focused on indulgent food labelling for product descriptions compared to outcome-simulation or neutral labelling. The apparent difference in results could possibly be explained by the focus of the study. The present study focused on manipulating the product packaging in supermarkets. The research that was carried out by Turnwald, Boles, and Crum (2017) focused on food labelling for vegetables in a university cafeteria. This difference in focus and setting could potentially explain why in the present study no significant results were found for the use of different product descriptions on the variables of expected tastiness, desirability and purchase intention. To investigate whether food is perceived differently in different settings such as a university cafeteria compared to in a supermarket more research has to be done. A suggestion for further research could be to compare the response to food descriptions in different settings to see whether students evaluate products and language differently in a different settings (e.g., restaurant, supermarket, university cafeteria).

In the study by Papies, Johannes, Daneva, Semyte, and Kauhanen (2020) food descriptions for plant and meat-based products were investigated. The results of their study indicated that the use of indulgent language had a positive effect on the purchase intention for the plant-based products. However, in the present study the focus of investigation was on healthy and unhealthy products instead of meat and plant-based products. Healthy products do not automatically have to be plant-based products and thus their results cannot answer whether indulgent language use should positively effect the perceptions of healthy products.

A recommendation for future research could be that the focus should be on a larger variety of food categories in order to investigate which food categories are significantly influenced by the use of varying product descriptions.

Results of the present study with regard to the perception of students of unhealthy foods compared to healthy foods were in line with previous research about the perceptions of healthy and unhealthy food. In this previous research it was stated that unhealthy products are seen as tastier compared to healthy products (Raghunathan, Naylor, & Hoyer, 2006). According to research by Turnwald, Jurafsky, Conner and Crum (2017) it was indicated that in restaurants the menus of healthy items were described in a significantly different manner compared to the standard food items. This indicated that people who published the menus had the perception that healthy food items had to be described in a different manner compared to the standard food items. In the study by Raghunathan, Naylor, and Hoyer (2006) it was suggested that describing healthy food in a different manner could increase people's perceptions of healthy food and positively influence eating behaviour. In the present study the descriptions of healthy foods were compared to the descriptions for unhealthy food. Results showed that there were no significant results that indicated that the use of a different type of language use increased the perceptions of students on healthy foods. The respondents expected the tastiness of the unhealthy products to be greater than the healthy products, they desired to eat the unhealthy products more, and were more inclined to purchase the unhealthy options on their next visit to a grocery store or supermarket.

Previous research by Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2019) indicated that there was evidence of healthy products having a higher expected tastiness, desirability and purchase intention. These results were formed on the basis of research that investigated outcome-simulated labelling for healthy and unhealthy products. However, in the present study there was no evidence found to support the results found by Muñoz-Vilches, van Trijp, and Piqueras-Fiszman. A potential explanation for the differing results between the present study and that of Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2019) could be that in the present study the outcome-simulation labelling was always focused on positive language use for both healthy and unhealthy products. In the research by Muñoz-Vilches, van Trijp, and Piqueras-Fiszman (2019), the outcome-simulation descriptions by the participants for the healthy products were written in a positive way, while the descriptions for the unhealthy products were written in a more negative way. The unhealthy products were described in ways such as, it would make you feel unenergized, or make you overweight. By letting participants write their own outcome-simulation focused descriptions for the healthy

and unhealthy products, their way of using positive or negative language for the different food types could have influenced the participants of the study to have preferred the healthy products over the unhealthy products. In the present study the labelling was done by the researchers and was written in a positive way for both the healthy and the unhealthy to maintain the closest resemblance to how products are currently described in supermarkets. The difference between letting the researchers describe products or leaving it to the participants could explain the differences in results between the present study and that of Muñoz-Vilches et al. (2019).

The present study only investigated Dutch students. It might be interesting and important for future research to conduct a cross cultural study. This should be done to compare the results found for the role of language on the perceptions of food. Perhaps the lack of significant results found for Dutch students could be found when this study is conducted in a different culture. Furthermore, there should be several studies that research countries that are similar to the Dutch culture and countries that have a very different culture compared to the Dutch culture. By conducting these cross cultural studies it could be possible to suggest that the role of language on the perceptions of food is related to culture.

There are several limitations of the present study. This study asked no questions about a possible diet or dietary restrictions of participants in the survey. Research done by Papies, Barsalou, and Rusz (2020) did check whether the diet of the participants influenced the results. This question is relevant to ask because someone with dietary restrictions or allergies could have a bias for certain products or food, they could be allergic to a product or not eat certain types of food based on religious or personal views. This question should have been asked in the present study in order to find out whether dietary restrictions could have had an effect on the answers given in the survey and in turn had an effect on the results of the study.

The language used on the product descriptions were based on language that was related to the desired food labelling. For the indulgent labelling the language use was taken from a database by Speed and Brysbaert (2020) to ensure that words used in the product description had a strong relation to taste. Each of the product descriptions for the same product included the same amount of words to eliminate any bias based on the length of the description. However in research by Turnwald, Boles, and Crum (2017), it was shown that their labelling were not of equal length but their results came back as significantly different. It could be possible that the length of the descriptions given to food could have caused the significant results to occur in the study by Turnwald, Boles, and Crum (2017). The present study did not look into whether the length of the descriptions had any effect on the

perceptions of the product. A recommendation for future research could be to have different lengths of descriptions for the same product and investigate whether the responses to these descriptions show any significant effect with regard to the expected tastiness, desirability and purchase intention of the product.

This study indicated that previous assumptions and findings about food descriptions are not always as clear as previously theorised. There were no significant differences found for the perceptions of healthy and unhealthy food with manipulated language use in product descriptions. Several studies suggested that there would be an effect of indulgent and outcome-simulation language on the perceptions of healthy food (Raghunathan et al., 2006; Turnwald et al., 2017). Furthermore, this study is in line with previous research indicating that people perceive unhealthy food as tastier compared to healthy food (Raghunathan Naylor, & Hoyer, 2006). These results could indicate that possibly the preferences of people of unhealthy food over their healthy counterparts are too deeply rooted for language to influence their perceptions on food.

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Appendix

Neutral	Indulgent	Outcome
		
		
		
		


Rijst wafels
Een (witte) wafel van gepofte rijst


Rijst wafels
Verrassend knapperig en verslavend lekker


Rijst wafels
Verlaagt de bloeddruk en versterkt de spieren


Volle yoghurt
Zuivelproduct gemaakt van melkzuur


Volle yoghurt
Lekker romig en zuur ontbijt


Volle yoghurt
Voor blijvend sterkere botten