

# The effect of language use and visual cueing in healthy food advertisements

---

Sara Croux

Bachelor's Thesis

Supervisor: Dr. L. Speed

Radboud University, Nijmegen

24-01-2020



## **Abstract**

Nowadays, we live in a world where we are more often confronted with online advertisements of unhealthy food products rather than advertisements depicting healthy food. Unhealthy foods are presented in such a way that consumers assign taste to these products. This is often achieved through the use of “tasty” language. This study wonders whether this type of language can be applied to healthy food advertisements as well. It focuses on which type of language in an ad, as well as a visual cue, works best for consumers in order to find the advertisements desirable, persuasive, and credible. Here, we believe that it is particularly important to focus on how to present healthy food in print advertisements. The study measured the effect of language and visual cueing by means of an online questionnaire in which participants were exposed to healthy food ads. Several questions were asked about the desirability, persuasiveness, and credibility of the advertisement. The results showed that visual cueing had no significant effect on the attitude of consumers. Language did show an effect on the perceived credibility, but only for ads with basic and nutritional language. Advertisements were found to be more credible when basic language was used compared to when nutritional language was used. In next studies on this topic, participants should be made aware of the essence of the presented language and the visual cue in the advertisement.

*Keywords:* Healthy food advertisements, Language, Visual cue, Attitude, Consumers.

## **Introduction**

In several countries, obesity is becoming a more common phenomenon. Globally, 315 million people are diagnosed with obesity. Moreover, the diagnosis of obesity has increased by fifty percent over the last ten years in western countries. Obesity is defined as an extremely high body mass index (weight/height)<sup>2</sup>. It is a serious matter which is characterized by an effect on psychosocial and physical well-being and health (James, 2004).

Several determinants can lead to the development of obesity. A decrease in physical activity and an increase in the consumption of high-fat, low-energy food products are key factors (Cateron & Gill, 2002). The decrease in physical activity is partly due to our changing environment, as an increasing amount of people perform job-related activities from home. Employees who work from home move less compared to those who are obligated to leave their houses to go to their job (Crosbie & Moore, 2004). In addition, many jobs require the use of internet and social media platforms, on which high-fat foods are being promoted by an increasing number of advertisers. When one searches for ‘food advertisements’ on Google Images, almost all pictures appear to be unhealthy fast food products. There are relatively few pictures of healthy foods, which is concerning.

Healthy food should receive more attention and should be promoted on a global level. The techniques to promote healthiness are endless, as are those to promote unhealthy foods. People may be encouraged or discouraged to make unhealthy decisions through social groups or environmental factors

such as the places where we work and/or live (McGinnis, Williams-Russo & Knickman, 2002). So, food advertisers should put more focus on depicting healthy, rather than unhealthy foods.

Print food advertisements generally consist of two elements. First, a picture of the product itself, and second, some sort of text to describe the product in a detailed manner. Language is an important tool to convey a message as effectively as possible. Language should be adjusted to the aim the advertiser is pursuing through his message. For instance, the language might take an informative, persuasive, direct, indirect, formal or informal style. Additionally, it should be adjusted to the target group or audience, as the choice of language use might vary across audiences. Entrepreneurs and investors might best be approached in a formal style, while students are more likely to be approached in an informal style. On the other hand, consumers who are tempted to buy a certain product, but need that last push, might be convinced more easily when persuasive language is used in an advertisement (Kannan & Tyagi, 2013). The linguistic relativity theory provides an explanation for this phenomenon.

The linguistic relativity theory (see Wolff & Holmes, 2010) suggests that language and its construction can influence our perception of the world. In fact, in some ways language can even determine our thoughts, an idea which is known as linguistic determinism. If differences in language lead to differences in thought, then the use of different types of languages in advertisements might lead to different thoughts.

Overall, there are many different types of languages that play a vital role in advertising. It is important to take into account the kind of language that is used, as it is said to influence our thoughts, behaviors, and attitudes (Kannan & Tyagi, 2013). People often tend to associate unhealthy food with words such as “tasty” and “delicious” (Papies, 2013). In their minds, people link these tempting food words to unhealthy food products, which in turn activates eating simulations of these products. This is often not the case for healthy foods, where generally no association is made with tempting food words. Hence, there is no connection with heavy eating simulations compared to unhealthy food products (Papies, 2013). Moreover, in a study conducted by Raghunathan, Naylor, and Hoyer (2006), it is investigated whether healthy products are linked to tastiness. The results show that consumers like unhealthy products better because they believe it tastes better. The fact that consumers often find unhealthy products tastier has to do with the language that is used to present the food products in this study. To illustrate an example, the participants were shown different versions of a cracker. They were told that some crackers contained a higher amount of fat than the others, while in reality the amount of fat was equal across the different versions. However, the consumers assumed that the crackers with a higher amount of fat would be tastier than the less fat containing crackers. These participants were certain of the tastiness of high fat crackers due to the fact that it was promoted through unhealthy language. This example shows the effect that the type of language can have on people’s thoughts and their perceived tastiness of food products. Through the studies by Papies (2013) and Raghunathan et al. (2006), we are now familiar with the fact that unhealthy products are best promoted through indulgent language. Consumers often associate indulgent language with tastiness of the products. However, we

are specifically interested in whether the positive effect of indulgent language on unhealthy food can be applied to healthy food products as well.

