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[(HIGH)LIGHTING PRODUCTS IN THE RETAIL ENVIRONMENT]

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Summary

Light has an impact on the way we perceive things. This applies to everyday life, but also to the retail environment. Within the context of the DONRO project, this study investigates the effects of lighting products in the retail environment.

Although several studies show positive atmosphere effects for lighting, the empirical findings on a product category level are small. In addition, most of these studies focus on the effects of light on a product category as a whole. Less research has been done about highlighting specific products within a product category. To contribute to this literature gap, this study investigates the effects of (high)lighting a specific part of a product category. An experiment was conducted, in which the effects were measured in terms of attention, attractiveness and choice behaviour. Furthermore, effects of light on the consideration set of the consumer were investigated.

A conceptual model was designed which describes the expected choice process of the consumer. In this model it is described that the light is expected to increase attention and attractiveness for the lighted products. The increased attention and attractiveness are subsequently expected to increase the chance that a product gets into the consideration set of the consumer, thereby increasing the chance that the lighted product will be chosen by the consumer.

A simulated supermarket shelf was created, which consisted of four kinds of products. Out of these four products, a shelf with white wines was partly lighted. The wines standing in the middle of the shelf were lighted, either with soft light of bright light. Students from Wageningen University were used as participants for the experiment. Participants were asked to choose 4 products, including a white wine. Participants were then asked to indicate which wines they had considered next to their wine of choice, and to rate the attractiveness of the white wines. To measure attention, participants were also presented with photos of the wines afterwards, asking them to indicate whether they were able to recognize them.

Illuminating specific products was not found to have an effect on the attention and attractiveness for the lighted products. However, clear effects were found for the consumer consideration set and the consumer choice behaviour. It can be concluded that the actual presence of light can influence consumers to consider at least one lighted wine, while an increase in illuminance can influence consumers to consider relatively more lighted wines compared to all wines available.

Whereas it is the actual presence of light that can have an influence on the inclusion of products in the consideration set, it is the bright light that can influence the consumer choice behaviour; a clear increase in the choice of lighted wines was measured when products were lighted with bright light. Retailers are therefore advised to light products with a high light intensity, if they want consumers to choose the lighted products.

Several recommendations for future researchers are given. Illuminating specific products was not found to have an effect on the attention and attractiveness for the lighted products. However, this does not mean that these effects do not exist. As described in the discussion, future researchers are advised to measure attention and attractiveness in a more direct way. Further, this study was conducted with students as participants. To be able to generalize the results of this study to a broader group of people, future researchers are advised to use a group of experienced wine buyers for the experiment.

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1. Introduction

Almost everyone will agree that lighting has an impact on the way we perceive things. When we go dining with a romantic partner we light candles; when we study we turn on bright lights and we would not organise a ghost tour in daylight. Just like lighting has a function in our everyday life, it has a function in the retail environment. It seems that lighting, even with the enormous set of visual environmental cues present in retail environments, does play a significant role in creating an ambiance in the retail store (Custers et al, 2010; Decré & Pras, 2013; Quartier et al, 2008, 2010).

Research has found several effects of light within a retail environment. Next to the role of creating an ambiance, some studies found lighting as a part of the retail atmosphere to have an influence on the affective states of consumers (pleasure and arousal) (Park & Farr 2007; Decré & Pras, 2013; Mouhoubi, 2014). These affective states can in turn cause behavioural changes, both positive (approach, buy more, stay longer) and negative (not approach, buy less, leave earlier) (Baker & al 1992; Donovan et al, 1994). Some studies even found a direct relation between in-store lighting and willingness to buy (Decré & Pras, 2013; Baker & al, 1992; Barli et al, 2011).

However, not much empirical research has been done regarding the effects of lighting on specific product groups, with the intention to increase attractiveness and attention for the products in these groups. This is remarkably, since light has the ability to alter the presentation of a product, which influences the attractiveness of a product (Barbut, 2001, 2002, 2003, 2004). More specifically, little empirical research has been done about lighting a part of a product category (Leijnse, 2013; Quartier, 2009). Previous research mostly experimented with lighting the product category as a whole, with the intention to measure a change in consumers' reaction for the product category as a whole (Areni & Kim, 1994; Summers & Herbert, 2001). Lighting only a part of a product category could increase attention and attractiveness for the specific products lighted, resulting in the highlighting of these products. Highlighting specific products successfully could have several benefits for retailers. Retailers could for instance highlight sustainable products, with the intention to improve sales for these products as well as their store image. Retailers could also highlight products with a high margin, with the intention to increase profit.

As lighting can have the ability to increase attention for products (Leijnse, 2013), lighting might have the ability to influence the products considered by consumers. A clear condition for a product to be considered by the consumer is that it is being noticed (Crowley & Williams, 1991). The potential effects of lighting specific products on the products considered by the consumer have not been investigated in earlier research. This study will look for these potential effects. More reasoning for this kind of thinking will be described more elaborately in the theory section.

1.1 Relevance and aim

Earlier studies provide moderate but promising results for the effect of soft light in a retail environment (Quartier, 2011). Although several studies show positive atmosphere effects for lighting, the empirical findings on a product category level are small (Leijnse, 2013). In addition, most of these studies focus on the effects of different kinds of light on a product category as a whole. Even less research has been done about highlighting specific products within a product category: only two

studies have been found (Leijnse, 2013; Quartier, 2009). This can also be seen in the literature overview provided in table 1.

To contribute to this literature gap, this study investigates the effects of (high)lighting a specific part of a product category. An experiment was conducted, in which the effects were measured in terms of attention, attractiveness and choice behaviour. Furthermore, the potential influence of light on the consideration set of the consumer will be investigated. For this study the following main question was created:

<u>What is the effect of illuminating specific products within a product category on consumer choice behaviour?</u>

In the following paragraphs the sub questions are presented. The sub questions also reveal the dependent variables used in this study, which will be explained shortly. The studies of Areni & Kim (1994) and Summers & Herbert (2001) show that lighting a product category can increase the amount of items examined and handled. More specifically, Leijnse (2013) shows that the lighting of specific wines within a product category can increase the recognition of the lighted wines. Based on the results of these studies, the dependent variable 'attention' was used. The following according sub question was made:

<u>What is the effect of illuminating specific products within a product category on product attention?</u>

The studies of Barbut (2001, 2002, 2003, 2004) and the studies of Quartier (2009, 2011) show that different light settings have influence on the attractiveness and preference of products. The appearance of the product was most desired when it was lightened with a lamp that has a similar colour spectrum as the product itself. The colour spectrum of the light will not be manipulated in this experiment. However, as brightness is an important aspect of how a colour is perceived, it is imaginable that illuminance can have an influence on the attractiveness of products. Based on this reasoning, the dependent variable 'attractiveness' was used. The following according sub question was made:

<u>What is the effect of illuminating specific products within a product category on product attractiveness?</u>

The consumer consideration set is defined as the set of brands brought to mind on a specific choice occasion (Nedungadi et al., 1991). Following the words of Nedungadi (1991), brand awareness is a necessary precondition for choice. However, he states, as the awareness set remains in the memory of the consumer, a product needs to be salient and accessible for the consumer to be included in the consideration set. As the literature shows that lighting (specific products within) a product category can increase attention for the lighted products, it is imaginable that lighting products can have an effect of the inclusion or exclusion of products in the consideration set of the consumer. Based on this reasoning, the dependent variable 'consideration set' was used. The following according sub question was made:

<u>What is the effect of illuminating specific products within a product category on a consumer consideration set?</u>

The last sub question is a logical continuation of the first three sub questions. The first sub questions reveal that it is expected that illuminating specific products can have an effect of product attention, attractiveness and the consumer consideration set. Based on these expectations, the question rises whether lighting specific products can also have an effect on the product choice behaviour.

In addition, as most studies have focused on lighting on an atmosphere level or a product category level (Leijnse, 2013; Quartier, 2009), these studies have mostly measured the amount of purchases for the lighted product category. As only a part of the product category will be lighted in this study, it would be interesting to know whether light can also influence the choice within the product category. Based on this reasoning, the dependent variable 'choice' was used. The following according sub question was made:

What is the effect of illuminating specific products within a product category on product choice behaviour?

Next to theoretical implications this thesis can be beneficial for companies connected to the DONRO project. DONRO (Developer of Nudges for Retail and Out-of-home) is a collaboration in which parties from both industry and research organisations together to explore the possibilities of nudging in a retail environment. Nudges ('a gently push'), as described by Thaler and Sunstein (2008) are subtle ways of altering consumers' behaviour in a way that is considered as more healthy or more sustainable. This altering is done by changing choice architectures, without omitting any options of choice.

This paper will not directly focus on nudging, as this paper is an initial and exploratory study. However, positive empirical outcomes for effects on product attention, attractiveness and choice behaviour could provide a basis for designing nudges within the retail environment. Second, the literature overview provided can contribute to the knowledge of these companies.

In the next chapter the available literature about lighting in the retail environment will be discussed. Based on the literature a conceptual framework is constructed, after which the hypotheses will be formed. In the chapters that follow the method of the experiment will be described, as well as the results, the conclusions, the discussion and recommendations for further research.

2. Literature about lighting in the retail environment

2.1 Effects of lighting on the store atmosphere

The effects of lighting on the perceived atmosphere in a store, and in turn, the effects of the perceived atmosphere on the consumer have been investigated in multiple ways. One of the most important aspects to discuss here are the emotional states pleasure and arousal. These emotional states are part of the Pleasure, Arousal and Dominance-model (PAD), as created by Mehrabian & Russell (1974). They proposed that these emotional states mediate approach-avoidance behaviours when induced by the environment. Roughly said, this means that an environment that induces an optimal combination of pleasure and arousal can create an atmosphere where a consumer wants to be, and where he wants to interact with the environment around him. More pleasure is considered as better in this case, whereas arousal has found to have its optimum levels per individual (Ridgway, 1990; Raju, 1980; Zuckerman, 1979). The third element of this model is Dominance. This is described as to what extent a person feels influenced or restricted by its environment and vice versa. However, Quartier (2010) shows that only few studies found effects of store atmosphere on the Dominance construct (e.g., Babin and Darden, 1995, Brengman, 2002)

A second important aspect to discuss here are the different kind of light properties of a lamp. In literature the colour temperature and illuminance are mainly used to differ between light. Colour temperature is a method of describing the colour characteristics of light, usually either warm or cool. Illuminance or light level is the amount of light energy that reaches the surface of an object. Iluminance is also referred to as a light being 'bright' or 'soft'.

