

HERDING CATS IN THE SUPERMARKET

The (lack of) effect of descriptive norm
messages on the choice for products
with lower expected liking

17
12
18

Bachelor thesis
Lotte Pater
971125643020

Management and Consumer Studies
Marketing and Consumer Behaviour

Preface

The bachelor thesis that lies in front of you is the result of my enthusiasm for and interest in consumer behaviour. My study Marketing and Consumer Behaviour opened a lot of doors for me. I am thankful that I got the ability to write my bachelor thesis for the Marketing and Consumer Behaviour group as completion of my study. It was a pleasurable experience, as well as an instructive adventure full of endless opportunities.

I want to thank the people who helped and encouraged me to write the thesis. First of all, I want to thank Erica van Herpen, my supervisor. I am grateful for the opportunities she gave me and the freedom she gave me to choose my own topic and area of interest. Moreover, she gave me useful and constructive feedback which helped me to fully reach my potential. Also, I want to thank my second supervisor Anouk Griffioen for reading and evaluating this thesis.

In addition, I would thank my personal environment for all the support I got from them while writing this thesis. Thanks to my friend Hanneke for her advice and readiness to listen and to Andries and my parents for their support. That made the writing even more pleasurable.

Enjoy reading.

Lotte Pater

Wageningen, December

Summary

The number of overweight people is rapidly growing. To counteract this growth, the Dutch government informs consumers about overweight and responsible and healthy nutrition. However, consumers do not always act rationally and therefore providing information may not be the optimal solution. Social norms, like the popularity of a product, are often used by consumers as guidelines for their product choice. Consumers then follow the herd. This research focuses on the effect of social norms on the choice for products containing a health-related claim to encourage the consumption of healthy food. Products containing a health-related claim have a lower expected liking than regular products. It was hypothesized that products with a descriptive norm message are chosen more frequently than products without a descriptive norm message. Moreover, it was hypothesized that the effect of a descriptive norm message on product choice is higher for products with lower expected liking than for regular products.

In this research, an experiment was conducted to measure the effect of social norms on the choice for products with lower expected liking in a between-subject design with three groups. The buying intention for two chocolate milk variants was measured and the social norm was manipulated with the use of a virtual reality environment.

The results showed that there is in this study no direct effect of social norms on the choice for food products with lower expected liking. So, in this study it was more like herding cats; an attempt was made to control consumers, but they seemed inherently uncontrollable regarding the specific norm used in this study. The social norm used in this study did not affect product choice, which might be due to rejection of or reactance to the social norm message. However, an indirect effect appeared to be that descriptive social norm messages directed at regular products do decrease the choice for products with lower expected liking. Limitations and suggestions for future research are discussed.

Content

Preface	1
Summary	2
Introduction	4
Literature review.....	7
Method	13
Results.....	18
Conclusion.....	23
Discussion.....	24
Appendix 1 – norm message.....	26
Appendix 2 – design virtual reality headset.....	27
Appendix 3 – products supermarket shelf.....	28
Appendix 4 – questionnaire	29
References	32

Introduction

Approximately 50 percent of the Dutch inhabitants is overweight. The percentage is growing rapidly since 1980 (Centraal Bureau voor de Statistiek, 2018). This is a problem for public health, which the Dutch government tries to solve (Rijksoverheid, n.d.). The government strives for healthy and responsible nutrition. Businesses are encouraged to produce healthier food, while consumers are encouraged to choose for healthy food. To reach their aspire, the Dutch government finances the information distribution about healthy and responsible nutrition. Consumers opt for healthy nutrition, according to the Dutch government, via information available on the labels or via quality marks attached to a product. The Dutch government assumes therewith rationality of the consumer; the decision process gone through by the consumer should lead to the optimal result. However, judgments made by individuals are bounded in rationality (Simon, 1957). Lack of information, time, budget and intelligence limitations as well as perceptual errors keep the consumer away from making the optimal choice. People instead rely on rules of thumb, called heuristics, when making decisions (Tversky & Kahneman, 1974). These heuristics can be helpful, but they may also lead to errors, called biases.

Such a heuristic used when making decisions is the behaviour of others; the social influence. Deutsch and Gerard (1955) divide this social influence into two categories; informational influence and normative influence. Informational influence is defined as “influence to accept information obtained from another as evidence about reality” (p. 629). Normative influence on the other hand is defined as “influence to conform with the positive expectations of another” (p. 629). These definitions can be related to respectively descriptive and injunctive norms, aspects of the social norm theory. Descriptive norms refer to the behaviour actually performed by other people, whereas injunctive norms refer to the feeling of what is right based on beliefs of approval (Berkowitz, 2004). Following these social norms leads to social influence on people’s behaviour or choices.

This research focuses on the effect of descriptive norms and informational social influence on choosing for the purchase of healthy food. Informational social influence occurs often in combination with normative influence (Deutsch & Gerard, 1955). However, normative influence provides limited points to actually stimulate the consumption of healthy and responsible nutrition. Normative influence can only be changed by influencing or changing the expectations of other people surrounding the decision maker. Informational social influence by contrast, does provide guidance for stimulating the consumption of healthy and responsible nutrition.

There already exists a lot of evidence from research that social norms can guide choice for healthier or more sustainable products (e.g. Salazar, Oerlemans & Stroe-Biezen, 2013; Stok, de Ridder, de Vet & de Wit, 2014). Robison, Fleming and Higgs (2014) found for instance that exposure to a descriptive norm can result in the selection of more vegetables. This behaviour of ‘doing what everyone else does’, is also called the herd behaviour (Banerjee, 1992; Hansen, 2014). People in this situation base decisions upon observed or inferred actions of others, instead of making their own independent decisions.

However, little attention in existing research has been paid to the effect of social influence and the herd behaviour on products with a health-related claim. Consumers expect products containing a health-related claim to have a lower liking (Carrillo, Varela & Fiszman, 2012).

Do social influence and herd behaviour show a stronger effect when applied to such products with lower expected liking compared to regular products? This may be the case if a descriptive norm displays a positive message about a product with lower expected liking, because this will provide new and contradictory information to the consumer. It opposes the existing descriptive norm of not buying the product because of the lower expected liking. A descriptive norm displaying a positive message will not provide any new information if it is relevant for an already positively perceived, regular product, because it will correspond with initial behaviour or thoughts. It will then only strengthen the beliefs of the consumer. Little is yet known about this difference in effect of a descriptive norm message.

Relevance

Research about the effect of social norms and social influence on products with lower expected liking therefore fulfils a knowledge gap and supplements existing knowledge. Zandstra, Carvalho and Van Herpen (2017) already investigated the impact of social norm messages on both choice and liking of salt-reduced products. This study does pay attention to the effect of social influence on products with lower expected liking. However, in the study no effect is found of descriptive norms on product choice. This contradicts earlier studies in which it was proven that social norms can affect the choice for healthier products (Robinson et al., 2014; Salazar et al., 2013; Stok et al., 2014). According to Zandstra et al. (2017) the absence of the effect might be due to a too subtle label on which the descriptive norm was stated. Another explanation of the absence could be a too general referent group to which the descriptive norm referred; namely 'people'.

This research further investigates the effect of social norms on the choice for products with lower expected liking, especially taking into account the appropriateness of the label and the referent group. Therewith, investigation of this effect contributes to the existing scientific knowledge. Moreover, the research is of importance for the government in its striving for more healthy and responsible nutrition and for the consumer in his choice for healthy products. Insight into the effectiveness of social norms on products with lower expected liking can provide the government with tools to steer and guide the behaviour of consumers. This can help the government to fulfil their aspire of healthy and responsible nutrition.

Aim

The aim of this research is to encourage the consumption of healthy and responsible nutrition by investigating the effect of social norms on the choice for products with lower expected liking. As existing theories and research shows, providing the consumer with information may be not the best way to encourage healthier food consumption. Consumers are bounded in rationality and therefore they use heuristics (Simon, 1957). They use social norms as guidelines and are therefore prone to social influence, which leads to herd behaviour. Insights about the precise effect of social influence on choice for healthy and responsible nutrition can help governments to guide consumers to opt for a 'better' choice to address overweight and other public health issues.

Research question

The central question in this research is *'What is the effect of social norms on the choice for food products with lower expected liking?'*

Reading guide

To answer the questions stated above, first of all the existing literature related to social norms and products with lower expected liking is discussed. Thereafter, the method used to answer the research question is elaborated upon. An experiment was conducted to measure the effect of social norms on the choice for products with lower expected liking in. The buying intention for two variants of a products was measured and the social norm was manipulated. One of the two variants is a product with lower expected liking, whereas the other variant is a regular product. Next, the results of the experiment are given, followed by a conclusion and discussion of these results.