Turnwald, Boles, and Crum (2017) conducted an experiment to investigate the effects of language types on healthy foods such as vegetables. It shows that the number of people choosing to consume vegetables rises when the vegetables are labeled with indulgent language compared to basic or healthy language. In this study, the basic language labels, for instance, consist of short descriptions such as “Beets” or “Butternut squash”. For the healthy language labels, a distinction is made between healthy restrictive and healthy positive. They both put focus on mentioning the nutritional values. An example of healthy restrictive language is: “Lighter-choice beets with no added sugar” and “Butternut squash with no added sugar”. Labels with healthy positive language are: “High-antioxidant beets” and “Antioxidant-rich butternut squash”. Lastly, for indulgent language, the focus lies more on the detailed flavors of the product. An example for beets is: “Dynamite chili and tangy lime-seasoned beets”. Furthermore, butternut squash was described indulgently as “Twisted garlic-ginger butternut squash wedges”. Participants eat a bigger portion of the vegetables when the vegetables are presented through indulgent language compared to the situation where the label contains healthy or basic language. The results of this study suggest that promoting healthy foods by healthy language on food signs is not effective. Instead, the use of indulgent language is shown to be effective for the promotion of healthy as well as unhealthy food products.

Turnwald et al. (2017) focused on the behavior of consumers towards eating vegetables and manipulated language on the food signs in front of the products. The current study, however, questions the attitudes of people towards various language usages in healthy food products advertisements. We wonder if the results proposed in Turnwald et al.’s (2017) study can be generalized to print food advertisements too. Of particular interest is whether the presented advertisements are perceived to be credible, desirable and persuasive. Previous research (Cacioppo, Cacioppo & Petty, 2018) has been particularly interested in measuring attitude because of the psychological and social relevance it possesses. A key characteristic of attitude is the fact that it can change over time, taking into consideration new cues and information people are presented with. In turn, changing attitudes can lead to new behaviors (Cacioppo, Cacioppo & Petty, 2018). Our study is specifically interested in whether attitude is changed when different types of language are used. Measuring attitude serves psychological and social relevance. Therefore, with this study, we hope to contribute to this field with new insights on the effect of language on consumers’ attitudes in print healthy food advertisements.

Generally, this study aims to find out whether attitude towards the advertisements will be more positive when presented with basic, nutritional or indulgent language. The linguistic relativity theory proposes that language influences our thoughts. The use of a specific language type might therefore lead to certain thoughts consistent with this language type. We form particular ideas in our minds based on the language we are presented with (Wolff & Holmes, 2010). This theory can be linked to basic language use. It might make consumers think that the product itself is rather basic as well. Nutritional language

is often not directly linked to tasty products. Food products that are perceived to be healthy, are also perceived to be less tasty (Turnwald et al., 2017). However, indulgent language convinces people to eat both unhealthy and healthy products. This can be explained by the concept of mental simulation, where we simulate actions that others perform in our minds. Papies (2013) describes that food descriptions which emphasize flavor in food products lead to activation of simulations of eating the food. The eating simulation in turn leads to an increase in desire for that particular food product. Indulgent language, which mostly emphasizes tastiness, makes us simulate eating, which makes us desire the food that is described by indulgent language (Papies, 2013).

Here, attitude is subdivided into three smaller dependent variables, namely desirability, persuasiveness, and credibility. First, desirability is measured. The desirability linked to an advertisement or a product is expressed in evaluations. These evaluations contribute to certain attitudes (Infante, 1971). When a participant perceives one or more of the advertisements to be desirable, then this means that they are more likely to want to eat it or buy it. This study investigates whether one specific language type leads to a higher level of desirability than another type of language use. In other words, are the participants more likely to want to eat a product when it is presented with basic, nutritional or indulgent language?

Second, persuasiveness is measured. A persuasive message aims to actively change a person's beliefs and attitude (Cacioppo, Cacioppo & Petty, 2018). This research tries to find out if one type of language is perceived to be more persuasive than the other types. In short, are the participants more likely to be persuaded by an advertisement with basic, nutritional or indulgent language?