Several studies found different kinds of lighting to have an effect on the pleasure and arousal of consumers. For instance Mouhoubi (2014) found cool bright lighting to increase consumers' arousal and pleasure in the store. Others only found this light to increase arousal (Park & Farr, 2007; Decré & Pras 2013), or only to increase pleasure (Quartier et al, 2010).

However, the results of the studies mentioned here are contradictory with other research. McCloughan et al (1999) found that sensation seeking was significantly higher under low than under high illuminance, and in the study of Park & Farr (2007) warm lighting seemed to increase pleasure, as opposed to cold lighting.

Note that this study of Quartier et al. (2010) used a simulated supermarket in their experiment, whereas the other studies mentioned here used photographs or small simulated shelves as stimuli. In this simulated supermarket three different atmospheres were created, corresponding to the light settings of a discounter, a hard discounter and a high quality supermarket. As stated before, the type of feelings brought about by the store (positive or negative) was linked to the perceived atmosphere, but the intensity of those feelings (arousal) was not.

Next to emotional states, the effects of lighting as part of the store atmosphere were measured in terms of consumers' store evaluation, time spent in store and (intentional) behaviour. Effects were mainly found for behavioural intentions and time spent in store. For an overview of empirical papers about the effects of lighting in the retail environment, see table 1.

The research on the effects of lighting as part of the retail atmosphere certainly shows that lighting can have an impact on the way we perceive the retail environment. Although the results are small and in some cases contradictory, the literature also shows promising indications for lighting to have an influence on behaviour of consumers. In the next section we will focus on the literature that has examined the effects of lighting a product category.

Table 1: Literature overview of empirical papers about effects of lighting in the retail environment.

Author	Independent variable	Dependent variable	Product or store type	Result	Atmosphere level, product category level or specific products level?
McCloughan et al (1999)	Illuminance and colour temperature	Mood (affect, sensation seeking, anxiety, hostility, depress, dysphoria)	White laboratory rooms	Sensation seeking was significantly higher under low than under high illuminance. Hostility was significantly greater under the warm rather than under the cool light.	Atmosphere
Park & Farr (2007)	Colour rendering and colour temperature	Emotional state and behavioural intention	laboratory with small simulated shelves	Cool lighting increases arousal and approach intentions, warm lighting increases pleasure and attractiveness.	Atmosphere
Briand &Pras (2010)	Illuminance, colour temperature and perceived temperature	Stimulation, upmarket positioning and relaxation	Jeans, books, and furniture stores	Bright cool light influences the stimulation and intention to buy. Light intensity has an impact upon intimacy perception but not on relaxation.	Atmosphere
Custers et al (2010)	Lighting attributes and interior qualities	Perceived atmosphere (cosiness, liveliness, tenseness and detachment)	Clothing stores	Lighting attributes and interior qualities were successfully related to perceived atmosphere.	Atmosphere
Quartier et al (2010)	Light settings (high quality supermarket, discounter, hard discounter)	Mood, emotions, price & image perception and behaviour	Simulated supermarket	Different light settings did not have an effect on the arousal and behaviour. Light setting did affect the pleasure experienced.	Atmosphere
Barli et al (2011)	Illuminance	Time spent in store and product purchases	Shopping mall	Time spent in the store was positively associated with soft lighting conditions, also with more purchases.	Atmosphere
Decré&Pras (2013)	Illuminance and colour temperature	Perceived atmosphere (stimulating and relaxing) and behavioural intentions (intention to buy and intention to spend time in the store)	Jeans, books, and furniture stores	A bright cool light had a stimulating effect on participants' store perception. Participants also increased their intentions to buy and to spend time in the store.	Atmosphere
Mouhoubi (2014)	Illuminance and colour temperature	Store evaluation and behavioural intentions	Consumer electronics store	Setting with bright and cool lighting elicited more pleasure and arousal compared to other settings. This setting was also seen as more approachable.	Atmosphere

Table 1 is continued on next page.

Areni& Kim (1994)	Illuminance(additional display lighting)	Number of items examined, handled and purchased	Wines	Brighter lighting influenced shoppers to examine and handle more wines, sales were not influenced.	Product category
Summers & Hebert (2001)	Illuminance (additional display lighting)	Time spent at the display, numbers of items touched and the number of items picked up	Belts and tools	Consumers touched more items and picked up more belts with the addition of display lighting. There were no results for tools.	Product category
Barbut (2001, 2002, 2003, 2004)	Colour rendering (incandescent, fluorescent and metal halide lamp)	Appearance, as seen from a table	Fresh meat	Appearance of the product was most desired when it was lightened with a lamp that has a similar colour spectrum as the product itself.	Product category
Quartier (2011)	Colour rendering and colour temperature	Appearance and willingness to buy	Food products	Attractiveness, tastiness and freshness were influenced by different lighting conditions. These three were also correlated to willingness to buy.	Product category
Quartier et al (2009)	Colour temperature and colour rendering	Product preference	Food products (including wines)	A cool white light has a positive effect on the preference for green vegetables. For all other product categories no significant results were found.	Specific products
Leijnse (2013)	Illuminance and background colours.	Attention, recognition, choice and emotional state	Wines	Increased product attention and recognition was found for the highlighted wines. No results were found for product attractiveness and choice. Background colour was only effective when combined with a higher illuminance. This combination was found to influence attention, recognition and choice. Red was found to be the most effective colour.	Specific products

2.2 Lighting on a product category level

As described earlier, few empirical studies have been done about the influence of light on a product category level. One of the first to conduct experiments with lighting food products was Barbut (2001, 2002, 2003, 2004). In these studies several laboratory experiments were conducted in which cold meat cuts on a table were lightened by different lights (incandescent, fluorescent and metal halide). He found that the appearance of the product was most desired when it was lightened with a lamp that has a similar colour spectrum as the product itself. Beef was for instance more preferred under a incandescent light than a fluorescent light, because of the lack of red light in the fluorescent light source.

In a similar study by Quartier (2011) five food items were photographed under eight different lighting settings. These lights differed in colour rendering and colour temperature, illuminance was kept as similar as possible. Attractiveness, freshness, tastiness and willingness to buy were investigated by a paired comparison approach: two images of the same product were shown side by side, and participants were asked to indicate their preference according to the specific criterion. Clear differences between the lighting conditions for specific products were found for the impression indicators (attractiveness, freshness, tastiness), showing that different lighting can indeed change the

appearance of a product, thereby influencing its appeal in a consistent manner. Also willingness to buy was found to be correlated with the impression indicators.

In a study by Summers & Hebert (2001), the influence of display lighting on the consumers' time spent at the display, numbers of items touched and the number of items picked up was measured. Supplemental lighting was installed at displays in two retail stores selling belts and tools, video cameras recorded the consumers' actions. The lighting treatment was turned on or off daily during the experiment in each store. They found that consumers touched more items and picked up more belts with the addition of display lighting. No results were found for tools.

Areni & Kim (1994) also tried to measure the effects of in-store lighting on consumers' reaction, although this in-store lighting was partial on an atmosphere level. They used the large wine cellar of a restaurant that was open to patrons who wished to just visit, sample some wines, or purchase some wines. Consumers' reaction to the shelves, their purchase behaviour and their time spent at the wine cellar were measured. Bright versus soft lighting was used as manipulation, which was done by altering the wattage of the lamps every night (50 watt and 75 watt). They concluded that brighter lighting influenced shoppers to examine and handle more wines, though sales were not influenced. The effect of lighting on the amount of time spent in the store and total purchases was, however, non-significant.

The described experiments show that different kinds of lighting of a product category can influence the attractiveness of products, the amount of times products are touched and the amount of times products are picked up. Only Areni & Kim measured the effect on total sales of the product category, but they did not find a significant effect. However, they did not investigate whether consumers bought other wines than they would have done without the brighter lighting. Although these studies have been done on a product category level, they show that lighting products can generate more attention to a product, and are able to increase the attractiveness of products. These findings emerge the question whether lighting specific products within a product category can generate similar effects for the lighted products. In the next chapter we will look at two studies in which, among other things, the effect of lighting specific products on consumer choice behaviour was investigated.

2.3 Lighting on a product level

Only two studies experimented with lighting only a part of a product category. Findings were small, and mostly found in a combination with a background colour or a change in colour rendering. Firstly Quartier et al. (2009) tested the influence of lighting on people's product preference in a small simulated supermarket. Nine product categories were presented in this supermarket, including wine, soda, groceries, cosmetics, bread, dairy, green and red vegetables and fruit. Each product category was divided in two divisions containing the same products, both lit with a different lamp. The choice of lamps was based on lighting experts and results of a small photograph pre-test. Difference lied mainly in colour temperature and colour rendering, different lamps for different product categories were used. Participants were asked to take one product out of each product category. A cool white light had a positive effect on the preference for green vegetables, compared to a warm reddish light. For all other product categories no significant difference could be found. The researchers concluded

that lighting does not have the amount of power to influence consumers in their product choice as they expected.

Although Quartier et al. (2009) found only very small results for the different kinds of lighting on product preference, it does show that it is actually possible to influence consumer choice behaviour using light. Important to mention here is that Quartier et al. (2009) used lights mainly differing in colour rendering and colour temperature, not different illumination levels. This means that any difference in consumer choice behaviour would have been a result of a difference in appearance. In other words, a difference in consumer choice behaviour would not have been a result of increased attention through different illumination levels.

Another study by Leijnse (2013) did use lights differing in their illumination levels. He used a simulated retail environment with four shelves, the upper two shelves containing red and white wines. Three illuminance settings (no light, soft light and bright light) and two background colours (red and blue) were used to measure differences in product attention, recognition, attractiveness and product choice. Lights were only placed in the middle of the shelf, only highlighting organic red and white wines. An eye tracker was used to measure the attention for products, the recognition and attractiveness of products were measured in a questionnaire afterwards. Increased product attention and recognition was found for the organic wines with a higher illuminance level. In addition, interaction effects were found for a bright light intensity in combination with a background colour. A bright light intensity in combination with a red background colour increased choice behaviour of the lighted red wines. For white wines, a bright light intensity in combination with a blue background colour increased the choice behaviour for the lighted wines. No significant results were found for choice behaviour for differences in illuminance only. Also Leijnse (2013) checked whether the increased attention and recognition of lighted organic wines had an effect on the choice behaviour of the consumer. He found that recognition did have an effect on the choice of organic wines. No direct influence was found for the effect of attention on the choice of organic wines.