Literature review

People may choose for particular products on the basis of other people's choices; they just follow the herd (Banerjee, 1992). They assume that choosing for a particular product is a good idea, because other people also choose for that product. In this literature review theories and studies about this behaviour are discussed. First, the social norms theory, informational social influence and herd behaviour are elaborated upon. Next, the effect of social norms on promoting food products is investigated. Subsequently, the effect of social norms on particularly the choice for food products with lower expected liking is discussed. Lastly, the role of the reference group of the social norm is reviewed as well as the role of the quality, credibility and framing of the social norm.

Social norms theory

The social norms theory argues that the behaviour of humans is influenced by actions and thoughts of members of social groups (Berkowitz, 2004). Interventions based on addressing the perceptions about the actions and thoughts of others, can result in healthier behaviour (Berkowitz, 2004). A distinction within the social norms theory is made between the descriptive norm, the perception of the behaviour of other people, and the injunctive norm, the perception of morals and beliefs about the appropriate behaviour (Cialdini, Reno & Kallgren, 1990; Deutsch & Gerard, 1955). Using the descriptive norm to steer people's behaviour results in more successful interventions than using the injunctive norm (Berkowitz, 2004). Normative feedback is already extensively used in prevention programs, since the evidence for the effectiveness of social norms is growing. Social norms are proven to be effective in changing behaviour in numerous areas, such as alcohol use, cigarette smoking and sexual assault (Berkowitz, 2004).

Informational social influence

When people conform to a descriptive norm, they fall prey to informational social influence (McDonald & Crandall, 2015). The behaviour of others is accepted as evidence about reality (Robinson, Thomas, Eaveyard & Higgs, 2014). Consumers tend to use for instance information about the popularity of a product in their choices. They assume that a product is good or excellent, because of the product's popularity (Robinson, Thomas, Eaveyard & Higgs, 2014). This inference making, ideas drawn from the popularity of a product, partly stems from the desire of the consumer to reduce quality uncertainty (Goedegebure, van Herpen & van Trijp, 2017). The popularity of a product acts as indicator of the quality of the product. The whole process of conforming to the descriptive norm leads to informational social influence on people's behaviour, which in turn can lead to herd behaviour.

Herd behaviour

Herd behaviour is described as "everyone doing what everyone else is doing, even when their private information suggests doing something quite different" (Banerjee, 1992, p. 798). According to Sun (2013), two primary characteristics are associated with the herd behaviour: discounting own information and imitating others. This can lead to choices that are inefficient or not optimal. In the domain of food choices this means that herd behaviour can lead to the consumption of unhealthy food.

On the other hand, the presence of herd behaviour can also contribute to consumption of healthier food. An intervention program could be developed, in which consumers are stimulated to consume healthy food based on the healthy food consumption of others.

The herd behaviour occurs especially when decisions are made under uncertainty and when the behaviour of others can be observed (Cruwys, Bevelander & Hermans, 2014; Sun, 2013). People namely seek for uncertainty reduction and affiliation with others. Under uncertainty, own information is disregarded to a larger extent and information provided by others is used instead. The observation of behaviour of others is needed or clues about the behaviour of others are needed to be able to follow their behaviour (Sun, 2013).

Effect of informational social influence on promoting food choice

Social norms are not only proven to be effective in areas such as alcohol use, cigarette smoking and sexual assault, but also in the area of food consumption. Several studies have shown that there exists an effect of informational social influence on promoting food choice (e.g. Burger et al., 2010; Croker, Whitaker, Cooke & Wardle, 2009; Cruwys et al., 2014; Templeton, Stanton & Zaki, 2016). For instance, in a study by Burger et al. (2010), participants had to choose for an energy snack either high or low in energy. Empty wrappers on the table of the participants indicated implicitly the choice for a healthy or unhealthy snack made by the previous participant. The snack low in energy was chosen more often when participants was implicitly told that prior participants chose the low-energy snack compared to when the participants was implicitly told that prior participants chose the high-energy snack. The behaviour of others acts thus as guideline for the participants.

Besides the change in food choice, food preferences can also change due to informational social influence. In a study by Templeton et al. (2016) participants' ratings of healthy and unhealthy food images changed after participants were exposed to made-up average ratings of other participants. Exposure to a healthy social norm lowered the preference for unhealthy food pictures. The social norm influences stated food preference up to three days, but does not influence subsequent food intake. So, informational social influence does change food choice and food preference, but not necessarily food intake. This insight might help to alter choice and preference of consumers choosing for a food product in the supermarket.

The effect of informational social influence is not only observed in laboratory studies, but also in field-experiments. A study conducted in an on-campus food court showed that a health-related descriptive norm results in a healthier food choice (Mollen, Rimal, Ruiter & Kok, 2013). Visitors of the food court encountered a message that stated that many students of the specific university opted for either the salad, as healthy descriptive norm, or the hamburger, as unhealthy descriptive norm. So, this study shows that the informational social influence is also present in daily life settings.

The strength of informational social influence on food choice might be determined by the extent to which a person is already complying with a social norm, as shown by Croker et al. (2009). In this study, the participants were provided with a made-up statement about the intention of Britain residents to eat vegetables or fruit. After reading the statement, participants had to indicate their intended vegetable and fruit intake for the next half year. The statement did increase the intended choice for vegetable and fruit intake among men but not the intended intake among women.

This might be due to the fact that the intended vegetable and fruit intake among women was already high. So, women already complied to the social norm in a larger extent than men, causing variation in the effect of the social norm. This might also be applicable to the case of products with a lower expected liking. These products are bought less in the supermarket compared to regular products. People do not yet comply to the behaviour of buying the products with lower expected liking. A social norm indicating that the product is bought by other people might thus have more effect on these products with lower expected liking, compared to regular products.

It can be concluded that several studies have proven that informational social influence affects food choice and preference both in laboratory and field settings (e.g. Burger et al., 2010; Mollen et al., 2013; Templeton et al., 2016). The strength of the informational social influence might be mediated by the extent to which a person already complies to the social norm (Croker et al., 2009). The knowledge about the influence of social surroundings on food choice could help governments to steer the buying and choice behaviour of consumers. However, the effect of informational social influence on products with lower expected liking might differ from the effect of social influence on regular or positively perceived products, because variants with lower expected liking are often perceived more negatively than regular products (Carrillo et al., 2012).

Effect of informational social influence on products with lower expected liking

Products containing a health-related claim have a lower perceived and expected liking than regular products (e.g. Carrillo et al., 2012; Schouteten et al., 2015). Claims such as 'light', 'low in salt' or 'no added sugar' get lower hedonic expectations. Therefore, a descriptive norm displaying a positive message for products with lower expected liking might introduce new information to the consumer. The new descriptive norm is not in line with the current norm of not buying but gives them opposite information which may in turn lead to increased attention. This reasoning is consistent with the schema theory (Dahlen, Lange, Sjoding & Torn, 2005). The schema theory predicts that people process things more extensively when incongruent information is provided. Incongruent information is not consistent with the expectations of consumers, which are based on schemas in the memory. For instance, in the study by Dahlen et al. (2005), the extensive processing of incongruent information led to a more favourable opinion of both advertisements and the brand the advertisements related to. Meyers-Levy and Tybout (1989) also found an increased product evaluation when participants were given moderate incongruent information. So, a counterintuitive descriptive norm that opposes the existing norm may lead to more extensive processing of the norm provided. Studies have been conducted to test this effect of descriptive norms and informational social influence on products with lower expected liking.

Pliner and Mann (2004) found no effect of informational social influence on food choice when the made-up choice of prior participants was told to the participants. Participants was told that most prior participants either opted for a palatable, creamy cookie or an unpalatable, light cookie. Almost all participants in this study opted for the palatable, creamy cookie. This study might thus suggest that informational social influence does not show an effect in relation to products that have a lower expected liking. However, the palatability of the unpalatable cookies in this research was rated very low by the participants, which may have caused all participants to choose the palatable version.

In real life it is not necessary the case that a product with lower expected liking is much less palatable. Moreover, participants in the study by Pliner and Mann (2004) had to taste the cookies during the experiment. It might be that the effect of this direct experience is stronger than the effect of the descriptive norm. This also might explain the absence of an effect of informational social influence. Again, in real life it is not necessary the case that a product can be tasted directly. Zandstra, Carvalho and Van Herpen (2017) investigated the impact of social norm messages on choice for salt-reduced products. The descriptive norm used in this study displays a behaviour trend rather than a fact about the majority of the consumers. This study also did not find an effect of descriptive norms on the choice for a certain product. This might be due to the fact that the label with the descriptive norm was too subtle. Also, a too broad reference group to which the descriptive norm referred can be an explanation for the absence of an effect.

Hence, the lack of effect of informational social influence of food choice for products with lower expected liking in these studies might be due to methodological issues. Therefore, the informational social influence on products with lower expected liking has to be investigated further. Attention needs to be paid to the norm referent group and other aspects that might determine the acceptance of the descriptive norm.