Third, credibility is measured. An advertisement is believed to be credible when the information involved is truthful and accurate (Kelman & Hovland, 1953). Credibility, next to desirability and persuasiveness, forms a person's attitude and is therefore a key factor in investigating the attitudes of consumers (MacKenzie, Lutz & Belch, 1986; Jaworski & MacInnis, 1989; Ling, Piew & Chai, 2010). So, this study aims to find out whether advertisements are perceived to be more credible when basic, nutritional or indulgent language is used.

As well as language affecting attitude, visual cues might have an effect on attitude too. Visual cues are types of sensory cues that can be added to food advertisements such as body parts. Here, we make use of visual cues such as a person's hand. The mirror neuron theory proposes that we perform simulations in our minds when we watch a person perform a specific action (Rizzolatti & Craighero, 2004; Rizzolatti, Craighero & Fadiga, 2002). For instance, if we are looking at an advertisement in which a hand is grabbing a food product, then that observation might lead us to mentally simulate the action. The fact that we want to understand an action is related to mental simulation. However, this mental simulation may happen unconsciously. Still, it is predicted that the mental simulation will lead to a more positive attitude. This means that when people observe another person picking up the food depicted in the food advertisement, their mental simulation is activated. Subsequently, in their minds

they are picking up the product as well. This in turn leads to higher cravings and desirability towards the product (Papiés, 2013).

This study will investigate whether people believe an advertisement is more desirable, persuasive, and credible when there is a visual cue, such as a person's hand. In this way, this research attempts to observe aspects of the mirror neuron theory by providing the participants with pictures of people who are holding the foods in the advertisement.

This study measures consumers' attitudes to healthy food advertisements. Language use in advertisements can guide attitude. Attitude in turn influences behavior (Kannan & Tyagi, 2013). It is relevant to understand how consumers' attitudes are formed and how we can influence them. Therefore, here language type and visual cue are manipulated in healthy food advertisements and people's attitudes to food advertisements are measured. These manipulations could lead people to be more likely to choose healthy food. This in turn contributes to the wider problem of consumers often choosing and eating unhealthy foods over healthy products. Attitude is measured by questioning the desirability, persuasiveness, and credibility of the food advertisements.

#### *Research questions*

Several questions are formulated in order to conduct this study.

RQ: To what extent is there an effect of different language types (basic, nutritional and indulgent) and a visual cue on the attitude towards a healthy food advertisement?

Q1: To what extent is there an effect of the language type on the attitude towards a healthy food advertisement?

Q2: To what extent is there an effect of a visual cue on the attitude towards a healthy food advertisement?

Q3: To what extent is there an interaction between language type and a visual cue on the attitude towards a healthy food advertisement?

#### *Hypotheses*

Regarding the first question, an effect of the different types of languages on the attitude towards a healthy food advertisement is predicted. The overall attitude and persuasiveness of the advertisements will be higher when indulgent language is used than when basic and nutritional language is used. Furthermore, the desirability of indulgent language will be higher than that of basic and nutritional language. The study by Turnwald, Boles, and Crum (2017) showed that healthy food and its labels are perceived as more desirable when indulgent language is used, instead of nutritional or basic language. Therefore, both persuasiveness and desirability will be higher for indulgent language advertisements than for basic and nutritional language. However, the credibility will be higher for basic and nutritional texts than for indulgent language. Here, it is expected that basic and nutritional language will come across as more credible and reliable since only the main facts about the products are stated. Indulgent

language leads to lower credibility because it anticipates people's senses of tastiness and employs some form of exaggeration.

For question two, an effect of a visual cue on the attitude towards the advertisement is predicted. Advertisements that contain a visual cue will lead to higher persuasiveness, credibility, and desirability. Here, the mirror neuron theory plays a key role. When we observe a person eating, we simulate that same action in our minds. The process of mental simulation results in higher desirability, persuasiveness, and credibility (Papies, 2013; Rizzolatti & Craighero, 2004; Rizzolatti, Craighero & Fadiga, 2002). In short, an advertisement with a visual cue is perceived to be more desirable, persuasive and credible.

Concerning the third question, an interaction effect between language and a visual cue on the attitude towards the healthy food advertisement is expected. For the advertisement with basic text, the effect of a visual cue will be stronger than for nutritional and indulgent language. This is predicted because persuasiveness is expected to be lower for basic language and so there is more room for the persuasiveness of a visual cue. This means that a visual cue leads to higher persuasiveness. Hence, for basic language, the persuasiveness should be increased by including a visual cue. Advertisements that contain indulgent language, however, will already persuade people to a high extent. Therefore, adding a visual cue will not make any obvious changes to this level of persuasiveness.