Although he found no direct influence of attention on final choice, there may be an indirect influence. The increased attention for products may not directly lead to increased choice behaviour, but could increase the chance that the consumer will consider it. In literature a lot of research has been done to examine what factors can influence a consumer to consider a product or not. In literature the bundle of products that a consumer considers is called a consideration set; a subset of the products of which a consumer is aware of, which he evaluates when making a purchase decision. In the next section the literature around consideration sets will be discussed shortly. The actual existence of consideration sets will be discussed, as well as the factors that can influence a consumer to consider a product.

2.4 Consideration sets

In 1961 Stigler introduced the concept of search costs in the economic theory, in which he showed that a rational consumer does not evaluate all products in a market. A consumer would search for information until the costs of searching information exceeded the expected benefits of that search. In this way the consumer was striving to evaluate the optimal number of products. Just like economic researchers investigated whether the consumer is motivated to evaluate all products, researchers in

psychology and consumer behaviour wonder whether the consumer is actually able to do so (Roberts, 1989)

It seems that this is not the case. Already in 1956, Miller suggests that the human mind has its limits according to the amount of information that we are able to receive, process and remember. He found that the maximum number of alternatives that can be evaluated at the same time lies between four and eight, due to limits in our working memory capacity. When a consumer is faced with a high number of alternatives, which is prevailing in current retail stores, he will not be able to evaluate them in a rational way. Researchers in consumer behaviour have developed theories to describe the ways consumers deal with this limitation. One of these theories states that consumers come to a purchase after a phased decision making process (Chakravarti et al, 2003; Bettman, 1979; Howard and Sheth, 1969). According to this theory, the consumer first filters the alternatives of which he is aware of using simple criteria. Having narrowed these alternatives to a small subset in the mind, the consumer will evaluate these products to make a final choice.

This phased decision making process moves from the 'awareness set' to the 'consideration set', and from the ' consideration set' to the purchase. Some researchers even suggest a 'choice set' , a small subset of the consideration set considered immediately prior to the final choice. The awareness set consists of a subset of all the alternatives that are available within a product category, of which the consumer is aware of. These can be products residing in individual long term memory, but the awareness set can also include items that one may encounter at the time of decision (at the display of the store). The consideration set is a subset of the awareness set, and consists of products that a consumer seriously considers. It is also defined as the set of brands brought to mind on a specific choice occasion (Nedungadi et al., 1991).

The distinction between items in the awareness set is an important one to mention. It makes a difference whether a consumer is in a situation in which his goals and the available alternatives are known to him, or in a novel buying situation in which his goals are not well defined. In novel buying situations, especially when stimulus based, the consumer will probably focus on a small amount of product attributes to narrow down the alternatives (Chakravarti & Janiszewski, 2003).

Next to a theoretical basis on which the consideration set is grounded, there is strong empirical support for the theory. The articles of Roberts (Roberts, 1989; Roberts & Lattin, 1991) give a very good literature overview of the research that has been done regarding consideration sets. He shows that consideration sets have been studied for consumer durables, for packaged goods and as well for industrial products. Most of these studies have been descriptive, investigating consideration set sizes for different kind of goods, and correlating the set size of an individual to one's attitude towards the category, information search and socio-demographic background. See Hauser and Wernerfelt (1990) for a list of average consideration set sizes from several published and unpublished studies.

In short the probability of brand choice within a product category, given a category purchase, can be thought to have three elements. This includes the probability of being aware of a brand; the probability of considering a brand, given awareness of it; and the probability of choosing the brand, given awareness and consideration (Roberts, 1989).

Although this paper does not directly focus on the highlighting of *brands*, these three elements shown by Roberts (1989) could also be applicable to products in general. Relating the three elements to the lighting of specific products, the lighting could have an effect on all these three elements. While in marketing awareness for brands is created by advertising for a large part (see Mahajan, Muller, and Sharma 1984), awareness for products in general (especially non-branded articles which have not gained attention by advertising) is also still created at the display in the store. As has been shown that lighting can have the ability to increase attention for products within a product category (Leijnse, 2013), it can be expected that the probability of the product to get in to the awareness set of the consumer increases.

Following the words of Nedungadi (1991), brand awareness is a necessary precondition for choice. However, he states, as the awareness set remains in the memory of the consumer, a product needs to be salient and accessible for the consumer to be included in the consideration set. Using the same reasoning as the previous paragraph, lighting specific products has the potential to increase the probability for that product to be included in the consumer consideration set. With the product having a higher probability to get into the consideration set, the product will have a higher probability to be chosen.

2.5 Conceptual framework and hypotheses

Following from the literature around lighting on a product category level, literature around lighting a product level and literature around consideration sets an conceptual framework of the effect of highlighting specific products was made. The conceptual framework can be seen at figure 1.
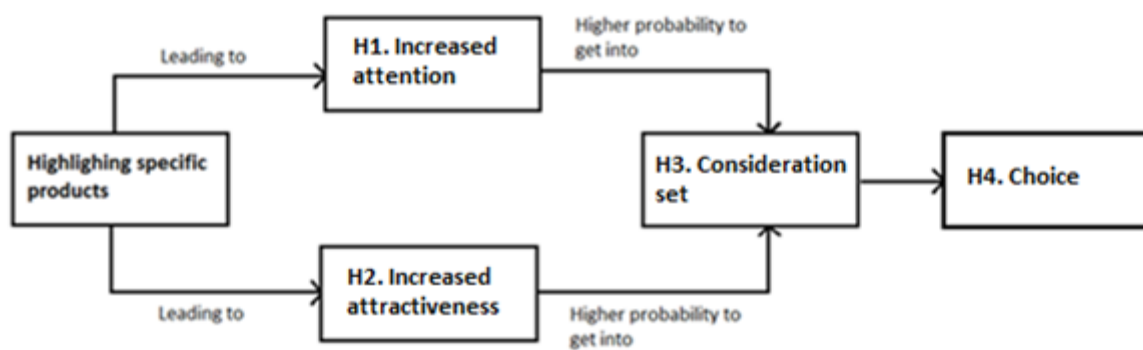

Figure 1: the conceptual framework of the effect of highlighting specific products.

The idea behind this conceptual framework is that highlighting specific products increases the probability that a product gets into the consideration set of a consumer, via increased attention and attractiveness. As illuminated products are expected to receive more attention, the probability that the product gets into the awareness set of the consumer increases. In addition, the literature shows that product attractiveness can be influenced by different light settings (Barbut, 2001, 2002, 2003, 2004; Quartier, 2011). As literature shows also that the product attractiveness is able to influence willingness to buy (Quartier, 2011), the increased attractiveness may lead to a higher probability that the product will reach the consideration set of the consumer.

The studies of Areni & Kim (1994) and Summers & Hebert (2001) show that increased illuminance can influence the amount of items touched and examined at the display. More specified to attention, Leijnse (2013) found a higher illuminance level to increase the attention and recognition for organic wines. Based on the findings of these researchers the following hypothesis was made.

H1. Illuminating specific products within a product category increases product attention

The studies of Barbut (2001, 2002, 2003, 2004) and the studies of Quartier (2009, 2011) show that different light settings have influence on the attractiveness and preference of products. The appearance of the product was most desired when it was lightened with a lamp that has a similar colour spectrum as the product itself. The colour spectrum of the light will not be manipulated in the experiment. However, as brightness is an important aspect of how a colour is perceived, it is expected that illuminance has an influence on the attractiveness of products. Based on this reasoning the following hypothesis was made.

H2. Illuminating specific products within a product category increases product attractiveness

With the large amount of alternatives nowadays present in the retail store, a consumer cannot evaluate all alternatives rationally anymore. Literature about consideration sets shows that consumers come to a purchase after a phased decision making process to deal with this limitation. In the section about consideration sets is described that a consumer narrows down the alternatives using simple criteria. Having narrowed these alternatives to a small subset in the mind, the consumer will evaluate these products to make a final choice (Chakravarti et al, 2003; Bettman, 1979; Howard and Sheth, 1969). It is expected that illuminating specific products influences the first criteria; that the consumer is aware of the product. Based on this reasoning the following hypothesis was made.

H3. Illuminating specific products within a product category increases the probability that a product is being considered

The last hypothesis is a logical continuation of the third hypothesis. As we expect illuminating specific products to increase the probability that a product is being considered, it is also expected that illuminating specific products increases the chance that the consumer will choose the product.

H4. Illuminating specific products within a product category increases the product choice

3. Method

3.1 Participants & design

Undergraduate and graduate students from Wageningen University were asked to participate in a consumer experiment concerning consumer choice behaviour.

The participants were randomly assigned to one of three experimental conditions, in an independent factorial design. This design was used to measure the independent variable using different participants (between groups).

In the consumer research room of Wageningen University a small supermarket display was set up, with four shelves. On these shelves, four kinds of food product categories were presented. These product categories were tea, fruit juices, red wine, and white wine. The white wine is the product category which was illuminated in this study. Wine was chosen for two reasons. The product was chosen since literature of Areni& Kim (1994) and Leijnse (2013) showed promising results for attention on this product. Moreover, most people do not seem to have a made-up preference for a specific wine, as purchasing wine can evoke considerable risk (Barber et al, 2008; Johnson et al, 2004). This is good for the experiment, as the effect of light can be measured better when preferences are not made up already. White wine as opposed to red wine was chosen because the study of Leijnse (2013) showed that red wine does not reflect light very good. He recommended to use products without a dark colour.

The shelf with the wines was provided with four lamps, additional to the lamps in the ceiling. The lamps in the ceiling were common fluorescent lamps, designed to illuminate the room. Two soft lights were placed on the back of the wines, and two bright lights on the front of the wines. Of the 16 white wines presented, the lamps only illuminated eight lamps in the middle. With these lamps three conditions could be created. In the 'soft light' condition only the lamps in the back of the wines were switched on. In the 'bright light' condition also the lamps on the front of the wines were switched on. In the control condition, none of the additional lamps were switched on. See table 2 for an overview of the conditions, see figures 2, 3 and 4 for pictures of the three different conditions.

Table 2: Overview of the three conditions of the experiment.

Condition number	Condition name	Meaning of condition
1	No light	Lights in front and at the back of the wines both are switched off
2	Soft light	Only lights shining at the back of the wines are switched on.
3	Bright light	Both the lights shining at the back and the front of the wines are switched on.

