

‘It’s a cold hard world’

The subconscious influence of sensory metaphors on consumer responses



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Abstract

This study investigates the influence of sensory metaphorical associations of physical warmth (warmth and coldness) and haptic experiences (softness and hardness), and their combination, on consumer responses in a retail environment.

Sensory marketing, which is the base of sensory metaphors, is nowadays almost impossible to imagine in stores: music is being played, scents linger in the air and specific light and colours are used. The behaviour that retail stores want to engage by making use of sensory marketing is purchase behaviour. The relatively young specific sub area of sensory marketing, 'sensory metaphors', has shown that even subtle, incidental bodily experiences can unconsciously affect thoughts, social perception, attitude, inference and judgement. The influence of various sensory metaphors is already proven in social psychology research, however we believe that sensory metaphors could influence consumer responses in a retail environment as well.

This study was conducted by means of a 2 (warm vs. cold) x 2 (soft vs. hard) between subjects experiment. Several important concepts of consumer responses were measured, providing the dependent variables: the 'consumers' general attitude towards the company', the 'consumers' perception of the company's social orientation', and the 'consumers' purchase intention'. The experiment was conducted at the University of Twente (N= 119). Warmth and coldness were manipulated by drinks and hard and soft haptic experiences were manipulated by chairs. Their subconscious influence on consumer responses was measured by means of a questionnaire about the brochure of a fictitious green energy company.

When used separately, the warm drink revealed a significant positive influence on the 'consumers' general attitude' and 'perception of the company's social orientation'. Furthermore this study found that the soft chair had a positive influence on all three dependent variables. The combination of the warm drink and soft chair on the 'perception of the company's social orientation' and 'purchase intention' interacted positively, but not on a significant level. Additionally, a negative interaction effect occurred for the general attitude construct.

The results of this study indicate that retail owners should place soft chairs in their seating area and offer warm drinks in order to create at least the best perception of the social orientation of the company and the highest purchase intention.

Keywords: sensory marketing, grounded cognition, sensory metaphors, physical warmth, haptic experiences, consumer responses

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1. Introduction

In today's stores consumers can get overwhelmed by manipulated sensory experiences. For instance, music is being played, scents linger in the air and specific light and colours are used with only one purpose: to trigger purchase behaviour. For example, the well-known brand Abercrombie & Fitch sprays their own fragrances in their stores, which according to the brand is congruent with their brand identity; a confident, bold and masculine attitude. The company also applies loud club music throughout its stores. They argue that younger people can withstand loud music longer, while older people may run from it, enabling the stores to maintain a more youthful and a 'fresher' image. This form of marketing is called sensory marketing and is defined as "marketing that engages the consumers' senses and affects their behaviours" (Krishna 2012, p. 332).

Sensory marketing has drawn a lot of attention during the last decade. Retailers and manufacturers recognized that multi-sensory brand experiences increase perceived product value, induce shoppers to stay longer at a store and ultimately to spend more money (Krishna, 2011). A specific sub area of sensory marketing that has become increasingly popular nowadays is that of 'sensory metaphors'. This relatively young research area shows that even subtle, incidental bodily experiences can unconsciously affect thoughts, social perception, attitude, inference and judgement. The power of sensory metaphors is overwhelming: Williams and Bargh (2008) showed that when a subject held a warm drink instead of a colder one, the subject perceived other people as more warm and caring. This example shows that experiencing physical warmth subconsciously promotes interpersonal warmth. Another study has shown that sitting on a soft chair during a sales pitch or negotiation leads to earlier customer agreements. Furthermore, judges sitting on a hard chair will impose higher punishments to criminals in a courtroom (Cherkasskiy, Song, Malahy, & Bargh, 2012).

Since the majority of the sensory metaphor experiments had a social psychology purpose, it would be interesting to examine whether sensory metaphors can also be applied to consumer responses in shops and retail stores for marketing purposes. Therefore, the main research question is: *"To what extent do both physical warmth of a drink and the softness of a chair subconsciously influence consumer responses?"*.

The objective of this study is to investigate the influence of the sensory metaphorical associations of physical warmth (warmth and coldness) and haptic experiences (softness and hardness), and their combination, on consumer responses in a retail environment. The practical relevance of this study is to help retailers to enhance the customers' attitude, perceived social orientation and purchase intention as parts of consumer responses.

2. Theoretical framework

Understanding the process of sensory metaphors on consumer behaviour starts with the underlying processes of sensation, perception and grounded cognition: perception that affects cognition. This paragraph will first clarify the basic concepts of sensory marketing and will then go deeper into sensory metaphors. Thereafter, the independent and dependent variables within this experiment will be clarified and hypotheses will be drawn.

2.1 An introduction to sensory marketing

The two main processes that underlie the way how we interpret the world around us are sensation and perception. Sensation is the stimulation of the senses. Perception is the process of acquiring, recording, interpreting, selecting and organizing sensory information (Matlin, 1988). Thus at sensation, the senses react on the stimulation, whereas the stimulation is interpreted by perception which results in an particular perceptual experience. According to Krishna (2012), the understanding of perception is essential for sensory marketing. She defines sensory marketing as “marketing that engages the consumers' senses and affects their perception, judgment and behaviour” (p. 332).

Sensory marketing is a branch of marketing based on the relationship between the consumers' senses (vision, audition, smell, touch and taste) and their behaviour. Several marketing channels make use of it, e.g. commercials and printed advertising. As mentioned in the introduction, Abercrombie & Fitch make use of a sensory marketing strategy that combines specific scents and music in their stores in order to sell more. Actually, almost every retail store makes use of sensory marketing: specific music is played almost everywhere. Other types of chains and companies also make use of it; from airlines to hotel chains and from hospitals to restaurants. The Holiday Inn hotels chain for example uses ‘relaxed’ scents combined with suitable music to keep people in their rooms, lobbies and bars longer.

2.2 Grounded cognition – perception that affects cognition

We know that the mind can control the body, but that it also occurs vice versa is relatively new. According to the theory of grounded cognition by Barsalou (2008), all types of memory are directly related to the senses. Thoughts, feelings, and behaviours are grounded in bodily

interaction with the environment and cognitive activity is grounded in earlier sensory experience. Barsalou argues that three components constitute grounded cognition, namely: bodily states, situated actions and mental simulations. Various other scientists in marketing and psychology research have supported the theory grounded cognition (Labroo & Nielsen, 2010; Mazar & Zhong, 2009; Williams & Bargh, 2008).

Bodily state refers to cognition that is affected by an unchanging physical condition that one is in. In all these situations, one holds a particular posture which results in certain behaviours and thought processes. For example, a study by Strack, Martin, & Stepper (1988) showed that facial activity has affected the funniness ratings of cartoons, by having the subjects hold a pen in their mouths a particular way. The subjects' smile muscles were stimulated by holding a pen horizontally in the mouth. This example shows that earlier experiences with smiling were grounded in thought, since smiling means liking, fun and pleasure. Another example of the effect of bodily states on cognition is that when subjects wore heavy backpacks, they judged hills as being steeper and distances as longer than when they did not (Proffitt, Stefanucci, Banton, & Epstein, 2003). In these two examples, one holds a particular bodily state which results in a certain perception that affects thoughts and behaviour.

Situated actions refer to cognition impacted by movements when some parts of the body are moved, but not the whole body (as with bodily states). An example of a situated action that affects cognition is provided by a study by Wells and Petty (1980). They showed that vertical and horizontal head movements impacted agreement and disagreement by shaking and nodding heads while listening to the content of a radio broadcast. This example shows that earlier associations with head nodding and shaking has grounded in thought, since nodding means disliking and shaking means liking. Another study that illustrates the impact of situated actions on cognition was conducted by Cacioppo, Priester, and Berntson (1993). The results of their experiment showed that Chinese ideographs were rated more positively when participants flexed their arms during evaluation than when they extended their arms. They argued that when grasping attractive objects, extending the arm is temporally strongly associated with approach by acquiring or consumption of these objects. On the other hand, flexing the arm resulted in avoidance. The reason behind the association between extending the arm and approach on the one hand, and flexing the arm on the other hand is caused by

lifelong experiences with such contingencies. These movements and their associations are grounded in our cognition.