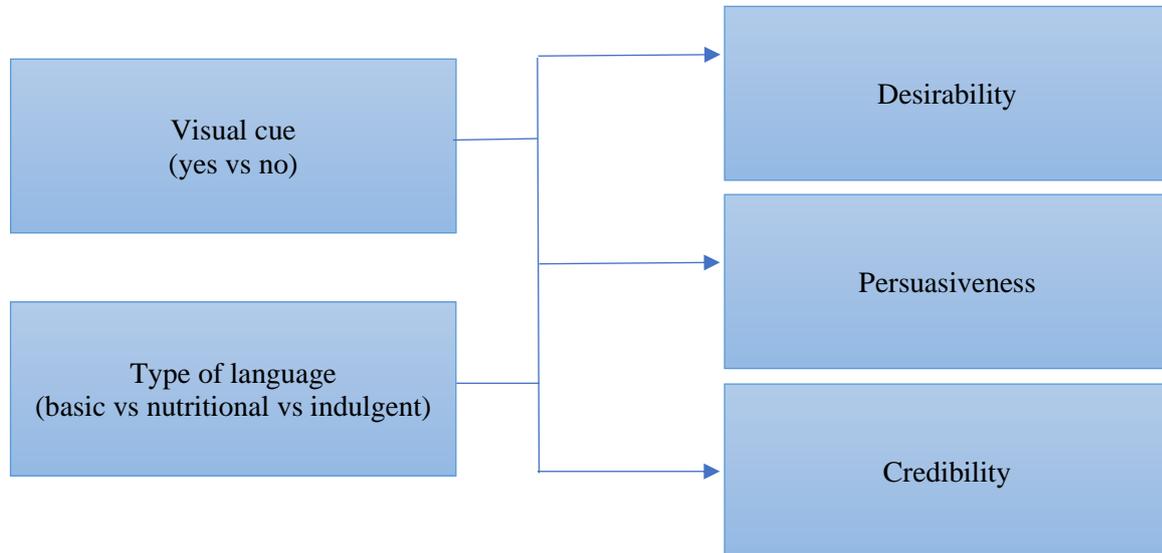
## **Method**

### *Materials*

We manipulated two independent variables, namely visual cue and type of language (see Figure 1). The variable visual cue had two levels: the presence of a visual cue or the absence of a visual cue. When there was a visual cue, a person's hand was displayed in the picture. This hand held on to either the fork, knife, spoon, or glass and was therefore directly connected to the food portrayed in the image. The second variable, type of language, contained three levels. The language was either basic, nutritional or indulgent. Each language type was presented above the picture of a food product and depicted a short description of the product. Basic language merely included informational details about the product. An example was: "Buy our new Caesar salad now with fresh iceberg lettuce, free-range chicken, and salad croutons" (see Appendix). Nutritional language included information on the nutritional values, for example: "Buy our healthy Caesar salad now with organic iceberg lettuce, lean chicken, and high-fiber croutons" (see Appendix). Lastly, indulgent language was focused on taste and highlighted the desires of the consumers. An example is: "Buy our tasty Caesar salad now with fresh iceberg lettuce, tender chicken, and crispy croutons" (see Appendix). Each description for basic, nutritional and indulgent language was matched for the number of words within the advertisements. The location of the visual cue differed across the pictures in which a visual cue was used. This was done so that not all pictures looked similar and to make it less boring for participants to fill in the questionnaire. For the same reason, the background in all pictures differed. All descriptions above the images of the foods contained a different type of language. Nevertheless, in each description, the product name was mentioned. The

products that were used for this study are a fruit salad, a green smoothie, a Caesar salad, a healthy sandwich, a green curry, and tomato soup.

Figure 1. Independent and dependent variables.



### *Subjects*

In order to obtain high statistical power, a sample size of 30 participants per condition was aimed for. By doing this, our data would comply with the Central Limit Theorem (Kwak & Kim, 2017). This theory suggests that a sample size of 30 participants contributes to normal sampling distribution. As this study included six conditions, a total minimum number of 180 participants was necessary to make valid inferences about the wider population. However, in order to improve the credibility and significance of our results, a larger sample size seemed more appropriate. Consequently, a total number of 319 subjects took part in the study. They were mainly recruited through a Facebook post that included the questionnaire. Also, some respondents were contacted via e-mail. Each participant was a native Dutch speaker. All of the participants were between 18 and 78 years old ( $M = 33.46$ ,  $SD = 15.39$ ). There were 89 male participants (27.9%) and 228 (71.5%) were female participants. Two of the participants (0.6%) did not want to clarify their gender. No criteria were used to select the participants with regard to their educational level. The most frequent level of education among the respondents was university level education ( $n = 134$ , 42.0%), followed by university of applied sciences ( $n = 97$ , 30.4%), then medium vocational education studies ( $n = 63$ , 19.7%), and lastly high school level ( $n = 24$ , 7.5%). Additionally, the participants' hunger level was measured on a 7-point Likert scale ( $M = 3.40$ ,  $SD = 1.68$ ). Then, they were asked about any special dietary requirements. Several participants have said to be vegetarian/vegan ( $n = 39$ , 12.2%), others were trying to lose weight ( $n = 102$ , 32%), a number of participants dealt with medical needs such as allergies or diabetes ( $n = 17$ , 5.3%), whereas some participants did not have any special dietary requirements ( $n = 183$ , 57.4%). Lastly, the respondents filled in whether they were right-

handed or left-handed. A total number of 288 was right-handed (90.3%) and 30 people were left-handed (9.4%).