Figure 2: 'No light' condition

Figure 3: 'Soft light' condition

Figure 4: 'Bright light' condition

3.2 Materials

3.2.1 Shelf layout

The small supermarket display has four shelves. The white wines were presented on the highest shelf. The other three shelves were presented with red wines, fruit juices and tea boxes to make it look like a real display. The red wines were presented on the second shelf (as seen from top), the fruit juices were presented on the third shelf and the tea boxes on the fourth shelf. A picture of the layout can be seen in figure 5.

Figure 5: The shelf layout

As can be seen on the photo, each shelf has space for 16 wines in a row. Out of the 16 white wines, the 8 wines standing in the middle could be lighted from the front and from the back. The lamps shining on the back of the wines were slightly turned downward. By doing this the lamp did not shine directly through the wines, but lighted the wines via the white shelf surface. In this way a more soft light condition could be created and the lamps would not shine in the eyes of the participants.

3.2.2 Price tags

Under every product on the shelf, a price tag was placed. On this price tag, only the name of the product and the price of the product were shown. Not more information about the wines was given (like country of origin or taste), to influence the experiment as little as possible. Of course the participants could still find this information on the wines itself. An example of a price tag can be seen in figure 6.

Figure 6: An example of a price tag

3.2.3 Products presented

In this section the presented white wines will be described, including the distribution of these 16 wines on the shelf. Other products will also be presented on the shelf, to fill the empty spaces on the shelf. These products are 16 red wines, 15 types of fruit juices, and 12 types of tea.

In the following table the white wines are presented. The wines in this table are presented in the same order as on the shelf. Moreover, the yellow coloured cells are wines that were lighted in the 'soft light' and 'bright light' condition.

Table 3: Distribution of white wines on the upper shelf.

Name	Taste (simplified)	Country of origin	Organic	Price
Montenay Chardonnay	Sweet	France	No	4,49
Nuevo Mundo	Dry	Chile	Yes	4,99
Nugan Chardonnay	Sweet	Australia	No	5,49
Kroon van Oranje Chardonnay	Sweet	South Africa	No	3,99
VoluptaSoave	Dry	Italy	No	5,99
OvejaNegra Chardonnay-Viognier	Dry	Chile	No	4,99
Mooi Fonteyn Steen	Dry	South Africa	No	4,49
Inycon Organic Grillo	Sweet	Italy	Yes	3,99
KumalaColombard-Chardonnay	Sweet	South Africa	No	4,49
Panul Chardonnay	Dry	Chile	Yes	4,99
Jaja de Jau Sauvignon Blanc	Sweet	France	No	5,49
Hardys Chardonnay	Sweet	Australia	No	3,99
Die KroonDroewit	Dry	South Africa	No	4,49
La natura	Dry	Italy	Yes	3,99
Ogio Pinot Grigio	Sweet	Italy	No	5,99
Chilensis Chardonnay	Dry	Chile	No	4,99

Table 4: Distribution of red wines on the second shelf.

red wines
Cape Cab
Santa Carolina
Domaine Saint-Jean
African Treasure
Cono Sur
Villa Marianna
Colombellasalento
Undurraga
Temprano de Chile Cabernet Sauvignon
Sicilia Nero d' Avola Rosso Salento
Cata Rosa Shiraz
Vistana Cabernet Sauvignon
Cono Sur (Cabernet Sauvignon) (organic)
Saint Roche (organic)
Bordeaux (organic)
Château Coulon (organic)

Table 5: Distribution of fruit juices and tea boxes on the third and fourth shelf.

Fruit juices	'Pickwick' tea
Fair Trade Sinaasappelsap	Minty Morocco
Fair Trade Appelsap	Turkish Apple
AppelsientjeGoudappel	Green Tea
AppelsientjeSinaasappelsap	Sterrenmunt
Appelsientje Mild Sinaasappel	Rooibos
Appelsientje Mild Mandarijn	Mild English
Appelsientje Mild AppelTroebel	Bosvruchten
Appelsientje Mild Multifruit	Citroen
Appelsientje Multi Vitamientje Appel Peer	Aardbei
RoosviceeMultivit Kiwi Sinaasappel	Dutch
Roosvicee Multivit Appel Rode Vrucht	Kamille
Roosvicee Multivit Bosvruchten	Earl Grey
Appelsientje Dubbel Drank Sinaasappel & Perzik	
Appelsientje Dubbel Drank Bessen & Druiven	
Appelsientje Dubbel Drank Passie & Peer	

3.2.4 Light characteristics

Different lamps were used for lighting the back and the front of the wines. For lighting the back of the wines two 'Balthazar Transparent' lamps were used, a Halogen lamp with 200 lumen (20W). For lighting the front two 'High-power LED Teun' lamps were used. These were LED lamps, with 62 lumen (3W).

Note that the lamp shining on the back of the wines has more Wattage than the lamp shining on the front of the wines. This may seem contradictory, as the lamps shining at the back of the wines create

the 'Soft light' condition. However, because these lamps are directed downwards, a soft light condition is created. See also the section on shelf layout. In addition, LED lights are much more efficient than Halogen lights. LED lights need much less Wattage to create the same amount of illumination.

As said earlier, in the 'Soft light' condition only the lamps shining on the back of the wines were switched on, in the 'Bright light' condition both lamps were turned on.

Table 6: Lux measurements on the upper shelf (white wine).

Place on the shelf	Light condition	Lux measured
Left	No	65
	Soft	65
	Bright	73
Middle	No	70
	Soft	360
	Bright	920
Right	No	60
	Soft	68
	Bright	77

As can be seen in the table, the amount of lux measured in the middle differed a lot for the different conditions, which is good. In addition, the left and right side of the shelf were not too much more lighted in the 'Soft light' and 'Bright light' condition. See Appendix A for pictures of the three different conditions.

3.3 Procedure

To recruit students to join the experiment, students were asked to join an experiment regarding 'product choice'. Flyers were handed out in the university café, the university library and in computer rooms. Students were also recruited by using a mailing list. This is list of students who have indicated to be interested in participating in experiments earlier.

When participants wanted to participate in the experiment, they were first presented with a paper. This paper included a form of consent, as well as the instructions for the experiment (see also Appendix B). In the instructions it was told that the participant was organising a party, for which he would need drinks. The participant was given a shopping list, on which was written: 1 box of tea, 1 pack of fruit juice, 1 bottle of red wine and 1 bottle of white wine (see also Appendix C). The participant was also given a shopping basket, to put the items in. When the participant was done reading the instructions, he walked along with the researcher to the simulated shelf. After the participant was done picking the items, the researcher presented the participant with a paper. On this paper the question was asked which red and white wine he had considered next to the wines he had chosen (see Appendix D to see this paper). After this question, the participant was guided to a computer where he was instructed to fill out a questionnaire. While the participant filled out the questionnaire, the researcher wrote down which products were picked by the participant (see Appendix E to see the input form). This was not done by the participant himself, because it was

better for the coming questions that the participant could not see the wines all together again. When the participant was done filling in the questionnaire, he was given a small reward. This reward was 3 euro. Not that this was a reward for participating in two experiments, participants took part in a non-related experiment to prior the experiment of this study.

3.4 Measures

The effects of illuminating a part of the white wines on product attractiveness and product attention were measured using the questionnaire. For this questionnaire, see Appendix F. This questionnaire was created using Qualtrics, a web-based survey software that is often used for scientific purposes.

To measure attention, the extent to which participants could recognize the wines was measured. Recognition seems to be a good indicator of attention, especially when looking at literature around advertising. Literature was found in which is shown that exposure time of an advertisement is a strong determinant of the recognition of that advertisement. For instance Danaher & Mullarkey (2003) found that web page exposure duration is a strong indicator of banner advertising recall. Rethans et al. (1986) found that recognition of advertising content increased with the frequency of exposure. More specifically, recognition memory was found to be a positive function of the number of eye fixations (maintaining one's visual focus on a single location) on a picture (Loftus, 1972). Pieters & Wedel (2000) found too that the number of eye fixations promotes picture recognition, this time with an eye tracking device.

To measure the product recognition, 12 wines were presented on a picture in random order. The participant was asked whether he recognized the bottle from the shelves. Four of these wines were not actually presented on the shelf. In this way a scale could be made of how good participants remembered the wines, which could be used in the analysis.

Product attractiveness was measured by asking participants to indicate the attractiveness of the wines, based on pictures of the white wine shelf. Every participant was shown a picture of the shelf with the same light conditions as he was presented with earlier. Participants were asked to rate all 16 wines on a scale of 0-10. See Appendix F for these photos with the corresponding questions.

The effect on the consumer consideration set was measured by asking the participant which wines he had considered while shopping. Hauser and Wernerfelt (1990) provide a very good overview of consideration set sizes for different kind of food products. Unfortunately, wine was not included in this overview. However, they show that the consideration set size typically varies between 2 and 8. As we do not know the typical size of the consideration set for wine, we do not ask the participant to mention a specific amount of alternatives. The participant was asked to read a paper while standing in front of the simulated shelf, on which was asked to point out the wines that he had considered. This was done by paper to rule out any differences in the way that the question was asked. See also Appendix D for this paper.

Next to the three aspects described above, the participants were asked to give their demographic information. This included question regarding gender, age and study program. The participants were also asked to indicate how often they bought red and white wine. With this information it was possible to see whether people who buy wine frequently are less influenced by the illumination, as they are expected to have a more specific preference.

At the end of the questionnaire participants were asked what they had seen as striking during the experiment. Participants were asked to mention as much things as they could think of. With this information there could be seen whether the lights on the simulated shelf were notable or not. Other remarks could also be of value, for instance remarks about the simulated shelf. These remarks can be used for further improvement of the simulated shelf.

4. Results

4.1 Participants & background information

4.1.1 Background of participants

A total of 124 participants completed the experiment. Out of these 124 participants, 75.8% were female and 24.2% were male. The mean age of the participants was 21 years, with a standard deviation of 2.9 years. 74.2% of the participants were undergraduates, 25.8% of the participants were graduates. Students from a diverse field of studies participated in the experiment. Four studies were clearly represented better than others. These studies were Management and Consumer studies, Health and Society studies, International Development studies and Food Technology.

At the end of the questionnaire participants were asked whether they had participated in a similar experiment before. 22.6% of all participated mentioned that this was the case. To control for this factor, all analyses of this chapter were also performed without these participants afterwards. All results were similar to the original results. Note that most results were not significant this time, as the amount of participants per condition was lower.

4.1.2 Participants per condition and withdrawn participants

42 Participants took part in the 'No light' condition, 41 participants took part in the 'Soft light' condition and 41 participants took part in the 'Bright light' condition. Three participants were (partly) excluded from analyses. One participant was excluded from all analyses. This participant clearly did not fill in the questionnaire seriously, as almost all wines were rated as zero in the attractiveness measurement. In addition, the question what the participant had experienced as striking was answered with 'nothing'. Because of a mistake of the researcher, the wine choice of one participant was not registered. This participant was removed from the analyses regarding choice, as well as the analyses of the consideration set, because the wine of choice was included in the consideration set. Another participant mentioned that he had considered all wines. As this participant clearly misinterpreted the question, this participant was removed from the analyses regarding the consideration set.

4.1.3 Experience with buying wine

Participants average buy one wine per three months, with the most participants buying wine at least once per month. To check whether the frequency of buying wine does not influence the experiment, a between subjects test was performed for the three conditions. The values of this test are $F_{(2,121)}= .462$, $p= .631$. This value is not significant, which means that the frequency of buying wine of the participants did not differ per condition. This is a good result, as this means that the dependent variables were not influenced by the variation in experience with buying wine.

4.1.4 Striking elements mentioned by participants

To gain insight in the great amount of remarks that respondents had given, the answers were categorized. A total of 16 categories were made. The six categories which were most mentioned are shown in table 7. A complete overview of the categories can be found in Appendix G.

Table 7: The six most mentioned elements by the participants.

Category name	Description	Times mentioned
Participants' own knowledge and expertise	Remarks about their own knowledge of wine, and their expertise in remembering wines from the shelf.	29
The products presented	Remarks about the products on the shelf, excluding wines. Things like brands, amounts, flavours, sorts, etc.	19
The wines presented	Remarks about the wine assortment. Things like taste, year, specialty, countries, etc. Excluding remarks about appearance being a main buy factor of the participant.	13
Price as important buy factor	Descriptions of participants' own shopping behaviour, remarking that the price of the wines was a main buy factor.	13
Appearance as important buy factor	Descriptions of participants' own shopping behaviour, remarking that the appearance of the wines was a main buy factor.	10
Other price related remarks	All remarks about the price of the wines, excluding 'price as important buy factor'. E.g. 'All prices were very similar' or 'No very cheap or very expensive wines'.	18

Next to these six categories, it is important to mention the participants who mentioned something about the light conditions. Although the lamps were quite bright, especially in the 'Bright light' condition, only six participants mentioned something about the light circumstances.

"The lighting behind the wines was remarkably, not present in a supermarket normally"

"Lamp directed to the wines, making some wines more standing out"

"The lamps behind the wine bottles created a nice impression"

"At the pictures, there was a difference in light between the wines, making some wines better lighted"

"Influence of light on choice"

"Light circumstances in the shop were different than the photographs of the bottles"

4.2 Attention

Attention was measured by analysing participants' recognition of wines presented in the questionnaire. Participants were asked whether they recognized a displayed wine bottle from the simulated shelf, presenting them 12 photos of wines. Out of the 12 wines presented in the questionnaire, only 8 were actually presented on the simulated shelf. Out of these 8 wines, four wines were presented on the middle of the simulated shelf. The other four wines were presented on the ends of the simulated shelf. The wines standing on the middle of the shelf and the very ends of the shelf were used, as these wines would have the most difference in illuminance (see table 6 for the Lux measurements on the shelf)

4.2.1 Recognition of the wines presented on the middle of the shelf

In table 8 an overview of the average number of recognized wines per condition is given, for the wines standing in the middle of the shelf. In other words, the wines that were lighted. A total of 4 wines from the middle were shown, so participants could recognize 0-4 wines.

Table 8: Overview of the number of recognized wines in the middle of the shelf, averaged per condition.

Condition	Mean	SD	N
No light	1.71	.97	42
Soft light	1.56	.98	41
Bright light	1.68	.85	41

To test if the differences in mean values were significant, a between subjects analysis was performed. Values of $F_{(2,121)} = .310$, $p = .734$. So the mean values were not found to be significantly

different for the three conditions. This means that the participants did not recognize less or more wines from the middle of the shelf for the different light conditions.

4.2.2 Recognition of the wines presented on the side of the shelf

In table 9 an overview of the average number of recognized wines per condition is given, for the wines on the sides of the shelf. In other words, the wines that were not lighted in any of the three conditions. A total of 4 wines from the sides were shown, so participants could recognize 0-4 wines.

Table 9: Overview of the average number of recognized wines per condition, on the right and left side of the shelf.

Condition	Mean	SD	N
No light	2.33	1.28	42
Soft light	2.05	1.00	41
Bright light	2.10	.86	41

To test if the differences in mean values were significant, a between subjects analysis was performed. Values of $F_{(2,120)}= .838$, $p= .435$ were found. So the mean values were not found to be significantly different for the three conditions. This means that the participants did not recognize less or more wines from the sides of the shelf for the different light conditions.

4.2.3 Relative recognition of the wines presented on the middle of the shelf

It was also tested whether participants recognized more or less wines from the middle shelf compared to the total amount of recognized wines, for the different conditions. The amount of recognized wines from the middle of the shelf was divided by the total amount of recognized wines. To test the differences for the three conditions, a between subjects analysis was performed. This analysis revealed values of $F_{(2,119)}= .056$, $p= .945$, which is not significant.

To make this analyses more accurate, the recognition of the participant was adjusted to their own recognition performance. In the recognition questionnaire four presented wines were not presented on the shelf. The answers to these question are therefore a representation of the recognition performance of the participant. The adjustment was made as follows: the number of recognized wines from the middle (0-4) divided by the total amount of good answers (0-12, as the four wines not presented on the shelf were included here). In table 10 an overview of the adjusted relative amount of recognized wines from the middle of the shelf is given.

Table 10: The adjusted proportion of recognized wines from the middle of the shelf

Condition	Mean	SD	N
No light	.33	.22	42
Soft light	.30	.17	41
Bright light	.30	.12	41

Subsequently a between subjects analysis was performed to test whether the recognition differed for the three conditions. Values of $F_{(2,121)}= .390$ $p= .678$ were found, which are not significant. From both analyses can be concluded that the participants did not recognize less or more wines from the middle in proportion to all wines, for the different light conditions.

4.3 Attractiveness

The attractiveness of the wines was measured by presenting the participants a photo of the shelf with the white wines. This photo was taken with the same light conditions as they had seen when they were standing in front of the shelf.

4.3.1 Attractiveness of wines presented in the middle of the shelf

To analyze the average attractiveness of white wines in the middle of the shelf, the values given for all 8 wines in the middle of the shelf were averaged. In table 11 the average attractiveness of the wines presented in the middle of the shelf is presented for the three conditions.

Table 11: The average attractiveness of the wines presented in the middle of the shelf.

Condition	Mean	SD	N
No light	5.20	1.28	42
Soft light	5.55	1.29	41
Bright light	5.08	1.21	41

To test whether these different means are significant, a between subjects analysis was performed. Results show no significant difference between the means: $F_{(2,121)}= 1.537$, $p= .219$. This means that the attractiveness of the wines in the middle of the shelf did not differ for the three light conditions.

4.3.2 Attractiveness of wines presented on the left and right side of the shelf

To analyse the average attractiveness of white wines on the left and right side of the shelf, the values given for all 8 wines on the sides of the shelf were averaged. In table 12 the average attractiveness of the wines presented on the sides of the shelf is presented for the three conditions.

Table 12: The average attractiveness of the wines presented on the left and right side of the shelf, per condition.

Condition	Mean	SD	N
No light	5.40	1.17	42
Soft light	5.36	1.38	41
Bright light	4.95	1.45	41

To test whether these different means are significant, a between subjects analysis was performed. Results show no significant difference between the means: $F_{(2,122)}= 2.163$, $p= .119$. This means that the attractiveness of the wines on the sides of the shelf did not differ for the three light conditions.

4.3.3 Variance of attractiveness explained by experimental manipulation

The previous two sections tested the between group variance of the attractiveness of the wines. This variance was not 'contaminated' by the experimental effect, as the manipulation has been done on different people.

Another way to test the effect of the three conditions is a within participant variance test. With this test the attractiveness of the wines on the sides of the shelf can be compared to the attractiveness of the wines on the middle of the shelf. This can be done with a repeated measures test, which can be used when different things are done in each experimental condition to the participants. So, any variation in an individual's scores will be partly due to the manipulation. The repeated measures of variance test gives values of $F_{(2,121)}= 1,867$, $p= .159$ for both the Greenhouse-Geisser and Huynh-Feldt test, which are non-significant. These results show that the attractiveness of the wines in the middle were not significantly influenced by the three light conditions.

4.4 Consideration set

After the shopping time in the simulated retail environment the participants were asked to point out which wines they had considered during their choice process. Note that the actual wine choice is included in the consideration set.

4.4.1 Consideration set sizes

Out of the 16 white wines available on the shelf, participants typically mentioned to consider 1-4 wines. See also figure 7 for an overview of the amount of times that a consideration set size has been mentioned.
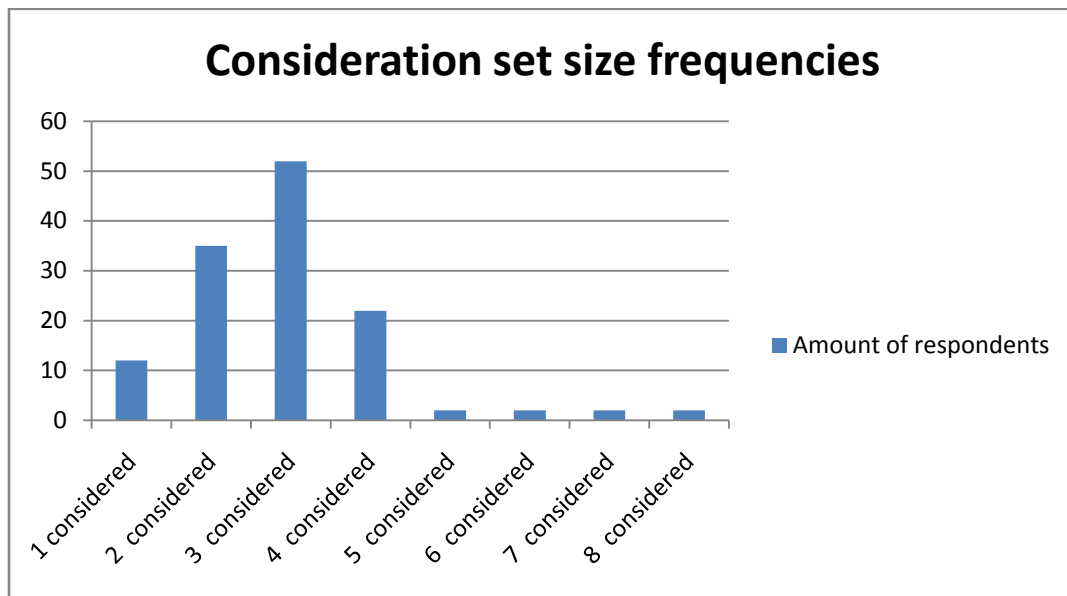

Figure 7: An overview of the consideration set size frequencies

The average consideration set size was 2.79 wines. In table 13 an overview of the average consideration set size per condition is shown.

Table 13: average consideration set size per condition

Condition	Mean	SD	N
No light	2.76	.99	41
Soft light	3.07	1.21	41
Bright light	2.53	.91	40

To see whether the differences in average consideration set sizes are significant, a between subjects analysis was performed. This analysis showed that the differences are marginally significant with $F(2,119)= 2.805$, $p= .065$.

Using a post-hoc LSD test, it was analyzed which differences between conditions are significant. The test showed that the consideration set size of 'Soft light' condition differs significantly from the 'Bright light' condition (p= .020). The differences between the 'No light' condition and the 'Soft light' and 'Bright light' condition were not significant (p= .173 and p= .322 respectively). The results show that illuminance has an effect on the consideration set size. Consideration set sizes are lower when products are lighted with soft light, compared to a situation in which products are lighted with bright light.

4.4.2 Considered wines in the middle of the shelf

The first way that was used to test whether lighting has an effect on the consideration set, is by looking at the amount of participants that has considered at least one wine from the ones in the middle of the shelf. For an overview of the amount of participants that considered at least one wine from the ones in the middle of the shelf, see table 14. For a graphic view, see figure 8.

Table 14: Overview of the amount of participants that considered at least one wine from the ones in the middle of the shelf.

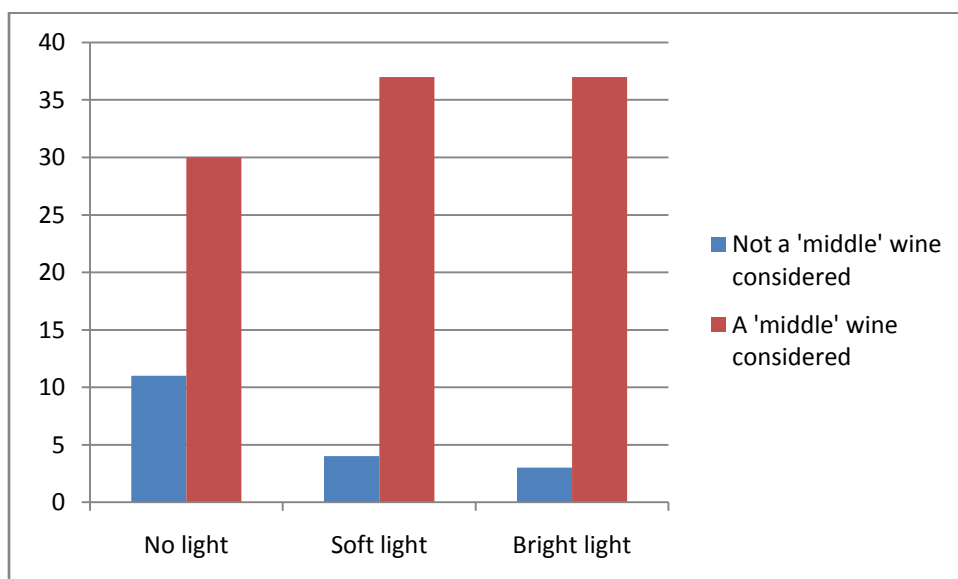| Condition	At least one wine standing in the middle of the shelf considered?		
	No	Yes	N
No light	11 (26.8%)	30 (73.2%)	41 (100%)
Soft light	4 (9.8%)	37 (90.2%)	41 (100%)
Bright light	3 (7.5%)	37 (92.5%)	40 (100%)

Figure 8: Overview of the amount of participants that considered at least one wine from the ones in the middle of the shelf.

To test whether these differences were significant, a Chi-Square test was performed. The values of this Chi-Square test show that the differences are significant: $X^2(2)= 7.241$, p= .027.

To discover between which conditions the differences are significant , three more Chi-Square analyses were performed. In each of these three analyses one condition was excluded from the dataset. When condition 'Soft light' was excluded, a value of $x^2(1)= 5.291$, p= 0.021 was found. This makes the difference between the 'No light' and the 'Bright light' condition significant. When condition 'Bright light' was excluded, a value of $x^2(1)= 3.998$, p= 0.042 was found. This makes the difference between the 'No light' and the 'Soft light' condition significant. Further, the analysis was performed while condition 'No light' was excluded from the dataset. The values of this analysis $x^2(1)= .131$ p=.514 show that there is no significant difference between the 'Soft light' and 'Bright light' condition here. The results show that significantly more participants in the 'Soft light' as well as the 'Bright light' condition considered at least one wine from the middle, while there was no difference between participants in the 'Soft light' and 'Bright light' condition.

4.4.3 Considered wines on the sides of the shelf

For the wines standing on the sides of the shelf the same analysis was performed, to test whether participants considered wines on the sides of the shelf more or less in the different conditions. For an overview of the amount of participants that considered at least one wine from the ones on the side of the shelf, see table 15. The Chi-Square test shows that the differences are not significant: $x^2(2)= 2.928$, p= .231. It can be concluded that the amount of participants considering at least one wine from the sides of the shelf did not differ between the three light conditions.

Table 15: Overview of the amount of participants that considered at least one wine from the ones on the side of the shelf.

	At least one wine standing on the side of the shelf considered?		
Condition	*No*	*Yes*	*N*
No light	3 (7.3%)	38 (92.7%)	41 (100%)
Soft light	3 (7.3%)	38 (92.7%)	41 (100%)
Bright light	7 (17.5%)	33 (82.5%)	40 (100%)

4.4.4. Relative consideration of the wines in the middle

The second way that was used to test whether lighting wines has an effect on the consideration set, was by analysing the relative amount of lighted wines considered, i.e. it there was tested whether participants considered relatively more or less wines from the middle in the different conditions. To do this, participants' amount of wines considered standing in the middle of the shelf was divided by

the amount of wines considered standing at the sides of the shelf. For an overview of the average percentages, see table 16.

Table 16: Proportion of considered wines standing in the middle of the shelf, per condition.

Condition	Mean	SD	N
No light	,39	,29	41
Soft light	,46	,24	41
Bright light	,54	,27	40

To test whether these differences are significant, a between subjects analysis was performed. This analysis shows that the differences are significant, with values of $F(2,119)= 3.283$ p= .041.

Based on the results of the post hoc LSD test, it can be concluded that the condition 'No light' differs significantly with the condition 'Bright light' (p= .012). The difference between 'Soft light' and 'No light' was non-significant (p= .251), just like the difference between 'Soft light' and 'Bright light' (p= .160). These results show that bright light significantly increases the proportion of lighted wines considered, compared to a situation without light. Soft light also increases the proportion of lighted wines considered, but this difference was not significant. It can be concluded that the proportion of lighted wines considered is influenced by the illuminance of the light; a higher illuminance results in a higher proportion of lighted wines considered.

4.4.5 Light versus no light

In section 4.4.2 was shown that both the 'Soft light as well as the 'Bright light' condition differed from the 'No light' condition regarding the amount of participants that had considered at least one wine from the middle. To check this result by an another analysis, it was also tested whether participants in the 'Soft light' and 'Bright light' condition considered a higher percentage of wines from the middle than participants in the 'No light condition. To perform this analysis, condition 'Soft light' and 'Bright light' were combined, which means that all participants of these conditions were considered to have been in the same condition. A between subjects analysis was conducted, which provided values of $F(1,122)= 3.404$, p= .067. Based on this result, it can be concluded that participants in the 'Soft light and 'Bright light' conditions consider a marginally significant higher proportion of wines from the middle, compared to participants in the 'No light' condition.

4.4.6 'Bright light vs. 'No light' and 'Soft light'

As the previous section showed, the difference between 'Bright light' and 'No light' is significant, but the difference between 'Bright light' and 'Soft light' is not. It would be interesting to whether there exists a significant difference between 'Bright light' and the other two conditions combined. To perform this analysis, condition 'No light' and 'Soft light' were combined, which means that all participants of these conditions were considered to have been in the same condition. Participants in the 'No light' and 'Soft light' conditions combined, considered on average 0.43 wines from the

middle relative to the total amount of considered wines. For participants in the 'Bright light' condition this value was .54. A between subjects analysis was conducted, which provided values of $F(1,122)= 4.548$, p= .035. These results show that participants in the 'Bright light' condition considered a significant higher proportion of wines from the middle, compared to participants in the 'No light' and 'Soft light' conditions combined.

4.5 Choice

4.5.1 Choice of lighted wines

For each condition it was evaluated how many participants had chosen a wine from the middle, and how many participants had chosen a wine from one of the sides of the shelf. Table 17 presents an overview of these frequencies.

Table 17: Number of times wines from the sides of the shelf chosen and number of times wines from the middle of the shelf chosen, with percentages.

Condition	Side of shelf	Middle of shelf	N
No light	23 (56.1%)	18 (43.9%)	41 (100%)
Soft light	27 (65.9%)	14 (34.1%)	41 (100%)
Bright light	16 (39.0%)	25 (61.0%)	41 (100%)

A Chi-Square test was performed to test whether the lighting of wines had an effect on the number of times a wine from the middle of the shelf was chosen, the part of the shelf that was lighted. The outcome of the Chi-Square test is $x^2(2)= 6.081$, p= .048, which is significant. Based on this analysis, it can be concluded that there are significant differences between the light conditions for the choice of wine. A graphical overview of the number of times a wine from the middle of the shelf was chosen is presented in figure 9.
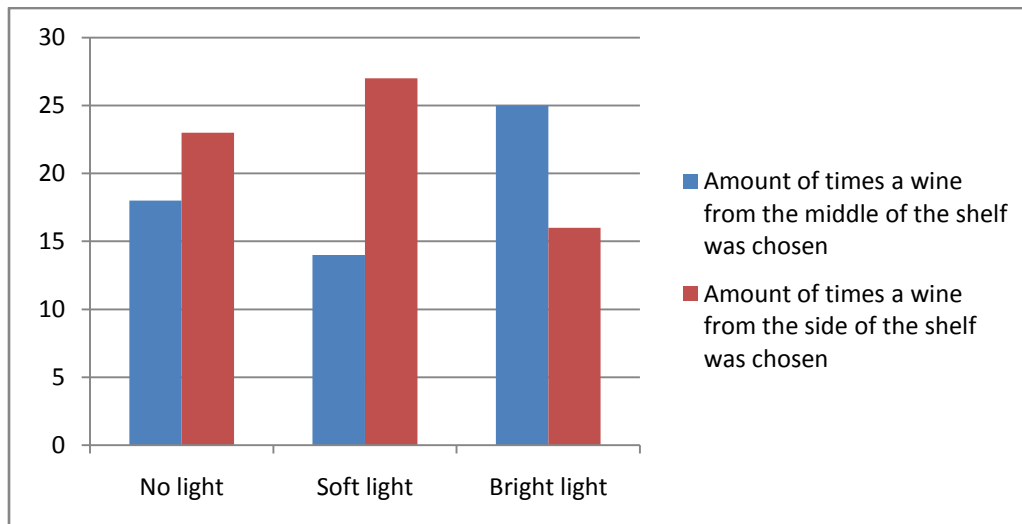
Figure 9: A graphical overview of the number of times a wine from the middle of the shelf was chosen, compared to the number of times a wine from the side of the shelf was chosen.

To discover between which conditions the differences are significant, three more Chi-Square analyses were performed. In each of these three analyses one condition was excluded from the dataset. When condition 'Soft light' was excluded, a value of $x^2(1)= 2.396$, $p= .092$ was found. This makes the difference between the 'No light' and the 'Bright light' condition marginally significant. When condition 'Bright light' was excluded, a value of $x^2(1)= .820$, $p= .249$ was found. This makes the difference between the 'No light' and the 'Soft light' condition non-significant. At the last, the analysis was performed while condition 'No light' was excluded from the dataset. The values of this analysis $x^2(1)= 5.917$ $p=.013$ show that there is a significant difference between the 'Soft light' and 'Bright light' condition here. These results show that the actual presence of light is not enough to increase the amount of lighted wines chosen. While the difference between the 'No light' and 'Soft light' is not significantly different, the difference between the 'No light' condition and the 'Bright light condition is marginally significant. In addition, the difference between the 'Soft light' condition and the 'Bright light' condition is significant. It can be concluded that the amount of lighted wines chosen is influenced by the illuminance of the light; a high illuminance results in a higher amount of lighted wines chosen, a low illuminance does not result in a higher amount of lighted wines chosen.

4.5.2 Light distance and choice

When looking at the method of this experiment, one can see that the wines in the middle of the shelf were lighted, but the wines on the sides of the shelf were not. However, this division was not that clear in reality. The illumination of the wines standing in the very middle of the shelf was a bit higher than the wines standing next to that wine. So the illumination was the strongest in the middle, and lowering as a wine was standing more to the side. This knowledge can be used to analyse the data in a different way, by creating a scale of distance from the light. For this test every wine was given a number, corresponding to the distance from the wine to the middle of the shelf. This could be number 1-8. To see the average distance from the middle for every condition, see table 18.

Table 18: The distance from the chosen wine to the middle, averaged per condition.

Condition	Mean	SD	N
No light	4,76	2,37	41
Soft light	4,90	2,08	41
Bright light	4,05	2,36	40

To test whether these differences are significant, a between subjects analysis was performed. This analysis gives no significant values: $F_{(2,120)}= 1.651$, $p= .196$. These results show that the distance to the middle as seen from the chosen wine does not significantly differ between the three light conditions.

5. Conclusions and discussion

The main goal of this study was to investigate the effect of illuminating specific products within a product category on consumer choice behaviour. A simulated display shelf was made, on which the light settings of the white wine shelf were manipulated. Half of the white wine shelf was either lighted with soft lights, with bright lights or not lighted. Effects of this manipulation were measured in terms of product attention, product attractiveness, the inclusion or exclusion of the product in the consumer consideration set and product choice behaviour.

Looking at the corresponding hypotheses, illuminating specific products within a product category has been found to have a positive effect on the consumer consideration set and on consumer choice behaviour. However, effects on product attention and product attractiveness have not been found. These results are remarkable when compared to the conceptual framework that was constructed in paragraph 2.5. In this framework there it expected that highlighting specific products increases the probability that a product gets into the consideration set of a consumer, via increased attention and attractiveness. The consumer is thereafter expected to choose an alternative out of the consideration set. Effects for the two 'outcomes' consideration set and consumer choice behaviour of this conceptual model have been found, while effects for the expected 'causes' attention and attractiveness have not. In the next paragraphs the elements of the conceptual framework will be further discussed, with the corresponding hypotheses.

In this study wines were not found to be recognized better when they were being watched in a setting with more light. This result is not in accordance with the literature and with the corresponding hypothesis. As Leijnse (2013) found in a similar study a higher illuminance level to increase the attention and recognition for organic wines, the illuminating of specific wines was expected to increase recognition for these wines. However, this effect was not found in this study. One explanation could be related to the presentation of wine. In the study of Leijnse (2013) a small description of the wine was placed on the price tag, including the land of origin, the taste of the wine and a serving advice. This information was also shown in the questionnaire when the participant was asked whether he had seen the wine. This description was not present in this study. It is imaginable that participants found it easier to recognize a wine when a description was shown next to the picture of the wine. In other words, the description could have made the wines more distinctive in the eyes of the participant. As the recognition was used as a measure for attention, the increased perceptual distinction between wines in the study of Leijnse (2013) may have caused the recognition test to measure attention better.

The second expected effect of illuminating specific products within a product category, was an increase in product attractiveness. This effect was especially expected to be found for white wines, as they reflect light very good. However, no significant difference in attractiveness was found for the three light conditions. This result was not expected when looking at the studies of Barbut (2001, 2002, 2003, 2004) and the studies of Quartier (2009, 2011). They showed that different light settings can have influence on the attractiveness of products. A higher attractiveness was expected for the lighted wines, as the light could shine through the wines. Two reasons could explain the results. To measure the attractiveness of the wines, photographs of the display shelf were used. Although these photographs were token in high quality, showing clear differences in illuminance, a photograph still cannot capture the precise impression of products that participants have at the simulated shelf.

Second, the attractiveness of products may not have been different for the different light conditions. Although the different light conditions were expected to influence the attractiveness, the light conditions were mainly designed to create a difference in illuminance. No research was done on the optimal light conditions for the attractiveness of white wine.

Following the conceptual framework, the increased attention and attractiveness were expected to increase the probability that a product gets into the consideration set of a consumer. Although light has not been found to increase attention and attractiveness for specific products within a product category in this study, clear effects on the consumer consideration set have been found. Effects of light on the consideration set have been found for the size, as well for the inclusion or exclusion of lighted wines in the consideration set for the different light settings. On average participants considered 2.8 wines, with three alternatives as most frequent set size. A difference was found for the set size of participants in the 'Soft light' and the 'Bright light' condition. Participants in the 'Soft light' condition considered on average 3.1 wines, while participants in the 'Bright light' condition considered on average 2.5 wines. One explanation could be that the attention of participants in the 'Bright light' condition was more attracted to the middle, compared to participants in the 'Soft light' condition. As the participant's attention is more directed to a specified part of the shelf, less alternatives are within his viewpoint, which may cause the participant to consider less alternatives.

An even more interesting finding is that the lighting of specific wines increased the chance that a lighted wine was included in the consideration set, as expected in hypothesis 3. This effect was found for both the 'Soft light' and 'Bright light' condition. No difference was found for the 'Soft light' and 'Bright light' condition. When looking at this result, it seems that the presence of light increases the chance that a product is being considered, regardless the amount of light. When comparing the amount of lighted wines considered with the total amount of considered wines, a slightly different result was found. Bright light increased the percentage of wines from the middle considered, but soft light did not.

At last there was found that the percentage of lighted wines considered was higher for the condition with bright light that the conditions without light and with soft light combined. After this result there can be concluded that the actual presence of light can influence a consumer to consider at least one lighted wine, while an increase in illuminance can influence consumers to consider relatively more lighted wines compared to all wines available.

The last expected effect of the illuminating of white wines was a change in consumer choice behaviour. For each condition there was measured what proportion of the wines chosen was a wine from the middle of the shelf; a lighted wine. A clear increase was found for the 'Bright light' condition compared to the 'Soft light' condition, also an increase was found for the 'Bright light' condition compared to the 'No light' condition. Whereas it is the actual presence of light which seems to have influence on the inclusion of products in the consideration set, it is the bright light which seems to have an influence on the consumer choice behaviour.

When looking at the two studies that have investigated the effect of light on specific products within a product category, this is a very interesting finding. Quartier et al. (2009) lighted products using lamps differing in colour temperature and colour rendering to find effects on choice. However, effects were only found for green vegetables, not for wine. Comparing that finding to this study, it is striking that Quartier et al. (2009) changed the colour temperature and colour rendering of lamps,

while this study only changed the illuminance of lamps. It seems that changing the illuminance of lamps has more effect on wine choice than changing the colour temperature and colour rendering. However, more research has to be done to ensure this, as these experiments were done in a different setting.

Leijnse (2013) found an increase in consumer choice behaviour for organic wines when they were lighted with a soft or bright light in combination with a red background light. No differences were found for light (illuminance) only. As the experiment of Leijnse (2013) was quite similar to this experiment, it is striking that in this study an effect was found for illuminance of specific wines on consumer choice behaviour. This difference can be explained by two reasons. At first, in this study the same amount of organic wines were lighted as there were organic wines not lighted. In this way the variables excluding light were more constant. Second, the differences in illuminance per condition were made stronger, as well as the difference between the lighted wines in the middle and the non-lighted wines on the sides of the shelf.

Especially the increase of lighted wines chosen in the 'Bright light' condition is useful for retailers. As illuminating products with bright light can influence consumers to choose the lighted product, retailers can illuminate those products for which they want more consumers to buy them. This could for instance be healthy or organic products with the intention to improve the store image, or products with a high margin to increase profits. The knowledge that products illuminated with a soft light were more often included in the consideration set has less practical value. However, if a retailer doesn't want to steer the consumer in the direction of the light too much, lighting with soft light instead of bright light is an option.