The third component of grounded cognition is ‘mental simulations’, which suggest that mental imagery drives cognition. Several studies provided evidence for such mental simulation, whereby imagining sensory perceptions lead to the activation of corresponding regions of the brain. For example, a study by Zatorre and Halpern (2005) showed that imagining to hear a lawn mower leads to the activation of the brains’ auditory cortex. Additionally, reading words associated with strong smells like ‘vanilla’ or ‘anise’ activates the brains’ olfactory cortex (González, et al., 2006) and viewing images of an apple pie activates the brains’ taste cortices (Simmons, Martin, & Barsalou, 2005). Additionally, a study by Elder and Krishna (2012) showed that different visual depictions of a product (e.g. in a web shop) can result in less or more mental simulation of using the product which could affect the purchase intention. For example, a spoon on the right of a soup bowl (versus left) results in a higher mental simulation and purchase intention for right-handed people than for left-handed people.

2.3 Sensory metaphors and grounded cognition

The way we think, what we experience and what we do every day is very much a matter of metaphors. Embodied processes often play an important role within metaphors, where abstract concepts are described by making use of concrete concepts derived from perceptual experience (Lakoff, 1980). For example, a bad relationship is often described as a distant one, whereas a good relationship is described as a ‘close’ one, because we are often physically near people we like and physically distant from people we dislike. The combination of bodily states and metaphors figures prominently in poems and songs, for example “my heart goes boom” and “my feet of the ground”.

A popular specific sub area of sensory marketing based on grounded cognition is ‘sensory metaphors’. Many studies have provided scientific evidence for the role of metaphors in human thought. For example, the well-known idiom ‘something smells fishy’ is metaphorically related to social suspiciousness. People use that metaphor when they conclude that something feels wrong. Various studies by Lee and Schwarz's (2014) showed that fishy smells can arouse social in people in a subconscious way. Another example of a

sensory metaphor is verticality. Ostinelli, Luna, and Ringberg (2014) found that upward movements have a positive effect on one's self esteem, since upward movements make people feel better about themselves. From earlier experiences, people have learned that upward movements are positively related and downward movements are negatively related, e.g., a thumb up is good and a thumb down is bad. When one is 'down', one is more inclined to look down. Zhong and Liljenquist (2006) found that immoral thoughts increased the urge of cleansing. They also showed that cleaning one's hands disabling guilt on subsequent behaviour. Later studies found that the influence of physical cleansings is not limited to obscene thoughts and behaviours; instead, physical cleansings seem to metaphorically eliminate various traces from the past. An example of a well-known idiom related to cleansing is: 'wash hands of', e.g. "I washed my hands of it long ago".

2.4 Consumer responses

The abovementioned examples of sensory metaphors show that even subtle, incidental physical experiences can unconsciously affect thoughts about metaphorically related targets. The majority of the conducted sensory metaphor experiments are related to social psychology, a branch of psychology that deals with social interactions on the individual level (person to person). It would be interesting to examine whether these sensory metaphors can also be applied to companies or retail stores. In today's stores many (sensory) marketing activities are already being applied: music is played, specific colors and light and sometimes even scents are used. These sensations will create a certain perception of the environment of the store. However, we believe that the perception of a store can be enhanced by making use of sensory metaphors that affect the consumer responses in a subconscious manner.

In order to measure the effect of sensory metaphors on consumer responses, some basic but important aspects of marketing communication research on consumer responses will have to be measured. First, we want to examine whether the general attitude of the respondents will be subconsciously influenced by the metaphorical association of sensory metaphors. The 'general' part of this 'general attitude' variable refers to the general properties of a company that will be measured. Since 'attitude' is one of the most popular constructs in marketing communication research, many measurements and scales are available to examine attitudes (Olson, Zanna, & Mark, 1993). Additionally, we want to examine whether consumers can

perceive a company or store as more social after being influenced by sensory metaphors. Therefore, the second dependent variable in this experiment is the ‘consumers’ perception of the company’s social orientation’, abbreviated to ‘company’s social orientation’. The third and last dependent variable for this experiment is ‘consumer purchase intention’, abbreviated to ‘purchase intention’. Purchase intention is a frequently used construct in both consumer behaviour research and marketing research and can be described as an individual’s conscious plan to make an effort to purchase something (Spears & Singh, 2004).

2.5 Manipulating sensory metaphors

In order to measure the effect of sensory metaphors on the dependent variables, two sensory metaphors regarding warmth and haptics were selected. These sensory metaphors were chosen for further examination since their power as sensory metaphors was proven by other studies. This paragraph will further explain the power and associations of these sensory metaphors.

2.5.1 Warmth metaphors

A common used metaphor in daily life is that of warmth and cold as a personality trait. Perceiving someone as warm or cold entails a broad understanding that focuses on a certain degree of sociality. We describe people as warm when we perceive them as social, good-natured, friendly, helpful and trustworthy, and on the other hand as cold when we perceive them as unsocial, unfriendly, deceitful and unreliable (Rosenberg, Nelson, & Vivekananthan, 1968; Fiske, Cuddy, & Glick, 2008). The power of this metaphor is also demonstrated as a sensory metaphor by Williams and Bargh (2008). Subjects of their experiment briefly held either a cup of hot coffee or a cup of iced coffee after which they had to fill in a personality impression questionnaire. As a result, the subjects who held the warm cup of coffee had a higher perceived social warmth in other people than the subjects who held the iced coffee. Another study by Williams and Bargh (2008) concluded that when holding a warm object instead of a colder one, people will behave in a more socially warm and caring way, for example by rather choosing a gift for their friends than for themselves. The subjects who held a cold object were more greedy and in 75% of the cases they chose a gift for themselves.

The abovementioned studies showed that incidental experiences with physical warmth turned into social warmth which influences judgments and behaviour toward other people without one being aware of this influence. How could warm objects produce the same affective states as a 'warm' person? According to Asch (1946), the affective responses are grounded together in memory and most abstract concepts in psychology are metaphorically based on concrete physical experiences. The insular cortex is implicated in processing both the physical and the psychological versions of warmth information in a subconscious manner. As a result, the feelings of warmth when one holds a hot cup of coffee or takes a warm bath might activate memories of other feelings associated with warmth (trust and comfort), because of earlier experiences with caretakers who provided warmth, shelter, safety, and nourishment. Because of these frequent early life experiences with the trustworthy caregiver, a close mental association usually develops between the concepts of physical warmth and psychological warmth.

While experiencing physical warmth makes one more social, physical coldness increases the longing for sociality. A study on social warmth that highlights the bidirectional relationship between physical and social warmth was conducted by Zhong and Leonardelli (2008). They showed that participants experience a room as physically colder after having been socially rejected. Another study reported that consumers perceived the ambient temperature to be cooler when eating alone than when eating with a partner (Lee, Rotman, & Perkins, 2014). Zwebnier, Lee, and Goldenberg (2014) studied whether the association of physical and socio-emotional warmth also extends to products. They found that higher ambient temperatures are associated with more positive affective responses and lower perceived distance to the target product, resulting in increased product valuation.

Based on the abovementioned studies and the positive metaphorical associations of warmth, we expect that consumer responses will also be influenced by experiencing physical warmth. Therefore we expect that:

H1a. Holding a warm drink has a significant positive effect on 'general attitude'.

H1b. Holding a warm drink has a significant positive effect on 'company's social orientation'.

H1c. Holding a warm drink has a significant positive effect on 'purchase intention'.

2.5.2 Haptic metaphors

Common touch-related metaphors are also frequently used in daily life, e.g. “it was a rough day”, “thinking about weighty matters” and “she’s my rock”. According to Ackerman, Nocera and Bargh (2010) are these metaphors also powerful as sensory metaphors. They found that heavy vs. light clipboards made job candidates appear more important. The metaphorical association of heaviness and lightness is ‘importance’, which implicates the heavier, the more important something is (Jostmann, Lakens, Schubert, 2009). Another study by Ackerman et al. (2010) found that touching a rough vs. a smooth object made social interactions more difficult. They argued that the experience of roughness and smoothness is metaphorically associated with concepts of difficulty and harshness. They also showed that sensory metaphors regarding to hardness and softness subconsciously affect one’s judgment. In daily life, we describe someone as soft when we perceive him or her as vulnerable, emotional, empathetic and sensitive, and we describe someone as hard when we perceive him or her as invulnerable, unemotional, non-empathetic, rigid and insensitive. In the experiment of Ackerman et al. (2010), participants either touched a soft blanket or a hard block of wood. The participants who touched the hard block of wood judged someone as more rigid and strict than participants who touched the soft blanket. Haptic experiences with respect to hardness and softness are metaphorically associated with (cognitive) flexibility, including stability, rigidity and strictness.