Hypotheses

Based on the literature review, two hypotheses are formulated. First of all, theory makes clear that the use of descriptive norms causes an individual to fall prey to informational social influence, which leads to herd behaviour in among others the food domain (Burger et al, 2016; Templeton et al., 2016). Therefore, it is hypothesized that

H1: Products with a descriptive norm message are chosen more frequently than products without a descriptive norm message.

Descriptive norms often lead to herd behaviour when decisions have to be made under uncertainty (Sun, 2013). When deciding for consumption of products with lower expected liking instead of regular products, people often face some kind of uncertainty. They might not know all the details about the sensory characteristics of the product, because they never consumed the product before. Moreover, the study by Croker et al. (2009) revealed a mediation of the compliance to a social norm on the effect of informational social influence. If there already is high compliance with the social norm, herd behaviour is less likely to happen. In their decision for products with lower expected liking, people often comply to the social norm of not buying the product. Providing information to these people about the behaviour of others, contradictory to the current norm, reveals new information. There is not yet high compliance with this new norm.

Besides, the schema theory (Dahlen, Lange, Sjoding & Torn, 2005) suggest an increased evaluation of a product or advertisement if the information provided is counterintuitive.

Based on the principles of uncertainty, compliance and the schema theory, it is hypothesized that

H2: The effect of a descriptive norm message on product choice is higher for products with lower expected liking than for regular products.

Conceptual model

Figure 1 shows the conceptual model and explains and visualizes the hypotheses in this research. First of all, hypothesis 1 is reflected in the model by the red line between the descriptive norm and the product choice. It visualizes that the use of a descriptive norm affects product choice.

Secondly, the effect of a descriptive norm on product choice can be moderated expected liking of a product. The effect of descriptive norms on products with lower expected liking, which often carry some uncertainty, is expected to be higher than the effect on regular products, according to hypothesis 2.

The hypotheses reflect the expected answer on the research questions of this research, based on the literature review. The next chapter explains in detail the methods used to test these hypotheses.

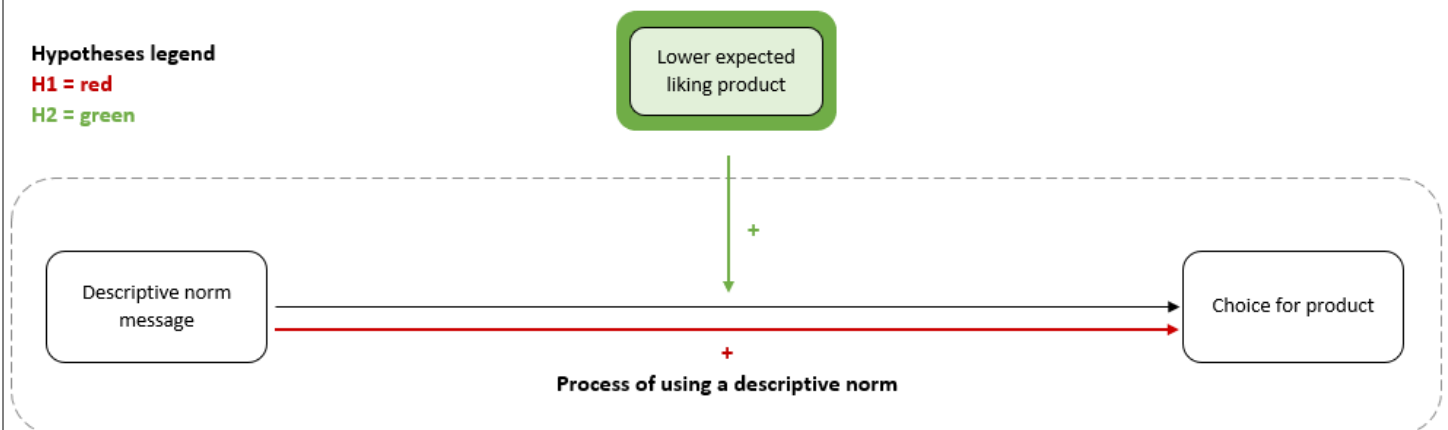


Figure 1 Conceptual model

To increase the effectiveness of the descriptive norm message, several factors need to be taken into account when making up the descriptive norm. Factors that appeared important and relevant from previous research are discussed here.

Norm referent group

It is proven that informational social influence can guide food choice or eating behaviour (e.g. Burger et al., 2010; Templeton et al, 2016). However, this effect is influenced by the identification with norm referent group (Sun, 2013). The identity of the preceding others is an important factor. The degree to which people have similar attributes, called homophily, determines the strength of peer influence (Rogers, 1983). The effect of informational social influence is higher when participants identify with the referent group of the available norm (Rogers, 1983; Stok, Verkooijen, de Ridder de Wit & de Vet, 2014).

In the study conducted by Burger et al. (2009) about low- and high-energy snacks, only female undergraduate students participated. In the study conducted by Croker et al. (2010) about vegetable and fruit intake, the descriptive norm referred to fellow countrymen of the participants. In the field-experiment by Mollen et al. (2013) about salads and hamburgers, the descriptive norm was related to fellow students studying at the same university. It might be that the participants in these studies identified with the norm referent group, because of the common characteristics. However, the identification of participants with the referent group was not investigated in these studies.

The lack of identification with the referent group in the study by Zandstra et al. (2017) could explain the absence of an effect.

So, it is important to take into account the norm referent group when conducting a study about the effect of informational social influence on food choice. Besides, other factors regarding the descriptive norm, such as argument quality, source credibility and framing, need to be taken into account.

Descriptive norm message: quality, credibility and framing

The social norms theory predicts that social norm messages or data can be initially rejected by participants (Berkowitz, 2002). The adoption of a norm message or information depends on both source credibility and argument quality, as demonstrated by a study done by Shen, Zhang and Zhao (2016). According to this study, the process of information adoption relates to informational social influence in that individuals accept information from external sources as credible evidence of reality. Both informational factors, including the information itself and information sources, as well as herd factors, doing what others do, determine the adaptation process. The study by Shen et al. (2016) showed an important role of the informational factors source credibility and argument quality on the acceptance of online reviews. It has to be taken into account that the latter factor, argument quality, might be less relevant in this study if social norms are regarded as a heuristic. Bicchieri (2006), for instance, classifies norm as heuristics. He argues that these heuristics are default rules stored in memory. If this is the case, then the quality of the argument is of minor importance when a decision is made, because the decision is based on a default rule.

Besides the argument quality and source credibility, the framing of the social norm message is important. Positively framed descriptive norms result in stronger motivation to consume healthy food than negatively framed descriptive norms (Mollen, Holland, Ruiters, Rimal & Kok, 2016). A positively framed descriptive norm might for instance indicate that a lot of people engage in desirable behaviour. On the opposite, a negatively framed descriptive norm might indicate that a lot of people do not engage in undesirable behaviour. When the norm is framed positively, the positive behaviour is highlighted, whereas the negative behaviour is highlighted when the norm is framed negatively.

It has been shown that the referent group, argument quality, source credibility and framing are important moderators of the effect of descriptive norms and informational social influence (Mollen et al., 2016; Rogers, 1983; Shen et al., 2016; Stok et al., 2014). In order to prevent norm messages or data being rejected by participants, source credibility, argument quality and positive framing need to be included in the descriptive norm design. While testing the hypotheses in this study, these factors need to be taken into account to determine the appropriate and most effective descriptive norm.

Method

Design

In this research, an experiment is conducted to measure the effect of social norms on the choice for products with lower expected liking in a between-subject design with three groups. Participants were randomly assigned to one of the three conditions (Table 1) in an online shelf purchase test with the use of a virtual reality headset, developed with VRdeck¹. The buying intention for two chocolate milk variants was measured and the social norm was manipulated. Chocolate milk was chosen as product category in this study, based on prior research done on the effect of social norms on buying intention for chocolate milk (Goedegebure, 2018). For this product category, the light variant scored significantly lower than the regular variant on quality and certainty about the quality. This supports that for chocolate milk, the light variant has a lower expected liking than the regular variant. This method section will give a description of the participants of this study, followed by a description of the manipulated variable, the norm message. Next, factors of the social norm message that, from the literature review, appeared to be important are elaborated upon. Lastly, the procedure of the experiment is discussed as well as the data analysis.

Participants

In total, 150 persons participated in this study, with an average age of 20.70 (SD = 2.53). A large majority (83.3%) of the participants was female. The participants were recruited via social media, a mailing list, posters in the building of Wageningen University and by approaching them actively. In this study, there were three inclusion criteria: 1) participants had to speak Dutch, because the questionnaire provided to them was in Dutch, 2) participants had to be responsible for the grocery shopping 3) and participants had to consume chocolate milk on a regular basis (with a minimum of 4 times a year). Using the Dutch language in the questionnaire eliminates misunderstanding due to limited knowledge of the language. Moreover, assuming that Dutch speaking participants are familiar with the Dutch culture, the effect of cultural differences is eliminated as much as possible.

A snack was provided to the participants as an incentive to participate in the experiment.