Coming back to the conceptual framework, hypothesis 1 and 2 about the effect of illuminating specific products within a product category on product attention and attractiveness are rejected. However, this does not mean that the effects do not exist. Although it is possible that either the effect of light on attention or attractiveness plays a smaller role in the process to product choice than expected, the limitations of the measurement methods in this study should not be overlooked. Both attention and attractiveness were measured in a non-direct way. Future researchers are advised to measure these variables in a more direct way. For attention this could mean measuring with an eye-tracker, for attractiveness this could mean that the product should be rated while the actual shelf display is visible, not a photograph.

Another limitation is the brightness of the room itself. To create distinct light conditions, the fluorescent lamps in the ceiling were partly turned off. Although this improved the manipulations, it is less realistic as supermarkets are generally better illuminated. Future research can determine whether the same results can be found in a setting with higher illumination, as it will be harder to make the light conditions look different from each other.

Further, as all participants were students, the average age of the participants was very low. In addition, the students were recruited independent of their experience with buying wine. It is therefore not expected that the students were very experienced with buying wine. This raises the question whether the same results could be found when a group of experienced wine buyers was used as participants for the experiment. The reason to think that experienced buyers may react differently, is that they are expected to have a stronger made-up preference of wine. The stronger preference may result in the light having less influence on them. To be able to generalize the results

of this study to a broader group of people, future researchers are advised to use a group of experienced wine buyers for the experiment.

At last, it is interesting to compare the finding of bright light increasing consumer choice behaviour, and the literature around lighting the retail atmosphere. Quite some studies found bright light to increase arousal in the retail store (Mouhoubi, 2014; Decré & Pras, 2013; Briand &Pras, 2010; Park & Farr, 2007; see also table 1 for an overview of empirical papers about effects of lighting in the retail environment). This comparison gives reason to investigate whether a relation exists between the illuminance of specific products within a product category, and the arousal of the participant. In the study of Leijnse (2013) the arousal of participants was measured in the questionnaire after they had been in shopping at the simulated shelf. No differences in arousal were found. However, this measure was taken after the shopping experience. The arousal induced by the light may be more situational. For future researchers it is advised to measure arousal at the same time as the participant is shopping, for instance by measuring the heart rate and skin resistance.

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Appendix A: Photos of conditions

'No light'

'Soft light'

'Bright light'

Appendix B: Instructions for the experiment
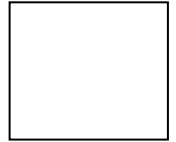
Instructieformulier voor het tweede onderzoek

Welkom bij het onderzoek naar productkeuze.

Stel je de volgende situatie voor:
Je hebt nog enkele producten nodig voor een feestje dat je gaat geven. Je hebt alleen nog drank nodig, de rest heb je al in huis. Om de drank te kopen, ga je naar de supermarkt.

Je kiest zo direct vier producten uit in een winkelschap. Deze vier producten staan op het boodschappenlijstje, die je meeneemt naar het winkelschap.
Je pakt het winkelmandje en je zet de gekozen producten in het mandje. Gedraag je zoals in een echte supermarkt.

Zodra je de producten hebt uitgekozen en in het mandje hebt geplaatst leg je het mandje op de grond. Hierna vul je een korte vragenlijst in achter de computer en krijg je je beloning.

Als je klaar bent om te beginnen, mag je je hand opsteken.

Veel plezier!

- Je kunt je op elk moment tijdens het onderzoek terugtrekken van deelname zonder verdere gevolgen.
- Deelname duurt ongeveer 10 minuten.
- Het onderzoek is in het kader van het DONRO-project en wordt tevens gebruikt voor academische doeleinden, anonimiteit wordt gegarandeerd. DONRO (Developer of Nudgesfor Retail and Out of Home) is een samenwerking waarin partijen van zowel de retail en de universiteit de mogelijkheden van nudging in een retail omgeving verkennen.
- Het afronden van het onderzoek en ondertekenen van de deelnamelijst wordt beschouwd als toestemming voor deelname in dit onderzoek.
- Als je vragen hebt over dit onderzoek kunt je deze stellen aan de begeleider in de zaal, of contact opnemen met Daniella Stijnen (FBR-CSIS).

Appendix C: Shopping list

Boodschappenlijstje
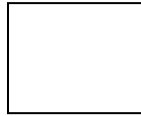
- 1 pak sap
- 1 doosje thee (de doosjes zijn leeg)
- 1 fles witte wijn
- 1 fles rode wijn

Als je klaar bent, leg het mandje dan op

de grond. De begeleider zal dan naar je

toe komen.

47

Welke <u>witte</u> wijnen heb je nog meer
overwogen om te kiezen?

Wijs deze wijnfles(sen) aan.

Het maakt niet uit hoeveel flessen je aanwijst.

Welke <u>rode</u> wijnen heb je nog meer
overwogen om te kiezen?

Wijs deze wijnfles(sen) aan.

Het maakt niet uit hoeveel flessen je aanwijst.

Appendix E: Input form experiment instructor

Invulblad voor experimentleider

Gekozen witte wijn:

Overwogen witte wijnen:

Gekozen rode wijn:

Overwogen rode wijnen:

Appendix F: The questionnaire

Note that participants saw only one light condition in the attractiveness measurement, in this appendix all three conditions are put in sequence.

Participantnummer (in te vullen door onderzoeksleider)

Welkom bij deze vragenlijst. Vul alle vragen volledig en naar waarheid in, er zijn geen goede of foute antwoorden. Als je klaar bent kun je je handtekening zetten en dan krijg je je beloning. Succes!

Je krijgt nu verschillende wijnflessen achter elkaar te zien, in totaal 12 flessen. Geef per wijnfles aan of deze fles wijn, volgens jou, wel of niet op het schap stond.

Heb je bovenstaande wijn gezien?

- ⭕ Ja
- ⭕ Nee
- ⭕ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

- ○ Ja
- ○ Nee
- ○ Weet ik niet

Heb je bovenstaande wijn gezien?

- ○ Ja
- ○ Nee
- ○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

○ Ja
○ Nee
○ Weet ik niet

Heb je bovenstaande wijn gezien?

O Ja
O Nee
O Weet ik niet

Heb je bovenstaande wijn gezien?

❍ Ja
❍ Nee
❍ Weet ik niet

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Hierboven zie je een afbeelding van het wijnschap zoals je die net gezien hebt. Bij elke wijnfles staat een nummer, dit nummer hoort bij de fles die erboven staat. Geef aan hoe aantrekkelijk je wijnen 1 tot en met 4 vindt, door middel van de sliders.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Geef aan hoe aantrekkelijk je wijnen 5 tot en met 8 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 9 tot en met 12 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 13 tot en met 16 vindt, door middel van de sliders.

Hierboven zie je een afbeelding van het wijnschap zoals je die net gezien hebt. Bij elke wijnfles staat een nummer, dit nummer hoort bij de fles die erboven staat. Geef aan hoe aantrekkelijk je wijnen 1 tot en met 4 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 5 tot en met 8 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 9 tot en met 12 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 13 tot en met 16 vindt, door middel van de sliders.

Hierboven zie je een afbeelding van het wijnschap zoals je die net gezien hebt. Bij elke wijnfles staat een nummer, dit nummer hoort bij de fles die erboven staat. Geef aan hoe aantrekkelijk je wijnen 1 tot en met 4 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 5 tot en met 8 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 9 tot en met 12 vindt, door middel van de sliders.

Geef aan hoe aantrekkelijk je wijnen 13 tot en met 16 vindt, door middel van de sliders.

Koop je wel eens wijn in de winkel (dus niet in de horeca)?

- ○ Nooit
- ○ Minimaal 1x per jaar
- ○ Minimaal 1x per half jaar
- ○ Minimaal 1x per kwartaal
- ○ Minimaal 1x per maand
- ○ Minimaal 1x per 2 weken
- ○ Minimaal 1x per week

Wat is er je tijdens dit onderzoek opgevallen? Noem zoveel mogelijk dingen die direct in je opkomen.

Heb je al eens eerder aan een vergelijkbaar onderzoek meegedaan, waarbij je ook vier producten uit een schap moest kiezen?

- ○ ja
- ○ nee

Wat is je geslacht?

- ○ Man
- ○ Vrouw

Wat is je leeftijd?

Welke studie doe je op dit moment? Geef bij voorkeur de drielettercode van je studie.

Dit was het einde van de vragenlijst, je kunt nu je handtekening zetten en je beloning ophalen. Bedankt voor je deelname! Wil je op de hoogte gehouden worden van meer onderzoeken met betrekking tot Marktkunde en Consumentengedrag, schrijf je e-mailadres dan op het daarvoor bestemde formulier.

Appendix G: Categories striking elements

Category name	Description	Times mentioned
Participants' own knowledge and expertise	Remarks about their own knowledge of wine, and their expertise in remembering wines from the shelf.	29
The simulated shelf	Remarks about the shelf as a whole, as being small, realistic, high, etc.	3
The products presented	Remarks about the products on the shelf, excluding wines. Things like brands, amounts, flavours, sorts, etc.	19
The appearance of the wines	Remarks about the wines looking special, exclusive, beautiful, looking the same, being noticeable, etc.	9
The wines presented	Remarks about the wine assortment. Things like taste, year, specialty, countries, etc.	13
A lot of wine choice	Remarks about the amount of wines presented (all mentioning that it was a lot).	7
The descriptions of the wines	Remarks about the little help they received with their choice; that the price tag did not give additional info about the wine.	6
Biological wines	All remarks about biological wine; biological wines being present, non-present, easy to find, etc.	5
Light circumstances	Remarks about the presence of light on the shelf, or about the presence of light on the photos in the questionnaire.	6

Product placement	Remarks about the order in which products were presented, horizontally and vertically.	6
Price mentioned as important buy factor	Descriptions of participants' own shopping behaviour, remarking that the price of the wines was a main buy factor.	13
Appearance of wine mentioned as important buy factor	Descriptions of participants' own shopping behaviour, remarking that the appearance of the wines was a main buy factor.	10
Important buy factors (not price)	Descriptions of participants' own shopping behaviour, excluding price and appearance of wines.	8
Other price related remarks	All remarks about the price of the wines, excluding 'price as important buy factor'.	18
Guess of survey goal	Thoughts and guesses of the goal of the experiment (1 person being partially right).	6
Survey questions	Remarks about the questions being asked in the questionnaire .	9