The abovementioned studies showed that experiences that are metaphorically related to haptics subconsciously influence social impression and decision making. The question that arises is how such basic haptic experiences concerning weight, texture and hardness, influence our cognitive processing. According to Barsalou (2003) and Mandler (1992) are sensory experiences stored in our mind since infancy which provides the basis of the development of complex concepts, also known as conceptual knowledge. When touching something hard, the brain activates the grounded conceptual knowledge related to hardness. This conceptual knowledge can also be related to a metaphor, e.g. feeling a rough stone makes us sensitive to rough textures and may also activate metaphorical roughness. According to Ackerman et al. (2010), haptic experiences with hardness subconsciously produce perceptions of strictness, rigidity, stability and reduce change from one’s initial decisions. In their experiment the participants sat in either a hard wooden chair or a soft cushioned chair while imagining shopping for a new car. They had to make an offer to the dealer which was

subsequently rejected. Then the participants had to make a second offer. As predicted, the participants who sat in hard chairs judged the employee to be both more stable and less emotional. Furthermore, the hard chair indeed produced less change in offer price than soft cushioned chairs did. Therefore, sitting on a hard chair increases rigidity in bargaining, and on the other hand, sitting on a soft chair leads to quicker agreement in bargaining. Based on these results we can assume that the participants in the hard chair have literally more hard which was expressed in being more strict and less flexible than and the participants on the soft cushioned chair. Another study among the impact of haptic metaphors was conducted by Cherkasskiy, Song, Malahy, & Bargh (2012). They proved that courts impose higher punishments to suspects when sitting on a hard chair than when sitting on a soft chair. Also for this experiment we can assume that the courts have become literally harder which was expressed in being more stable, strict and less flexible.

Based on the abovementioned studies and the metaphorical associations of hardness and softness, we expect that consumer responses will also be influenced by haptic experiences regarding to hardness and softness. The metaphorical associations with hardness and softness are less related to social concepts (general attitude and company's social orientation), but we expect that the soft chair condition will still have a positive influence on the general attitude and company's social orientation compared to the hard chair condition. We therefore expect that:

H2a. Sitting on a soft chair has a significant positive effect on 'general attitude'.

H2b. Sitting in a soft chair has a significant positive effect on 'company's social orientation'.

H2c. Sitting on a soft chair has a significant positive effect on 'purchase intention'.

2.5.3 The connection between the variables; (dis)comfort

Both independent variables within this research are linked to each other, because people use both 'hard' and 'cold' to explain discomfort, and 'soft' and 'warm' to explain comfort. An example of a frequently used statement is: "It is a cold hard world". This statement clarifies the negative charge of 'cold' and 'hard' (Melnick, 1999). The reason why we typically pair 'cold' with 'hard' and 'warm' with 'soft', is that associations with 'cold' and 'hard' are neither pleasant nor positive. A 'warm soft mommy' is a frequently used association for a caring mother. This example clarifies the pleasant and positive association with 'warm' and 'soft'.

Apart from the two main effects described above, an interaction effect might occur. When combining both independent variables, ‘physical warmth’ and ‘haptic experience’, with the dependent variables, we expect that the most ‘positive’ condition (warm and soft) will lead to the most positive influence on all these variables. We can maintain that, in general, the positively associated conditions (warm and soft) will automatically lead to a higher mean score on all constructs compared to the negatively associated conditions (cold and hard). We expect a significant positive interaction between the warm and soft condition on all three dependent variables. We therefore expect that:

H3a. Holding a warm drink and sitting on a soft chair has a significant positive effect on ‘general attitude’.

H3b. Holding a warm drink and sitting on a soft chair have a significant positive effect on ‘company’s social orientation’.

H3c. Holding a warm drink and sitting on a soft chair have a significant positive effect on ‘purchase intention’.

2.5.4 Effect size

Apart from the positive and negative associations of the independent variables, we expect a distinction in the subconscious influence between the constructs regarding to their different metaphorical associations. Since warmth and coldness are mostly metaphorically associated with sociality, trustworthiness, helpfulness and friendliness, we expect that the subconscious influence of the temperature of the drink will be dominant over the type of chair for the ‘company’s social orientation’ and ‘general attitude’ constructs. Conversely, because the metaphorical associations with haptic experience are more related to (cognitive) flexibility, stability, rigidity and strictness, we expect that the subconscious influence of the type of chair will be dominant over the temperature of the drink for the ‘purchase intention’ construct. We therefore expect that:

H4a. The warm drink is a better predictor of the ‘general attitude’ than the soft chair

H4b. The warm drink is a better predictor of the ‘company’s social orientation’ than the soft chair.

H5. The warm drink is a poorer predictor of the ‘purchase intention’ than the soft chair.

2.6 Connecting the variables: a conceptualized research model

This study aims to identify the subconscious influence of the metaphorical associations of physical warmth and haptic experience on the participants' 'general attitude towards a company', 'perception of the company's social orientation' and 'purchase intention'. The focus is on whether the manipulated independent variables will result in a different mean score on the dependent variables. *Figure 1* provides an overview of the dependent and independent variables for the experiment.

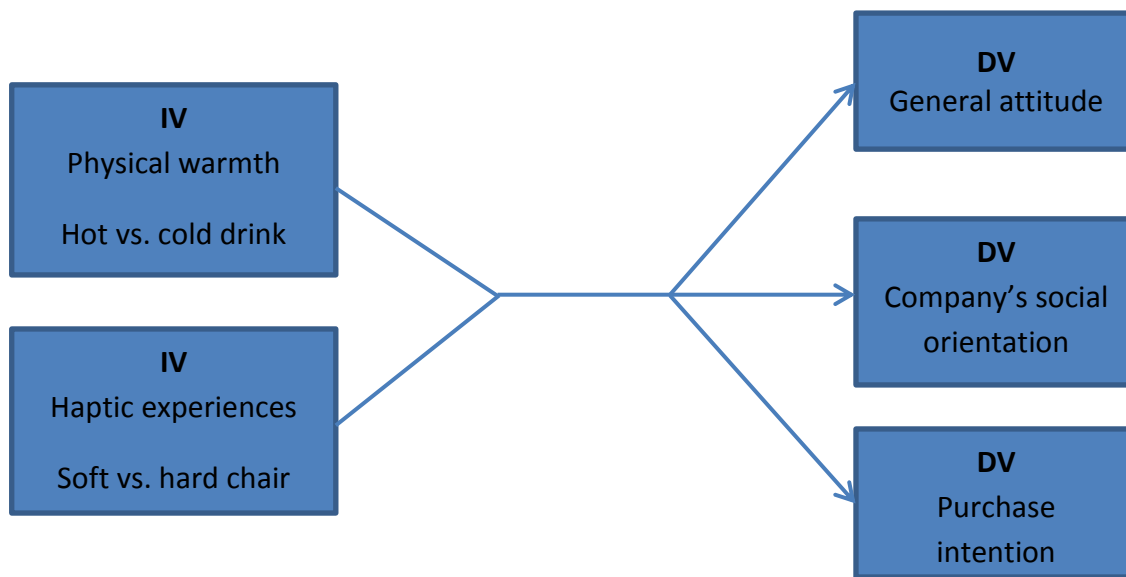


Figure 1. Conceptualized research model including independent and dependent variables within a 2x2 between subjects design.

3. Methodology and data collection

As mentioned in the theoretical framework, a 2 (cold drink vs. warm drink) x 2 (hard chair vs. soft chair) between subjects design was used for the experiment. The experiment was conducted as a quantitative field experiment at the University of Twente. This section will further explain the sampling procedure and study design, followed by the clarification of the manipulated stimuli. Finally, this section will clarify the validity and reliability of the measures.

3.1 Participants

Since the experiment was conducted at the University of Twente, most of the participants had an academic background. There was however no restriction in educational background or age. The only requirement for the participants was to understand the Dutch language, since the brochure and questionnaire were set up in Dutch. The aim was to gather at least 20 questionnaires for each experimental condition, thus 80 respondents in total, in order to conduct a reliable experiment. Eventually 119 respondents (62% female, 38% male) participated in the experiment. As can be seen in Table 1, the participants were almost equally distributed over the conditions, even as their mean ages. All participants participated voluntarily in the experiment and completed the questionnaire by answering all questions. The respondents' age ($n = 119$) varied from 18 to 41 years, with an average age of 22.4 ($SD = 2.97$).