Norm messages

The selected descriptive norm message was 'Popular among customers' (Appendix 1). It was explained in lowercase on the label that this message meant that everyday an increasing number of customers of that specific supermarket drink Chocomel (light). This explanation of the norm message was chosen based on the earlier used descriptive norm messages in the studies by Zandstra et al. (2017) and Mollen et al. (2016). The descriptive norm message is framed positively (e.g. mentioning the amount of people engaging in a certain behaviour), because positively framed norms result in higher motivation to consume healthy food (Mollen et al., 2016).

Condition	Perception
1 (n = 50)	No norm
2 (n = 50)	Norm on variant with lower expected liking
3 (n = 50)	Norm on regular variant

¹ VRdeck is a program developed by Vrmaster and records the choices made in a virtual reality environment. This data can then be used for analysis and research (Vrmaster, n.d.)

Moreover, customers of the specific supermarket are chosen as norm referent group in this message, regarding the fact that the identity of others is an important factor in determining the strength of social influence (Sun, 2013).

Participants may feel more connected to customers of the supermarket where they are doing their groceries than to people in general.

The label with the norm message on it also contains the logo of the supermarket Emté. This logo refers to the fact that the message comes from this supermarket, which enhances source credibility. Emté is also the supermarket used in the virtual reality headset. Most Dutch people are familiar with this supermarket chain, which is also located in Ede. Emté is assumed to be knowledgeable on the topic of the social norm message. They know the sales figures and are experts on this topic.

Participants were exposed to an online supermarket shelf with five variants of chocolate milk via a virtual reality headset (Appendix 2). The shelf contained two different brands. A variant with lower expected liking and a regular variant of Chocomel were presented (Appendix 3). Moreover, three different variants of Melkan were presented. The variants of Chocomel were the target products in this study, whereas the variants of Melkan all fell in the category 'others'. Either no message or a descriptive norm message was shown in front of either the regular variant or the variant with lower expected liking of Chocomel (Table 1). The participants were randomly assigned to one of the three conditions. Participants were able to choose one of the five variants of chocolate milk.

Procedure

Participants completed the test individually at Wageningen University. Approximately 10 minutes were needed to complete the experiment. First, participants received instructions on paper and on a video about the use of the virtual reality headset. Participants were told that a shelf with chocolate milk would be shown to them, representing the shelf design in a real supermarket. The participants were asked to think about a situation in which they were standing in a real supermarket, about to choose a product. To get used to the virtual reality headset, participants were first exposed to a shelf with different variants of nuts. After the participants got used to the headset, a shelf with five variants of chocolate milk was shown to them. They were asked to choose one product. Besides, the buying intention for the regular and the light variant of Chocomel had to be indicated afterwards on a computer with a questionnaire (Appendix 4). The participants were led to believe that they were randomly assigned to the condition where the brand Chocomel needed to be evaluated. Moreover, the participants were asked about several other things regarding the norm referent group, norm message quality and norm message credibility. Also, the product quality, healthiness and certainty about the quality needed to be evaluated. Moreover, an attention question was added to make sure that participants indeed did carefully read the questions. Lastly, demographic variables were retrieved, as well as the usability of the virtual reality headset. In the end, the participants were asked to provide their mail address for debriefing after the study. When the participants finished the questionnaire, they received a snack and left the room.

Product choice and buying intention

Buying intention for the target products was inferred with the use of three different statements on a 7-point scale:

- If this product was available in the market, I would buy it (Zandstra et al., 2017)
- If I see this product, I would like to buy it (Baker & Churchill, 1977)
- I would like to try this product (Baker & Churchill, 1977)

These three items were averaged to create a buying-intention index for both the regular Chocomel ($\alpha = .91$) and the variant with lower expected liking, the light variant of Chocomel ($\alpha = .91$).

Referent group, norm message quality and norm message credibility

As became clear from the literature review, the norm referent group, the quality of the norm message and the credibility of the norm message are important determinants for the effect of the descriptive norm on people's behaviour. The adaptation of the norm depends on these factors. Therefore, referent group, norm message quality and norm message credibility were checked in this study to test the effectiveness of the descriptive norm.

The identification of the participants with the referent group was measured with the following statements (Stok et al, 2012; Stok et al, 2014) on a 7-point scale:

- I feel a connection to customer of this supermarket
- I identify with customers of this supermarket

Participants' responses to these two items were averaged to create an identification index ($\alpha = .80$).

The argument quality is the extent to which people regard the information they received as complete, consistent and accurate (Bailey & Pearson, 1983). Therefore, the argument quality of the norm message was measured by three statements (Shen et al., 2016) on a 7-point scale:

- The message is complete
- The message is accurate
- The message is objective

The three items were averaged to create an argument-quality index ($\alpha = .59$). However, it should be noted the reliability of this scale is very moderate.

Lastly, source credibility can be defined as the perception of a person towards the credibility of the information source. Unlike argument quality, source credibility is not about the content of the information but rather about the source of information (Petty & Cacioppo, 1986). The source credibility of the norm message is checked by four statements (Shen et al., 2016) on a 7-point scale:

- People who wrote this message are knowledgeable on this topic
- People who wrote this message are expert on this topic
- People who wrote this message are trustworthy
- People who wrote this message are reliable

Participants' responses to these four items were averaged to create an argument-credibility index ($\alpha = .70$).

Additional variables

Participants were also asked to evaluate the quality of both Chocomel variants, to check if the perception regarding the quality of both variants indeed differed. The product quality was inferred by three statements (Goedegebure, 20018) on a 7-point scale:

- This product has a good taste
- This product is a tasty product
- This product has a good quality

The three items were averaged to create a product-quality index for both the regular Chocomel ($\alpha = .90$) and the variant with lower expected liking, the light variant of Chocomel ($\alpha = .87$).

Participants were also asked to evaluate the healthiness of both Chocomel variants to check if the perception regarding both variants indeed differed by one statement (Goedegebure, 2018) on a 7-point scale:

- This product is a healthy product

In addition, the certainty about the quality of both Chocomel variants was retrieved to check if the certainty about the quality indeed differed between both variants. The quality certainty was retrieved with three questions (Goedegebure, 2018) on a 7-point scale:

- I feel certain about the estimation of the quality of this product
- I have doubts about the quality of this product
- I am convinced of my rating of the quality of this product

Participants' responses to these three items were averaged to create a quality-certainty index for both the regular Chocomel ($\alpha = .81$) and the variant with lower expected liking, the light variant of Chocomel ($\alpha = .85$). The statement 'I have doubts about the quality of this product' was reversed. Lastly, the usability of the virtual reality headset was examined with three questions (Goedegebure, 2018) on a 7-point scale:

- The control of the virtual reality environment was clear and understandable
- The control in the virtual reality environment required little effort
- I found it easy to shop in the virtual reality environment

The three items were averaged to create a headset-usability index ($\alpha = .78$).

Data analysis

The data was then analysed using SPSS Statistics 23. $p < 0.05$ was used as value for statistical significance. First of all, the successfulness of randomisation between the different conditions was checked with a chi-square test for gender and ANOVAs for age, referent group identification, message quality, message credibility and the perceived quality, certainty about the quality and healthiness of the products.

The means of the usability of the virtual reality headset, the attention check, the identification with the referent group and norm message quality and norm message credibility were interpreted to check for the strength and effectiveness of the manipulation, the norm message.

When a particular product was chosen, it was coded as 1 and when a particular product was not chosen it was coded as 0. A chi-square test was used to identify differences in the product choice for the Chocomel variants between the conditions. As follow-up analysis, a logistic regression was used to compare the different conditions. Repeated measures ANOVA was used to compare the means of buying intention of the regular and the light variant in the different conditions. Another repeated measures ANOVA was used as follow-up analysis to compare the means of buying intention for the regular variant between the different groups if needed.

Moreover, ANOVA was used to compare the means of buying intention for the regular variant between the different groups. This was also done to compare the means of buying intention for the light variant.

Besides, it was checked whether the perceived quality of the light version was indeed lower than the perceived quality of the regular version using a repeated measures ANOVA for the different conditions. This test was also used to check whether the participants perceived the light version to be healthier and to check whether the participants experienced more quality uncertainty for the light version. Another repeated measures ANOVA was conducted as follow-up analysis to compare the means between the different groups if needed.

Results

In this section, the results of this study are discussed. It was expected that a product with a lower expected liking, the Chocomel light variant, is chosen more frequently when a descriptive norm message is displayed in front of the product. Moreover, it was expected that the effect of a descriptive norm message on product choice is higher for products with lower expected liking than for regular products.

Randomisation and attention check

First of all, it was examined whether the randomisation between the three conditions was successful regarding basic demographic variables. The chi-square test for gender showed no significant effect for condition ($\chi^2(4) = 2.27, p = 0.687$). Likewise, the ANOVA for age showed no significant effect for condition ($F(2, 147) = 2.66, p = 0.074$). Moreover, the attention check, which was added to make sure that participants were indeed reading the questions, revealed that all participants paid attention to the questionnaire and read the statements.