### *Design*

The design consisted of a 3 x 2 design with type of language (three levels: basic vs nutritional vs indulgent) and visual cue (two levels: yes vs no) as independent variables. A within-subjects design was used to conduct this study. All participants were exposed to all three levels of language, as well as to a visual cue or no visual cue. The order of the advertisements seen by each participant was randomized so that the possibility of tiredness could be eliminated.

### *Instruments*

The dependent variable that was measured was the attitude towards the healthy food advertisements. Attitude focuses on different evaluations of the advertisement. This variable was subdivided into three smaller dependent variables, namely desirability, persuasiveness, and credibility. An example statement in the survey for the variable 'desirability' was: "This product looks nice". Additionally, an example statement for the variable 'persuasiveness' was: "I think this advertisement is persuasive". Lastly, an example statement for 'credibility' was: "This is a realistic advertisement".

This study was conducted by means of an online, individual questionnaire. The first part of the questionnaire included a short introduction on the studies of the researchers as well as instructions for filling in the survey. In the second part, the participants were presented with the first advertisement. Subsequently, two questions per attitude variable (desirability, persuasiveness, and credibility) were asked. The answer options consisted of a 7-point Likert scale ranging from 1=completely disagree to 7=completely agree (Likert, 1931). After that, the participants were asked to fill in their age, gender (male/female/I'd rather not say), educational level (high school/medium vocational education/university of applied sciences/university), the level of hunger at that moment (on a 7-point Likert scale ranging from 1=not hungry at all to 7=really hungry), their dietary requirements (vegetarian or vegan/trying to lose weight/medical needs in terms of allergies or diabetes/no dietary requirements at all) and their dominant hand (left/right). In the third part of the questionnaire, the subjects were debriefed by means of an explanation on the purpose of the study. Filling in the questionnaire took the respondents approximately ten minutes.

### *Statistical treatment*

Cronbach's  $\alpha$  was computed to test for the reliability of the different items (desirability, persuasiveness, and credibility) in order to accurately measure the dependent variable attitude. Additionally, three separate 3 x 2 repeated measures within-subjects ANOVAs for the three dependent variables were used to analyze the data.

## Results

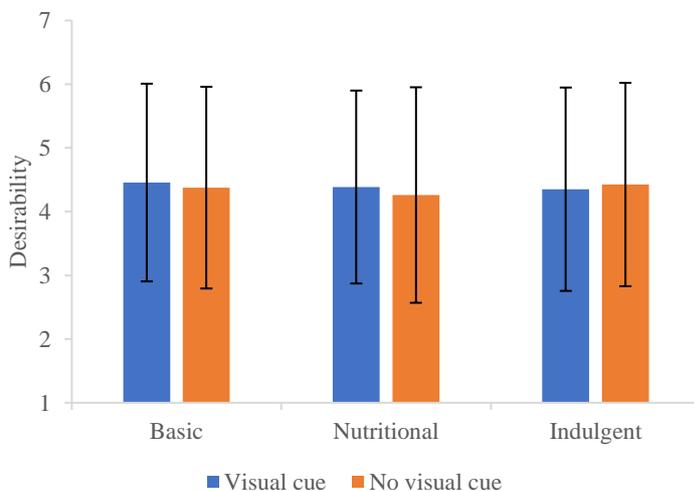
### *Cronbach's alpha*

In the survey, all three dependent variables were measured with several items. Two questions per dependent variable were asked. As there were three levels for the variable language (basic, nutritional, and indulgent) and two levels for the variable visual cue (yes and no), there were six alphas for each dependent variable. In total, this means that there were eighteen Cronbach's alphas. Of these eighteen alphas, seventeen were found to be good, and one was acceptable. The highest Cronbach's alpha was  $\alpha = .93$  for 'desirability with nutritional language and no visual cue' comprising two items. The lowest Cronbach's alpha was  $\alpha = .79$  for 'persuasiveness with indulgent language and no visual cue' comprising two items.

### *Desirability*

There was no significant main effect of type of language ( $F(2, 636) < 1, p = .54, \eta^2_p = .002$ ) and no significant main effect of visual cue ( $F(1, 318) < 1, p = .48, \eta^2_p = .002$ ). Also, no significant interaction effect was found between language and visual cue ( $F(2, 636) = 1.00, p = .37, \eta^2_p = .003$ ).

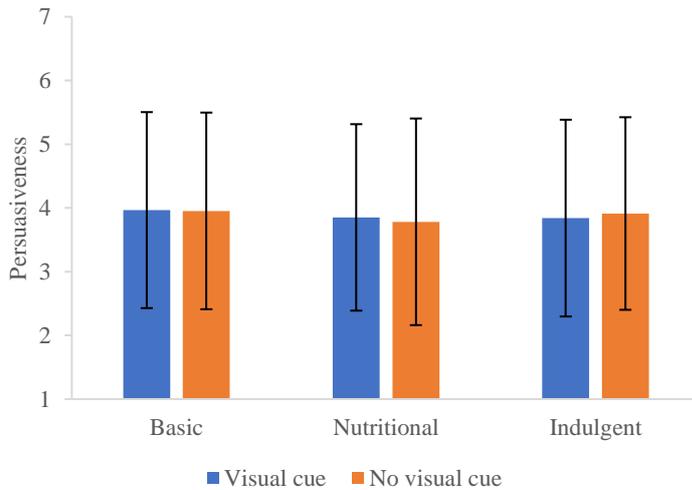
Figure 2. Means and standard deviations for desirability on a 7-point Likert scale (1=completely disagree and 7=completely agree).



### *Persuasiveness*

There was no significant effect of type of language on persuasiveness of the advertisements ( $F(2, 636) = 1.68, p = 1.87, \eta^2_p = .005$ ). Moreover, a repeated measures ANOVA showed no significant effect of visual cue on persuasiveness ( $F(1, 318) < 1, p = .96, \eta^2_p = .000$ ). Lastly, the interaction effect between type of language and visual cue was not found to be significant ( $F(2, 636) < 1, p = .62, \eta^2_p = .002$ ).

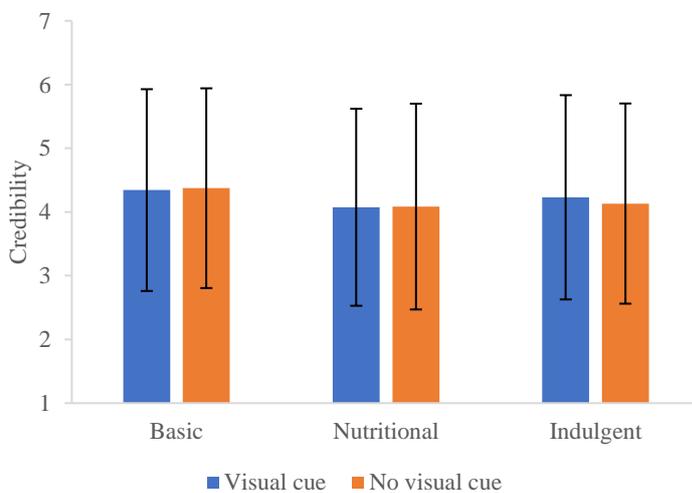
Figure 3. Means and standard deviations for persuasiveness on a 7-point Likert scale (1=completely disagree and 7=completely agree).



### Credibility

There was a significant main effect of type of language on credibility of the advertisements ( $F(2, 636) = 6.74, p = .001, \eta^2_p = .021$ ). Advertisements in which basic language was presented were perceived to be significantly more credible ( $M = 4.36, SD = .075, p = .001$ ) than advertisements in which nutritional language was displayed ( $M = 4.08, SD = .075, p = .001$ ). No significant differences were found between basic and indulgent language and between nutritional and indulgent language. Also, no significant main effect was found for visual cue ( $F(1, 318) < 1, p = .72, \eta^2_p = .000$ ). In addition, the interaction effect between type of language and visual cue was not found to be significant ( $F(2, 636) < 1, p = .59, \eta^2_p = .002$ ).

Figure 4. Means and standard deviations for credibility on a 7-point Likert scale (1=completely disagree and 7=completely agree).



## **Conclusion**

In this study, the three variables desirability, persuasiveness, and credibility were measured. The main aim of the study was to discover whether a certain type of language and the presence of a visual cue would have an effect on the way people would perceive advertisements. In order to do this, healthy food advertisements were manipulated by changing the language in the ad to either basic language, nutritional, or indulgent language as well as adding a visual cue or not adding one. Several questions were asked to participants by means of a questionnaire to find out the levels of desirability, persuasiveness, and credibility of an advertisement.

Firstly, this study shows that the type of language and the presence or absence of a visual cue did not lead to significant effects on the desirability of the ad. This means that for each type of language, the level of desirability was somewhat the same. Additionally, adding a visual cue did not result in a significant effect on desirability compared to leaving the visual cue out. In short, the participants were not more likely to want to eat the food with one particular kind of advertisement.

Secondly, for persuasiveness, the type of language showed no significant effect. Moreover, no significant effect was found for the absence or presence of a visual cue. The level of persuasiveness with the participants did not differ significantly when they saw an advertisement with a specific language type or a visual cue.