Table 1. Participants Characteristics per Experimental Conditions

| Condition: | | Cold drink Hard chair | Cold drink Soft chair | Warm drink Hard chair | Warm drink Soft chair |
|---------------------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|
| Date of experiment | | 10-06-15 | 08-06-15 | 01-06-15 | 04-06-15 |
| N | | 29 | 31 | 29 | 30 |
| Mean age | | 21.93 | 21.90 | 22.41 | 23.27 |
| Gender % | Male | 31 | 38.7 | 34.5 | 46.7 |
| | Female | 69 | 61.3 | 65.5 | 55.3 |

The subjects of the experiment had to fill in a questionnaire about a brochure of the fictitious green energy company 'The Green Energy Company'. During the experiment participants were sitting on a hard wooden chair or a soft office chair, and drinking cold or warm tea. Every participant was presented with the same brochure and questionnaire about

‘The Green Energy Company’. In order to prevent that the participants would be aware of the manipulated conditions, four different days were scheduled for conducting the experiment. Every day had another combination of manipulated variables. Table 1 provides an overview of the different experiment dates, including the distribution of participants over the conditions with the mean age and gender percentage.

3.2 Stimuli

In order to conduct a successful, valid and reliable experiment, the purpose of the experiment had to be unclear to the respondents. The manipulated stimuli were well considered before conducting the experiment. Consequently, two small pre-tests were conducted prior to the experiment. This paragraph will further explain why and how the stimulus materials were chosen and manipulated.

3.2.1 Manipulated drink temperature

Warm and cold drinks were used in order to control the manipulated variable of physical warmth. The drink itself (e.g. the taste) does not have anything to do with the purpose of the experiment, since the focus of the experiment is on the warmth or cold that the drink transmits to the participants. Therefore, the temperature of the drink is the only manipulated factor in both the warm and cold condition.

In order to find a drink that has the same properties when being warm and cold, a small pre-test was conducted with 4 people at the researchers’ home. Both warm and cold drinks were tasted and evaluated on similarities in flavour, colour and substance. After having tasted various drinks with a warm and cold temperature, hot tea and ice tea were chosen as the best drinks for both conditions. The only difference between the drinks was the sweetness between the warm tea and ice tea, since ice tea contains added sugars and regular tea made from a teabag does not. This issue was solved by adding two teaspoons of sugar per can of hot tea. Images of the used drinks can be found in appendix D.

In order to measure the effects of physical warmth, the temperature differences between the drinks were to be as large as possible. It was important that the tea was drinkable from the start of the experiment, to prevent that subjects would not drink the tea at all. The warm tea had a temperature of approximately 55 degrees Celsius and the ice tea had a temperature of approximately 6 degrees Celsius. In order to reach those temperatures,

water was boiled for the warm tea and ice cubes were added to the ice tea to cool the drink. To regulate the temperature of the drinks, a thermos flask and thermometer were used for both drinks to keep them at approximately 55 degrees and 6 degrees Celsius. The cups used for the experiment were simple white plastic disposable cups, which are hygienic and easy to use. These cups were good temperature conductors, which is important since physical warmth was the manipulated factor in this experiment.

3.2.2 Manipulated hardness and softness

Within this experiment one hard chair and one soft chair were used to measure the subconscious effects of the metaphorical associations of hardness and softness. The hard chair was to be as hard as possible and the soft chair as soft as possible. In order to find two suitable chairs, a small pre-test was conducted with 3 students of the University of Twente. Both hard chairs and soft chairs were tested and evaluated and the subjects had to keep in mind that apart from the hardness or softness, all other dimensions were to be as much as similar to each other.

The height and depth of the chairs were measured and compared. The hard seats had no ability to adjust the height or seat of the chair, while the softer chairs had. It was therefore possible to adjust the soft seat to the dimensions of the hard seat. After testing the chairs, two chairs were selected, being a soft office chair without arm rests and a hard wooden chair without arm rests. Images of the used chairs can be found in appendix A.

3.2.3 The brochure

A brochure of the fictitious green energy company 'The Green Energy Company' was composed in order to measure the subconscious influence of metaphorical associations on the dependent variables. An image of the brochure can be found in appendix B. From this brochure, the participants had to gain all the information about the company. The main reason for using a fictitious company is that the participants would not have an opinion about the company in advance. A benefit for choosing a green energy company is the ability to scale items related to all three constructs.

For the brochure's lay out, information was retrieved from other Dutch green energy companies such as Windunie, Huismerk Energie, Raedthuys Pure Energie, Qurrent and

Greenchoice (Wise, 2014). The brochures of these companies often contained information about the company and how they produce and deliver their green energy.

3.2.4 Introduction

Before the participants started with the actual experiment, a short introduction was attached to the questionnaire. Hereby participants were informed about what was expected from them during the experiment, being providing their attitude to a green drink and a green energy company. An emphasis was made on that the experiment was actually a small pre-test. By framing the experiment as a small pre-test, participants would be more easy going, less critical and purely relying on their sense, without difficulties coming to mind. Since the participants were all recruited on the University of Twente, it is very likely that they would have been extra critical when the actual goal of the experiment would have been mentioned. The introduction that was attached to the questionnaire can be found in appendix C.

3.3 Measurements

After the participants had read the introduction they could start answering the questionnaire, by which the dependent variables were measured. In order to measure the three dependent variables, three different constructs were established with each different items. In this paragraph, the method of measurement for each dependent variable as well as the reliability of the used constructs will be further explained.

3.3.1 Measurement of dependent variables

First the respondents had to supply demographic information, consisting of age and gender. Items on the topic of the drink were included in order to be sure that participants had a physical experience with warmth or coldness before judging 'The Green Energy Company'. This was important since the purpose of offering a drink was to conduct physical warmth or coldness. The items of the drink, measured on a 7-point-likert-scale, were specifically about taste and purchase intention. However, in the end, the results of the drink do not count for the experiment. They functioned as an unobtrusive manner to let the participants experience physical warmth or coldness before judging 'The Green Energy Company'. The reason for using multiple items about the drink is to prevent raising suspicion among the subjects regarding the research goals. If the drink itself would only have been covered by one question, the subjects might have concluded that the drink was not of interest to the

researchers, and found out the actual research goals. This could have influenced the subjects' answers to the items and thereby the results from the field study.

After the items about the drink, the participants were presented with the items about the 'general attitude' construct. Since measuring a complete attitude is far too extensive, only eight basic attitude-related items were measured. For the creation of the 'general attitude' construct, much inspiration has been gained from earlier studies by Mc. Croskey and Richmond (1989) and Spears and Singh (2004). The items were measured on an eight-item semantic differential scale (Snider & Osgood, 1969). Example answers for the eight-item semantic differential scale are: *bad / good, convincing / not convincing, not credible / credible*. Today, semantic differential scales are one of the most widely applied scales for the measurement of attitudes. The bipolar adjective pairs can be used for a wide variety of subjects (Himmelfarb, 1993).

Seven items regarding the social orientation construct were asked on a 7-point-likert-scale. This construct was aimed at the social aspects of the company, including customer service, reliability and commitment. The items used in the questionnaire were based on statements from a previous study by Gummeson (2005), in which a sample of 1.000 consumers had to answer, in five to ten words, what first came to mind when thinking of the most important brand aspects. The study identified the most important consumer-based dimensions of brands for the U.S. population, divided in: perceived quality, perceived value, brand loyalty, and sustainability. The social orientation construct contained items regarding the social aspects of the consumer-based dimensions, hence the name 'company's social orientation'. The construct contained five positively worded items and two negatively worded items. It is known that varying the direction of questioning minimizes bias produced by the respondents (Spector, 1992). Examples of used statements are: *TGEC seems like a customer-friendly energy company to me* and *TGEC seems like a compassionate energy company to me*. The used 7-point-likert-scale ranged from 1=completely disagree to 7=completely agree. It is known that Likert-scales are especially useful when measuring characteristics of people such as attitudes, feelings and opinions, and therefore as well for the sociality related consumer-based dimensions (Likert, 1932).