Table 2. Mean scores (\pm SD) for different attributes split by condition

	No label (1)	Label on Chocomel light (2)	Label on regular Chocomel (2)	Total
Buying intention Chocomel	5.05 \pm 1.43	4.73 \pm 1.61	4.75 \pm 1.62	4.85 \pm 1.55
Buying intention Chocomel light	4.61 \pm 1.55	4.56 \pm 1.70	4.61 \pm 1.44	4.59 \pm 1.55
Identification referent group	3.24 \pm 1.54	3.36 \pm 1.32	3.22 \pm 1.34	3.27 \pm 1.39
Argument quality label	3.02 \pm 1.11	2.88 \pm 1.02	3.21 \pm 1.04	3.04 \pm 1.06
Argument credibility label	3.25 \pm 0.94	2.98 \pm 0.96	3.24 \pm 0.73	3.15 \pm 0.89
Product quality Chocomel	5.77 \pm 1.24	5.76 \pm 1.08	5.83 \pm 1.22	5.79 \pm 1.18
Product quality Chocomel light	5.17 \pm 1.24	5.35 \pm 1.09	5.27 \pm 1.20	5.26 \pm 1.17
Product healthiness Chocomel	2.32 \pm 1.35	2.24 \pm 1.10	2.12 \pm 1.08	2.23 \pm 1.78
Product healthiness Chocomel light	2.82 \pm 1.45	2.82 \pm 1.34	2.58 \pm 1.14	2.74 \pm 1.31
Quality certainty Chocomel	4.93 \pm 0.94	4.66 \pm 1.15	4.79 \pm 0.97	4.79 \pm 1.02
Quality certainty Chocomel light	4.23 \pm 1.19	4.47 \pm 1.31	4.33 \pm 1.20	4.34 \pm 1.23

Referent group

Overall, participants had moderate identification with the other customers of the supermarket with a mean of 3.27 on a 7-point scale (Table 2). An ANOVA revealed that there were no significant differences in identification between the conditions ($F(2, 147) = 0.15, p = 0.865$). The presence or absence of a label on the regular or light Chocomel did not impact the identification with the referent group. So, randomisation of this variable was successful.

Norm message quality

The quality of the descriptive norm message, the label, had a mean rating of 3.04 on a 7-point scale (Table 2). An ANOVA showed that there were no significant differences in rating of the norm message quality between conditions ($F(2, 147) = 1.20, p = 0.303$). The presence or absence of a label on the regular or light Chocomel did not impact the rated quality of the norm message. So, randomisation of this variable was successful.

Norm message credibility

The credibility of the descriptive norm message had a mean rating of 3.15 on a 7-point scale (Table 2). An ANOVA showed that there were no significant differences in rating of the norm message credibility between conditions ($F(2, 147) = 1.53, p = 0.220$). The presence or absence of a label on the regular or light Chocomel did not impact the rated credibility of the norm message. So, randomisation of this variable was successful.

Usability virtual reality headset

The usability of the virtual reality headset had a mean rating of 5.68 (SD = 1.04) on a 7-point scale, which is a high score. An ANOVA showed that there were no significant differences in rating of usability of the virtual reality headset between conditions ($F(2, 147) = 0.38, p = 0.686$). The presence or absence of a label on the regular or light Chocomel did not impact the rated usability of the virtual reality headset. So, randomisation of this variable was successful.

Product choice

Figure 2 shows the product choice between the two variants of Chocomel within the different conditions. A chi-square test revealed no significant effect of the product choice for regular Chocomel ($\chi^2(2) = 1.26, p = 0.490$), whereas a significant effect was revealed of the product choice regarding the light Chocomel ($\chi^2(2) = 8.18, p = 0.017$). The significant result indicates that there is an association between the conditions and whether the Chocomel light was chosen or not. There is a significant difference in the response pattern in the three conditions.

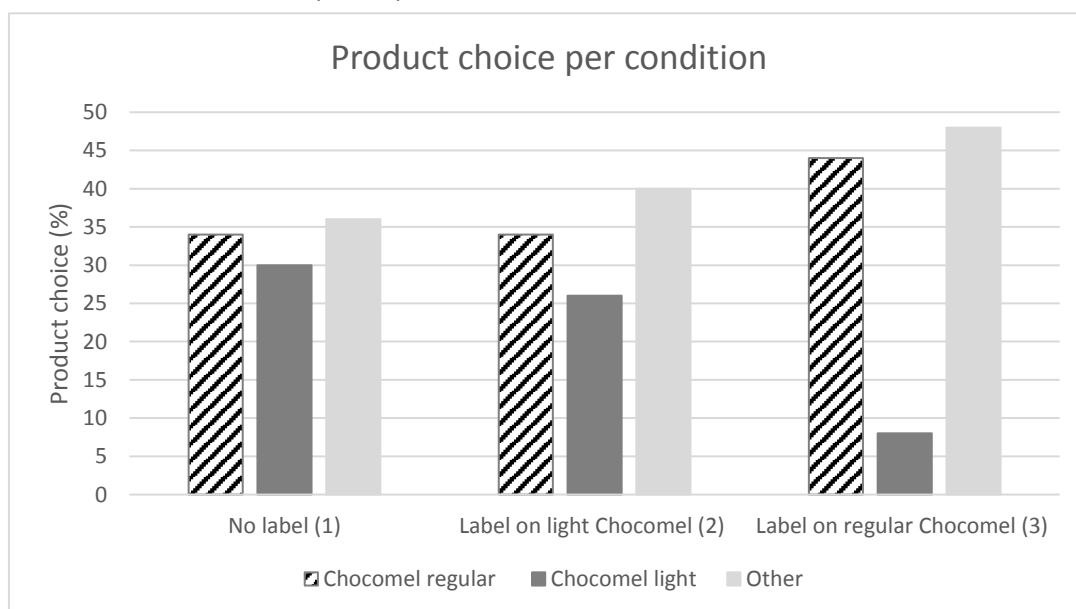


Figure 2 Product choice for Chocomel variants (%) per condition

The significant effect was broken down using a z-test to compare column proportions with Bonferroni correction. From this analysis, it became clear that in the condition with the label on the regular Chocomel (condition 3), a significantly greater proportion (92%) of the participants did not chose the Chocomel light. Only a small proportion (8%) choose the Chocomel light.

A logistic regression in which choice for Chocomel regular was explained with the conditions showed no significant effect of condition ($\chi^2(2) = 1.41, p = 0.494$), neither did a logistic regression in which choice for 'other' was explained with conditions ($\chi^2(2) = 1.54, p = 0.464$). A logistic regression in which choice for Chocomel light was explained with the conditions did show a significant effect of condition ($\chi^2(2) = 9.23, p = 0.010$). Adding the conditions as a predictor improves the model significantly. The model correctly classified 78.7% of the cases. So, the presence or absence of a descriptive norm on either the light or regular Chocomel variant can explain the choice for Chocomel light.

Table 3. Results logistic regression choice for Chocomel light with no label (1) as reference group

	B	Wald	df	Sig.	Odds ratio
Label on light Chocomel (2)	-0.20	0.20	1	0.656	0.820
Label on regular Chocomel (3)	-1.60	6.93	1	0.008	0.203

Table 4. Results logistic regression choice for Chocomel light with label on regular Chocomel (3) as reference group

	B	Wald	df	Sig.	Odds ratio
No label (1)	1.60	6.93	1	0.008	4.929
Label on light Chocomel (2)	1.40	5.19	1	0.023	4.041

Table 3 shows that the logistic regression (using the condition without label (condition 1) as reference group) revealed that for the condition with the label on regular Chocomel (condition 3) the choice for Chocomel light decreases significantly compared to the condition without label. The choice for Chocomel light does not differ significantly between the condition without label (condition 1) and the condition with the label on light Chocomel (condition 3).

Moreover, Table 4 shows that the logistic regression (using the condition with the label on regular Chocomel (condition 3) as reference group) revealed that for the condition with the label on light Chocomel (condition 2) the choice for Chocomel light increases significantly compared to the condition with the label on the regular Chocomel.

Put differently, the results of the logistic regression showed that the choice for Chocomel light decreases when there is a label on the regular Chocomel compared to when there is no label or a label on the light Chocomel. The odds of choosing Chocomel light are 4.041 higher when the label is on the light Chocomel and 4.929 higher when there is no label, compared to when there is a label on the regular Chocomel.

Buying intention

Table 2 shows the mean ratings on buying intention for both the regular and light Chocomel variant. A repeated measures ANOVA was conducted to examine the difference between the buying intention for the regular and light Chocomel variants. The test revealed no significant interaction effect of variant and condition ($F(2, 147) = 0.96, p = 0.385$). This shows that differences in buying intention between both variants were not different between conditions. The main effect revealed that there were significant differences in participants' intention to buy the different variants ($F(1, 147) = 7.03, p = 0.009$). The buying intention for regular Chocomel was higher ($M = 4.85$) than the buying intention for light Chocomel ($M = 4.59$).

An ANOVA revealed that there were no significant differences in both the buying intention for Chocomel regular ($F(2, 147) = 0.66, p = 0.517$) and the buying intention for Chocomel light ($F(2, 147) = 0.02, p = 0.98$) between the different conditions. The presence or absence of a label on the regular or light Chocomel did not impact the buying intention.

Product quality

Table 2 shows the mean ratings on product quality for both the regular and the light Chocomel variant. A repeated measure ANOVA was conducted to examine the difference between the rated product quality of the regular and light Chocomel variants. The test revealed no significant interaction effect of product quality and the conditions ($F(2, 147) = 0.64, p = 0.527$). This shows that differences in rated product quality between both variants were not different between conditions. The main effect showed that there were significant differences in participants' rating of the quality of the different variants ($F(1, 147) = 53.47, p < 0.001$). The product quality of regular Chocomel was rated higher ($M = 5.79$) than the product quality of light Chocomel ($M = 5.26$).

An ANOVA showed that there were no significant differences in both the ratings of the product quality for Chocomel regular ($F(2, 147) = 0.04, p = 0.957$) and the ratings of the product quality for Chocomel light ($F(2, 147) = 0.30, p = 0.744$) between the different conditions. The presence or absence of a label on the regular or light Chocomel did not impact the rated quality of the product.

Product healthiness

In Table 2, the mean ratings on product healthiness for both the regular and the light Chocomel variant can be found. A repeated measure ANOVA was conducted to examine the difference between the rated product healthiness for the regular and light Chocomel variants. The test revealed no significant interaction effect of product healthiness and the conditions ($F(2, 147) = 0.39, p = 0.6817$). This shows that differences in rated product healthiness between both variants were not different between conditions. The main effect revealed that there were significant differences in participants' rating of the healthiness of the different variants ($F(1, 147) = 81.7, p < 0.001$). The healthiness of regular Chocomel ($M = 2.23$) was rated lower than the healthiness of light Chocomel ($M = 2.74$).

An ANOVA revealed that there were no significant differences in both the ratings of the healthiness for Chocomel regular ($F(2, 147) = 0.36, p = 0.696$) and the ratings of the healthiness for Chocomel light ($F(2, 147) = 0.55, p = 0.576$) between the different conditions. The presence or absence of a label on the regular or light Chocomel did not impact the rated healthiness of the product.

Quality Certainty

Table 2 shows the mean ratings on quality certainty for both the regular and light Chocomel variant. A repeated measures ANOVA was conducted to examine the difference between the rated quality certainty for the regular and light Chocomel variants. The test revealed a significant interaction effect of product quality and the conditions ($F(2, 147) = 3.86, p = 0.023$). This shows that differences in rated product quality between both variants were different between conditions. The test revealed that there were significant differences in participants' rating of the certainty of the quality of the different variants ($F(1, 147) = 33.86, p < 0.001$). The quality certainty of regular Chocomel ($M = 4.79$) was rated higher than the quality certainty of light Chocomel ($M = 4.34$). Another repeated measures ANOVA showed that the differences in rating of the quality certainty were only significant in the condition without label (condition 1) ($F(1, 49) = 18.81, p < 0.001$) and with the label on the regular Chocomel (condition 3) ($F(1, 49) = 20.83, p < 0.001$), as shown in Figure 3. This implies that the difference in quality certainty did not appear when there was a label on the light Chocomel (condition 2). Despite the fact that the difference was not statistically significant in this condition, it can be seen in Figure 3 that the quality certainty of Chocomel light remained lower than the quality certainty of Chocomel regular

An ANOVA showed that there were no significant differences in both rating of the quality certainty for Chocomel regular ($F(2, 147) = 0.91, p = 0.401$) and the rating of the quality certainty for Chocomel light ($F(2, 147) = 0.50, p = 0.606$) between the different conditions. The presence or absence of a label on the regular or light Chocomel did not impact the rated quality certainty per product separately, although it did impact the differences in quality certainty between both variants, as mentioned before.

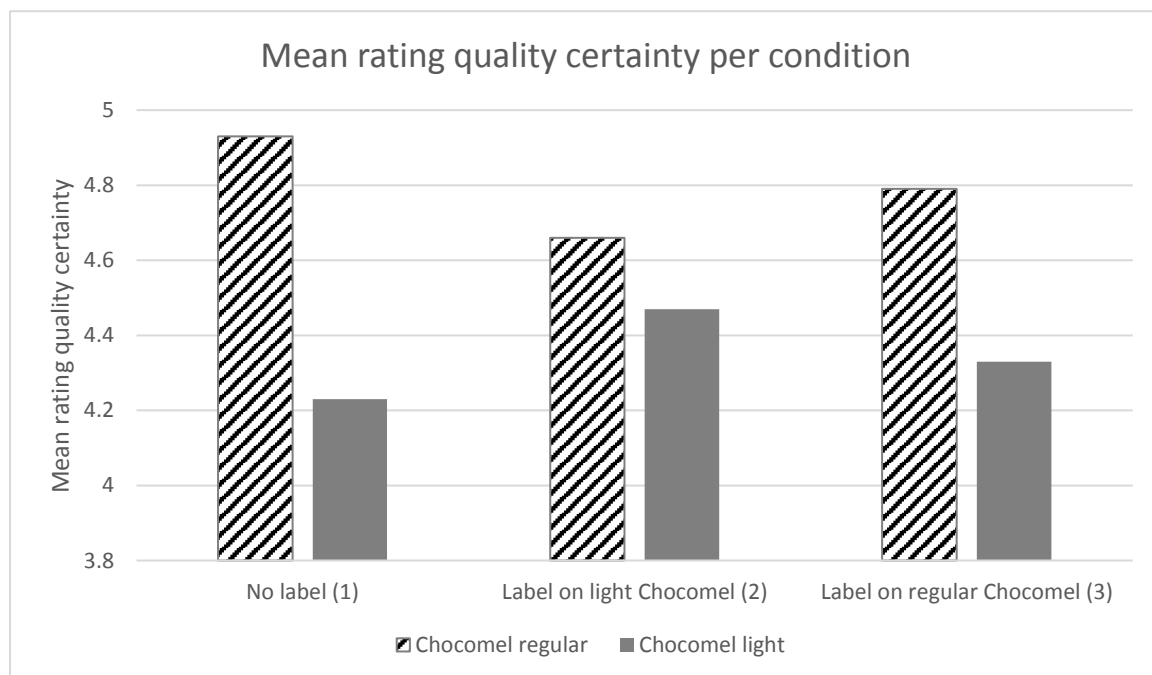


Figure 3 Mean rating quality certainty per condition

Conclusion

This study does not show a direct effect of a descriptive norm message on the targeted product, nor on the products in the category 'others'. So, hypothesis one is rejected in this study, because products with a descriptive norm message are not chosen more frequently than products without a descriptive norm message. Hypothesis two is also rejected, because there is also no difference in effect of a descriptive norm message between products with lower expected liking and regular products.

However, this study reveals that a descriptive norm message on Chocomel regular decreases the choice for Chocomel light. A greater proportion of people does not choose Chocomel light when there is a descriptive norm message on the regular Chocomel. So, a descriptive norm message on regular or light Chocomel does not change the choice frequency and buying intention for the targeted product. But the descriptive norm message might affect the choice frequency and buying intention for related, not targeted, products. Despite the fact that the hypotheses are rejected based on this research, it should be noted that a descriptive norm message on regular products can affect the choice for the light variant with lower expected liking.

For the descriptive norm message to be effective, the message needs to have a high quality, a high credibility and people should identify with the norm referent group of the message. In this study, both the quality and credibility of the descriptive norm message were rated moderate to low. Moreover, there was a moderate to low identification with the norm referent group, the other customers in the supermarket. This should be taken into account when interpreting the results, because it might explain unexpected results in this study. The low identification might have weakened the effect of the descriptive norm message.

All in all, it can be concluded that there is no direct effect of social norms on the choice for food products with lower expected liking. A descriptive social norm message targeted at products with lower expected liking does not affect the choice frequency for such products. Nevertheless, there appears to be an indirect effect of a descriptive social norm message on a regular product. Descriptive social norm messages directed at regular products do decrease the choice for products with lower expected liking.

Discussion

The effect of social norms on the choice for food products with lower expected liking was investigated in this study to encourage the consumption of healthy and responsible nutrition. It was concluded that social norms do not directly influence the product choice for neither regular products nor products with lower expected liking. These findings contradict the hypotheses and expectations in this study. Moreover, the finding that social norm messages directed at regular products decrease the choice for products with lower expected liking was also unexpected.