Thirdly, the dependent variable credibility did show a significant effect for the type of language. An advertisement presented with basic language was found to be more credible than an advertisement with nutritional language. Between basic and indulgent language and between nutritional and indulgent language, there were no significant effects on the credibility level. Lastly, there was no significant effect of the presence or absence of a visual cue on credibility with participants.

## **Discussion**

The study by Raghunathan, Naylor, and Hoyer (2006) proposed that people often like unhealthy foods better because they believe it tastes better. They believe this because the language displayed with the food is indulgent. Healthy foods are often presented in a less indulgent and less attractive manner than unhealthy foods. Raghunathan et al. (2006) used language such as “high fat crackers”. All of the crackers contained the same amount of fat, but when the crackers were presented as “low fat crackers”, people assumed that they would not taste as good as “high fat crackers”. This means that unhealthy products might best be promoted through indulgent language, as consumers believe it highlights the taste aspect. The results in this study show that this is not applicable to healthy food products. Therefore, it does not meet our expectations. The participants were not likely to want to eat the product when it was presented through basic, nutritional, or indulgent language.

Turnwald, Boles, and Crum’s (2017) study showed that consumers were more likely to eat a healthy dish such as vegetables when it was presented with indulgent language rather than with basic or healthy language. However, their study focused on food signs in front of the dishes in a canteen, whereas this

study focused on print advertisements. We might have found different results compared to Turnwald et al. (2017) due to the fact that print food advertisements do not apply to real life experiences with consumers. In the experiment conducted by Turnwald et al. (2017) the participants actually saw the food being made and put in front of them. This might have enhanced the mental simulation process (Papies, 2013). Papies proposes that language which emphasizes taste leads to a higher desire for the product that is described. The language we are exposed to makes us simulate eating. In a food canteen people might pay more attention to the food sign because they have to make quick decisions on what to choose. With the advertisements in this study, however, it might not have been clear that close attention should have been paid to the texts above the pictures. Consequently, the process of mental simulation might have been absent, which actually should have lead to high levels of desirability and persuasiveness. The same explanation can be applied to the presence or absence of a visual cue in this study. We tend to simulate the actions in our minds that we see other people performing (Papies, 2013). Nevertheless, in this study the participants might not have been exposed to the picture of other people eating or desiring the product in a clear manner. This may mean that if they did not see others eating and enjoying the dish, the mental simulation is not thoroughly activated. Hence, the levels of desirability and persuasiveness did not rise.

The results do not confirm the predicted effect of language on the perceived credibility of the advertisements. The study predicted that basic and nutritional language would be perceived as more credible than indulgent language. However, advertisements with basic language showed a higher level of credibility than ads with nutritional language. This means that advertisements with basic language are believed to be accurate and truthful (Kelman & Hovland, 1953). Consequently, the level of credibility is relatively high. Therefore, the advertisements with nutritional and indulgent language might have to be made more credible. The words chosen in the text should adhere to truthful and accurate informational standards (Kelman & Hovland, 1953). Further, we predicted an effect of a visual cue on the credibility level of the advertisement. We believed that when the participants would see a hand in the advertisement, the process of mental simulation would be activated. This was due to the fact that seeing a hand holding on to the fork or spoon would make people think of others performing the action of eating. Consequently, the participants would mentally simulate a similar action. However, the exposure to the hand in the advertisement might not have been enough to make the advertisement credible.

In a following study, a similar survey might be used. Nonetheless, an important change may be made. In the introduction section prior to the survey, the participants should be informed shortly about the aim of the study. They could be told that they might be asked questions about the language use and visual cue in a later stage of the experiment. This ensures them that attention should be paid to various language types above the food pictures as well as the contribution of a visual cue. The fact that the results in this study are not significant might be due to lack of attention or concentration with the respondents when filling in the survey. They may not have paid attention to different language types

and visual cues or they did not know that this was expected of them. Rather, they might have focused on the appearance of the advertisement itself and the food that was presented in it.

This study did not find effects of language and a visual cue on desirability, persuasiveness, and credibility. Still, it contributes to the theory. It examined the effects of print healthy food advertisements on attitude, whereas previous research mainly focused on unhealthy food ads. Even though indulgent language works well for unhealthy food products shown to consumers and on real life food signs for healthy food products, it does not work well for healthy foods on print advertisements. Likewise, basic and nutritional language does not lead the advertisements to be more desirable or persuasive, and only basic language leads to higher credibility than nutritional language.

## References

- Cacioppo, J.T., Cacioppo, S., & Petty, R.E. (2018). The neuroscience of persuasion: a review with an emphasis on issues and opportunities. *Social Neuroscience* 13(2), 129-172.
- Caterson, I.D., & Gill, T.P. (2002). Obesity: epidemiology and possible prevention. *Best Practice & Research Clinical Endocrinology and Metabolism*, 16(4), 595-610.
- Crosbie, T., & Moore, J. (2004). Work-life balance and working from home. *Social Policy & Society*, 3(3), 223-233.
- Infante, D.A. (1971). Predicting attitude from desirability and likelihood ratings of rhetorical propositions. *Speech Monographs*, 38(4), 321-326.
- James, P.T. (2004). Obesity: The worldwide epidemic. *Clinics in Dermatology*, 22(4), 276-280.
- Jaworski, B.J., & MacInnis, D.J. (1989). Information processing from advertisements: toward an integrative framework. *Journal of Marketing*, 53(4), 1-23.
- Kannan, R., & Tyagi, S. (2013). Use of language in advertisements. *English for Specific Purposes World*, 37(13), 1-10.
- Kelman, H.C., & Hovland, C.I. (1953). "Reinstatement" of the communicator in delayed measurement of opinion change. *Journal of Abnormal and Social Psychology*, 48, 327-335.
- Kwak, S.G., & Kim, J.H. (2017). Central limit theorem: the cornerstone of modern statistics. *Korean Journal of Anesthesiology*, 70(2), 144-156.
- Likert, R. (1931). A technique for the measurement of attitudes. *Archives of Psychology*, 22(140), 5-55.
- Ling, K.C., Piew, H.T., & Chai, T.L. (2010). The determinants of consumer's attitude towards advertising. *Canadian Social Science*, 6(4), 114-126.
- MacKenzie, S.B., Lutz, R.J., & Belch, G.E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: a test of competing explanations. *Journal of Marketing Research*, 23(2), 130-143.

- McGinnis, J.M., Williams-Russo, P., & Knickman, J.R. (2002). The case for more active policy attention to health promotion. *Health Affairs*, 21(2), 78-93.
- Papies, E.K. (2013). Tempting food words activate eating simulations. *Frontiers in Psychology*, 4(838), 1-12.
- Raghunathan, R., Naylor, R.W., & Hoyer, W.D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing*, 70(4), 170-184.
- Rizzolatti, G., Craighero, L., & Fadiga, L. (2002). The mirror system in humans. In M.I. Stamenov & V. Gallese (Eds.), *Advances in consciousness research, Vol. 42. Mirror neurons and the evolution of brain and language* (pp. 37-59). Amsterdam, The Netherlands: John Benjamins Publishing Company.
- Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annual Review of Neuroscience*, 27(1), 169-192.
- Turnwald, B.P., Boles, D.Z., & Crum, A.J. (2017). Association between indulgent descriptions and vegetable consumption: twisted carrots and dynamite beets. *JAMA Internal Medicine*, 177(8), 1216.
- Wolff, P., & Holmes, K.J. (2011). Linguistic relativity. *Wiley Interdisciplinary Reviews: Cognitive Science*, 2(3), 253-265.

**Appendix**  
*Advertisements*

	<b>Basic</b>	<b>Nutritional</b>	<b>Indulgent</b>
<b>Fruit salad</b> without visual cue	<p>PROBEER DEZE VLOTTE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE FRUITSOORTEN</p>	<p>PROBEER DEZE ECOLOGISCHE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE VITAMINEN</p>	<p>PROBEER DEZE TONGSTRELENDE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE ZOETIGHEDEN</p>
<b>Fruit salad</b> with visual cue	<p>PROBEER DEZE VLOTTE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE FRUITSOORTEN</p>	<p>PROBEER DEZE ECOLOGISCHE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE VITAMINEN</p>	<p>PROBEER DEZE TONGSTRELENDE SNACK EENS! FRUITSALADE MET EEN OVERVLOED AAN VERSCHILLENDE ZOETIGHEDEN</p>
<b>Green smoothie</b> without visual cue	<p>Smoothie van divers fruit en een mix van Japanse thee extracten</p>	<p>Smoothie van vitaminerijk fruit en een mix van cafeïnevrije thee extracten</p>	<p>Smoothie van verfrissend fruit en een mix van verrijnde thee extracten</p>
<b>Green smoothie</b> with visual cue	<p>Smoothie van divers fruit en een mix van Japanse thee extracten</p>	<p>Smoothie van vitaminerijk fruit en een mix van cafeïnevrije thee extracten</p>	<p>Smoothie van verfrissend fruit en een mix van verrijnde thee extracten</p>

**Caesar salad**  
**without**  
**visual cue**



**Caesar salad**  
**with visual cue**



**Healthy**  
**sandwich**  
**without**  
**visual cue**



**Healthy**  
**sandwich**  
**with visual cue**



**Green curry  
without  
visual cue**



**Green curry  
with visual cue**



**Tomato soup  
without  
visual cue**



**Tomato soup  
with visual cue**