Finally, another seven items on a 7-point-likert-scale were asked in order to measure the construct 'purchase intention'. This experiment is not aimed at measuring a complete purchase intention as this would create the need to include other dependent variables, which would make this research too extensive. The construct is adapted and limited to the circumstances of the experiment and the corresponding opportunities. An example of a consecutive limitation is therefore that the setup of the experiment does not concern the existence of a need for a (new) green energy company among the participants. It also does not provide room for comparing alternatives. The 'purchase intention' construct focusses on the amount of flexibility and compliance of the participants as the result of the metaphorical associations of the independent variables. The main question is whether participants in the 'soft chair' condition will comply faster than respondents in the 'hard chair' condition. Therefore, the items included for this construct are about the willingness to receive additional information about the company and the compliance regarding listening to the company's call centre staff and door to door sales persons. In other words, it is about the interest in the company and her service(s). A few examples of the used statements are: *I would consider to receive additional information about TGEC at home* and *I would consider to switch to TGEC on a short-term, via the free transfer service where they terminate my current contract*. The statements were based on previous research by the world's leading consumer behaviourists: Dodds, Monroe, and Grewal (1991), Grewal, Monroe and Krishnan (1998) and Hardesty, Carlson, and Bearden (2002). The scale of the measured items was ranging from 1=completely disagree to 7=completely agree (Spector, 1992). The questionnaire can be found in appendix D.

3.3.2 Reliability of constructs

After entering the data in the Statistical Program for Social Sciences (SPSS), the two negatively worded items were recoded to be able to measure the internal consistency or reliability of the constructs. As part of the internal consistency calculations a Cronbach's Alpha was calculated for the three constructs, being 'general attitude' ($\alpha = .94$), 'company's social orientation' ($\alpha = .88$) and 'purchase intention' ($\alpha = .88$). Table 2 provides an overview of the reliability of the constructs. According to Nunnally (1978), a constructs' Cronbach's Alpha should be at least .70 to achieve a reliable scale. Based on the values of the Cronbach's Alpha we can therefore conclude that all three constructs have a reliable scale.

3.4 Procedure

The participants were selected by the researcher at the University of Twente. The subjects were asked whether they wanted to participate in a small pre-test experiment about green products which would take only 5 minutes. Subjects who were willing to fill in the questionnaire were guided to Cubicus room C227 at the University of Twente. The participants were instructed to first read the introduction attached to the questionnaire. Thereafter they could start filling in the questionnaire. The first items were about the drink, therefore the participants were instructed to taste the drink before filling in the items. After the participants filled in the questionnaire, the researcher asked them for their opinion about the experiment.

3.5 Data Analysis

Two-way ANOVAs were performed with physical warmth and haptic experiences as independent variables and the 'general attitude', 'company's social orientation', and 'consumers' purchase intention' as dependent variables. Individual characteristics of respondents (age and gender) were considered as possible moderators. Bonferroni post-hoc analyses were performed to test the significance differences between the means and the effect size of the independent variables on the dependent variables.

4. Results

In order to examine whether the conditions over the four groups were equally distributed, an ANOVA was conducted on age and gender. The ANOVA on age reveals no significant differences between the four groups ($F(3, 115) = 1.392, p = .249$). The ANOVA on gender also reveals no significant differences between the groups ($F(3, 115) = .560, p = .642$). Therefore we can conclude that both age and gender can be excluded as possible moderators within this experiment.

In order to examine whether the two drinks had the same taste, an ANOVA was conducted on the different items about the drink. Only the perceived freshness was significantly different for the drinks, which is an expected finding. Actually, the perceived freshness discrepancy between the drinks is good since the temperature was to be the only noticeable manipulation.

4.1 Effects of physical warmth and haptic experiences on general attitude

A two-way ANOVA was conducted with physical warmth and haptic experience as the main factors and general attitude as the dependent variable. Figure 2 provides an overview of the 'general attitude' results for both independent variables.

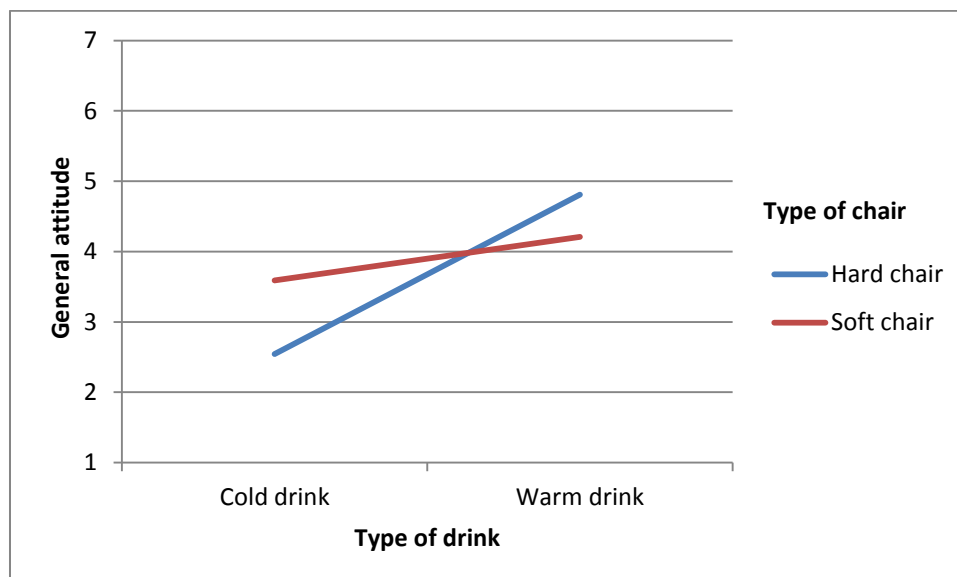


Figure 2. An overview of the subconscious influence of type of drink and type of chair on general attitude.

The results show a significant main effect for the type of drink on general attitude ($F(1, 115) = 96.04, p < .001, \text{partial } \eta^2 = .46$). The participants who drank the hot tea scored significantly

higher on the variable 'general attitude' ($M = 4.50$, $SD = .82$) than participants who drank the ice tea ($M = 3.08$, $SD = .98$). In addition, the main effect for the type of chair on attitude is also significant ($F(1, 115) = 6.92$, $p = .01$, partial $\eta^2 = .02$). The participants who were sitting on the soft chair scored significantly higher on the variable 'general attitude' ($M = 3.90$, $SD = 1.15$) than the participants who were sitting on the hard chair ($M = 3.68$, $SD = .90$). The results also indicate a significant negative interaction effect between the type of drink and type of chair on the attitude towards 'The Green Energy Company' ($F(1, 115) = 31.28$, $p < .001$, partial $\eta^2 = .21$). As can be seen in figure 2, the participants who drank the hot tea while they sat on the hard chair scored significantly higher than the participants in the other conditions.

4.2 Effects of physical warmth and haptic experiences on the company's social orientation

A two-way ANOVA was conducted with physical warmth and haptic experience as the main factors and the company's social orientation as the dependent variable. The results show a significant main effect for the type of drink on the 'company's social orientation' ($F(1, 115) = 21.33$, $p < .001$, partial $\eta^2 = .16$). This means that participants who drank the hot tea scored significantly higher on the 'company's social orientation' ($M = 5.22$, $SD = .76$) than the participants who drank the ice tea ($M = 4.64$, $SD = .66$). Another main effect occurs for the type of chair on the 'company's social orientation' ($F(1, 115) = 7.26$, $p = .008$, partial $\eta^2 = .06$). This result indicates that the participants who sat on the soft chair scored significantly higher on the 'company's social orientation' ($M = 5.09$, $SD = .58$), than the participants who sat on the hard chair ($M = 4.75$, $SD = .90$). No interaction effect is found between the type of drink and type of chair on the 'company's social orientation' ($F(1, 115) = .06$, $p = .82$, partial $\eta^2 = .00$).

4.3 Effects of physical warmth and haptic experiences on purchase intention

A two-way ANOVA was conducted with physical warmth and haptic experience as the main factors and purchase intention as the dependent variable. The results show that the participants who drank the hot tea ($M = 3.44$, $SD = .11$) scored higher on purchase intention than the participants who drank the ice tea ($M = 3.32$, $SD = .11$). However, this result was not significant ($F(1, 115) = .60$, $p = .44$, partial $\eta^2 = .01$). The ANOVA shows a main effect for the

type of chair on *purchase intention* ($F(1, 115) = 4.95, p = .03, \text{partial } \eta^2 = .04$). This result indicates that participants who sat on the soft chair scored significantly higher on purchase intention ($M = 3.55, SD = .81$) than participants who sat on the hard chair ($M = 3.21, SD = .85$). No interaction effect is found between the type of drink and type of chair on the purchase intention ($F(1, 115) = .02, p = .90, \text{partial } \eta^2 = .00$).