The findings not only contradict the hypotheses of this study, but also results from other research. From previous research, it became clear that social norms can change behaviour in various areas (Berkowitz, 2004). In earlier studies, it was shown that consumers use information about the popularity of a product when making a choice (Robinson, Thomas, Eaveyard & Higgs, 2014) to reduce quality uncertainty (Goedegebure, van Herpen & van Trijp, 2017). These social norms are also specifically shown to be effective in the area of food consumption (Burger et al., 2010; Croker, Whitaker, Cooke & Wardle, 2009; Cruwys et al., 2014; Mollen, Rimal, Rutter & Kok, 2013; Templeton, Stanton & Zaki, 2016). On the other hand, Zandstra et al. (2017) did, as in this study, neither find an effect of social norm message on the choice for products with lower expected liking. The absence of an effect was attributed to amongst others a too broad reference group.

Therefore, this study took into account the reference group and other aspects that could influence the effectiveness of the descriptive norm message. The adoption of a norm message depends on the message quality and credibility (Shen, Zhang & Zhao, 2016) and identification with the norm referent group (Stok, Verkooijen, de Ridder de Wit & de Vet, 2014). Although these aspects were taken into account carefully in this study, both the quality and credibility of the norm message were perceived to be quite low. Moreover, the identification with the referent group, other consumer in the same supermarket, was also low. The lack of norm message quality, norm message credibility and identification with the referent group might have caused a rejection of the descriptive norm message and therefore might explain the unexpected results in this study.

Next to this, the rejection of the norm message could also be caused by a broader concept called reactance. People have a fundamental need for autonomy, according to the theory of psychological reactance (Jenkins & Dragojevic, 2013). Persuasive messages are a threat to the autonomy. The perceived threat causes reactance and the persuasive message is resisted as defensive reaction. If the people in a supermarket assume that the label tries to persuade them to buy a certain product, they might thus reject this message. This resistance is then a motivational state with the aim to reduce behavioural change and people might refute the message (Fransen, Verlegh, Kirmani, Smit, 2015).

Lastly, the disappearance of difference in quality certainty might explain the unexpected results. The presence of a descriptive norm message on the product with lower expected liking reduced the difference in quality certainty between the regular product and the product with lower expected liking.

It can be said that a descriptive norm message thus decreases the difference in perceived quality certainty between the products. This would imply that the expected liking of the product with lower expected liking increases relative to the regular product. The hypothesized higher effect of the descriptive norm message on products with lower expected liking is than weakened because of the perceived equality between both products regarding the quality certainty.

Although the results of this study were against expectations, the outcomes and insights that appeared do contribute to the existing knowledge. The study showed that the choice for products with lower expected liking can be stimulated indirectly by removing existing social norm messages on regular products. Descriptive social norm messages directed at regular products namely decrease the choice for products with lower expected liking. So, to encourage the consumption of healthy and responsible nutrition, descriptive social norm messages aimed at regular chocolate milk products should disappear, based on the findings of this particular study.

Moreover, this study shows that a label on a product with lower expected liking can diminish the difference in quality certainty perception between regular products and products with lower expected liking. A first step towards reduction of the lower liking expectations of products with a health-related claim could be the addition of a descriptive norm message on these products.

Limitations and future research

This study also had some limitations, which should be addressed in future research. First of all, as already stated, the identification with the referent group and the perceived quality and credibility of the norm message were quite low. The importance of these aspects is highlighted in previous research. Future investigation should therefore take into account carefully these factors when conducting research in this area.

Moreover, a large majority of the participants in this study were students, because the experiment took place at a university. Students are often price conscious because of their budget limits. Some participants even mentioned that price was for them one of the most important aspects when choosing for a certain product. Therefore, the results of this study might not be representative for a broader population of grocery shoppers and the budget limits might have influenced the results. Following research should therefore also focus on other segments and their buying behaviour. Lastly, the focus in this was on one particular product, namely chocolate milk. It is therefore not possible to say if the insights and results from this study can be generalized towards a range of other products. Chocolate milk can for instance be seen as an indulgence product which might have influenced the results. In the future, research should therefore also focus on other products and product categories to investigate the effect of social norms in a broader range of available products.

So, future research regarding the product choice of products with lower expected liking should focus on the quality of the descriptive norm message. It should be explicitly researched whether the descriptive norm message is rejected or not by the consumers and on which basis. The current research already shows a useful indirect effect of the descriptive norm messages, but a more in-depth understanding of the direct effect would not only be an addition to the existing knowledge, but it would also be useful to steer consumers towards more healthy and responsible nutrition.

Appendix 1 – norm message



Populair bij
klanten



* elke dag drinkt een groeiend aantal klanten van deze supermarkt Chocomel

Appendix 2 – design virtual reality headset



Appendix 3 – products supermarket shelf



Appendix 4 – questionnaire

Bedankt voor uw deelname aan dit onderzoek. Deze enquête maakt deel uit van mijn onderzoek naar koopgedrag. Door deel te nemen aan dit onderzoek levert u een bijdrage aan mijn afstudeeronderzoek. U heeft net gewinkeld in een virtuele omgeving. In deze enquête volgen vragen over enkele producten die u tijdens het winkelen bent tegengekomen. U wordt gevraagd uw mening te geven over een aantal stellingen. Hierbij zijn er geen goede of foute antwoorden.

Alles zal naar waarheid gerapporteerd worden en uw anonimiteit wordt gewaarborgd. Met het invullen van deze enquête geeft u toestemming om uw antwoorden te gebruiken voor onderzoeksdoeleinden. U kunt op ieder moment besluiten om te stoppen met het invullen van deze enquête.

De enquête zal ongeveer 5 minuten in beslag nemen.

Koopintentie (voor de reguliere en light versie)

Geef voor onderstaand product aan in hoeverre u het eens bent met de stelling (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Als dit product te koop zou zijn in de supermarkt, zou ik het product kopen (Zandstra et al., 2017)

Ik zou dit product graag willen proberen (Baker & Churchill, 1977)

Als ik dit product zie, zou ik het graag willen kopen (Baker & Churchill, 1977)

Productkwaliteit

Geef aan in hoeverre u het eens bent met de volgende stellingen (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Dit product heeft een goede smaak (Goedegebure, 2018)

Dit product is een lekker product (Goedegebure, 2018)

Dit product heeft een prima kwaliteit (Goedegebure, 2018)

Productkwaliteit zekerheid

Geef aan in hoeverre u het eens bent met de volgende stelling (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Ik voel me zeker over mijn inschatting van de kwaliteit van dit product (Goedegebure, 2018)

Ik twijfel over de kwaliteit van dit product (Goedegebure, 2018)

Ik ben overtuigd van mijn beoordeling van de kwaliteit van dit product (Goedegebure, 2018)

Product gezondheid

Geef aan in hoeverre u het eens bent met de volgende stelling (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Dit product is een gezond product (Goedegebure, 2018)

Referentie schapkaartje

Geef aan in hoeverre u het eens bent met de volgende stellingen (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Ik voel een connectie met de klanten van deze supermarkt (Stok et al, 2012; Stok et al, 2014)

Ik identificeer me met de klanten van deze supermarkt (Stok et al, 2012; Stok et al, 2014)

Argument kwaliteit schapkaartje

Geef aan in hoeverre u het eens bent met de volgende stellingen (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

Bovenstaand schapkaartje is compleet (Shen et al., 2016)

Bovenstaand schapkaartje is nauwkeurig (Shen et al., 2016)

Bovenstaand schapkaartje is objectief (Shen et al., 2016)

Geloofwaardigheid schapkaartje

Geef aan in hoeverre u het eens bent met de volgende stellingen (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

De makers van dit schapkaartje hebben kennis over dit onderwerp (Shen et al., 2016)

De makers van dit schapkaartje zijn experts op dit gebied (Shen et al., 2016)

De makers van dit schapkaartje zijn te vertrouwen (Shen et al., 2016)

De makers van dit schapkaartje zijn deugdelijk (Shen et al., 2016)

Gebruik VR-bril

Geef aan in hoeverre u het eens bent met de volgende stelling (helemaal mee oneens - helemaal mee eens op een 7-puntsschaal)

De besturing van de virtuele omgeving was helder en begrijpelijk (Goedegebure, 2018)

De besturing in de virtuele winkel kostte me weinig moeite (Goedegebure, 2018)

Ik vond het makkelijke om te winkelen in de virtuele omgeving (Goedegebure, 2018)

Ik vond het makkelijk om te doen wat ik wilde in de virtuele omgeving (Goedegebure, 2018)

Demografie

Wat is uw geslacht?

Man

Vrouw

Neutraal

Wat is uw leeftijd?

Open

Bedankt voor uw deelname aan het onderzoek. Mocht u nog opmerkingen of vragen hebben naar aanleiding van deze enquête of het onderzoek, dan kunt u contact opnemen met lotte.pater@wur.nl. Mocht u graag informatie willen ontvangen over het doel van het onderzoek na afronding van het onderzoek, dan wordt u verzocht hier uw e-mailadres achter te laten.

References

- Bailey, J.E., & Pearson, S.W. (1983). Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, 29(5), 530-545.0
- Baker, M.J., & Churchill, G.A. (1977). The impact of physically attractive models on advertising evaluations. *Journal of Marketing Research*, 14(4), 538-555.
- Banerjee, A.V. (1992). A Simple Model of Herd Behavior. *The Quarterly Journal of Economics*, 107(3), 797-817.
- Berkowitz, A.D. (2002). *Responding to the Critics: Answers to Common Questions and Concerns about the Social Norms Approach* (The Report on Social Norms: Working Paper #7). Retrieved from <http://www.alanberkowitz.com/articles/WP7.pdf>
- Berkowitz, A.D. (2004). *The Social Norms Approach: Theory, Research, and Annotated Bibliography*. Retrieved from http://www.alanberkowitz.com/articles/social_norms.pdf
- Bicchieri, C. (2006). *The grammar of society: The nature and dynamics of social norms*. Cambridge, United Kingdom: Cambridge University Press
- Burger, J.M., Bell, H., Harvey, K., Johnson, J., Stewart, C., Dorian, K., & Swedroe, M. (2010). Nutritious or Delicious? The Effect of Descriptive Norm Information on Food Choice. *Journal of Social and Clinical Psychology*, 29(2), 228-242. <https://doi.org/10.1521/jscp.2010.29.2.228>
- Carrillo, E., Varela, P., & Fiszman, S. (2012). Effects of food package information and sensory characteristics on the perception of healthiness and the acceptability of enriched biscuits. *Food Research International*, 48(1), 209-216. <https://doi.org/10.1016/j.foodres.2012.03.016>
- Centraal Bureau voor de Statistiek (2018). 100 duizend volwassenen hebben morbide obesitas. Retrieved from <https://www.cbs.nl/nl-nl/nieuws/2018/27/100-duizend-volwassenen-hebben-morbide-obesitas>
- Cialdini, R.B., Reno R.R., & Kallgren, C.A. (1990). A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.
- Crocker, H., Whitaker, K.L., Cooke, L., & Wardle, J. (2009). Do social norms affect intended food choice? *Preventive Medicine*, 49(2-3), 190-193. <https://doi.org/10.1016/j.ypmed.2009.07.006>
- Cruwys, T., Bevelander, K.E., & Hermans, R.C.J. (2014). Social modelling of eating: A review of when and why social influence affects food intake and choice. *Appetite*, 86, 3-18. <http://dx.doi.org/10.1016/j.appet.2014.08.035>

Dahlen, M., Lange, F., Sjodin, H., & Torn, F. (2005). Effects of ad-brand incongruency. *Journal of Current Issues and Research in Advertising*, 27(2), 1-12. doi: 10.1080/10641734.2005.10505178

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The journal of abnormal and Social Psychology*, 51(3), 629-636.

Fabiano, P. (1999). Learning Lessons and Asking Questions about College Social Norms Campaigns. McDonald, R.I., & Crandall, C.S. (2015). Social norms and social influence. *Current Opinion in Behavioral Sciences*, 3, 147-151. <https://doi.org/10.1016/j.cobeha.2015.04.006>

Fransen, M. L., Verlegh, P.W., Kirmani, A., & Smit, E.G. (2015). A typology of consumer strategies for resisting advertising and a review of mechanism for countering them. *International Journal of Advertising*, 34(1), 6-16. <https://doi.org/10.1080/02650487.995284>

Goedegebure, R.P.G., Van Trijp, H.C.M., & Van Herpen, E. (2017). The Reasons for Choosing Popular: Extending Naive Theories of Popularity With Uncertainty Reduction and Societal Value. *Latin American Advances in Consumer Research*, 4, 69-70.

Goedegebure, R.P.G., Van Herpen, E., & Van Trijp, H.C.M. (2018) Using product popularity to stimulate choice for light products in supermarkets. *Working paper*.

Hansen, H. (2014). Informational Cascades, Herding Bias, and Food Taste Evaluations. *Journal of Food Products Marketing*, 20, 1-16. doi: 10.1080/10454446.2012.726945

IRI. (2018, March 30). Hoogste groei A-merken top 100 sinds 9 jaar. Retrieved from <https://www.iriworldwide.com/nl-NL/insights/news/Hoogste-groei-A-merken-top-100-sinds-9-jaar>

Jenkins, M., & Dragojevic, M. (2013). Explaining the process of resistance to persuasion: a politeness theory-based approach. *Communication Research*, 40(4), 559-590. <https://doi.org/10.1177/0093650211420136>

Meyers-Levy, J., & Tybout, A.M. (1989). Schema Congruity as a Basis for Product Evaluation. *Journal of Consumer Research*, 16, 39-54.

Mollen, S., Rimal, R.N., Ruiter, R.A.C., & Kok, G. (2013). Healthy and unhealthy social norms and food selection. Findings from a field-experiment. *Appetite*, 65, 83-89. <https://doi.org/10.1016/j.appet.2013.01.020>

Mollen, S., Holland, R.W., Ruiter, R.A.C., Rimal, R.N., & Kok, G. (2016). When the Frame Fits the Social Picture: The Effects of Framed Social Norm Messages on Healthy and Unhealthy Food Consumption. *Communication Research*, 1-33. doi: 10.1177/0093650216644648

Petty, R.E., & Cacioppo, J.T. (1986). The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology*, 19, 123-205.

Pliner, P., & Mann, N. (2004). Influence of social norms and palatability on amount consumed and food choice. *Appetite*, 42(2), 227-237. <https://doi.org/10.1016/j.appet.2003.12.001>

Rijksoverheid. (n.d.). Rijksoverheid bevordert productie gezonde voeding. Retrieved from <https://www.rijksoverheid.nl/onderwerpen/voeding/gezonde-voeding>

Robinson, E.L., Fleming, A., & Higgs, S. (2014). Prompting Healthier Eating: Testing the Use of Health and Social Norm Based Messages. *Health Psychology*, 33, 1057-1064. doi: 10.1037/a0034213

Robinson, E., Thomas, J., Aveyard, P., & Higgs, S. (2014). What Everyone Else Is Eating: A Systematic Review and Meta-Analysis of the Effect of Informational Eating Norms on Eating Behavior. *Journal of the Academy of Nutrition and Dietetics*, 114(3), 414-429. <http://dx.doi.org/10.1016/j.jand.2013.11.009>

Rogers, E.M. (1983). *Diffusion of innovations*. New York, United States: Free Press.

Salazar, H.A., Oerlemans, L., & Stroe-Biezen, S. (2013). Social influence on sustainable consumption: evidence from a behavioural experiment. *International Journal of Consumer Studies*, 37, 172-180.

Schouteten, J.J., de Stuer, H., de Pelsmaeker, S., Lagast, S., de Bourdeaudhuij, I., & Gellynck, X. (2015). Impact of Health Labels on Flavor Perception and Emotional Profiling: A consumer Study on Cheese. *Nutrients*, 7(12), 10251-10268. doi: 10.3390/nu/7125533

Shen, X., Zhang, K.Z.K., & Zhao, S.J. (2016). Herd behavior in consumers' adoption of online reviews. *Journal of the Association for Information Science and Technology*, 67(11), 2754-2765. doi: 10.1002/asi.23605

Simon, H. A. (1957). *Models of man*. New York, United States: Wiley.

Stok, F.M., de Ridder, D.T.D., de Vet, E., & de Wit, J.B.F. (2012). Minority talks: The influence of descriptive social norms on fruit intake. *Psychology & Health*, 27(8), 956-970. doi: 10.1080/08870446.2011.635303

Stok, D.M., de Ridder, D.T., de Vet, E., & de Wit, J.B. (2014). Don't tell me what I should do, but what others do: the influence of descriptive and injunctive peer norms on fruit consumption in adolescents. *British Journal of Health Psychology*, 19(1), 52-64. doi: 10.1111/bjhp.12030

Stok, F.M., Verkooijen, K.T., de Ridder, D.T.D., de Wit, J.B.F., & de Vet, E. (2014). How Norms Work: Self-Identification, Attitude, and Self-Efficacy Mediate the Relation between Descriptive Social

Norms and Vegetable Intake. *Applied psychology: Health and Well-Being*, 6(2), 230-250. doi: 10.1111/aphw.12026

Sun, H. (2013). A longitudinal study of herd behavior in the adoption and continued use of technology. *MIS Quarterly*, 37(4), 1013-1041.

Templeton, E.M., Stanton, M.V., & Zaki, J. (2016). Social Norms Shift Preferences for Healthy and Unhealthy Foods. *PLoS ONE*, 11(11), 1-16. doi: 10.1371/journal.pone.0166286

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131.

VRmaster (n.d.). VR services. In-VR analytics. Retrieved from <https://vrmaster.co/use-virtual-reality-in-your-business-training/#creation>

Zandstra, E.H., Carvalho, A.H.P., & van Herpen, E. (2017). Effects of front-of-pack social norm messages on food choice and liking. *Food Quality and Preference*, 58, 85-93.