5. Conclusions and discussion

The aim of this experiment was to find out whether sensory metaphors regarding physical warmth and haptic experiences could be used to enhance consumer responses in a retail environment. The main research question was: *“To what extent do both physical warmth of a drink and the softness of a chair subconsciously influence consumer responses?”*. The consumer responses were measured by three constructs, namely: the general attitude, the company’s social orientation and purchase intention. We both found interesting results that are in line with the proposed hypotheses, as well as interesting results we did not expect.

5.1 Discussion

We found that the warm drink was more effective in enhancing the participants’ general attitude and company’s social orientation than the cold drink. These results confirm hypotheses 1a and 1b. The warm drink was more effective in enhancing the participants’ purchase intention than the cold drink, however it was not significant. Hypothesis 1c can therefore not be confirmed. A possible explanation for this result could be that the purchase intention construct contains less socially loaded items than the other two constructs, for which a main effect did occur. This has probably led to a significant main effect of warmth on the more social related constructs, but no significant influence on the participants’ purchase intention. Additionally we found that the soft chair was more effective in enhancing all three dependent variables than the hard chair. Therefore we can conclude that hypotheses 2a, 2b and 2c are confirmed by the results.

Due to the high level of comfort and positive metaphorical associations of the warm (drink) and soft (chair) condition, we expected a positive interaction effect for all three dependent variables. However, the results did not show a significant positive interaction effect for the company’s social orientation and purchase intention constructs. In addition, against all expectations, a negative interaction effect occurred for the general attitude construct. This result showed that the hard chair and warm drink condition caused the most positive general attitude of the participants, which contradicts hypothesis 3a. A possible explanation of this result could be the occurrence of a ‘contrast effect’ between the independent variables on the general attitude construct. As a result of the contrast effect, the participants who sat on the hard chair felt the hardness very good, and therefore the warm tea had an

extra influence which resulted in the highest general attitude for these participants. What also could have contributed to this result is the narrow discrepancy in the softness of the manipulated chairs. As mentioned before, a small pre-test was conducted in order to find two chairs that had more or less the same properties and visual appearance, but a large discrepancy in softness and hardness. During the seats pre-test, it became clear that it was a difficult to find two chairs that have approximately the same dimensions and visual appearance, but a significant difference in softness. Often, very soft chairs are very different in shape and size than hard chairs, which have most likely led to a too narrow discrepancy in hardness and softness. The hard chair was very hard, because of being a wooden chair, but the soft chair could have been much softer. Therefore, the hardness of the hard chair could have been more sensible than the softness of the soft chair. This could have contributed to the contrast effect. However, this will need to be further examined by future research. What also could have been contributed to the negative interaction effect is a low construct validity. As mentioned in the method, measuring a complete attitude would have been too extensive since an attitude has a very wide domain. Therefore only eight basic attitude-related items were measured, hence the name 'general attitude'. As a consequence, a complete attitude was not measured.

A possible explanation for the insignificant interaction effects for the company's social orientation and purchase intention constructs could be that the sensory metaphors independently influenced the company's social orientation and purchase intention, as a result of parallel processing in the brain due to the different metaphorical associations. As mentioned in the theoretical framework, the metaphorical link between soft and warm is both more positive than hard and cold, but warm and soft have different associations. A 'warm' person is friendly and social, however a soft person is not per se friendly and social. The metaphorical associations of warmth are related to sociality and friendliness, whereas the metaphorical associations of softness are more related to the level of flexibility and compliance gaining. We assume that this is why the expected significant positive interaction effects did not occur.

What we also expected based on the metaphorical associations between the independent variables, was a discrepancy in the effect size on the dependent variables. The effect size is indicated by means of Partial Eta Squared (partial η^2). Partial Eta Squared is the variance of a

variable that remains after excluding the variance that may be explained by other forecasters. In general, a Partial Eta Squared up to .01 is showing a weak effect, a score of .06 a moderate effect, and a score of .16 a large effect (Brown, 2008). It also means that. The results showed that effect size for the type of drink (.46) on the general attitude was higher than the effect size of the type of chair (.02) on the general attitude. This means that 46% of the change in the 'general attitude' can be accounted for by the type of drink and 2% of the change in the 'general attitude' can be accounted for by the type of chair. Therefore we can conclude that the type of drink is a better predictor for the general attitude than the type of chair. This result confirms H4a. The results also showed that the effect size for the type of drink (.16) on the company's social orientation was higher than the effect size of the type of chair (.06) on the company's social orientation. This result indicates that the type of drink is a better predictor for the company's social orientation than the type of chair, which confirms H4b. Additionally, the results showed that the effect size for the type of drink (.01) on purchase intention is lower than the effect size of the type of chair on purchase intention (.04). In this case the type of chair is a stronger predictor for the general attitude than the type of drink. This confirms hypothesis 5.

5.2 Limitations and future research

This study has provided insightful findings, however it has certain limitations as well. This paragraph will discuss the limitations of this study and provide the corresponding suggestions for future research.

A first limitation of this study was the timeframe when the experiments were conducted. As mentioned in the method section, the experiment was conducted on four different days in the late spring, in a two week window. The outside temperatures were around room temperature and more or less similar on all four days. The results could have been different when the experiment would have been conducted in the winter, since the participants might then have preferred a warm drink over a cold drink. On the other hand, the results could also have been different when the weather would have been very warm and sunny. The participants of our experiment most likely preferred a cold drink over a warm drink, because of the weather characteristics when the experiment was carried out. A suggestion for future research is therefore to conduct the experiment in different seasons in order to exclude bias of the preference for a drink.

Another limitation was the manipulation of the physical warmth of the drinks. A small pre-test concluded that hot tea and ice tea were the best drinks, with more or less the same taste. The only difference between the drinks was the sweetness, since ice tea contains added sugars and regular tea, made from a teabag, does not. Although the sweetness issue was solved by adding two teaspoons of sugar per can of hot tea, the results could have been different when two exactly the same drinks were used, but with different temperatures.

Another limitation of this study was the manipulation of softness and hardness by the chairs. The aim was to find two chairs with a high discrepancy in hardness or softness. The hard chair should be as hard as possible and the soft chair should be as soft as possible, however all other dimensions should be as similar as possible. It proved to be difficult to find two chairs with approximately the same dimensions, but with a large discrepancy in softness and hardness. The results could have been different when the discrepancy in softness and hardness would have been larger. When the soft chair would have been softer, we expect a higher positive effect between the soft chair and the warm drink that would be more positive than the current interaction effects on the dependent variables. Moreover, we expect that the negative interaction effect on the 'general attitude' will have become less significant. A suggestion for future research is therefore to repeat the experiment with two similar chairs that have a higher discrepancy in hardness and softness.

A final, but nonetheless important limitation of this study was how the 'general attitude' construct was measured. This measurement might have been too narrow in terms of the amount of items for a wide construct as an attitude. As already discussed in the results discussion, an interaction effect occurred in the opposite direction than predicted for the general attitude construct. Measuring an incomplete general attitude might have contributed to this result. Although measuring a complete attitude would have been too extensive for this study, a few more items could have been added to the construct in order to increase the construct validity. A suggestion for future research would therefore be to add several more items to the construct in order to gain a more complete measurement of the 'general attitude' construct.

5.3 Practical implications

The findings of this study offer practical guidelines for retailers and organizations to improve the general attitude, perception of the company's social orientation and purchase intention of their consumers. This can be achieved by placing soft chairs or seats in the seating area, combined with offering warm drinks. As a result of this study, there is now evidence that physical experiences with warmth and softness have a subconscious positive influence on consumer behaviour. By applying the theories derived from this study, retailers could both directly and indirectly achieve higher sales. Directly, since specifically haptic experiences with softness have contributed to a higher purchase intention. Indirectly, since experiences with physical warmth have contributed to an enhanced general attitude. According to the well-known Theory of Planned behaviour by Azjen (1985), the more the attitude is enhanced, the higher the behavioural intention becomes. Thus, the more the attitude towards a product or company is enhanced, the higher the purchase intention becomes.

Since little research is conducted on the topic of sensory metaphors, many opportunities are still available to investigate the subconscious influence of sensory metaphors. Further research is necessary to provide more insight in the effectiveness of sensory metaphors. Several interesting directions for further research have come forward through this study. It would be interesting to examine whether these results are also valuable to other types of companies, e.g. a hospital or bank waiting room. It would also be interesting to test whether physical warmth and haptic experiences could be manipulated in other ways, for example without a drink. It might be possible to create a warm and soft chair as one product.

5.4 Conclusion

Based on the results, the main finding of the experiment is that the warm and the soft chair separately have contributed to a higher score on the dependent variables than the cold drink and the hard chair did. Especially the type of drink was a strong predictor for enhancing the general attitude and the company's social orientation. When applied together, the warm drink and the soft chair did not significantly enhance the dependent variables. Nevertheless, the warm drink and the soft chair together still have contributed to the highest score on the company's social orientation and purchase intention. With this conclusion, this study has contributed to more insight into the sensory metaphors phenomenon. The results of this

study indicate that retail owners should place soft chairs in their seating area and/or offer warm drinks in order to create at least the best perception of the social orientation of the company and the highest purchase intention. In a later stage, the results and conclusions of this study could be extended, interpreted and applied to other settings where one can sit and drink at the same time, for example in the waiting room of a hospital or at a bank.

References

- Ackerman, J. M., Nocera, C. C., & Bargh, J. A. (2010). Incidental Haptic Sensations Influence Social Judgments and Decisions. *Science*, 328(5986), 1712-1715. doi: 10.1126/science.1189993.
- Asch, S. E. (1946). Forming impressions of personality. *The Journal of Abnormal and Social Psychology*, 41(3), 258-290. doi: <http://dx.doi.org/10.1037/h0055756>.
- Azjen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl, & J. B. (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Barsalou, L. W. (2003). Situated simulation in the human conceptual system. *Language and Cognitive Processes*, 18 (5-6), 513-562. doi: 10.1080/01690960344000026.
- Barsalou, L. W. (2008). Grounded Cognition. *The Annual Review of Psychology*, 59, 617-45.
- Brown, J. D. (2008). Effect size and eta squared. *JALT Testing & Evaluation SIG Newsletter*, 12(2), 38-43.
- Cacioppo, J. T., Priester, J. R., & Berntson, G. G. (1993). Rudimentary determinants of attitudes: II. Arm flexion and extension have differential effects on attitudes. *Journal of Personality and Social Psychology*, 65(1), 5-17. doi: <http://dx.doi.org/10.1037/0022-3514.65.1.5>.
- Cherkasskiy, L., Song, H., Malahy, S., & Bargh, J. (2012). Soft on crime: Sitting in soft versus hard chairs produces more lenient recommended sentences. San Diego, CA.
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of Price, Brand, and Store Information on Buyers' Product Evaluations. *Journal of Marketing Research*, 28(3), 307-319. doi: 10.2307/3172866.
- Elder, R., & Krishna, A. (2012). The "Visual Depiction Effect" in advertising: Facilitating embodied mental simulation through product orientation. *Journal of Consumer Research*, 38(6), 988-1003.
- Fiske, S., Cuddy, A., & Glick, P. (2007). Universal dimensions of social cognition: warmth and competence. *TRENDS in Cognitive Sciences*, 11(2), 77-83.
- González, Barros-Loscertales, A., Pulvermüller, F., Meseguer, V., Sanjuán, A., & V. Belloch, e. a. (2006). Reading cinnamon activates olfactory brain regions. *NeuroImage*, 32(2), 906-912.
- Grewal, D., Monroe, K. B., & Krishnan, R. (1998). The Effects of Price-Comparison Advertising on Buyers' Perceptions of Acquisition Value, Transaction Value, and Behavioral Intentions. *Journal of Marketing*, 62(2), 46-59.

- Gummeson, E. (2005). Qualitative Research in Marketing: Road-Map for a Wilderness of Complexity and Unpredictability. *European Journal of Marketing*, 39(3/4), 309-327.
- Hardesty, D. M., Carlson, J. P., & Bearden, W. (2002). Brand Familiarity and Invoice Price Effects on Consumer Evaluations: The Moderating Role of Skepticism toward Advertising. *Journal of Advertising*, 31(2), 1-15. doi: 10.1080/00913367.2002.10673663.
- Himmelfarb, S. (1993). The measurement of attitudes. In A. H. Eagly, & S. Chaiken, *Psychology of Attitudes* (pp. 23-88). Thomson: Wadsworth.
- Jostmann, N. B., Lakens, D., & Schubert, T. W. (2009). Weight as an embodiment of importance. *Psychological Science*, 20(9), 1169-1174.
- Krishna, A. (2011). *Sensory Marketing: Research on the Sensuality of Products*. Michigan : Taylor & Francis Group.
- Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of Consumer Psychology*, 22(3), 332-351. doi: 10.1016/j.jcps.2011.08.003.
- Krishna, A., & Schwarz, N. (2014). Sensory marketing, embodiment, and grounded cognition: A review and introduction. *Journal of Consumer Psychology*, 24(2), 159-168.
- Labroo, A. A., & Nielsen, J. H. (2010). Half the Thrill Is in the Chase: Twisted Inferences from Embodied Cognitions and Brand Evaluation. *Journal of Consumer Research*, 143-158. doi: <http://dx.doi.org/10.1086/649908>.
- Lakoff, M., & Johnson, M. (1980). *Metaphors We Live By*. Chicago: Univ. of Chicago Press.
- Lee, S. H., Rotman, J. D., & Perkins, A. W. (2014). Embodied cognition and social consumption: Self-regulating temperature through social products. *Journal of Consumer Psychology*, 24(2), 234-240.
- Lee, S., & Schwarz, N. (2014). Metaphors in judgment and decision making. In M. J. Landau, M. D. Robinson, & B. P. Meier (Eds.), *The power of metaphor: Examining its influence on social life*, (pp. 85-108).
- Likert, R. (1932). A Technique for the Measurement of Attitudes. *Archives of Psychology*, 140, 1-55.
- Mandler, J. M. (1992). How to build a baby: II. Conceptual primitives. *Psychological Review*, 99(4), 587-604. doi: <http://dx.doi.org/10.1037/0033-295X.99.4.587>.
- Matlin, M. W. (1988). *Sensation and perception*. Needham, MA, US: Allyn & Bacon .

- Mazar, N., & Zhong, C. (2010). Do Green Products Make Us Better People? *Psychological Science*, XX(X), 1–5. doi: 10.1177/0956797610363538 .
- McCroskey, J. C., & Richmond, V. P. (1989). Bipolar scales. In P. Emmert, & L. L. Barker, *Measurement of communication behaviour* (pp. 154-167). White Plains, NY: Longman.
- Melnick, B. (1999, December 9). *Cold Hard World \ Warm Soft Mommy: Gender and Metaphors of Hardness, Softness, Coldness, and Warmth*. Opgehaald van PSYART: A Hyperlink Journal for the Psychological Study of the Arts.: http://www.psyartjournal.com/article/show/melnick-cold_hard_world_warm_soft_mommy_gender_a
- Nunnally, J. C. (1978). *Psychometric Theory*. New York: McGraw-Hill.
- Olson, M. J., Zanna, & Mark, P. (1993). Attitudes and Attitude Change. *Annual Review of Psychology*, 44, 117–54. doi:10.1146/annurev.psych.44.1.117.
- Ostinelli, M., Luna, D., & Ringberg, T. (2014). When up brings you down: The effects of imagined vertical movements on. *Journal of Consumer Psychology*, 24(2), 271–283.
- Proffitt, D. R., Stefanucci, J., Banton, T., & Epstein, W. (2003). The Role of Effort in Perceiving Distance. *Psychological Science*, 14(2), 106-112. doi: 10.1111/1467-9280.t01-1-01427.
- Rosenberg, S., Nelson, C., & Vivekananthan, P. S. (1968). A MULTIDIMENSIONAL APPROACH TO THE STRUCTURE OF PERSONALITY IMPRESSIONS. *Journal of Personality and Social Psychology*, 9(4), 283-294. doi: <http://dx.doi.org/10.1037/h0026086>.
- Simmons, W. K., Martin, A., & Barsalou, L. W. (2005). Pictures of Appetizing Foods Activate Gustatory Cortices for Taste and Reward. *Cerebral Cortex*, 15(10), 1602-1608. doi: 10.1093/cercor/bhi038.
- Snider, J. G., & Osgood, C. E. (1969). *Semantic Differential Technique: A Sourcebook*. Chicago: Aldine.
- Spears, N., & Singh, S. N. (2004). Measuring Attitude toward the Brand and Purchase Intentions. *Journal of Current Issues & Research in Advertising*, 26(2), 53-66. doi: 10.1080/10641734.2004.10505164.
- Spector, P. E. (1992). *Summated rating scale construction: an introduction*. Newbury Park, CA: SAGE Publications, Inc.

- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54(5), 768-777. doi: <http://dx.doi.org/10.1037/0022-3514.54.5.768>.
- Wells, G. L., & Petty, R. E. (1980). The Effects of Over Head Movements on Persuasion: Compatibility and Incompatibility of Responses. *Basic and Applied Social Psychology*, 1(3), 219-230. doi: 10.1207/s15324834basp0103_2.
- Williams, L., & Bargh, J. (2008). Experiencing Physical Warmth Promotes Interpersonal Warmth. *Science Magazine*, 322(5901), 606-607. doi: 10.1126/science.1162548.
- Wise. (2014, October). Retrieved from: Welke energiebedrijven zijn duurzaam, en wie zijn de grootste vervuilers? : <http://www.wisenederland.nl/groene-stroom/wie-zijn-de-groenste-en-wie-zijn-de-grootste-vervuilers>
- Zatorre, R. J., & Halpern, A. R. (2005). Mental Concerts: Musical Imagery and Auditory Cortex. *ScienceDirect*, 47(1), 9–12. doi: 10.1016/j.neuron.2005.06.013.
- Zhong, C., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion literally feel cold? *Psychological Science*, 19(9), 838–842.
- Zhong, C., & Liljenquist, K. (2006). Washing Away Your Sins: Threatened Morality and Physical Cleansing. *Science*, 313(5792), 1451-1452. doi: 10.1126/science.1130726.
- Zwebner, Y., Lee, L., & Goldenberg, J. (2014). The temperature premium: Warm temperatures increase product valuation. *Journal of Consumer Psychology*, 24(2), 251–259.

Appendix A. Stimulus Materials – Drinks and chairs



A. Cold drink



B. Warm drink



C. Hard chair



D. Soft chair

Appendix B. Research materials - Brochure

The Green Energy Company.

Kies nu voor 100% groene stroom
rechtstreeks van de bron.

Voor het doorgeven van de wereld,
ook aan uw
achterachterkleinkinderen





The Green Energy Company ©
Daar wordt iedereen beter van.

The Green Energy Company Zon- en windenergie

Groene energie van The Green Energy Company
is groener dan groen. Het is de nieuwste en
schoonste leverancier van groene stroom in
Nederland.

Gebieden is dat groen niet altijd groen is, maar bij
ons is dat anders. Onze energie komt rechtstreeks
van onze 880 windmolens en 1400 hectare
zonnepanelen, zodat u verzekerd kunt zijn van
100% groene energie.

U kunt gemakkelijk overstappen via onze gratis
overstapservice. Wij bieden u een vast of variabel
tarief tegen een scherpe prijs, met slechts één
maand opzegtermijn.

In de gratis klanten app kunt u gemakkelijk en snel
een overzicht van uw verbruik terug vinden.
Daarnaast vindt u in onze app handige tips om
energie te besparen, en wanneer u vragen heeft
kunt u 24/7 chatten met onze medewerkers.

Stap daarom vandaag nog over en geef de wereld
door.





Bel 0800-1812 voor meer informatie of ga naar
onze site: www.tgec.nl/overstappen



The Green Energy Company ©

Contact:
www.tgec.nl
T: 0800-1812
F: 0812-2612
E: klantenservice@tgec.nl

Oude Morshiefweg 12
Postbus 91254
3026 AV Rotterdam

Appendix C. Introduction of questionnaire

Welkom. Alvast hartelijk bedankt voor je deelname aan mijn vooronderzoek over groene producten. In het kader van het milieu en het milieubewustzijn heb ik twee producten waarvan ik graag je mening/houding wil weten. De uitkomst van dit vooronderzoek zal ik gaan gebruiken voor mijn daadwerkelijke onderzoek.

Als eerste krijg je een drankje. Dit drankje is een variant op de bestaande thee dranken. Het is de bedoeling dat je het drankje proeft. Je mag het natuurlijk ook helemaal opdrinken. Tijdens het proeven van het drankje krijg je de brochure te zien van de nieuwe energiemaatschappij 'The Green Energy Company'. Deze energiemaatschappij levert uitsluitend groene energie die rechtstreeks van de bron komt.

Nadat je het drankje hebt geproefd en de brochure hebt doorgelezen krijg je een vragenlijst met vragen over deze twee producten. Het invullen van de vragenlijst zal ongeveer 8 minuten in beslag nemen.

Laura van der Kemp, student marketingcommunicatie

Appendix D. Research materials - Questionnaire

1. Wat is je geslacht?

- ☐ Man (1)
☐ Vrouw (2)

2. Wat is je leeftijd?

3. Wat vind je van het drankje dat je zojuist geproefd hebt? Geef aan op een schaal van 1 t/m 7 wat je van het drankje vindt. Ik vind het drankje

| | Helemaal mee oneens (1) | Mee oneens (2) | Beetje mee oneens (3) | Neutraal (4) | Beetje mee eens (5) | Mee eens (6) | Helemaal mee eens (7) |
|--------------------|-------------------------------|-----------------------|--------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------|
| Lekker (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Verfrissend (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bitter (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Zoet (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Smaakvol (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vies (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fruitig (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4. Geef aan op een schaal van 1 t/m 7 in hoeverre je het eens bent met de volgende stellingen:

| | Helemaal mee oneens (1) | Mee oneens (2) | Beetje mee oneens (3) | Neutraal (4) | Beetje mee eens (5) | Mee eens (6) | Helemaal mee eens (7) |
|---|----------------------------------|-----------------------|--------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------|
| Ik zou het drankje willen kopen wanneer het in de supermarkt verkrijgbaar is (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ik zou overwegen dit drankje bestellen wanneer het in de horeca verkrijgbaar is (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

5. Wat is je eerste indruk van de nieuwe groene energiemaatschappij 'The Green Energy Company' aan de hand van de brochure? Ik vind 'The Green Energy Company' (TGEC):

| | 1 (1) | 2 (2) | 3 (3) | 4 (4) | 5 (5) | 6 (6) | 7 (7) |
|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Niet overtuigend:Overtuigend (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Onorigineel:Origineel (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ongeloofwaardig:Geloofwaardig (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Niet innovatief:Innovatief (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Onprofessioneel:Professioneel (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Slecht:Goed (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Oninteressant:Interessant (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Zwak:Sterk (8) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. Geef op een schaal van 1 t/m 7 aan in hoeverre je het eens bent met de volgende stellingen:

| | Helemaal mee oneens (1) | Mee oneens (2) | Beetje mee oneens (3) | Neutraal (4) | Beetje mee eens (5) | Mee eens (6) | Helemaal mee eens (7) |
|---|----------------------------------|-----------------------|--------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------|
| TGEC lijkt mij een klantvriendelijke energiemaatschappij (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een onbetrouwbare energiemaatschappij (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een meelevende energiemaatschappij (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een onsympathieke energiemaatschappij (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een sociale energiemaatschappij (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een eerlijke energiemaatschappij (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TGEC lijkt mij een betrokken energiemaatschappij (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7. Geef op een schaal van 1 t/m 7 aan in hoeverre je het eens bent met de volgende stellingen:

| | Helemaal mee oneens (1) | Mee oneens (2) | Beetje mee oneens (3) | Neutraal (4) | Beetje mee eens (5) | Mee eens (6) | Helemaal mee eens (7) |
|--|----------------------------------|-----------------------|--------------------------------|-----------------------|---------------------------|-----------------------|-----------------------------|
| Ik zou het overwegen om mij aan te melden voor de maandelijkse nieuwsbrief e-mail van TGEc om op de hoogte te worden gehouden van de laatste ontwikkelingen. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanneer een call-centre medewerker mij opbelt over TGEc ben ik bereid om aandachtig te luisteren naar zijn verhaal (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ik zou overwegen aanvullende informatie van TGEc thuis te ontvangen (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanneer een door-to-door verkoper bij mij thuis aanbeld ben ik bereid om aandachtig te luisteren naar zijn verhaal over TGEc (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanneer ik nu moest kiezen voor een energiemaatschappij zou ik overwegen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| om te kiezen voor groene energie van TGEK (5) | | | | | | | |
| Wanneer ik een flyer over TGEK wordt uitgedeeld ben ik bereid om deze goed door te lezen (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ik zou direct overstappen naar TGEK via de gratis overstapservice waarbij ze mijn oude contract gratis opzeggen. (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |