Bachelor Thesis Psychology of Conflict, Risk & Safety
Prof. Dr. Ad Pruyn & Dr. Peter de Vries
Corinna Gerst, s1076809

Impression Formation Through Adding "Weight and Structure" to Arguments

Corinna Gerst

University of Twente

Abstract Years of research have shown the importance of unconscious information processing in impression formation. Especially in the context of consumer psychology, the stimulation of visual, olfactory, and auditory senses has been demonstrated to be an effective mean for regulating consumer's behaviour on an unconscious level. However, the role of touch (tactile sense) with its fundamental dimensions weight and texture has been studied rarely. In this paper it is argued, that tactile manipulation is a powerful mean to influence consumer's impressions. This idea was tested by comparing the effects of different paper versions within visual communication material. In a first experiment, a 2x2 between-subjects-design was used to compare the effects of Weight (light versus heavy) and Texture (glossy versus rough) within an image brochure about a supermarket. Subjects in the heavy-paper condition and the rough-paper condition reported higher scores on brochure quality than subjects within the light-paper or glossy-paper condition. Texture also affected perceptions of brochure attractiveness, brand credibility & trust, and behavioural intention to go to the advertised supermarket. In a second study, it was focused on the effects of Weight within a product brochure. Contrary to the effects found in the image brochure, Weight even affected brand evaluation. Furthermore, additional variables were included, whereby Weight positively affected material evaluation, authenticity perceptions, and the preference for the brand and product advertised. Additionally, it was focused on congruence effects created by cross-pairing paper material (light versus heavy) with content (Light chips versus Classical chips). It was assumed that information congruent with each other is processed more fluently and accordingly, evaluated more positively. However, no such effects could be found. Findings suggest that tactile information can function as a subsequent cue for impression formation. Thereby, these effects may differ between image and product related material, which should be the focus of future research. The lack of congruence effects indicates that visual communication design could incorporate Weight regardless the product's attributes, since even the Light chips brochure benefited from heavy paper material.

KEY WORDS: Impression Formation, Tactile Sense, Weight, Texture, Congruence

Enschede, 26th of June 2013

Impressieformatie Door Toevoeging van "Gewicht en Structuur" Aan Argumenten

Corinna Gerst

Universiteit Twente

Abstract Jaren onderzoek heeft het belang van onbewuste informatieverwerking bij impressie formatie aangetoond. Vooral in de context van de consumenten psychologie werd gedemonstreerd dat het stimuleren van visuele, olfactorische en auditieve zintuigen een effectief middel is, om gedrag van consumenten op een onbewust niveau te reguleren. Daarentegen werd de rol van het tactiel zintuig met zijn fundamentele dimensies *Gewicht* en *Textuur* zelden onderzocht. In dit paper wordt betoogd dat de tactiele manipulatie een krachtig middel is, om impressies van consument te beïnvloeden. Dit idee werd getest door de effecten van verschillende papierversies voor visueel communicatiemateriaal te vergelijken. In een eerste experiment werd een 2x2 tussen-proefpersonen-opzet gebruikt, om de effecten van *Gewicht* (licht versus zwaar) en *Textuur* (glanzend versus ruw) door middel van een imagobrochure over een supermarkt te vergelijken. Proefpersonen in de zware- en ruwe-papier conditie rapporteerden hogere scores op brochure kwaliteit dan proefpersonen in de lichte- of glanzende-papier conditie. *Textuur* had bovendien invloed op de percepties van brochure-aantrekkelijkheid, merk-geloofwaardigheid & vertrouwen, en gedragsintentie om naar de geadverteerde supermarkt te gaan. Een tweede experiment werd gericht op de effecten van *Gewicht* in een productbrochure. In tegenstelling tot de effecten in de imagobrochure, heeft *Gewicht* zelfs de merkevaluatie beïnvloed. Bovendien werden extra variabelen opgenomen, waarbij *Gewicht* positieve invloed had op materiaalevaluatie, authenticiteit percepties, en de voorkeur voor het merk en het geadverteerde product. Daarnaast werden congruentie-effecten onderzocht, die door *cross-pairing* van materiaal (licht versus zwaar) en inhoud (Light chips versus Classical chips) gecreëerd werden. Er werd aangenomen dat congruente informatie vloeiender verwerkt en daardoor positiever geëvalueerd wordt. Er werden echter geen dergelijke effecten gevonden. De resultaten suggereren dat tactiele informatie als een additionele cue voor impressieformatie kan werken. Daarbij kunnen deze effecten verschillen tussen imago- en productgerelateerd materiaal, wat ook de focus van toekomstig onderzoek zou moeten zijn. Het gebrek aan congruentie-effecten geeft aan dat *Gewicht*, ongeacht de attributen van het product, in communicatiemateriaal opgenomen zou kunnen worden, omdat zelfs de Light chips brochure van het zwaar papier profiteerde.

KEY WORDS: Impressieformatie, Tactiel Zintuig, Gewicht, Textuur, Congruentie

TABLE OF CONTENT

1. INTRODUCTION **5**

1.1 System 1 and System 2 5

1.2 The Power of Unconscious Information Processing 5

1.3 The Human Sense of Touch 6

1.4 Tactile Influences Within the Context of Visual Communication 9

1.5 Congruence Improves Processing Fluency 11

2. GENERAL METHOD **12**

2.1 Conscious and Unconscious Information Processing 13

2.2 Pretest 13

3. STUDY 1 **14**

3.1 Stimulus Material 15

3.2 Method 15

3.2.1 Participants and Procedure *15*

3.2.2 Measures *16*

3.3 Results 17

3.4 Conclusion 19

4. STUDY 2 **19**

4.1 Stimulus Material 21

4.2 Method 21

4.2.1 Participants and Procedure *21*

4.2.2 Measures *22*

4.3 Results 25

4.4 Conclusion 28

5. GENERAL DISCUSSION **29**

5.1 Tactile Influences 29

5.2 Congruence Effects 29

5.3 Conclusions 30

5.4 Limitations 32

5.5 Future Research 32

REFERENCES **34**

APPENDIX: TABLE OF CONTENT **39**

1. INTRODUCTION

Getting insight in the nature of the human being, especially in the mechanisms of decision making, is an extensive field of interest. For many years, rational choice was assumed to explain behaviour (Simon, 1955; Downs, 1957), which is a conscious process (Kahneman, 2011). However, there are findings which cannot be explained by using this concept. Examples are the '*mere-exposure effect'* (Zajonc, 1986), improved attitudes towards an object by repeated exposure, the *'embodying emotion'*, (cartoon) evaluations are more positive when smiling (Strack, Martin, & Stepper, 1988), and the *'ideomotor-effect'*, exposing participants by a particular idea - concept of 'elderly' - influences their subsequent behaviour - walking more slowly (Bargh, Chen, & Burrows, 1996). Reviewing those investigations, it can be argued that people's evaluations are not solely based on rational argumentation, there has to be an alternative explanation: unconscious information processing.

1.1 System 1 and System 2

Stanovich and West (2000) combined both unconscious and conscious information processing by introducing the terms system 1 and system 2 and therefore, accepting their co-existence. Within this dual-process approach, system 1 can be characterised as an autonomous, instinctive and uncontrolled mode of thinking, which takes place rapidly, parallel and automatically. In contrast, system 2 operates slowly and sequentially with the aim of hypothetical thinking, abstract reasoning, and self-mastery. However, last mentioned processes are constrained by working memory capacity and require high effort (Evans, 2003). Focusing research on the processes and results of system 1, it has been found that those operations can create complex and skilled judgments, independent of system 2 (Morrewedge & Kahneman, 2010). Going a step further, Dijksterhuis (2004) claims that "conscious thought is [...] maladaptive when making complex decisions" (p. 586). Therefore, the concept of the unconsciousness was subject of many investigations and targeting almost all of our five senses.

1.2 The Power of Unconscious Information Processing

For a long time, vision dominated scientific research related to consumption (Jannson-Boyd, 2011). Studies in consumer psychology showed that the unconscious exposure of words can affect consumer behaviour, known as subliminal priming. For example, the subliminal presentation of the words *drinking, glass* and *water* was shown to be effective to promote drinking behaviour and perceived thirst (Veldkamp, Custers, & Aarts, 2011). Another technique for making use of the human vision is adjusting the in-store illumination and

pursuing its impact on shoppers' search, purchase, and consumption behaviours. For example, it was found that "brighter lighting influenced shoppers to examine and handle more merchandise" (Areni & Kim, 1994, p. 117). However, in the past 15 years there has been gradual shift to the interest in how other senses can impact aspects related to consumer decision making and product evaluation (Jannson-Boyd, 2011). Accordingly, the auditory dimension was subject of study as well. In a supermarket, “French [in-store] music led to higher sales of French than German wine, and German [in-store] music led to higher sales of German than French wine” (North, Hargreaves, & McKendrick, 1999, p. 274). Also, results of the exposure to classical versus top-forty background music indicated that customers selected more expensive merchandise when classical music was played (Areni & Kim,1993). Thirdly, investigations of the olfactory dimension demonstrated that the presence/ absence of an odour affects consumer behaviour. Guéguen and Petr (2006) showed that consumers in a restaurant stayed longer when exposed to a scent of lavender, associated with relaxation, than in the non-aroma condition. Hirsch (1995) investigated the context of gambling, where ambient aromas were found to influence the gamblers' behaviour; the amount of money gambled was greater than in odour-free control condition.

This is only a selection of many studies targeting these three senses (for an extensive overview see Dijksterhuis, 2007). However, the tactile dimension has not been considered that extensively. Even though the first experiment known investigating unconscious processes was targeting the human sense of touch, touch as a consumer communication tool has been rarely used (Jannson-Boyd, 2011). In the year 1884, Pierce and Jastrow could reveal that a human subject is able to discriminate between weights, even though the absolute difference is minimal so that it could not be detected consciously. For this aim, they set up a weight-discrimination-experiment, which the researchers performed themselves. The task was to identify the heavier object and to indicate how sure they were about this judgment on a rating scale, resulting in a difference limen (knowing versus guessing). Conducting the analysis, Pierce and Jastrow (1884) noticed that the majority of guessed weight-judgments was correct. Their success rate deviated significantly from chance. Consequently, the authors inferred that unconscious perception has to be responsible for this finding.

1.3 The Human Sense of Touch

The importance of tactile input for human information processing can already be found in our youngest childhood, since touch is the first sense to develop in infants (Miodownik, 2005). From the moment we are born, the sense of touch is continuously used for information acquisition (Piaget, 1952) and later in our

development for environmental manipulation, which are the two primary functions of our hands (Ackerman, Nocera, & Bargh, 2010). Tactile information subconsciously influences impressions, judgments, decisions and actions (Williams, Huang, & Bargh, 2009), since conceptual knowledge based on early sensimotor experiences is acquired. The underlying concept is the formation of a *'haptic mindset'* originating from diverse associative linkages that are triggered when touching objects (Ackerman, Nocera, & Bargh, 2010).

Moreover, evidence from everyday consumption behaviour emphasises the importance of tactile input, such as within the clothes shopping context. Next to the visual information gained when considering a specific item for possible purchase, the tactile information serves as a peripheral cue (Peck & Wiggins Johnson, 2011). For example, if the impression obtained by both senses is not satisfactory to the possible customer, (s)he decides to shop elsewhere (Gladwell, 1996). In addition, according to McCabe and Nowlis (2003), consumers prefer to purchase products from stores where they are allowed to touch them. To the contrary, if they are prevented from touching the product of interest, judgment decisions are affected negatively (Peck & Childers, 2003). Besides, Spence, Nicholls and Driver (2001) demonstrated that consumers are less likely to shift their attention to a competing product or brand, once they focused on the tactile input, which also underlines the importance of touch. Finally, it is found that tactile information is linked to affect (Jannson-Boyd, 2011). Specifically, when consumers experience a haptically pleasant product it triggers an emotional response (Schifferstein & Hekkert, 2011). Summarising, within the last years a clearer understanding emerged with regard to the important role the human sense of touch plays in consumer evaluations. Even more specific, "the capability of increasing the likelihood of sales [...] is the key to why touch should be acknowledged as an important tool" (Jannson-Boyd, 2011, p. 542).

The fundamental dimensions of touch are texture, hardness, and weight (Ackerman, Nocera, & Bargh, 2010; Hollins, Faldowski, Rao, and Young, 1993; Picard, Dacremont, Valentin, and Giboreau, 2003), whereby each dimension evokes certain metaphorical associations based on the haptic mindset as described above. Firstly, texture and specifically roughness is associated with the concepts of *difficulty* and *harshness*, as expressed in the metaphors "having a rough day" and "coarse language" (cf. Ackerman, Nocera, & Bargh, 2010, p. 3). Secondly, hardness, as opposed to softness, is associated with the concepts of *stability*, *rigidity*, and *strictness*, as expressed in the idioms "(s)he is my rock" and "hard-hearted" (cf. Ackerman, Nocera, & Bargh, 2010, p. 4). Thirdly, heaviness is associated with *seriousness* and *importance*, as expressed in the metaphors "thinking about weighting matters" and "gravity of the situation" (cf. Ackerman, Nocera, &

Bargh, 2010, p. 2). Those metaphors and associations are not only applicable to the English language, but to many more, such as Dutch, German, Spanish, and even Chinese (Jostmann, Lakens, & Schubert, 2009).

Moreover, with respect to last mentioned dimension "people 'weigh' the value of different options before making a decision, they 'add weight' to place emphasis on important ideas, and their opinion 'carries weight' if they fill an influential position" (Jostmann, Lakens, & Schubert, 2009, p. 1169). Accordingly, it is argued that the "abstract concept of importance is grounded in bodily experiences of weight" (Jostmann, Lakens, & Schubert, 2009, p. 1169), which is known as embodiment. Theories on *'embodied cognition'* posit that perceptual representations of abstract concepts are developed through schematisation of experienced bodily states. Within the present context the embodiment of importance emerged from the fact that heavier objects have a greater impact on people with respect to physical as well as mental effort. Consequently, the experience of weight influences the judgments regarding the extent of importance that is allocated. The authors demonstrated within four different studies that the dimension of weight has a powerful effect on subsequent judgments (Jostmann, Lakens, & Schubert, 2009). For this aim, they used a heavy versus a light clipboard, which participants were holding when answering different questions. Participants within the heavy clipboard condition (1) judged the value of foreign currencies to be higher, (2) found it more important to have a voice in decision-making procedures, (3) displayed a greater consistency in judgments, and (4) demonstrated more polarisation when evaluating strong versus weak arguments, compared to participants holding the light clipboard. Concluding, weight led to a greater effort participants put into thinking and greater cognitive elaboration as well as greater confidence in one's opinion (Jostmann, Lakens, & Schubert, 2009).

The associations arising when holding a relatively heavy object, such as the clipboard, and the transfer process taking place could also be supported by findings of Ackerman, Nocera, and Bargh (2011). The theoretical evaluation of a potential job applicant was more positive and social issues were experienced as more important. Besides, this process is also taking place in a somewhat more practical situation. Participants were asked to evaluate the same yoghurt, while divided into three groups. Each group was eating from a bowl differing in weight. This manipulation affected sensory and hedonic perception of the yoghurt, since effects could be found for density as well as price-expectation ratings, with the highest scores within the heavy-bowl condition (Piqueras-Fiszman, Harrar, Alcaide, & Spence, 2011).

1.4 Tactile Influences Within the Context of Visual Communication

It has not been clearly figured out for what type of product categories tactile stimulation will influence the consumer perception (Jannson-Boyd, 2011). As described above, also within a more abstract setting the associations made on basis of weight have an impact on the evaluation of for example value, social issues, and judgment consistency. Accordingly, the object of evaluation by itself is not required to contain the tactile manipulation in order to be evaluated more favourably. To the contrary, the experience of weight in general at the moment of evaluation is sufficient to achieve the desired effect. Consequently, it can be argued that the product of evaluation even does not have to be present at all. The effect of weight manipulation may also be valid for visual communications, such as advertisements, flyers, letters of application, or the annual report of a company. Much research focused on making visual material more appealing to the consumer with respect to colour usage, typeface, logo design, and more (Zhang, Feick, & Price, 2006; Van Rompay, Hekkert, Saakes, & Russo, 2005; Childers & Jass, 2002). For instance, statements presented in a colour which is easy to read are judged more credible (Reber & Schwarz, 1999; Unkelbach, 2007). The relative neglect of the sensory dimension touch within this research domain builds up the motivation to study weight differences within this context in more detail. Additionally, findings could contribute to an expansion of theories of the unconsciousness as well as an increased effectiveness of visual communications, such as product campaigns.

It is assumed that two processes of association formation are taking place when evaluating visual material. Firstly, a message is printed on a medium, specifically paper, which evokes different associations based on different tactile dimensions (i.e. texture, hardness, weight) and their respective distinctiveness. For example, the dimension weight could influence the perceived quality of the paper, whereby heavier paper is assumed to be associated with better quality. This is the first transfer process taking place as illustrated in Figure 1. Secondly, the message itself contains specific information that needs to be evaluated. Assuming that this evaluation would be based on the rational model it can be argued that paper-evaluation and text-evaluation are taking place totally independent of each other (Figure 1).

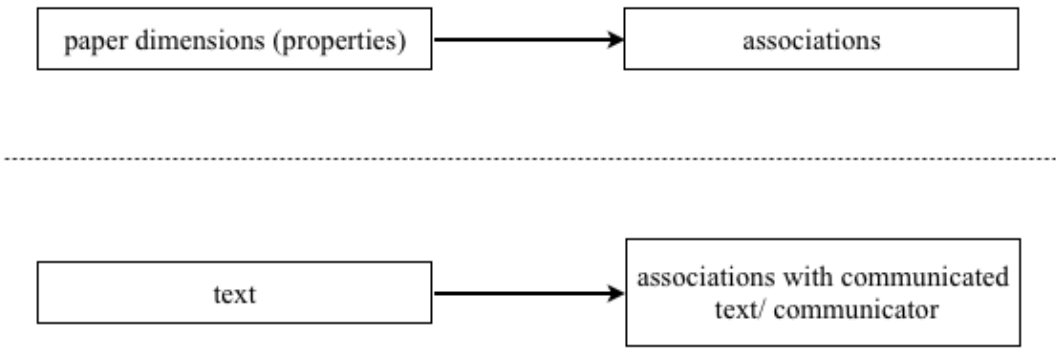


Figure 1. *Independent evaluation of paper and written text.*

However, thought processes are known to be interdependent, even though people are not aware of it. For instance, Harrar and colleagues (2011) as well as Piqueras-Fiszman and her colleagues (2012) recently demonstrated that tableware and the environment have effect on the perception of food and drink. Next to the transfer of low-level attributes taking place to the consumables (e.g. colour of a plate influences flavour perception), likewise, "high-level attributes of the tableware, such as their perceived quality and expense, might be transferred to the consumables" (Spence, Harrar and Piqueras-Fiszman, 2012, p. 10). Accordingly, it can be argued that consumers can be influenced unconsciously. Therefore, it is assumed that evaluating a product is not solely based on rational arguments. To the contrary, processing other information simultaneously would have an influence on the final judgment, even though people are not aware of this relation.

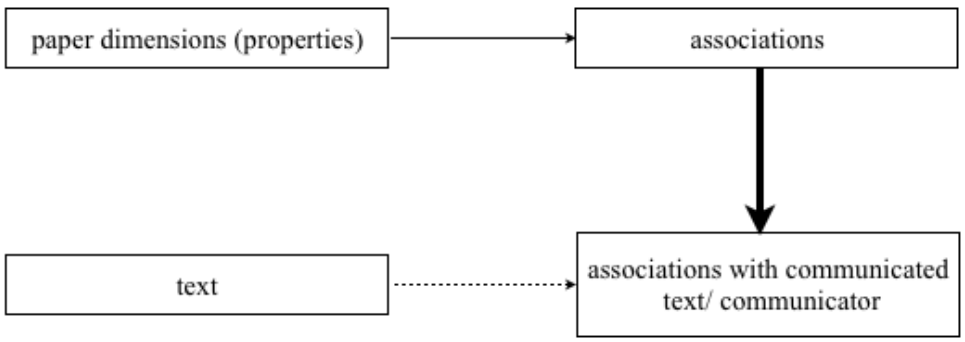


Figure 2. *Transfer of paper-associations on text evaluation*

In line with this reasoning it can be argued that paper-evaluation and text-evaluation are taking place concurrently, resulting in interdependent unconscious information processing. It can be assumed that the tactile processing is taking place much faster than reading the whole text. Therefore, the consumer already has a first impression and does not need to process the written information that accurately. Rather, (s)he

adopts the associations made on basis of the quality of the paper directly to the associations (s)he thought have made on basis of the written information. This link between associations is reasonable, since those associations could be similar. As stated above a paper can be categorised as qualitatively good, likewise the text printed on the paper can be evaluated as good quality arguments. This example of identical evoked associations can be supplemented with associations of credibility, trust, attractiveness, and many more. Accordingly, a second transfer process is taking place: Paper-association influence the text-associations which leads to the assumption that subtle changes in paper quality affect information processing of rational arguments (Figure 2). For the purpose of identifying the underlying processes, the following research question was formulated.

What is the influence of varying tactile paper dimensions on the evaluation of visual communication material?

1.5 Congruence Improves Processing Fluency

Products as well as visual communications involve multiple visual elements, such as colour, typeface, or logo design, whereby each of those *'channels'* communicates specific symbolic meaning (Van Rompay, Pruyn, & Tieke, 2009). A consumer faces the challenge to integrate these meanings into an overall impression. Arguably, this integrating process is facilitated if the different elements are carrying the same message, opposed to the situation if they are disagreeing with each other. This is in line with the *'consistency principle'*, which states that different expressions originating from the same source should be consistent (Rotenberg, Simourd, & Moore, 1989). The general need for unity, and more specifically, the benefit of congruence among visual features for a fictive product evaluation, is demonstrated by Van Rompay and Pruyn (2011). For this aim they used two shape variants and two typeface variants of a fictitious brand of bottled water connoting either luxury or casualness within their first study and either masculinity or femininity within their second investigation. "Cross-pairing the two shapes with the two typefaces resulted in [respectively] four product variants, either congruent or incongruent in terms of the symbolic meanings connoted" (p. 599). Results indicated that participants were more attracted to the product representing congruence.

This effect can be explained based on the fact that stimuli which can be easily processed are evaluated more positively and evoke more favourable attitudes. The underlying concept is identified as processing fluency that is hedonically marked (Van Rompay & Pruyn, 2011). This implies according to

Reber and colleagues (2004) that fluent processing is experienced as overall positive. Based on these processing fluency accounts, for example, the mere-exposure effect identified by Zajonc in 1986 could be explained afterwards. Simply based on the repeated perception of the same object or person, this stimulus could be processed with increasing fluency, leading to an enhanced appeal.

In addition to the aforementioned multiple visual channels, consumer products and visual communications are often embedded within a context encompassing non-visual elements as well. Those elements may be addressing remaining senses, such as the tactile dimension. In analogy with the benefit of congruence among multiple elements *within* one dimension, congruence should also be established *across* different dimensions, such as the material (touch) and the communicated appearance of a product for example (vision). Accordingly, it is assumed when meaning connoted across the different elements are incompatible, it is more difficult for the consumer to develop an overall image of the specific product or brand, which in turn may negatively affect attitude formation (Van Rompay, Pruyn, & Tieke, 2009). This process needs to be subject of investigation as well.

2. GENERAL METHOD

To answer the research question, this study focused on the effects of varying paper versions on the evaluation of visual communications (i.e. study 1: *image brochure* of a supermarket and study 2: *product brochure* of Lay's chips). As shown by Ackerman, Nocera, and Bargh (2010) the fundamental tactile dimensions are texture, hardness, and weight. Firstly, it was chosen to study the dimension of *Weight* in more detail in the context of visual communications on paper. This choice is originated from the finding of Jostmann, Lakens, and Schubert (2009), who demonstrated that evaluation of different dependent variables could be influenced by answering questions on heavy clipboard versus a light clipboard. The dimension hardness was not included, since it is implicitly embedded in the dimension *Weight*, because relatively heavy paper is necessarily perceived as harder than relatively light paper. Secondly, *Texture* was added to the current research design of the first study, since it seems a crucial dimension of paper. In the second study, it was especially focused on the (in)congruence effects of content and tactile information (i.e. *Weight*) on product and brand evaluations.

2.1 Conscious and Unconscious Information Processing

It is argued that the conscious information processing of the content of a visual communication is supplemented by unconscious information processing, which is evoked by different (implicit) associations made on basis of the paper version. Thereby, it is predicted that relatively heavy and rough paper types have a positive effect on the evaluation of the visual communication. This is based on the findings of Ackerman, Nocera, and Bargh (2010), who argued that heaviness is associated with *seriousness* and *importance* and roughness is associated with *difficulty* and *harshness*. To measure the effect of the varying tactile dimensions five dependent variables were analysed with a survey (i.e. attractiveness, perceived quality, credibility and trust, brand evaluation, behavioural intention) during study 1. The second study focused on studying the dimension of *Weight* in combination with congruence effects of content. However, the first step was to check for the effectiveness of the paper manipulations in order to be able to draw valid conclusions during study 1 and 2.

2.2 Pretest

To ensure the effectiveness of both manipulations, 14 participants took part in a pretest. Based on the combination of the two dimensions *Weight* (light [90g/m²] versus heavy [300g/m²]) and *Texture* (glossy versus rough), participants were presented with four types of paper stimulus material (Material A: light and glossy; Material B: light and rough; Material C: heavy and glossy; Material D: heavy and rough). Items used for the pretest can be found in Appendix A.1 and A.2. In order to reduce possible sequence effects, the different paper types were administered in a random order to the participants. Most important findings of the pretest of the potential stimulus material are described in the following. For a more detailed description of applied analyses see Appendix A.3 and A.4.

Participants were asked to compare the different stimuli directly with respect to the two dimensions *Weight* and *Texture*. Since most data were distributed non-normally, a Wilcoxon-Signed Rank Test was conducted respectively with the test value 4 (meaning no difference between paper materials). For one exception the data was normally distributed and therefore, an One-Sample t-test was performed with the same test value. Results indicated that both 'heavy' materials C and D were indeed perceived as heavier than the 'light' materials A ($z = -3.64$, $p < .001$ and $z = -3.74$, $p < .001$) and B ($z = -3.64$, $p < .001$ and $z = -3.50$, $p < .001$). Additionally, no difference was found between the two heavy variants (C and D, $z = -1.47$, *ns*) as well as between the two light variants (A and B, $z = -1.32$, *ns*). Also, results indicated that both 'rough'

materials B and D were indeed perceived as rougher than the 'glossy' materials A ($z= -3.56$, $p < .001$ and $z= -3.50$, $p < .001$) and C ($z= -2.04$, $p < .05$ and $z= - 2.98$, $p < .05$). Additionally, no difference was found between the two rough variants (B and D, $t= 0.43$, *ns*) as well as between the two glossy variants (A and C, $z= -0.85$, *ns*).

To conclude, the explicit comparison of stimulus material indicated that desired manipulations were effective with respect to the dimensions of *Weight* and *Texture*, and therefore appropriate to be utilised during the following studies.

3. STUDY 1

Based on described insights, the first study aimed to demonstrate the effect of different paper versions on the evaluation of the communicated message. Therefore, this study tested the prediction that a visual communication printed on relatively (1) heavy and (2) rough paper will benefit with respect to several dependent variables in opposition to the same visual communication printed on relatively (1) light and (2) glossy paper. Specifically, the dependent variables predicted to be affected by the paper material are *Brochure Attractiveness*, *Brochure Quality*, *Brand Evaluation*, *Brand Credibility and Trust*, and *Behavioural Intention to Go to the Supermarket*. In order to be able to evaluate potential effects afterwards the following hypotheses were formulated:

H1: *The visual communication printed on heavy stimulus material will be evaluated more positively with respect to the dependent variables than the light stimulus material version [main effect].*

H2: *The visual communication printed on rough stimulus material will be evaluated more positively with respect to the dependent variables than the glossy stimulus material version [main effect].*

H3: *The visual communication printed on the combination heavy and rough stimulus material will be evaluated most positively with respect to the dependent variables[interaction effect].*

Finally, it was expected that all effects on the dependent variables are distinct irrespective the fact the potential consumer knows the brand communicated or not. To test these predictions, paper quality of a fictitious visual communication of the German supermarket *EDEKA* was manipulated.

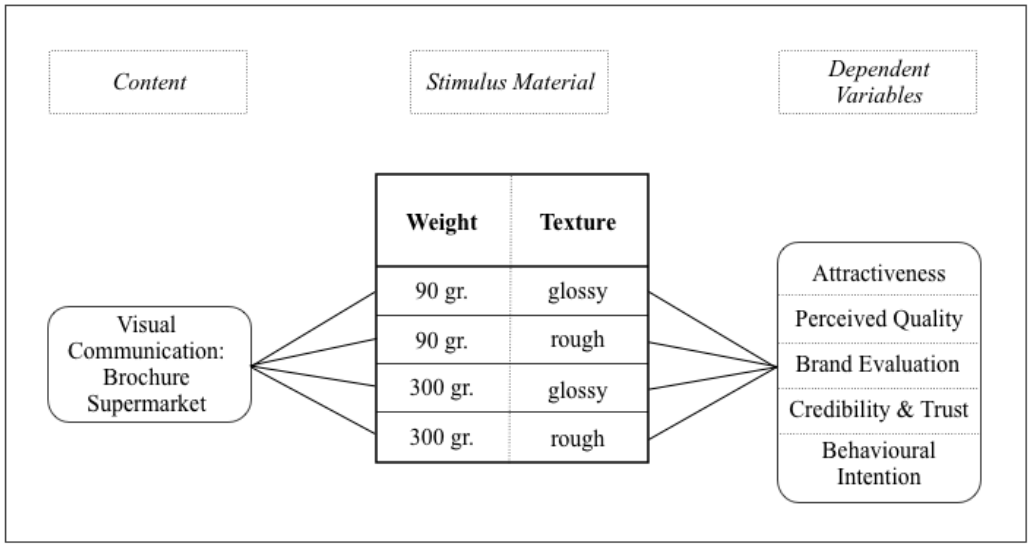


Figure 3. *Research model study 1*

3.1 Stimulus Material

An image brochure of the German supermarket *EDEKA* was created based on selected content of the annual report 2011 (Geschäftsbericht 2011: EDEKA Nord - Leidenschaft für Lebensmittel). The same visual communication was printed on four different paper versions. These were established by manipulating two tactile dimensions of the paper quality: *Weight* (light [90g/m²] versus heavy [300g/m²]) and *Texture* (glossy versus rough). Accordingly, the two extremes of the mentioned dimensions were paired, resulting in a 2 x 2 between-subject design. Except for the variations discussed, the brochures were identical (Appendix B). Therefore, there was no influence that could bias potential differences between conditions.

3.2 Method

3.2.1 Participants and Procedure

Based on a power analysis 168 participants (42 per group) were randomly selected to take part in the study (55 male and 113 female; mean age 26.91 years; familiarity with supermarket: 73 yes, 25 not really, and 70 no; a frequency distribution can be found in Appendix C.2). Participants received a brochure, whereby they were randomly assigned to the conditions, and a questionnaire (pretested in advance, see Appendix A.5). The purpose of the study was introduced at the beginning of the questionnaire: "Companies spend a lot of time and effort in creating adverts that convey the right brand image to customers. To make sure the 'right' image comes across; a supermarket is interested in your perception of this brand." Participants were asked to globally evaluate the brochure within one minute, instead of studying each detail. Next, participants filled in the questionnaire (Appendix C.1) comprising the dependent measures. In order to

prevent participants from just filling in their answers at one extreme of the likert-scale, some items were reversed. After completion of the questionnaire, participants were thanked for their cooperation.

3.2.2 Measures

Brochure Attractiveness. Participants' brochure attitude was measured with four items reflecting the extent to which participants *liked* the brochure and perceived the brochure as *attractive*, *appealing*, and *differentiating* from competitors. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude was formed by summing and averaging the scores on these items ($\alpha = .81$).

Brochure Quality. The perceived quality of the brochure was measured with four items reflecting the extent to which participants perceived the brochure as *superior*, *premium*, *of high quality*, and *belonging to high-class*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude was formed by summing and averaging the scores on these items ($\alpha = .92$).

Brand Evaluation. Brand evaluation was measured with four items indicative for participants' attitude towards the brand ("This supermarket appeals to me", "This is an unattractive supermarket", "I feel positive about this supermarket", and "I have the impression this is a poor supermarket"). Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brand. A general attitude was formed by summing and averaging the scores on these items ($\alpha = .79$).

Brand Credibility and Trust. Brand credibility was measured with four items reflecting the extent to which participants perceived the supermarket as *reliable*, *authentic*, and *trustworthy*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brand. A general attitude was formed by summing and averaging the scores on these items ($\alpha = .70$).

Behavioural Intention. Participants' potential future behaviour was measured with four items reflecting the extent to which participants had the intention to get involved with this supermarket *EDEKA* within the next month ("I will stop by this supermarket when I am nearby", "I would rather go to this supermarket than somewhere else when I am nearby", "I want to go to this supermarket when I am nearby", and "I will choose this supermarket when I am nearby"). Participants indicated on a 7-point likert scale the

extent to which they considered these items descriptive for their intention. A general behavioural intention was formed by summing and averaging the scores on these items (α = .88).

3.3 Results

A multivariate analysis of covariance (MANCOVA) with *Weight* (light versus heavy) and *Texture* (glossy versus rough) as independent variables, *Brochure Attractiveness*, *Brochure Quality*, *Brand Evaluation*, *Brand Credibility and Trust*, and *Behavioural Intention* as dependent variable, and *Gender* and *Familiarity With Supermarket* as covariates was conducted. Beforehand, items appropriate for further analysis were identified by means of a reliability analysis (Appendix C.3) and constructs were computed. Afterwards an outlier analysis was conducted. Thereby, identified scores were adjusted following the procedure suggested by Field (2009), which entails to replace those scores by the mean plus/minus two standard deviation (Appendix C.4). Finally, the assumptions of a MANCOVA were investigated (i.e. homogeneity of variance, normal distribution, independence of covariate and treatment effect, homogeneity of regression slopes). For details see Appendix C.5.

Results of the MANCOVA revealed a non-significant effect of *Gender*, $F(5, 158)= 1.62$, *ns*, and a significant relationship of the covariate *Familiarity* with the outcome variables, $F(5, 158)= 4.78$, $p < .001$, $\eta^2 = .13$. Both independent variables revealed an effect on the dependent variables across the experimental conditions, whereas the interaction between *Weight* and *Texture* was non-significant (Table 1).

Table 1. MANCOVA Results for Study 1 (Multivariate Tests)

Variable	*df*	*F*	*p*	η^2
Familiarity (Covariate)	5	6.05	.00	.16
Weight	5	4.74	.00	.13
Texture	5	3.01	.01	.09
Weight x Texture	5	0.21	.96	.01
Error	159			

In order to study these findings in more detail, the univariate test results served as a follow-up (for a detailed overview see Appendix C.6, Table C6.1). Based on the findings above, only *Familiarity* was included as a covariate within this analysis. Since the multivariate analysis revealed no significant effect of an interaction on the dependent variables, the interaction was neglected on the univariate level as well. Accordingly, only the two main effects were studied in more detail. Mean ratings (M) and standard deviations (SD) as a function of the independent variables can be found in Table 2.

Table 2. Average Rating and Standard Deviations of Dependent Variables as a Function of Weight and Texture (Study 1)

		Brochure Attractiveness			Brochure Quality			Brand Evaluation			Brand Credibility and Trust			Behavioural Intention		
Weight	Texture	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N
light	glossy	4.43	1.18	42	4.26	1.02	42	5.00	1.03	42	5.02	0.98	42	3.55	1.30	42
	rough	4.70	1.01	42	4.57	1.06	42	5.31	0.65	42	5.10	0.85	42	3.94	1.12	42
	total	4.57	1.01	84	4.41	1.05	84	5.16	0.87	84	5.10	0.91	84	3.74	1.22	84
heavy	glossy	4.63	1.21	42	4.59	1.14	42	5.19	0.86	42	5.10	1.01	42	4.15	1.29	42
	rough	5.08	1.16	42	4.96	1.35	42	5.50	0.73	42	5.34	0.92	42	4.85	1.19	42
	total	4.85	1.20	84	4.77	1.25	84	5.35	0.81	84	5.20	0.97	84	4.50	1.28	84
total	glossy	4.53	1.19	84	4.42	1.09	84	5.10	0.95	84	5.04	0.99	84	3.85	1.32	84
	rough	5.08	1.10	84	4.76	1.22	84	5.41	0.69	84	5.22	0.89	84	4.40	1.24	84
	total	4.71	1.16	168	4.59	1.16	168	5.25	0.84	168	5.13	0.94	168	4.12	1.31	168

Brochure Attractiveness. Analysis of covariance revealed a significant effect of the covariate Familiarity. The main effect of Weight was non-significant, while there was a significant main effect of Texture on Brochure Attractiveness. Thereby, participants within the rough-paper condition (M= 5.08; SD= 1.10) scored higher on Brochure Attractiveness than participants within the glossy-paper condition (M= 4.53; SD= 1.19).

Brochure Quality. Analysis of covariance revealed a significant effect of the covariate Familiarity. The main effect of Weight was found to be significant. Thereby, participants within the heavy-paper condition (M= 4.77; SD= 1.25) scored higher on Brochure Quality than participants within the light-paper condition (M= 4.41; SD= 1.05). Similarly, the main effect of Texture was significant as well. Thereby, participants within the rough-paper condition (M= 4.76; SD= 1.09) scored higher on Brochure Quality than participants within the glossy-paper condition (M= 4.42; SD= 1.22).

Brand Credibility and Trust. Analysis of covariance revealed a non-significant effect of the covariate Familiarity. The main effect of Weight was non-significant, while there was a significant main effect of Texture on Brand Credibility and Trust. Thereby, participants within the rough-paper condition (M= 5.22; SD= 0.89) scored higher on Brand Credibility and Trust than participants within the glossy-paper condition (M= 5.04; SD= 0.99).

Behavioural Intention. Analysis of covariance revealed a significant effect of the covariate Familiarity. The main effect of Weight was non-significant, while there was a significant main effect of Texture on Behavioural Intention. Thereby, participants within the rough-paper condition (M= 4.40; SD= 1.24) scored higher on Behavioural Intention than participants within the glossy-paper condition (M= 3.85; SD= 1.32).

3.4 Conclusion

The results show that participants who received the visual communication printed on heavy paper, scored partly higher on the measured variables than participants who received the visual communication printed on light paper. This confirms, in part, hypothesis 1. Likewise, participants who received the visual communication printed on rough paper, scored partly higher on the measured variables than participants who received the visual communication printed on glossy paper. This confirms, in part, hypothesis 2. Contrary to the expectation that cross-pairing the heavy with the rough paper stimulus material resulted in the most favourable evaluation of the dependent variables, no interaction effect could be revealed. Therefore, hypothesis 3 was rejected.

4. STUDY 2

Based on the insights of the first study - no interaction effect between tactile dimensions could be revealed - this second study focussed in more detail on the tactile dimension *Weight*. Thereby, it was aimed at demonstrating that the magnitude of effect for paper's weight on certain variables is depending on the content of the visual communication. Specifically, congruence plays a role here. It was assumed that information congruent with each other is processed more fluently (Van Rompay & Pruyn, 2011). According to recent insights (e.g. Lee & Labroo, 2004; Reber, Schwarz, & Winkielman, 2004) "stimuli that can be easily processed are generally evaluated in positive terms and inspire favourable attitudes" (Van Rompay & Pruyn, 2011, p. 600). Within the current context, the congruence of stimulus material (i.e. paper) and an advertised content (i.e. Lay's chips) was under investigation. Thereby, it was proceeded from the assumption that the dimension *Weight* is represented in the stimulus material (i.e. light [90g/m²] versus heavy [300g/m²]) as well as in the content of the Lay's brochure (i.e. LAY'S® Classic Potato Chips / LAY'S® Light Original Potato Chips). Accordingly, weight is presented explicitly and physically in the stimulus material, whereas weight is rather represented implicitly (i.e. as calories) in the content of the brochure.

Assuming that congruence is also beneficial within the proposed context, this study tested the prediction that a visual communication would be evaluated more favourably when printed on a paper version connoting the same associations as the content (i.e. Light [few calories] Lay's chips advertisement printed on light paper and Classical [many calories] Lay's chips advertisement printed on heavy paper). Subsequently, study 2 tested predictions with respect to brand, product, brochure, and stimulus material perception. Specifically, the dependent variables predicted to be affected by the (in)congruence effects of paper material and content are *Brand Evaluation*, *Brand Credibility and Trust*, *Behavioural Intention*, *Perception of Brand's Seriousness and Importance*, *Preference Brand*, *Preference Kind*, *Brochure Attractiveness*, *Brochure Quality, Stimulus Material Evaluation*, and *Authenticity*. Furthermore, it was expected that the relationship between content and paper material is dependent on the extent of *Processing Fluency*. In order to be able to evaluate potential effects afterwards the following hypotheses were formulated:

H4: *The visual communication printed on heavy stimulus material will be evaluated more positively with respect to the dependent variables than the light stimulus material version [main effect].*

H5: *The visual communications connoting congruence among stimulus material and content (i.e. Classical chips advertised on heavy paper version; Light chips advertised on light paper version) will be evaluated more positively with respect to the dependent variables than the visual communications connoting incongruence among stimulus material and content (i.e. Classical chips advertised on light paper version; Light chips advertised on heavy paper version) [interaction effect].*

H6: *The expected interaction effect of stimulus material and content with respect to the dependent variables is mediated by Processing Fluency [moderated mediation].*

Finally, it was expected that all effects on the dependent variables are distinct irrespective the fact the potential consumer knows the brand communicated or not. To test these predictions, paper weight as well as advertised kind of Lay's chips (Classic versus Light) of a fictitious visual communication were manipulated.

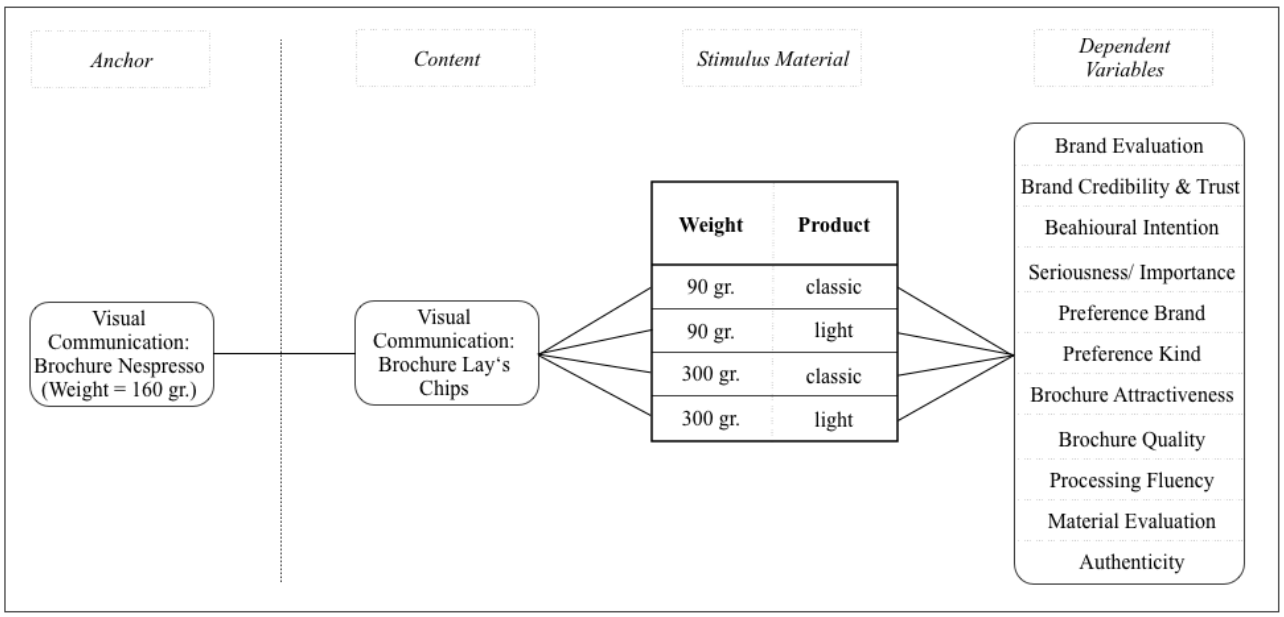


Figure 4. *Research model study 2*

4.1 Stimulus Material

A basic product brochure of the brand Lay's was created based on selected content of the corporate website (Frito-Lay, 2013). Thereby, this basic brochure was adjusted with two different kinds of Lay's chips (LAY'S® Classic Potato Chips / LAY'S® Light Original Potato Chips). These two versions were printed respectively on two different paper versions (light [90g/m²] versus heavy [300g/m²]). Accordingly, cross-pairing these factors resulted in a 2 x 2 between-subject design. Except for the variations discussed, the brochures were identical (Appendix D.1 and D.2). Therefore, there was no influence that could bias potential differences between conditions.

In order to ensure participants will unconsciously attend to the quality of the stimulus material, a second brochure served as an anchor. For this aim, an information brochure of the brand Nespresso, which is a neutral stimulus (neither associated with lightness nor with heaviness), was created (Appendix D.3) and printed on stimulus material with a weight (160g/m²) approximately intermediate between the stimulus material used for the Lay's brochure (Appendix G).

4.2 Method

4.2.1 Participants and Procedure

Based on a power analysis 140 participants (35 per group) were randomly selected to take part in the study (48 male and 92 female; mean age 23.15 years; a frequency distribution can be found in Appendix E.3). In the first instance, participants were told they have to practice shortly evaluating a brochure in order

to assure they are prepared well for the real study. For this aim they received the Nespresso brochure as described above and shortly afterwards a questionnaire (Appendix E.1).

After completing the first brochure evaluation, the 'real' study followed. Participants received a brochure of the brand Lay's and a questionnaire (piloted and pretested in advance, Appendix A.6 and A.7), whereby the purpose of the study was introduced at the beginning of the questionnaire: "Companies spend a lot of time and effort in creating advertising material that convey the right brand image to customers. The company *Frito-Lay* intents to place new information material about the brand *Lay's* on the market. Thereby, they are aiming at developing a brochure, which is appealing to potential customers and induces future purchases of Lay's chips. To make sure the 'right' image comes across, Frito-Lay is interested in your perception of this brand". Participants were asked to evaluate the advertisement. Next, participants filled in the questionnaire (Appendix E.2) comprising the dependent measures as well as filler items used to reduce hypothesis guessing. In order to prohibit participants from just filling in their answers at one extreme of the likert-scale, some items were reversed. After completion of the questionnaire, participants were thanked for their cooperation.

4.2.2 Measures

Brand Evaluation. Based on the fact that congruence effects were shown to be influential on the perceived value of the brand under investigation (Van Rompay & Pruyn, 2011), brand evaluation in a more general sense was included as a first measure within the current study. Participants' perception of the brand was measured with three items reflecting the extent to which participants *felt positive* about the brand, perceived the brand as *fine*, and as *poor*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brand. General brand evaluation was formed by summing and averaging the scores on these items ($\alpha = .81$).

Brand Credibility and Trust. According to the consistency principle a source should be communicating consistently across different dimensions (Rotenberg, Simourd, & Moore, 1989), which is supposed to create a more credible message. The positive effect of congruence on credibility evaluations has been demonstrated by Van Rompay and Pruyn (2011). Accordingly, the construct Brand Credibility and Trust was measured with three items reflecting the extent to which participants perceived the brand as *reliable* and *trustworthy*. Participants indicated on a 7-point likert scale the extent to which they considered these items

descriptive of the brand. A general attitude was formed by summing and averaging the scores on these items (α = .81).

Behavioural Intention. Participants' future behaviour was measured with three items reflecting the extent to which participants had the intention to get involved with the product of the particular brand within the next month with respect to *tasting* and *buying* ("I want to taste Lay's chips", "I will go tho a supermarket to buy Lay's chips", and "I would love to buy Lay's chips"). Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive for their intention. A general behavioural intention was formed by summing and averaging the scores on these items (α = .91).

Seriousness/ Importance. Based on the assumption that heaviness (of the paper) implies seriousness and importance (Ackerman, Nocera, & Bargh, 2010), it was supposed that those associations were transferred to the evaluation of the brand under investigation. Following this, participants were asked to indicate which adjectives of a semantic differential (six-point) they considered as more descriptive of the brand. Those pairs were *trivial - serious*, *insubstantial - substantial*, and *unimportant - important*. General perceived seriousness/ importance was formed by summing and averaging the scores on these items (α = . 89).

Brochure Attractiveness. Based on the finding that the underlying concept processing fluency of congruence effect positively affects aesthetic judgments, the construct brochure attractiveness was included as a dependent measure. Participants' perception of the brochure's attractiveness was measured with three items reflecting the extent to which participants *liked* the brochure and perceived the brochure as *appealing*, and *eye-catching*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude was formed by summing and averaging the scores on these items (α = .94).

Brochure Quality. The construct brochure quality was included in order to check for the effectiveness of the proposed manipulation (i.e. *Weight* of stimulus material). The perceived quality of the brochure was measured with three items reflecting the extent to which participants perceived the brochure as *premium*, *of high quality*, and *belonging to high-class*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude towards Brochure Quality was formed by summing and averaging the scores on these items (α = .93).

Material Evaluation. In order to prevent participants from anticipating the purpose of the study, three filler items (i.e. design, print quality, colours) were added to four items measuring the construct Material Evaluation. Participants were asked to indicate to what extent the items *liking material*, *thinking of material as low quality*, *preferring heavier material*, and c*omparing it to material used for the Nespresso brochure* were indicative for their perception (on a 7-point likert scale). A general perception was formed by summing and averaging the scores on these items (α = .88).

Authenticity. In order to ensure participants perceived the visual communication as potential real advertising material of the company Frito Lay, the construct authenticity was included as a manipulation check. Authenticity of the brochure was measured by three items covering the scope of *brochure authenticity*, the estimation to which extent they believed the brochure was *real advertising material* and an *effective means for informing customers*. A general perception of authenticity was formed by summing and averaging the scores on these items (α = .68).

Preference Brand. In order to check that participants attitudes are not biased by their existing preference for a brand of chips, this construct was included as well. The participants' preference for the brand was measured with three items reflecting the extent to which participants would choose Lay's *rather than Pringles* and *over other brands*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude was formed by summing and averaging the scores on these items (α = .84).

Preference Kind. In order to check that participants attitudes are not biased by their existing preference for a particular flavour of chips, this construct was included as well. The participants' preference for the specific kind of Lay's chips was measured with three items reflecting the extent to which *preferred the specific flavour* and were about *buying this flavour rather than another*. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. A general attitude was formed by summing and averaging the scores on these items (α = .96).

Processing Fluency. Based on the findings that processing fluency is the underlying concept of congruence effects (e.g. De Vries & Van Rompay, 2009), the construct was included in the study as well. For this purpose, processing fluency was operationalised as the extent to which the existing impression of the company is in line with the presented visual communication. Participants' processing fluency was measured

with two items reflecting the extent to which participants felt that their *first impression* as well as the *design* of the brochure matches with their existing image of the company Frito-Lay. Participants indicated on a 7-point likert scale the extent to which they considered these items descriptive of the brochure. General processing fluency was formed by summing and averaging the scores on these items (α = .97).

4.3 Results

A multivariate analysis of covariance (MANCOVA) with *Weight* (light versus heavy) and *Flavour* (Classic versus Light) as independent variables, *Brand Evaluation*, *Brand Credibility and Trust*, *Behavioural Intention*, *Seriousness/ Importance*, *Preference Brand*, *Preference Kind*, *Brochure Attractiveness*, *Brochure Quality*, *Material Evaluation*, and *Authenticity* as dependent variables, and *Gender* as covariate was conducted. Beforehand, items appropriate for further analysis were identified by means of a reliability analysis (Appendix E.4) and constructs were computed. Afterwards an outlier analysis was conducted. Thereby, identified scores were adjusted following the procedure suggested by Field (2009), which entails to replace those scores by the mean plus/minus two standard deviation (Appendix E.5). Finally, the assumptions of a MANCOVA were investigated (i.e. homogeneity of variance, normal distribution, independence of covariate and treatment effect, homogeneity of regression slopes). For details see Appendix E.6.

Results of the MANCOVA revealed a non-significant relationship of *Gender* with the outcome variables F(10, 125)= 1.77, *ns*. Therefore, there was no need to control for the effect of a covariate on the outcome. Both independent variables revealed an effect on the dependent variables across the experimental conditions, whereas the interaction between *Weight* and *Flavour* was non-significant (Table 3).

Table 3. MANOVA Results for Study 2 (Multivariate Tests)

Variable	*df*	*F*	*p*	η^2
Weight	11	4.32	.00	.28
Flavour	11	2.36	.01	.17
Weight x Flavour	11	0.92	.52	.08
Error	125			

In order to study these findings in more detail, the univariate test results served as a follow-up (for a detailed overview see Appendix E.7, Table E7.1). Since the multivariate analysis of variance revealed no significant effect of an interaction on the dependent variables, the interaction was neglected on the univariate

level as well. Accordingly, only the two main effects were studied in more detail. Mean ratings (M) and standard deviations (SD) as a function of the independent variables can be found in Table 4.

Table 4a. Average Rating and Standard Deviations of Dependent Variables as a Function of Weight and Flavour (Study 2)

		Brand Evaluation			Brand Credibility and Trust			Behavioural Intention			Seriousness/ Importance		
Weight	Flavour	M	SD	N	M	SD	N	M	SD	N	M	SD	N
light	Classic	5.43	0.82	35	5.09	0.88	35	4.45	1.50	35	3.64	1.05	35
	Light	4.54	1.22	35	4.60	1.17	35	3.80	1.52	35	3.49	0.94	35
	total	4.99	1.12	70	4.85	1.06	70	4.12	1.54	70	3.56	0.99	70
heavy	Classic	5.39	0.66	35	5.09	0.91	35	4.52	1.66	35	3.71	0.96	35
	Light	5.19	0.89	35	4.97	1.00	35	3.96	1.37	35	3.81	0.74	35
	total	5.29	0.78	70	5.03	0.95	70	4.25	1.54	70	3.76	0.86	70
total	Classic	5.41	0.74	35	5.09	0.89	35	4.49	1.57	35	3.68	1.00	35
	Light	4.86	1.11	35	4.78	1.10	35	3.88	1.44	35	3.65	0.86	35
	total	5.14	0.98	70	4.94	1.01	70	4.18	1.53	70	3.66	0.93	70

Table 4b. Average Rating and Standard Deviations of Dependent Variables as a Function of Weight and Flavour (Study 2)

		Preference Brand			Preference Kind			Brochure Attractiveness			Brochure Quality		
Weight	Flavour	M	SD	N	M	SD	N	M	SD	N	M	SD	N
light	Classic	4.05	1.48	35	4.04	1.43	35	4.75	1.27	35	3.61	1.40	35
	Light	3.56	1.34	35	3.47	1.15	35	3.78	1.53	35	3.09	1.17	35
	total	3.81	1.42	70	3.75	1.32	70	4.27	1.48	70	3.35	1.31	70
heavy	Classic	4.16	1.63	35	3.53	1.18	35	5.03	0.86	35	4.36	1.02	35
	Light	4.26	1.60	35	3.47	1.16	35	4.73	1.15	35	3.96	1.21	35
	total	4.21	1.60	70	3.50	1.16	70	4.88	1.01	70	4.16	1.13	70
total	Classic	4.11	1.55	35	3.78	1.33	35	4.89	1.08	35	3.98	1.27	35
	Light	3.90	1.50	35	3.47	1.14	35	4.25	1.43	35	3.52	1.26	35
	total	4.01	1.52	70	3.63	1.24	70	4.57	1.30	70	3.75	1.28	70

Table 4c. Average Rating and Standard Deviations of Dependent Variables as a Function of Weight and Flavour (Study 2)

		Material Evaluation			Authenticity			Processing Fluency		
Weight	Flavour	M	SD	N	M	SD	N	M	SD	N
light	Classic	3.91	1.28	35	4.08	1.15	35	4.23	1.42	35
	Light	3.56	1.07	35	3.65	1.19	35	3.69	1.06	35
	total	3.74	1.18	70	3.86	1.18	70	3.96	1.27	70
heavy	Classic	5.05	0.93	35	4.40	1.10	35	4.01	1.44	35
	Light	4.72	1.30	35	4.45	1.20	35	3.96	1.29	35
	total	4.89	1.13	70	4.42	1.14	70	3.99	1.36	70
total	Classic	4.48	1.25	35	4.24	1.13	35	4.12	1.43	35
	Light	4.13	1.32	35	4.04	1.25	35	3.82	1.18	35
	total	4.31	1.29	70	4.14	1.19	70	3.97	1.31	70

Brand Evaluation. The main effect of Weight was found to be significant. Thereby, participants within the heavy-paper condition (M= 5.29; SD= 0.78) scored higher on Brand Evaluation than participants within the light-paper condition (M= 4.99; SD= 1.12). Similarly, the main effect of Flavour was significant as well. Thereby, participants within the Classic-Lay's condition (M= 5.41; SD= 0.74) scored higher on Brand Evaluation than participants within the Light-Lay's condition (M= 4.86; SD= 1.11).

Behavioural Intention. The main effect of Weight was non-significant, while there was a significant main effect of Flavour on Behavioural Intention. Thereby, participants within the Classic-Lay's condition (M= 4.49; SD= 1.57) scored higher on Behavioural Intention than participants within the Light-Lay's condition (M= 3.88; SD= 1.44).

Brochure Attractiveness. The main effect of Weight was found to be significant. Thereby, participants within the heavy-paper condition (M= 4.88; SD= 1.01) scored higher on Brochure Attractiveness than participants within the light-paper condition (M= 4.27; SD= 1.48). Similarly, the main effect of Flavour was significant as well. Thereby, participants within the Classic-Lay's condition (M= 4.89; SD= 1.08) scored higher on Brochure Attractiveness than participants within the Light-Lay's condition (M= 4.25; SD= 1.43).

Brochure Quality. The main effect of Weight was significant. Thereby, participants within the heavy-paper condition (M= 4.16; SD= 1.23) scored higher on Brochure Quality than participants within the light-paper condition (M= 3.35; SD= 1.31). Similarly, the main effect of Flavour was significant as well. Thereby, participants within the Classic-Lay's condition (M= 3.98; SD= 1.27) scored higher on Brochure Quality than participants within the Light-Lay's condition (M= 3.52; SD= 1.26).

Material Evaluation. The main effect of Weight was significant. Thereby, participants within the heavy-paper condition (M= 4.89; SD= 1.13) scored higher on Material Evaluation than participants within the light-paper condition (M= 3.74; SD= 1.18). The main effect of Flavour revealed to be non-significant.

Authenticity. The main effect of Weight was significant. Thereby, participants within the heavy-paper condition (M= 4.42; SD= 1.14) scored higher on Authenticity than participants within the light-paper condition (M= 3.86; SD= 1.18). The main effect of Flavour revealed to be non-significant.

Even though interaction effects among *Weight* and *Flavour* could not be revealed with respect to the vast majority of dependent variables, a moderated mediation analysis was conducted. Despite those non-significant findings this choice is still reasonable, since potential interaction effects could be masked by a third variable. Specifically, this analysis aims to investigate whether the non-observed interaction effects of *Weight* and *Flavour* on the dependent variables are mediated by Processing Fluency. For this purpose, the procedure suggested by Muller, Judd, and Yzerbyt (2005) was followed, which entails four conditions to be met in order to confirm moderated mediation. However, since the second condition (the interaction effect of the independent variables (i.e. *Weight* x *Flavour*) on the mediator (i.e. Processing Fluency) should be significant) already has been shown to be violated, there was no need to further investigate the remaining conditions. Accordingly, the variable Processing Fluency was dropped as a potential mediator.

4.4 Conclusion

The results show that participants who received the visual communication printed on heavy paper, scored partly higher on the measured variables than participants who received the visual communication printed on light paper. This confirms, in part, hypothesis 4. Contrary to the expectation that the evaluation of the measured variables would benefit from a congruent version of the visual communication in terms of paper stimulus material and content, no interaction effect could be revealed. Therefore, hypothesis 5 was rejected.

Finally, it was shown that the potential effect of the relationship between paper stimulus material and content on the measured variables is not depending on Processing Fluency. Therefore, hypothesis 6 was rejected.

5. GENERAL DISCUSSION

5.1 Tactile Influences

The findings reported in study 1 largely confirm the importance of incorporating the tactile dimension in the design of a visual communication. Although the proposed main effects of the dimensions *Weight* and *Texture* varied in strength across the dependent variables, the overall results partly support the prediction that brand and brochure perceptions benefit from (1) heavy and (2) rough paper versions. Specifically, it could be revealed that the visual communication printed on heavy material as opposed to light material benefits in terms of Brochure Quality evaluations. Furthermore, results show that the visual communication printed on rough as opposed to glossy material positively affects perceptions of Brochure Attractiveness, Brochure Quality, Brand Credibility and Trust, and Behavioural Intention. However, contrary to expectations cross-pairing the two dimension did not result in an interactive intensification with respect to the dependent variables.

The research design of the second study included the dimension *Weight* again in order to investigate this concept in more detail with respect to additional dependent variables and in its pure condition. Thereby, it could be revealed that weight effects not only influence perceptions of the visual communications itself, which was the case during study 1 (i.e. Brochure Quality), but those effects were extended to product perceptions and even reaching brand evaluation in a more general sense. Specifically, study 2 testifies to the central role of paper quality (i.e. *Weight*) in demonstrating the positive influence of printing the visual communication on heavy as opposed to light material with respect to Material Evaluation, Authenticity, Preference Kind, Preference Brand, and Brand Evaluation. A summary of described results can be found in Appendix F, Table F.1.

5.2 Congruence Effects

The research design of study 2 incorporated next to the tactile dimension *Weight* the focus on congruence effects by including content (i.e. *Flavour*), which was supposed to be either in line with the paper material used or not. Opposed to the prediction that a visual communication would be evaluated more favourably when printed on a paper version connoting the same associations as the content (i.e. Light [few calories]

Lay's chips advertisement printed on light paper and Classical [many calories] Lay's chips advertisement printed on heavy paper), no effects of assumed beneficial cross-pairing could be revealed.

A general explanation for the missing congruence effects might be offered by the findings of Meyers-Levy, Louie, and Curren (1994), who propose that people may prefer moderate levels of incongruence. Furthermore, it may be possible that some degree of incongruence triggers curiosity in the consumer, since it is deviating from its competitors. This attraction may in a next step lead to a positive evaluation of the whole. The positive effects of incongruence on attention formation could already be revealed in the context of product design, which could be utilised as a strategy to evoke amazement (Ludden, Schifferstein, & Hekkert, 2008). However, study 2 revealed similarly no benefit from incongruence. Accordingly, future research should aim at clarifying potential effects of (in)congruence, which should also expand the context of content to for example lay-out and colour use.

In addition, processing fluency was supposed to mediate the relationship of touch (i.e. *Weight*) and content (i.e. *Flavour*). However, study 2 revealed no effects of this construct. This lack of mediation may be due to the operationalisation and measurement of the construct Processing Fluency. Thereby, this variable was translated into items studying the extent to which design and first impression of the visual communication are in line with existing image of the company. However, this is a limited picture of Processing Fluency, since also the perceived agreement of information presented and known facts and the ease of processing should be incorporated in the measurement. Besides, the mentioned study did not incorporate direct measures of Processing Fluency, such as reaction speed and/or psychophysiological measures (Winkielman & Cacioppo, 2001). Accordingly, future research should spend more attention to the operationalisation of the proposed mediator.

5.3 Conclusions

The findings indicate that the importance of design is not restricted to the perceptual domain exemplified across for example layout and colour choice (e.g. Childers & Jass, 2002; Reber & Schwarz, 1999; Zhang, Feick, & Price, 2006), but also pertains to the tactile dimension connoted within the *Weight* and *Texture* domain. In addition, the findings presented suggest no need for congruence of symbolic meanings because consistency among content and tactile characteristics did not facilitate processing. The lack of congruence effects indicates that weight effects could be found for both types of advertised chips in the brochure. Since even the Light chips brochure benefited from heavy paper material, visual communication design could

incorporate Weight regardless the product's attributes. Current findings are in line and provide further support for the supposition proposed by Peck and Childers (2003), that next to the visual input, tactile information can function as subsequent cue and framer for impression formation.

However, there are some inconsistent findings with respect to the effect of the dimension *Weight* among study 1 and 2. While the visual communication printed on heavier material only benefited in terms of Brochure Quality during the first study, during the second study the variables Material Evaluation, Authenticity, Preference Kind, Preference Brand, and Brand Evaluation were evaluated more favourably. It could be argued that these inconsistencies in part relate to the type of product used in the studies. While study 1 communicated the outline of a German supermarket (i.e. *EDEKA*), the visual communication of study 2 related to the promotion of a specific product (i.e. Lay's chips) and the underlying company. Accordingly, study 1 tested effects of touch by the means of an *'image brochure'* and study 2 aimed at testing those effects by the means of the presentation of a real product. A main difference between those stimuli may be the fact, that a supermarket has a more abstract character for potential consumers than chips. This is also related to situation, that the product itself can be experienced and also touched directly, which is not the case in that sense for a supermarket. Missing findings in study 1 can therefore be explained in terms of the 'product' advertised in the visual communication. Consequently, a potential for the influence of the tactile dimensions is present. However, future research needs to establish a range of product and/ or service categories that benefit from tactile stimulation (Jannson-Boyd, 2011). Besides, current studies incorporated existing companies/ products in the research design. Tactile effects may also differ across new product/ brand launch and the presentation of an existing product/ brand.

Another explanation, for the inconsistent findings can be offered by the likelihood-elaboration model (Petty & Cacioppo, 1979), which generally argues that a persuasion technique needs to be aligned to characteristics of the receiver. Thereby, the key variable in this process is *involvement*, "the extent to which an individual is willing and able to 'think' about the position advocated" (Shumarova & Swatman, 2006). Arguably, the perception formation process of product and brand may be more important to the consumer in the case of high involvement. Under these circumstances, the potential consumer may put more effort in gathering and evaluating relevant information. In other words, dependent on product type and consumer involvement, effects of tactile manipulation as well as congruence effects may vary with respect to product and brand evaluations. Future research should also attend to these implications.

In terms of practical implications, decisions regarding visual communication design should also incorporate the dimension of touch as a consumer communication tool. This consideration may lead to an increased effectiveness of a visual communication (e.g. product campaigns). Thereby, the capability of increasing the likelihood of sales should be considered as a potential benefit (Jannson-Boyd, 2011). The fact that tactile interaction may trigger an emotional response (Rolls, O'Doherty, Kringelbach, Francis, Bowtell, & McGlone, 2003) further strengthens the argument that touch is a vital part of marketing. Concluding, subtle changes in paper quality may affect information processing of rational arguments.

5.4 Limitations

Based on implications of study 1, it was decided to add an anchor visual communication to study 2. Thereby, participants' attentions should subconsciously be guided to the dimension of *Weight*. However, a minor shortcoming in the design of the anchor (i.e. Nespresso brochure) could be identified. Specifically, a difference in printing quality (i.e. font size; cf. Appendix D) may be perceived by the participants when directly comparing the anchor with the following visual communication (Lay's brochure). Therefore, it could be argued that the Lay's brochure evaluation benefited from the anchor presentation in general. However, this inconsistency among the two brochures was very small and therefore it can be assumed that the objective of introducing the anchor has been successful anyhow.

As argued in prior sections, the construct Processing Fluency was not operationalised completely. This fact may relate to the non-significant effect of this variable for the *Weight* x *Flavour* relationship in study 2. Another limitation of study 2 is the lacking direct measurement of weight impressions with respect to the brand. Even though participants were asked to indicate how important and serious they felt about the brand, this on the next level of abstraction.

5.5 Future Research

As already mentioned, future research should in first instance focus on the establishment of a product range, for which tactile manipulations of a visual communication are effective in terms of subsequent evaluations. Thereby, it may also be an option to divide this research by (1) the tactile dimensions and (2) distinguishing between launch of new products/brands and an existing product with a relatively stable brand image.

As previous research suggests, congruence effects are distinct *within* one dimension, such as vision (e.g. Van Rompay & Pruyn, 2011). However, it should also be investigated in more detail to which extent

congruence effects are present *across* different dimensions. By studying congruence effects of the dimension touch with another dimension, research should not be limited to content, but also incorporate other factors such as layout and colour design.

Finally, as the results of the current study relate to visual communication, this evokes some difficulties for the booming e-commerce generation. Clearly, it may be difficult to find a solution regarding to how consumers can engage in virtual tactile shopping (Jannson-Boyd, 2011). Therefore, future research may address to look for potential effects of a *'tactile language'*, which could be incorporated into online as well as offline communications.

Most importantly, however, the findings suggest that future research should start to include the dimension of touch in the development of attitude formation models as well as in the design of visual communications. It is shown that tactile factors are able to influence product and brand evaluations by the means of a visual communication, which might therefore be a good extension to increase the explanatory power of current and future models of unconscious processes.

REFERENCES

Ackerman, J. M., Nocera, C. C., & Bargh, J. A. (2010). Incidental Haptic Sensations Influence Social Judgments and Decisions. *Science, 328*(5985), 1712 - 1715.

Areni, C. S., & Kim, D. (1993). The Influence of Background Music on Shopping Behavior: Classical versus Top-Forty Music in a Wine Store. *Advances in Consumer Research, 20*, 336-340.

Areni, C. S., & Kim, D. (1994). The influence of in-store lighting on consumers' examination of merchandise in a wine store. *International Journal of Research in Marketing, 11*, 117-125.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action. *Journal of Personality and Social Psychology*, 230-244.

Childers, T. L., & Jass, J. F. (2002). All dressed up with something to say: Effects of typeface semantic associations on brand perceptions and consumer memory. *Journal of Consumer Psychology, 12*(2), 93 - 106.

De Vries, P. W., & Van Rompay, T. J. L. (2009). *Subtle Persuasion: the Unobtrusive Effect of Website-Banner Congruence on Trust*. University of Twente. Claremont.

Dijksterhuis, A. (2004). Think Different: The Merits of Unconscious Thought in Preference Development and Decision Making. *Journal of Personality and Social Psychology, 87*(5), 586-598.

Dijksterhuis, A. (2007). *Het Slimme Onbewuste*. Amsterdam: Prometheus/ Bert Bakker.

Downs, A. (1957). An Economic Theory of Political Action in Democracy. *The Journal of Political Economy, 65*, 135-150.

Evans, J. (2003). In two minds: dual-process accounts of reasoning. *TRENDS in Cognitive Sciences, 7*(10), 454-459.

Field, A. (2009). *Discovering Statistics Using SPSS*. London: SAGE Publications Ltd.

Frito Lay (2013). Frito Lay - Good Fun. Retrieved 30 April, 2013, from http://www.fritolay.com

Guéguen, N., & Petr, C. (2006). Odors and consumer behavior in a restaurant. *Hospitality Management, 25*, 335-339.

Harrar, V., Piqueras-Fiszman, B., & Spence, B. (2011). There's more to taste in a coloured bowl. *Perception, 40*, 880 - 882.

Hirsch, A. (1995). Effects of ambient odors on slot-machine usage in a Las Vegas casino. *Psychology and Marketing, 12*, 585-594.

Hollins, M., Faldowski, R., Rao, S., & Young, F. (1993). Perceptual dimensions of tactile surface texture: A multidimensional scaling analysis. *Perception & Psychophysics, 54*(6), 697-705.

Jansson-Boyd, C. V. (2011). Touch matters: exploring the relationship between consumption and tactile interaction. *Social Semiotics, 21*(4), 531 - 546.

Jostmann, N. B., Lakens, D., & Schubert, T. W. (2009). Weight as an Embodiment of Importance. *Psychological Science, 20*(9), 1169 - 1174.

Kahneman, D. (2011). *Ons Feilbare Denken: Thinking, fast and slow* Amsterdam/Antwerpen: Uitgeverij Business Contact.

Lee, A. Y., & Labroo, A. A. (2004). The effect of conceptual and perceptual fluency on brand evaluation. *Journal of Marketing Research, 41*(2), 151 - 165.

Ludden, G. D. S., Schifferstein, H. N. J., & Hekkert, P. (2008). Surprise as a design strategy. *Design Issues, 24*(2), 28 - 38.

McCabe, D. B., & Novlis, S. M. (2003). The effect of examining actual products of product descriptions on consumer preference. *Journal of Consumer Psychology, 13*, 431 - 439.

Meyers-Levy, J. M., Louie, T. A., & Curren, M. T. (1994). How does the congruity of brand names affect evaluations of brand name extensions? *Journal of Applied Psychology, 65*(1), 113 - 131.

Miodownik, M. (2005). A touchy subject. *Materials today, 8*(6), 6.

Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When Moderation Is Mediated and Mediation Is Moderated. *Journal of Personality and Social Psychology, 89*(6), 852 - 863.

North, A. C., Hargreaves, D. J., & McKendrick, J. (1999). The influence of in-store music on wine selection. *Journal of Applied Psychology, 84*(2), 271-276.

Peck, J., & Childers, T. (2003). To have and to hold: The influence of haptic information on product judgement. *Journal of Marketing, 67*, 35 - 48.

Cacioppo, J. T., & Petty, R. E. (1979). Effects of message repetition and position on cognitive response, recall and persuasion. *Journal of Personality and Social Psychology*, *27,* 97 - 109.

Piaget, J. (1952). *The origins of intelligence in children*. New York: International University Press.

Picard, D., Dacremont, C., Valentin, D., & Giboreau, A. (2003). Perceptual dimensions of tactile textures. *Acta Psychologica, 114*(2), 165.184.

Pierce, C. S., & Jastow, J. (1884). On Small Differences in Sensation. *Memoirs of the National Academy of Science, 3*(75-83).

Piqueras-Fiszman, B., Alcaide, J., Roura, E., & Spence, C. (2012). Is it the plate or is it the food? The influence of the color and shape of the plate on the perception of the food placed on it. *Food Qual Prefer, 24*, 205 - 208.

Reber, R., & Schwarz, N. (1999). Effects of processing fluency on judgments of truth. *Consciousness and Cognition, 8*(3), 338 - 342.

Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review, 8*(4), 364 - 382.

Rolls, E. T., O'Doherty, J., Kringelbach, M. I., Francis, S., Bowtell, R., & McGlone, F. (2003). Representations of pleasant and painful touch in the human orbitofrontal cingulated cortices. *Cerebral Cortex 13*, 308 - 317.

Rotenberg, K. J., Simourd, L., & Moore, D. (1989). Children's use of a verbal-nonverbal consistency principle to infer truth and lying. *Child Development, 60*(2), 309 - 322.

Schifferstein, H. N. J., & Hekkert, P. (2011). Sensory aesthetics in product design. In F. Bacci & D. Melcher (Eds.), *Art and the senses* (pp. 529 - 555). Oxford: Oxford University Press.

Shumarova, E., & Swatman, P. A. (2006). *The Dynamics of Innovation in Electronic Networks - a System Dynamics Perspective on IT Innovation Diffusion*. Paper presented at the 24th International Conference of the System Dynamics Society, Nijmegen, the Netherlands.

Simon, H. A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics, 69*(1), 99-118.

Spence, C., Harrar, V., & Piqueras-Fiszman, B. (2012). Assessing the impact of the tableware and other contextual variables on multisensory flavour perception. *Flavour, 1*(7), 1 - 12.

Spence, C., Nicholls, M. E. R., & Driver, J. (2001). The cost of expecting events in the wrong sensory modality. *Perception and Psychophysics, 63*, 330 - 333.

Stanovich, K. E., & West, R. F. (2000) Individual differences in reasoning: Implications for the rationality debate. *Behav. Brain Sci.,* 23, 645–726

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*, 768-777.

Unkelbach, C. (2007). Reversing the truth effect: Learning the interpretation of processing fluency in judgments of truth. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 33*(1), 219 - 230.

Van Rompay, T. J. L., Hekkert, P., Saakes, D., & Russo, B. (2005). Grounding abstract object characteristics in embodied interactions. *Acta Psychologica, 119*(3), 315 - 351.

Van Rompay, T. J. L., & Pruyn, A. T. H. (2011). When Visual Product Features Speak the Same Language: Effects of Shape-Typeface Congruence on Brand Perception and Price Expectations. *J Pord Innov Manag, 28*, 599-610.

Van Rompay, T. J. L., Pruyn, A. T. H., & Tieke, P. (2009). Symbolic Meaning Integration in Design and its Influence on Product and Brand Evaluation. *International Journal of Design, 3*(2), 19 - 26.

Veldkamp, M., Custers, R., & Aarts, H. (2011). Motivating consumer behavior by subliminal conditioning in the absence of basic needs: Striking even while the iron is cold. *Journal of Consumer Psychology, 21*, 49-56.

Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The Scaffolded Mind: Higher mental processes are grounded in early experience of the physical world. *Eur J Soc Psychol., 39*(1), 1257 - 1267.

Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology, 81*(6), 989 - 1000.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9*, 52-80.

Zhang, Y., Feick, L., & Price, L. J. (2006). The impact of self-construal on aesthetic preference for angular versus rounded shapes. *Personality and Social Psychology Bulletin, 32*(6), 794 - 805.

APPENDIX: TABLE OF CONTENT

Appendix A: Pretest **41**

A.1 Pretest Stimulus Material 41

A.2 Pretest Stimulus Material Arranged by Constructs 47

A.3 Descriptive Statistics of the Pretest Stimulus Material 49

A.4 Results of the Pretest Stimulus Material 51

A.5 Pretest Questionnaire Study 1 54

A.6 Pilot-Study Advertising Material Study 2 56

A.7 Pretest Questionnaire Study 2 57

Appendix B: Visual Communication Used for Study 1 **63**

Appendix C: Study 1 **65**

C.1 Questionnaire 65

C.2 Frequency Distribution 67

C.3 Cronbach's Alpha Scores 67

C.4 Outlier Analysis 67

C.5 Checking Assumptions (MANCOVA) 68

C.6 Results Multivariate Analysis of Covariance 70

Appendix D: Visual Communication Used for Study 2 **72**

D.1 Advertising Material Version Lay's Classic 72

D.2 Advertising Material Version Lay's Light 74

D.3 Advertising Material (Anchor) Nespresso 76

Appendix E: Study 2 **78**

E.1 Questionnaire: Nespresso 78

E.2 Questionnaire: Lay's 79

E.3 Frequency Distribution 83

E.4 Cronbach's Alpha Scores 83

E.5 Outlier Analysis 84

E.6 Checking Assumptions (MANCOVA) 85

E.7 Results Multivariate Analysis of Variance 88

Appendix F: Summary of Results 90

Appendix G: Paper Versions Used During Both Studies 92

Appendix A: Pretest

A.1 Pretest Stimulus Material

To assure that the paper versions would be perceived as expected with respect to the two tactile dimensions *Weight* and *Texture* a pretest was conducted. Additionally, it was tested if the different paper versions evoke associations such as *Difficulty* and *Harshness* for relatively heavy paper and *Importance* and *Seriousness* for the relatively rough paper versions as indicated by Ackerman, Nocera, and Bargh (2010). Moreover, it was tested if the different paper versions would affect the evaluation of some dependent variables on its own (without any visual communication), which were partly used during study 1 as well as study 2. In the following the used questionnaire for pretesting the different paper versions is presented. Thereby, each participant has evaluated four different paper versions individually and finally, made a comparison between the different paper versions with respect to the two tactile dimensions manipulated. Accordingly, a within-subject design was applied for the first part of the questionnaire, and a between-subject design was used to evaluate the second part of the questionnaire. It can be argued that the individual evaluation was an implicit measure of the two tactile manipulations and the final comparison explicitly asked for evaluating the manipulations *Weight* and *Texture*.

Material A

Please indicate to what extent you agree with the following statements. For this please purpose tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1)	This material is of high quality.	☐	☐	☐	☐	☐	☐	☐
2)	This material makes a credible impression.	☐	☐	☐	☐	☐	☐	☐
3)	This material is superior.	☐	☐	☐	☐	☐	☐	☐
4)	This material differentiates itself from 'competitors' through good design.	☐	☐	☐	☐	☐	☐	☐
5)	I like this material.	☐	☐	☐	☐	☐	☐	☐
6)	The quality of the material could be improved.	☐	☐	☐	☐	☐	☐	☐
7)	This material is appealing to me.	☐	☐	☐	☐	☐	☐	☐
8)	This material makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
9)	I would not trust this material.	☐	☐	☐	☐	☐	☐	☐
10)	The material is eye-catching.	☐	☐	☐	☐	☐	☐	☐
11)	What is your estimation of the average price of a package with 100 sheets of this material?	_____ cents						

Please indicate which adjective is describing the material better using a the semantic differential. For this purpose tick the corresponding box ranging from one extreme to the other extreme.

trivial	☐	☐	☐	☐	☐	☐	☐	serious
complex	☐	☐	☐	☐	☐	☐	☐	incomplex
insubstantial	☐	☐	☐	☐	☐	☐	☐	substantial
patient	☐	☐	☐	☐	☐	☐	☐	rigour
grave	☐	☐	☐	☐	☐	☐	☐	frivolous
unimportant	☐	☐	☐	☐	☐	☐	☐	important
sophisticated	☐	☐	☐	☐	☐	☐	☐	unsophisticated
relevant	☐	☐	☐	☐	☐	☐	☐	irrelevant
easy	☐	☐	☐	☐	☐	☐	☐	difficult
gentle	☐	☐	☐	☐	☐	☐	☐	harsh
rough	☐	☐	☐	☐	☐	☐	☐	glossy
light	☐	☐	☐	☐	☐	☐	☐	heavy

Material B

Please indicate to what extent you agree with the following statements. For this purpose please tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1)	This material is of high quality.	☐	☐	☐	☐	☐	☐	☐
2)	This material makes a credible impression.	☐	☐	☐	☐	☐	☐	☐
3)	This material is superior.	☐	☐	☐	☐	☐	☐	☐
4)	This material differentiates itself from 'competitors' through good design.	☐	☐	☐	☐	☐	☐	☐
5)	I like this material.	☐	☐	☐	☐	☐	☐	☐
6)	The quality of the material could be improved.	☐	☐	☐	☐	☐	☐	☐
7)	This material is appealing to me.	☐	☐	☐	☐	☐	☐	☐
8)	This material makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
9)	I would not trust this material.	☐	☐	☐	☐	☐	☐	☐
10)	The material is eye-catching.	☐	☐	☐	☐	☐	☐	☐
11)	What is your estimation of the average price of a package with 100 sheets of this material?	_____ cents						

Please indicate which adjective is describing the material better using a the semantic differential. For this purpose tick the corresponding box ranging from one extreme to the other extreme.

trivial	☐	☐	☐	☐	☐	☐	☐	serious
complex	☐	☐	☐	☐	☐	☐	☐	incomplex
insubstantial	☐	☐	☐	☐	☐	☐	☐	substantial
patient	☐	☐	☐	☐	☐	☐	☐	rigour
grave	☐	☐	☐	☐	☐	☐	☐	frivolous
unimportant	☐	☐	☐	☐	☐	☐	☐	important
sophisticated	☐	☐	☐	☐	☐	☐	☐	unsophisticated
relevant	☐	☐	☐	☐	☐	☐	☐	irrelevant
easy	☐	☐	☐	☐	☐	☐	☐	difficult
gentle	☐	☐	☐	☐	☐	☐	☐	harsh
rough	☐	☐	☐	☐	☐	☐	☐	glossy
light	☐	☐	☐	☐	☐	☐	☐	heavy

Material C

Please indicate to what extent you agree with the following statements. For this purpose please tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1)	This material is of high quality.	☐	☐	☐	☐	☐	☐	☐
2)	This material makes a credible impression.	☐	☐	☐	☐	☐	☐	☐
3)	This material is superior.	☐	☐	☐	☐	☐	☐	☐
4)	This material differentiates itself from 'competitors' through good design.	☐	☐	☐	☐	☐	☐	☐
5)	I like this material.	☐	☐	☐	☐	☐	☐	☐
6)	The quality of the material could be improved.	☐	☐	☐	☐	☐	☐	☐
7)	This material is appealing to me.	☐	☐	☐	☐	☐	☐	☐
8)	This material makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
9)	I would not trust this material.	☐	☐	☐	☐	☐	☐	☐
10)	The material is eye-catching.	☐	☐	☐	☐	☐	☐	☐
11)	What is your estimation of the average price of a package with 100 sheets of this material?	_____ cents						

Please indicate which adjective is describing the material better using a the semantic differential. For this purpose tick the corresponding box ranging from one extreme to the other extreme.

trivial	☐	☐	☐	☐	☐	☐	☐	serious
complex	☐	☐	☐	☐	☐	☐	☐	incomplex
insubstantial	☐	☐	☐	☐	☐	☐	☐	substantial
patient	☐	☐	☐	☐	☐	☐	☐	rigour
grave	☐	☐	☐	☐	☐	☐	☐	frivolous
unimportant	☐	☐	☐	☐	☐	☐	☐	important
sophisticated	☐	☐	☐	☐	☐	☐	☐	unsophisticated
relevant	☐	☐	☐	☐	☐	☐	☐	irrelevant
easy	☐	☐	☐	☐	☐	☐	☐	difficult
gentle	☐	☐	☐	☐	☐	☐	☐	harsh
rough	☐	☐	☐	☐	☐	☐	☐	glossy
light	☐	☐	☐	☐	☐	☐	☐	heavy

Material D

Please indicate to what extent you agree with the following statements. For this purpose please tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1)	This material is of high quality.	☐	☐	☐	☐	☐	☐	☐
2)	This material makes a credible impression.	☐	☐	☐	☐	☐	☐	☐
3)	This material is superior.	☐	☐	☐	☐	☐	☐	☐
4)	This material differentiates itself from 'competitors' through good design.	☐	☐	☐	☐	☐	☐	☐
5)	I like this material.	☐	☐	☐	☐	☐	☐	☐
6)	The quality of the material could be improved.	☐	☐	☐	☐	☐	☐	☐
7)	This material is appealing to me.	☐	☐	☐	☐	☐	☐	☐
8)	This material makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
9)	I would not trust this material.	☐	☐	☐	☐	☐	☐	☐
10)	The material is eye-catching.	☐	☐	☐	☐	☐	☐	☐
11)	What is your estimation of the average price of a package with 100 sheets of this material?	_____ cents						

Please indicate which adjective is describing the material better using a the semantic differential. For this purpose tick the corresponding box ranging from one extreme to the other extreme.

trivial	☐	☐	☐	☐	☐	☐	☐	serious
complex	☐	☐	☐	☐	☐	☐	☐	incomplex
insubstantial	☐	☐	☐	☐	☐	☐	☐	substantial
patient	☐	☐	☐	☐	☐	☐	☐	rigour
grave	☐	☐	☐	☐	☐	☐	☐	frivolous
unimportant	☐	☐	☐	☐	☐	☐	☐	important
sophisticated	☐	☐	☐	☐	☐	☐	☐	unsophisticated
relevant	☐	☐	☐	☐	☐	☐	☐	irrelevant
easy	☐	☐	☐	☐	☐	☐	☐	difficult
gentle	☐	☐	☐	☐	☐	☐	☐	harsh
rough	☐	☐	☐	☐	☐	☐	☐	glossy
light	☐	☐	☐	☐	☐	☐	☐	heavy

Comparison

Please indicate to what extent you agree with the following statements. For this purpose please tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

	definitely disagree						definitely agree
	1	2	3	4	5	6	7
weight							
Material A is heavier than Material B.	☐	☐	☐	☐	☐	☐	☐
Material A is heavier than Material C.	☐	☐	☐	☐	☐	☐	☐
Material A is heavier than Material D.	☐	☐	☐	☐	☐	☐	☐
Material B is heavier than Material C.	☐	☐	☐	☐	☐	☐	☐
Material B is heavier than Material D.	☐	☐	☐	☐	☐	☐	☐
Material C is heavier than Material D.	☐	☐	☐	☐	☐	☐	☐
roughness							
Material A is rougher than Material B.	☐	☐	☐	☐	☐	☐	☐
Material A is rougher than Material C.	☐	☐	☐	☐	☐	☐	☐
Material A is rougher than Material D.	☐	☐	☐	☐	☐	☐	☐
Material B is rougher than Material C.	☐	☐	☐	☐	☐	☐	☐
Material B is rougher than Material D.	☐	☐	☐	☐	☐	☐	☐
Material C is rougher than Material D.	☐	☐	☐	☐	☐	☐	☐

A.2 Pretest Stimulus Material Arranged by Constructs

The pretest for the stimulus material measured nine constructs, which can be found in Table A2.1. The corresponding items are also indicated.

Table A2.1. Constructs and Corresponding Items

Construct	Construct Number	Item	Reversed
Perceived Quality	PQ1	This material is of high quality.	
	PQ2	This material is superior.	
	PQ3	The quality of the material could improved.	x
Attractiveness	A1	This material is appealing to me.	
	A2	This material differentiates itself from 'competitors' through good design.	
	A3	I like this material.	
	A4	The material is eye-catching.	
Credibility and Trust	C1	This material makes a reliable impression.	
	C2	This material makes a credible impression.	
	C3	I would not trust this product.	x
Value	V	What is your estimation of the average price of a package with 100 sheets of this material?	
Seriousness/ Importance	S1	trivial - serious	
	S2	grave - frivolous	x
	S3	insubstantial - substantial	
	S4	unimportant - important	
	S5	relevant - irrelevant	x
Difficulty/ Harshness	D1	easy - difficult	
	D2	complex - incomplex	x
	D3	sophisticated - unsophisticated	x
	D4	gentle - harsh	
	D5	patient - rigour	
Tactile Dimensions (implicit)	RG	rough - glossy	x
	LH	light - heavy	
Weight (explicit)	W1	Material A is heavier than Material B.	
	W2	Material A is heavier than Material C.	
	W3	Material A is heavier than Material D.	
	W4	Material B is heavier than Material C.	
	W5	Material B is heavier than Material D.	
	W6	Material C is heavier than Material D.	
Texture (explicit)	T1	Material A is rougher than Material B.	
	T2	Material A is rougher than Material C.	
	T3	Material A is rougher than Material D.	
	T4	Material B is rougher than Material C.	

T5	Material B is rougher than Material D.
T6	Material C is rougher than Material D.

However, based on a reliability analysis, some items were excluded for the analysis. Each construct (except the comparison part) was measured four times, based on the fact that participants were asked to evaluate four different paper version in a within-subject design. Accordingly, a Cronbach's Alpha was calculated for each construct and each paper version independently. Results can be found in Table A2.2. In a second step it was figured out if the reliability of a construct could be enhanced by leaving out a certain item. Again, this analysis was conducted for each construct and paper version independently. Afterwards, the results (i.e. similarities) were compared on the level of each individual construct in order to figure out if the reliability of a whole construct could be enhanced. This was the case for the constructs *Perceived Quality* and *Seriousness/ Importance*: excluding respectively one item could enhance the reliability of the two constructs for each paper version (ranging from .046 to .191 and from .032 to .138). Similarly, the reliability of the constructs *Attractiveness* and *Difficulty/ Harshness* could be improved. For both constructs the reliability for the evaluation of three paper versions could be improved greatly (ranging from .041 to .146 and from .091 to .383), whereas the Cronbach's Alpha for the evaluation of the last paper version decreased slightly when leaving out this particular item. However, the difference was so small (.031 and .093) that the benefit of using fewer items (for three parts of the two constructs) for the analysis outbalanced the reduction of internal consistency (of that specific part of the two constructs) for the improvement of the general reliability of each construct.

Table A2.2. Reliability Analysis

Construct	Cronbach's Alpha Material A		Cronbach's Alpha Material B		Cronbach's Alpha Material C		Cronbach's Alpha Material D		Selected Items
	before reduction	after reduction	before reduction	after reduction	before reduction	after reduction	before reduction	after reduction	
Perceived Quality	.829	.875	.806	.943	.673	.864	.809	.879	PQ1, PQ2
Attractiveness	.832	.894	.876	.845	.828	.869	.676	.822	A1, A2, A3
Credibility and Trust	.893		.922		.898		.817		C1, C2, C3
Seriousness/ Importance	.817	.955	.791	.882	.914	.966	.872	.904	S1, S2, S4, S5
Difficulty/ Harshness	.592	.801	.487	.578	.252	.635	.714	.621	D1, D2, D3, D4

A.3 Descriptive Statistics of the Pretest Stimulus Material

In the following the analyses conducted for evaluating the pretest are presented. In order to be able to choose the appropriate statistical analysis, a first step was to check for a normal distribution of the data. Thereby, it is differentiated between the dependent variables (Table A3.1 and Table A3.2).

Table A3.1. Check for Normal Distribution of the Constructs: Kolmogorov-Smirnov Test

Construct	Material A	Material B	Material C	Material D
Attractiveness	$D(14)= 0.18$, *ns*	$D(14)= 0.10$, *ns*	$D(14)= 0.19$, *ns*	$D(14)= 0.16$, *ns*
Perceived Quality	$D(14)= 0.26$, $p < .05$	$D(14)= 0.19$, *ns*	$D(14)= 0.18$, *ns*	$D(14)= 0.22$, *ns*
Credibility and Trust	$D(14)= 0.20$, *ns*	$D(14)= 0.15$, *ns*	$D(14)= 0.22$, *ns*	$D(14)= 0.14$, *ns*
Value	$D(14)= 0.26$, $p < .05$	$D(14)= 0.28$, $p < .05$	$D(14)= 0.25$, $p < .05$	$D(14)= 0.30$, $p < .05$
Seriousness/ Importance	$D(14)= 0.14$, *ns*	$D(14)= 0.13$, *ns*	$D(14)= 0.14$, *ns*	$D(14)= 0.18$, *ns*
Difficulty/ Harshness	$D(14)= 0.23$, *ns*	$D(14)= 0.13$, *ns*	$D(14)= 0.14$, *ns*	$D(14)= 0.22$, *ns*
light - heavy	$D(14)= 0.25$, $p < .05$	$D(14)= 0.19$, *ns*	$D(14)= 0.28$, $p < .05$	$D(14)= 0.22$, *ns*
glossy - rough	$D(14)= 0.19$, *ns*	$D(14)= 0.20$, *ns*	$D(14)= 0.16$, *ns*	$D(14)= 0.26$, $p < .05$

Table A3.2. Check for Normal Distribution of the Comparison: Kolmogorov-Smirnov Test

Item	
Weight	
W1	D(14)= 0.23, p < .05
W2	D(14)= 0.53, p < .001
W3	D(14)= 1.00, p < .001
W4	D(14)= 0.53, p < .001
W5	D(14)= 0.49, p < .001
W6	D(14)= 0.26, p < .05
Texture	
R1	D(14)= 0.51, p < .001
R2	D(14)= 0.31, p < .001
R3	D(14)= 0.48, p < .001
R4	D(14)= 0.36, p < .001
R5	D(14)= 0.17, *ns*
R6	D(14)= 0.44, p < .001

Next, the variables measured based on a within-subject design were evaluated using a Repeated-Measures ANOVA or Friedman's ANOVA, depending on the presence or absence of a normal distribution. Depending on the Maulchy's Test of Sphericity, results of the Repeated-Measures ANOVA were derived from the univariate output assuming sphericity or using the Greenhouse-Geisser correction. Those test results as well as means and standard deviations of the dependent variables (per paper type) can be found in Table A3.3. Finally, the variables measured based on a between-subject design were evaluated using either the One-Sample T-Test or the Wilcoxon Signed-Rank Test, depending on the presence or absence of a normal distribution of the data. Those test results as well as means and standard deviations of the dependent variables can be found in Table A3.4.

Table A3.3. Results Pretest Questionnaire: Constructs

Construct	Material A	Material B	Material C	Material D	Maulchy's Test of Sphericity	Significance (2-sided)
Attractiveness	M= 4.45, SD= 1.32	M= 4.38, SD= 1.57	M= 5.26, SD= 1.20	M= 4.21, SD= 1.42	$\chi^2(5)= 0.44$, *ns*	F(3, 39)= 1.46, *ns*
Perceived Quality	Mdn= 4.75, SD= 1.44	Mdn= 4.75, SD= 1.59	Mdn= 5.75, SD= 1.16	Mdn= 5.00, SD= 1.61		$\chi^2(3)= 5.15$, *ns*
Credibility and Trust	M= 4.95, SD= 1.15	M= 4.45, SD= 1.42	M= 5.64, SD= 1.24	M= 4.90, SD= 1.18	$\chi^2(5)= 0.28$, *ns*	F(1.74, 22.67)= 2.32, *ns*
Value	Mdn= 110, SD= 125.91	Mdn= 110, SD= 127.21	Mdn= 150, SD= 161.91	Mdn= 115, SD= 257.11		$\chi^2(3)= 5.93$, *ns*
Seriousness/ Importance	M= 4.20, SD= 1.66	M= 4.57, SD= 1.79	M= 5.18, SD= 1.71	M= 4.88, SD= 1.39	$\chi^2(5)= 0.44$, *ns*	F(3, 39)= 1.36, *ns*
Difficulty/ Harshness	M= 3.98 SD= 1.22	M= 4.21, SD= 1.08	M= 4.20, SD= 1.11	M= 4.41, SD= 0.98	$\chi^2(5)= 0.56$, *ns*	F(3, 39)= 0.52, *ns*
Weight (implicit)	Mdn= 2.50, SD= 1.59	Mdn= 2.50, SD= 1.77	Mdn= 5.00, SD= 1.82	Mdn= 6.00, SD= 0.96		$\chi^2(3)= 22.76$, $p < .001$
Texture (implicit)	Mdn= 3.50, SD= 1.51	Mdn= 4.50, SD= 1.77	Mdn= 4.00, SD= 1.94	Mdn= 5.50, SD= 0.99		$\chi^2(3)= 12.55$, $p < .05$

Table A3.4. Results Pretest Questionnaire: Comparison (Explicit Measure)

Item	Mean/ Median and Standard Deviation	Significance (1-sided)
Weight		
W1	Mdn= 7.00, SD= 2.34	z= -1.32, *ns*
W2	Mdn= 1.00, SD= 0.54	z= -3.64, p < .001
W3	Mdn= 1.00, SD= 0.00	z= -3.74, p < .001
W4	Mdn= 1.00, SD= 0.27	z= -3.64, p < .001
W5	Mdn= 1.00, SD= 0.83	z= -3.50, p < .001
W6	Mdn= 4.00, SD= 1.64	z= -1.47, *ns*
Texture		
R1	Mdn= 1.00, SD= 0.36	z= -3.56, p < .001
R2	Mdn= 4.00, SD= 1.55	z= -0.85, *ns*
R3	Mdn= 1.00, SD= 0.43	z= -3.49, p < .001
R4	Mdn= 7.00, SD= 2.34	z= -2.04, p < .05
R5	M= 4.21, SD= 1.89	t= 0.43, *ns*
R6	Mdn= 1.00, SD= 1.65	z= -2.98, p < .05

A.4 Results of the Pretest Stimulus Material

Participants were asked to indicate on a 7-point likert scale the extent to which they considered these stimuli containing attractiveness, quality and credibility and trust. An one-way repeated measures ANOVA (for normally distributed data) and a Friedman's ANOVA (for non-normally distributed data) analysis indicated that the evaluation of mentioned dependent variables was not significantly affected by the type of paper

(*Attractiveness*: F(3, 39)= 1.46, *ns*; *Perceived Quality*: $\chi^2(3)= 5.15$, *ns*; *Credibility and Trust*: F(1.74, 22.67)= 2.32, *ns*).

Next, participants were asked to estimate the price for a package of 100 sheets of each paper version. A Friedman's ANOVA analysis indicated that the price perception (*Value*) did not vary among the different paper types, $\chi^2(3)= 5.93$, *ns*.

Following the line of argumentation stated above, heaviness is associated with seriousness and importance and roughness is associated with the concepts of difficulty and harshness. In order to figure out if these associations are also present when using different paper versions as stimulus material, participants had to indicate on a semantic differential which adjectives were most appropriate for describing the stimuli. An one-way repeated measures ANOVA analysis indicated paper type did neither significantly affect the perception of *Seriousness/ Importance*, F(3, 39)= 1.36, *ns*, nor the perception of *Difficulty/ Harshness*, F(3, 39)= 0.52, *ns*.

Making use of the semantic differential again, participants were asked to indicate for each paper version independently to what extent they experienced the paper type as glossy versus rough and light versus heavy. Since this evaluation was performed version for version, this measurement can be regarded as implicit, as opposed to the direct comparison they were asked to made in the end with respect to the same dependent variables. Therefore, last mentioned evaluation of *Weight* and *Texture* can be regarded as explicit. For the implicit measure, however, a Friedman's ANOVA analysis indicated that participants reported a difference in perception with respect to both variables (*Glossy - Rough*: $\chi^2(3)= 12.55$, $p < .05$*; Light - Heavy*: $\chi^2(3)= 27.76$, $p < .001$). Because of significant results, Wilcoxon-Signed Rank Tests were used as follow-up analyses. Thereby, the significant level had to be adapted by .05/number of tests (Field, 2009). Accordingly, not all pairs of conditions need to be compared randomly, but a 'wise choice' had to made, otherwise findings could only be accepted as significant in the case they were below .008 (.05/6).

It is assumed to find a non-significant effect for the Weight-scores between Material A (Mdn= 2.50) and B (Mdn= 2.50) (both 90g) as well as Material C (Mdn= 5.00) and D (Mdn=6.00) (both 300g). These expectations were confirmed by the Wilcoxon Signed-Rank Tests (90g: z= -0.88, *ns*; 300g: z= -0.29, *ns* [based significance level on .05/3 tests = .017]). Since those versions did not differ significantly from each other the final comparison was made between Material B (90g) and C (300g), whereby the Wilcoxon Signed-

Rank Test revealed a significant difference, z= -3.09, p < 0.017 (.05/3 tests = .017). Accordingly, it can be inferred that Material C was also rated heavier than Material A as well as Material D was rated as heavier than both Material A and B.

It is assumed to find a non-significant effect for the Texture-scores between Material A (Mdn= 3.50) and C (Mdn= 4.00) (both glossy) as well as Material B (Mdn= 4.50) and D (Mdn=5.50) (both rough). These expectations were confirmed by the Wilcoxon Signed-Rank Tests (glossy: z= -1.03, *ns*; rough: z= -2.45, *ns* [based significance level on .05/4 tests = .013]). A comparison between Material C and D revealed, that last mentioned was indeed perceived a more rough, z= -2.55, p < .013. Accordingly, it can be inferred that Material D was perceived as more rough than Material A as well. However, Material B was not perceived as more rough than Material A (z= -0.75, *ns*). Therefore, it can be inferred that this was the case for the comparison between Material C and B as well. Table A4.1 contains an overview of these results.

Table A4.1. Follow-Up Analysis of Implicit Weight and Texture Comparison Utilising the Wilcoxon Signed-Rank Test

Comparison	Significance (1-sided)	Conclusion	Expectation
Weight			
Material A and Material B	z= -0.88, p > .017	A = B	✓
Material C and Material D	z= -0.29, p > .017	C = D	✓
Material B and Material C	z= -3.09, p < .017	B < C	✓
		A < C	✓
		B < D	✓
		A < D	✓
Texture			
Material A and Material C	z= -1.93, p > .013	A = C	✓
Material B and Material D	z= -2.45, p > .013	B = D	✓
Material C and Material D	z= -2.55, p < .013	C < D	✓
		A < D	✓
Material B and Material A	z= -0.75, p > .013	B = C	✗
		D = C	✗

Finally, participants were asked to compare the different stimuli directly with respect to the two dimensions *Weight* and *Texture*. Since most data was distributed non-normally, a Wilcoxon-Signed Rank Test was conducted respectively with the test value 4 (meaning no difference between paper materials). For one exception an One-Sample t-test was performed with the same test value. Results indicated that both 'heavy' materials C and D were indeed perceived as heavier than the 'light' materials A (z= -3.64, p < .001 and z= -3.74, p < .001) and B (z= -3.64, p < .001 and z= - 3.50, p < .001). Additionally, no difference was found between the two heavy variants (C and D, z= -1.47, *ns*) as well as between the two light variants (A and B,

z= -1.32, *ns*). Also, results indicated that both 'rough' materials B and D were indeed perceived as rougher than the 'glossy' materials A (z= -3.56, p < .001 and z= -3.50, p < .001) and C (z= -2.04, p < .05 and z= - 2.98, p < .05). Additionally, no difference was found between the two rough variants (B and D, t= 0.43, *ns*) as well as between the two glossy variants (A and C, z= -0.85, *ns*).

To conclude, even though different paper types on its own revealed no significant effect on potential dependent variables for study 1 and 2, the explicit comparison (and the implicit comparison partly) indicated that desired manipulations were effective with respect to the dimensions of *Weight* and *Texture*, and therefore appropriate to be utilised during the following studies.

A.5 Pretest Questionnaire Study 1

To measure the dependent variable in the most effective way, the internal consistency (Cronbach's alpha) was tested within a pretest. In total, 13 participants took part in the pretest which consisted of 30 questions in total. These items were related to the constructs presented in Table A5.1 and partly based on the research of Van Rompay and Pruyn (2011) as well as Van Rompay, Pruyn, and Tieke (2009). Every construct (n=5) was measured by six items. Those were presented in a random order within the questionnaire. The goal of the pretest was to reduce the total number of questions and to assure a high level of internal consistency. Therefore, participants evaluated the same version (i.e. Material A) of the stimulus material used within study 1.

Table A5.1. Items For the Pretest Questionnaire Study 1

Construct	No.	Selected items	Reversed
Brochure Attractiveness	1	This brochure is appealing to me.	
	14	This brochure differentiates itself from 'competitors' through good design.	
	8	I do not like this brochure.	x
	25	The brochure is eye-catching.	
	18	This brochure is unattractive.	x
	29	I think this brochure is pleasing.	
Brochure Quality	23	This brochure is of high quality.	
	30	This brochure is superior.	
	2	The quality of the brochure could improved.	x
	7	The quality of this brochure is premium.	
	19	The quality of the brochure is below standard.	x
	26	This brochure belongs to high-class.	

Brand Evaluation	9	This supermarket appeals to me.	
	4	This is a fine supermarket.	
	15	I feel positive about this supermarket.	
	13	This is an unattractive supermarket.	x
	22	I have the impression this is a poor supermarket.	x
	27	I love this supermarket.	
Brand Credibility and Trust	10	This supermarket makes a reliable impression.	
	3	This supermarket makes a credible impression.	
	16	I would not trust this supermarket.	x
	6	This supermarket is trustworthy.	
	20	This supermarket makes a sincere impression.	
	28	This supermarket is authentic.	
Behavioural Intention	12	I want to go to this supermarket when I am nearby.	
	21	I will choose this supermarket when I am nearby.	
	5	I will stop by this supermarket when I am nearby.	
	11	I would rather go to this supermarket than somewhere else when I am nearby.	
	24	I would love to go shopping in this supermarket.	
	17	I will never go to this supermarket.	x

As a result of the pretest, it was possible to decrease the total number of items to four per construct. Thereby, the internal consistency could be increased for all constructs (increase ranging from .008 to .258). After the reduction of the amount of items, all constructs could exhibit a reliability of at least .85. The results and chosen items are shown in Table A5.2.

Table A5.2. Remaining Items For Questionnaire Study 1

Construct	Cronbach's Alpha before reduction	Cronbach's Alpha after reduction	Construct Number	Selected items	Reversed
Brochure Attractiveness	.610	.868	A1	This brochure is appealing to me.	
			A2	I do not like this brochure.	x
			A3	This brochure differentiates itself from 'competitors' through good design.	
			A4	This brochure is unattractive.	x
Brochure Quality	.931	.955	Q1	The quality of this brochure is premium.	
			Q2	This brochure is of high quality.	
			Q3	This brochure belongs to high-class.	

			Q4	This brochure is superior.	
Brand Evaluation	.899	.907	E1	This supermarket appeals to me.	
			E2	This is an unattractive supermarket.	x
			E3	I feel positive about this supermarket.	
			E4	I have the impression this is a poor supermarket.	x
Brand Credibility and Trust	.831	.852	C1	This supermarket is trustworthy.	
			C2	This supermarket makes a reliable impression.	
			C3	I would not trust this supermarket.	x
			C4	This supermarket is authentic.	
Behavioural Intention	.926	.961	BI1	I will stop by this supermarket when I am nearby.	
			BI2	I would rather go to this supermarket than somewhere else when I am nearby.	
			BI3	I want to go to this supermarket when I am nearby.	
			BI4	I will choose this supermarket when I am nearby.	

Finally, participants were asked to indicate if they had any problems understanding certain formulations or if they had general comments. Since there was no problem with understanding the items, the phrasing was not changed for the real study. One participant mentioned that it would be possible to adjust the possible answer categories by removing the neutral alternative from the likert scale. Accordingly, he argued, participants were 'forced' to choose a positive or negative answer. However, it was decided for remaining this neutral alternative, since respondents truly might feel neutral about a given item. Forcing them to choose for on side, either positive or negative, would possibly introduce respondent bias.

A.6 Pilot-Study Advertising Material Study 2

Since many participants doubted the realness of the visual communication during the first study, a pilot-study was conducted during study 2 in order to ensure that the prepared advertising material looks as authentic as possible. For this purpose, 5 participants took part in a verbal pilot-study. In the first instance they were asked to indicate how real they considered the brochure. Here, all participants stated they could imagine that the brochures were real advertising material for the brand Lay's. Next, they were asked if they could think of improvements to make the brochure even more authentic. Since nobody gave the suggestions, the purpose of the study was introduced. Accordingly, one participant suggested to replace an image with a individual picture of a package of Lay's chips. He argued, "otherwise the real stimulus will get lost in the picture".

Another participant suggested to enlarge another package of Lay's chips within the brochure with the same purpose. After making these adjustments, a questionnaire was developed and a pretest was conducted as described in the following section.

A.7 Pretest Questionnaire Study 2

To measure the dependent variables in the most effective way, the internal consistency (Cronbach's alpha) was tested within a pretest. In total, 11 participants took part in the pretest which consisted of 53 questions in total. These items were related to the constructs presented in Table A7.1 and partly based on the research of Van Rompay and Pruyn (2011) as well as Van Rompay, Pruyn, and Tieke (2009). The majority of constructs (n=9) was measured by five items and another construct consisted of three statements. Those statements were presented construct by construct within the questionnaire. It was chosen for this style to ensure participants were not influenced by more by specific aspects of the brochure when answering for example questions about the brand in general, since the constructs ranged from general to the particular (brand - product - brochure - stimulus material). The goal of the pretest was to reduce the total number of questions and to assure a high level of internal consistency. Therefore, participants evaluated the same version (i.e. Version A) of the stimulus material used within study 2.

Table A7.1. Items For the Pretest Questionnaire Lay's Study 2

Construct	No.	Selected items	Reversed
Brand Evaluation	1	The brand Lay's appeals to me.	
	2	Lay's is an unattractive brand.	x
	3	I feel positive about this brand.	
	4	Lay's is a fine brand.	
	5	I have the impression Lay's is a poor brand.	x
Brand Credibility & Trust	6	Lay's is a trustworthy brand.	
	7	The brand Lay's makes a reliable impression.	
	8	I would not trust this brand.	x
	9	This brand is authentic.	
	10	This brand makes a sincere impression.	
Behavioural Intention	11	I want to try Lay's chips.	
	12	I would never buy Lay's chips	x
	13	I want to taste Lay's chips.	
	14	I will go to a supermarket to buy Lay's chips.	
	15	I would love to buy Lay's chips.	

Seriousness/ Importance	16	trivial - serious	
	17	grave - frivolous	x
	18	insubstantial - substantial	
	19	unimportant - important	
	20	relevant - irrelevant	x
Preference Brand	21	I would rather buy Lay's chips than Pringles.	
	22	When I buy chips the next time, I would not pick Lay's.	x
	23	I would choose Lay's chips over no-name products.	
	24	If I had to choose between different brands of chips, I would pick Lay's.	
	25	I prefer Lay's chips over other brands.	
Preference Kind	26	I would like to try the kind of Lay's chips as advertised in the brochure.	
	27	I prefer the flavour of Lay's chips as advertised in the brochure over different flavours.	
	28	I would rather buy another kind of Lay's chips than announced in the brochure.	x
	29	When I buy Lay's chips, I would choose that flavour as advertised in the brochure.	
	30	If I had to choose between different flavours of chips, I would pick the kind advertised in the brochure.	
Brochure Attractiveness	31	This brochure is appealing to me.	
	32	I do not like this brochure.	x
	33	The brochure is eye-catching.	
	34	This brochure is unattractive.	x
	35	I think this brochure is pleasing.	
Brochure Quality	36	This brochure is of high quality.	
	37	This brochure belongs to high-class.	
	38	The quality of the brochure could be improved.	x
	39	The quality of this brochure is premium.	
	40	The quality of the brochure is below standard.	x
Processing Fluency	41	The first impression of the brochure matches my perceived image of the company Frito-Lay.	
	42	The design of the brochure matches my perceived image of the company Frito-Lay.	
Material Evaluation a) cover items	43	I like the design of the brochure.	
	44	The colours used for the brochure are appealing.	
	45	The quality of printing could be improved.	x
Material Evaluation b) stimulus material	46	I like the material of the brochure.	
	47	I think the paper used for the brochure is of low quality.	x
	48	The weight of the brochure is adequate.	

	49	I would prefer to print this brochure on heavier paper.	
	50	I would rather print this Lay's brochure on the material used for the Nespresso brochure.	x
Authenticity	51	I consider this brochure as authentic.	
	52	I think this brochure is real advertising material.	
	53	In my opinion the brochure will be an effective mean to inform customers.	

As a result of the pretest, it was possible to decrease the total number of items to predominantly three per construct. Thereby, the internal consistency could be increased for the majority of constructs (increase ranging from .008 to .991). Some constructs lost some reliability by reducing the number of items to three. However, this loss was so minimal (decrease .018 and .019) that the advantage of having fewer items outbalanced the slightly decreased reliability. After the reduction of the amount of items, all constructs could exhibit a reliability of at least .81. The results and chosen items are shown in Table A7.2.

Table A7.2. Remaining Items For Questionnaire Study 1

Construct	Cronbach's Alpha before reduction	Cronbach's Alpha after reduction	Construct Number	Selected items	Reversed
Brand Evaluation	-.048	.810	B1	I feel positive about this brand.	
			B2	Lay's is a fine brand.	
			B3	I have the impression Lay's is a poor brand.	x
Brand Credibility & Trust	.829	.810	C1	Lay's is a trustworthy brand.	
			C2	The brand Lay's makes a reliable impression.	
			C3	I would not trust this brand.	x
Behavioural Intention	.871	.907	BI1	I want to taste Lay's chips.	
			BI2	I will go to a supermarket to buy Lay's chips.	
			BI3	I would love to buy Lay's chips.	
Seriousness/ Importance	-.097	.894	S1	trivial - serious	
			S2	insubstantial - substantial	
			S3	important - unimportant	x
Preference Brand	.828	.843	PB1	I would rather buy Lay's chips than Pringles.	x
			PB2	If I had to choose between different brands of chips, I would pick Lay's.	
			PB3	I prefer Lay's chips over other brands.	
Preference Kind	.947	.955	PK1	I prefer the flavour of Lay's chips as advertised in the brochure over different flavours.	

			PK2	I would rather buy another kind of Lay's chips than announced in the brochure.	x
			PK3	When I buy Lay's chips, I would choose that flavour as advertised in the brochure.	
Brochure Attractiveness	.920	.937	A1	This brochure is appealing to me.	
			A2	I do not like this brochure.	x
			A3	The brochure is eye-catching.	
Brochure Quality	.945	.933	Q1	This brochure is of high quality.	
			Q2	This brochure belongs to high-class.	
			Q3	The quality of this brochure is premium.	
Processing Fluency	.922	.922	PF1	The first impression of the brochure matches my perceived image of the company Frito-Lay.	
			PF2	The design of the brochure matches my perceived image of the company Frito-Lay.	
Cover Items	-	-	co1	I like the design of the brochure.	
			co2	The colours used for the brochure are appealing.	
			co3	The quality of printing could be improved.	x
Material Evaluation	.849	.876	M1	I like the material of the brochure.	
			M2	I think the paper used for the brochure is of low quality.	x
			M3	I would prefer to print this brochure on heavier paper.	
			M4	I would rather print this Lay's brochure on the material used for the Nespresso brochure.	x
Authenticity	.676	.676	AU1	I consider this brochure as authentic.	
			AU2	I think this brochure is real advertising material.	
			AU3	In my opinion the brochure will be an effective mean to inform customers.	

Based on the same established constructs measuring brand perception (Brand Evaluation, Brand Credibility & Trust, Behavioural Intention) in the case of Lay's, items were constructed for the case of the Nespresso brochure. This 'anchor-questionnaire' was pretested as well by the same 11 participants. Likewise, five items per construct were reduced to three according to reliability analysis. However, in order to enable a valid comparison with the constructs used for the Lay's evaluation, it was chosen to select the same corresponding items for the Nespresso evaluation. This aim outweighed the potential loss of reliability, since the questions used for evaluating the Lay's brochure are primarily important and pinoeering. Thereby, the internal consistency increased for the construct Brand Evaluation, remained the same for Behavioural Intention, but decreased for Brand Credibility and Trust.

Table A7.3. Items For the Pretest Questionnaire Nespresso Study 2

Construct	No.	Selected items	Reversed
Brand Evaluation	1	The brand Nespresso appeals to me.	
	2	Nespresso is an unattractive brand.	x
	3	I feel positive about Nespresso.	
	4	Nespresso is a fine brand.	
	5	I have the impression Nespresso is a poor brand.	x
Brand Credibility & Trust	6	Nespresso is a trustworthy brand.	
	7	The brand Nespresso makes a reliable impression.	
	8	I would not trust this brand.	x
	9	This brand is authentic.	
	10	This brand makes a sincere impression.	
Behavioural Intention	11	I want to try Nespresso coffee.	
	12	I would never buy Nespresso coffee.	x
	13	I want to taste Nespresso coffee.	
	14	I will go to a supermarket to buy Nespresso coffee.	
	15	I would love to buy Nespresso coffee.	

Table A7.4. Items For the Pretest Questionnaire Nespresso Study 2

Construct	Cronbach's Alpha before reduction	Cronbach's Alpha after reduction	Construct Number	Selected items	Reversed
Brand Evaluation	.902	.947	Bn1	I feel positive about Nespresso.	
			Bn2	Nespresso is a fine brand.	
			Bn3	I have the impression Nespresso is a poor brand.	x
Brand Credibility & Trust	.818	.571	Cn1	Nespresso is a trustworthy brand.	
			Cn2	The brand Nespresso makes a reliable impression.	
			Cn3	I would not trust this brand.	x
Behavioural Intention	.866	.866	BIn1	I want to taste Nespresso coffee.	
			BIn2	I will go to a supermarket to buy Nespresso coffee.	
			BIn3	I would love to buy Nespresso coffee.	

Finally, participants were asked to indicate if they had any problems understanding certain formulations or if they had general comments. The majority of participants indicated that it was difficult to

answer the semantic differential since they were not familiar with particular adjectives. However, due to the reduction of items, the adjective-pairs identified as vague were excluded anyway based on the reliability analysis. Since there was no problem with understanding the remaining items, the phrasing was not changed for the real study.

Über sämtliche Bereiche wird auch das EDEKA-Qualitätsmanagement-System

Qualität einkaufen – 765 Mal im Norden

Mehr Lebensqualität für unsere Kunden

Qualität ist für den EDEKA-Einzelhandel nicht nur die Produktqualität der zahlreichen Marken und Artikel, sondern alles, was vom Kunden unter Qualität verstanden wird. Für den täglichen Einkauf sind Kompetenz, freundliche Beratung, Frische, Sortimentsbreite oder Preis-Leistungs-Verhältnis wichtig. Damit die Erwartungen und Wünsche in unseren Märkten optimal erfüllt werden können, ist für den EDEKA-Groß- und Einzelhandel das EDEKA-Qualitätsmanagement-System entwickelt worden.

Speziell geschulte Mitarbeiter/-innen beantworten die Fragen unserer Kunden rund um die Ernährung und geben Hinweise und Tipps. Diesen von den Kunden zunehmend genutzten Service bauen wir kontinuierlich aus. Zu diesem Zweck haben wir ein Trainerteam geschaffen, das vor Ort Mitarbeiter/-innen des Einzelhandels ausbildet.

Produkte aus ökologischer Landwirtschaft stehen nicht nur für einen schonenden Umgang mit den natürlichen Ressourcen, sondern auch für eine hohe Produktqualität. Kein Wunder also, dass sich immer mehr Bio-Produkte in den Regalen und Frischeabteilungen unserer Märkte befinden.

Bio Wertkost

Mit unserer Eigenmarke „Bio Wertkost" bieten wir unseren Kunden eine breite Auswahl an Produkten aus kontrollierter, ökologischer Landwirtschaft mit der gewohnten hohen EDEKA-Qualität an.

EDEKA

EDEKA Nord

Leidenschaft für Lebensmittel

EDEKA Nord eG
Gadelander Straße 120
26529 Neuenkirchen

EDEKA Handelsgesellschaft Nord mbH
Gadelander Straße 120
26529 Neuenkirchen
www.edeka-nord.de


Hochwertige
Weinauswahl
Jan Frauen
Tipps vom
Weinexperten
Frische Lebensmittel
aus der Region
Kurze Wege vom Erzeuger zum Verbraucher
Die Obst- und Gemüseprodukte von „Unsere Heimat – echt & gut" stammen ausschließlich aus unserem Absatzgebiet, also aus Schleswig-Holstein, Hamburg, Mecklenburg-Vorpommern und dem nördlichen Niedersachsen.
Die Produkte werden von unseren regionalen Vertragslieferanten direkt in unsere drei Logistikzentren Neumünster, Zarrentin und Malchow geliefert, die im „Herzen" unseres Absatzgebietes liegen, ebenso wie die Standorte unserer regionalen Lieferanten. Kurze Wege vom Feld in Ihren EDEKA-Markt vor Ort sind also garantiert.
Die Ware wird ausschließlich durch zertifizierte Vertragslieferanten geliefert. In den entsprechenden Zertifikaten sind sämtliche Bedingungen vereinbart, die die Produkte der Eigenmarke „Unsere Heimat – echt & gut" erfüllen müssen. Die Einhaltung wird durch unabhängige Institute und durch Mitarbeiter der EDEKA Nord kontrolliert.
Die Kennzeichnung erfolgt am Produkt. Auf jeder Packung bzw. jedem Karton wird der Produzent namentlich mit Adresse ausgewiesen.
Geprüfte Qualität
für EDEKA Nord
Wir setzen auf Natur
In Sachen Qualität, Sicherheit und Transparenz bei der Fleischproduktion setzt EDEKA Nord seit Jahren Maßstäbe. Mit NATUR PUR geht das NORDfrische Center noch einen Schritt weiter und setzt ausschließlich auf Bio. Die Vorgaben an Qualität und Tierhaltung gehen zum Teil deutlich über die gesetzlichen Richtlinien hinaus.
Um den hohen Bio-Standards gerecht zu werden, arbeitet das NORDfrische Center mit dem Biopark-Verband zusammen. Er wurde 1991 von engagierten Landwirten und Wissenschaftlern in Mecklenburg-Vorpommern gegründet und vermarktet nur, was aus den Biopark-Betrieben stammt. Das Futter wird in betriebseigenen Mühlen hergestellt und stammt zum großen Teil von eigenen Flächen.
Um den Geschmack der Region zu treffen, orientieren sich die erfahrenen Fleischermeister des NORDfrische Centers an norddeutschen Rezepten. Tägliche Verkostungen und engmaschige Kontrollen garantieren eine gleichbleibend hohe Qualität von NATUR PUR-Produkten. Die regionale Nähe zu den Landwirten und Tieren ermöglicht eine unmittelbare Qualitätskontrolle.
Unsere Heimat
UNSERE HEIMAT
NATUR PUR
EDEKA BIO

Appendix C: Study 1

C.1 Questionnaire

Companies spend a lot of time and effort in creating adverts that convey the right brand image to customers. To make sure the 'right' image comes across; a supermarket is interested in your perception of this brand.

Just try to get an overall impression by studying the brochure no longer than one minute. Then, you are asked to indicate to what extent you agree with the following statements. For this purpose tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1	This brochure is appealing to me.	☐	☐	☐	☐	☐	☐	☐
2	I will stop by this supermarket when I am nearby.	☐	☐	☐	☐	☐	☐	☐
3	This supermarket is trustworthy.	☐	☐	☐	☐	☐	☐	☐
4	The quality of this brochure is premium.	☐	☐	☐	☐	☐	☐	☐
5	I do not like this brochure.	☐	☐	☐	☐	☐	☐	☐
6	This supermarket appeals to me.	☐	☐	☐	☐	☐	☐	☐
7	This supermarket makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
8	I would rather go to this supermarket than somewhere else when I am nearby.	☐	☐	☐	☐	☐	☐	☐
9	I want to go to this supermarket when I am nearby.	☐	☐	☐	☐	☐	☐	☐
10	This is an unattractive supermarket.	☐	☐	☐	☐	☐	☐	☐
11	This brochure differentiates itself from 'competitors' through good design.	☐	☐	☐	☐	☐	☐	☐
12	I feel positive about this supermarket.	☐	☐	☐	☐	☐	☐	☐
13	I would not trust this supermarket.	☐	☐	☐	☐	☐	☐	☐
14	This brochure is unattractive.	☐	☐	☐	☐	☐	☐	☐
15	I will choose this supermarket when I am nearby.	☐	☐	☐	☐	☐	☐	☐
16	I have the impression this is a poor supermarket.	☐	☐	☐	☐	☐	☐	☐
17	This brochure is of high quality.	☐	☐	☐	☐	☐	☐	☐
18	This brochure belongs to high-class.	☐	☐	☐	☐	☐	☐	☐
19	This supermarket is authentic.	☐	☐	☐	☐	☐	☐	☐
20	This brochure is superior.	☐	☐	☐	☐	☐	☐	☐

Now, some general questions follow:

What is your nationality?

- ☐ Dutch
- ☐ German
- ☐ Other: _____

What is your gender?

- ☐ female
- ☐ male

How old are you?

_____

Are you a student or working at the University of Twente?

- ☐ yes
- ☐ no

To what extent do you consider yourself being able to *understand* the German language?

- ☐ I am a native speaker
- ☐ I can understand nearly everything
- ☐ I can understand some words
- ☐ no at all

Are you familiar with the supermarket?

- ☐ yes
- ☐ not really, just heard/ saw it once
- ☐ no

Thanks a lot for your participation!

C.2 Frequency Distribution

Table C2.1. Frequency Distribution

	Are you familiar with the supermarket?			**Total**
	yes	not really	no	
Material A	19	5	18	**42**
Material B	13	8	21	**42**
Material C	17	7	18	**42**
Material D	24	5	13	**42**
Total	**73**	**25**	**70**	**168**

C.3 Cronbach's Alpha Scores

Using the selected items based on the reliability analysis (Table C3.1), constructs were computed by adding those items and dividing by the total number of items per construct (i.e. 3 or 4). In advance, missing values were identified (6 in total) and replaced by the mean of that specific item within the specific condition.

Above this, four respondents were excluded from the analysis. Two of them for the reason because they were too young (12 and 16) and only participated because they asked to when their parents took part in the current study. The third respondent did express disinclination while filling in the questionnaire and seemed to be absent-minded. The fourth participant excluded did feel uncomfortable while filling in the questionnaire and therefore, acted angrily and seemed to just fill in the answers.

Table C3.1. Cronbach's Alpha Scores and Selected Items

Construct	Alpha before reduction	Alpha after reduction	Used items
Brochure Attractiveness	.813	.813	A1, A2, A3, A4
Brochure Quality	.917	.917	Q1, Q2, Q3, Q4
Brand Evaluation	.793	.793	E1, E2, E3, E4
Brand Credibility and Trust	.676	.699	C1, C2, C3
Behavioural Intention	.874	.881	BI1, BI3, BI4

C.4 Outlier Analysis

An outlier analysis was conducted as a following step. Thereby, boxplots were used to identify the outliers of each construct individually. For this purpose, these constructs were respectively separated by stimulus material, leading to the identification of the following respondents as outliers (Table C4.1).

Table C4.1. Identified Outliers

Construct	Material A	Material B	Material C	Material D
Brochure Attractiveness				
Brochure Quality				
Brand Evaluation				
Brand Credibility and Trust		75; 81		
Behavioural Intention	3; 5; 10	36; 81		103

Consequently, the scores of these outliers have been adjusted. Depending on their position at the extreme positive or negative side of the scale, these scores have been replaced by the mean of that specific construct in the specific material group plus/ minus two standard deviations.

C.5 Checking Assumptions (MANCOVA)

Since the current study was set up using a factorial design, specifically a 2 (*Weight*: light [90g/m²], heavy [300g/m²]) x 2 (*Texture*: glossy, rough) between-subject design, as well as measuring several dependent variables (i.e. Brochure Attractiveness, Brochure Quality, Brand Evaluation, Brand Credibility and Trust, Behavioural Intention) a multivariate analysis of variance (MANOVA) needs to be conducted in order to investigate possible effects of the paper type. However, it can be assumed that women in general have a different affiliation with supermarkets than men have. Also the fact that some participants knew the supermarket while others did not, may affect the dependent variables anyway. For these reasons it was chosen to include the variables Gender and Familiarity With Supermarket as Covariates. Accordingly, the assumptions of conducting an multivariate analysis of covariance (MANCOVA) had to be checked.

Firstly, measurements should be statistically independent (Field, 2009), which is assured by utilising a between-subject design for the current study. Secondly, participants were randomly sampled from the population of interest and dependent variables were measured at an interval level (i.e. likert scale). Thirdly, a homogeneity of variance needs to be present, which was checked by conducting the Levene's test (Table C5.1). Since the sample sizes were equal across the groups (i.e. 42), the Box's test has not been applied. The fourth assumption is a normal distribution of the dependent variables, whereby this needs to be the case across different conditions (not only in general; Field, 2009). This criterion has been met partially: The scores on Behavioural Intention and Brochure Quality were not significantly non-normal, while scores on Brochure Attractiveness, Brand Evaluation, and Brand Credibility and Trust were significantly deviating

from a normal distribution (Table C5.2). Accordingly, it was tried to transform the data with the aim of arriving at a normal distribution of all dependent variables afterwards. However, none of the applied transformations (i.e. Log transformation, square transformation, square root transformation, 1/square root transformation, and reciprocal transformation) lead to the desired result. Consequently, all subsequent analyses were performed using the original data. Fortunately, the Pillai-Bartlett trace is relatively robust to violations of assumptions (Field, 2009). Accordingly, it was still appropriate to conduct a MAN(C)OVA.

Table C5.1. Homogeneity of Variance

Construct	Levene's Test
Brochure Attractiveness	$F(3, 164)= 0.94$, *ns*
Brochure Quality	$F(3, 164)= 1.78$, *ns*
Brand Evaluation	$F(3, 164)= 2.42$, *ns*
Brand Credibility and Trust	$F(3, 164)= 0.64$, *ns*
Behavioural Intention	$F(3, 164)= 0.75$, *ns*

Table C5.2. Normal Distribution

Construct	Kolmogorv-Smirnov Test			
	Material A	Material B	Material C	Material D
Brochure Attractiveness	$D(42)= 0.16$, $p < .05$	$D(42)= 0.12$, *ns*	$D(42)= 0.10$, *ns*	$D(42)= 0.14$, $p < .05$
Brochure Quality	$D(42)= 0.09$, *ns*	$D(42)= 0.10$, *ns*	$D(42)= 0.11$, *ns*	$D(42)= 0.10$, *ns*
Brand Evaluation	$D(42)= 0.09$, *ns*	$D(42)= 0.15$, $p < .05$	$D(42)= 0.12$, *ns*	$D(42)= 0.09$, *ns*
Brand Credibility and Trust	$D(42)= 0.14$, $p < .05$	$D(42)= 0.18$, $p < .05$	$D(42)= 0.16$, $p < .05$	$D(42)= 0.12$, *ns*
Behavioural Intention	$D(42)= 0.11$, *ns*	$D(42)= 0.13$, *ns*	$D(42)= 0.08$, *ns*	$D(42)= 0.13$, *ns*

Subsequently, it was checked for the independence of covariate and treatment effect. For this purpose, a factorial MANOVA was conducted with the potential covariates (Gender and Familiarity With Supermarket) as dependent variables and the two grouping variables *Weight* and *Texture* as fixed factors. There was a non-significant main effect of *Weight* on Gender and Familiarity, $F(2, 163)= 1.37$, *ns*. Similarly, the main effect of Texture on the dependent variables was non-significant as well, $F(2, 163)= 0.04$, *ns*. Moreover, the interaction effect between *Weight* and *Texture* on the dependent variables was found to be non-significant, $F(2,163) = 2.31$, *ns*.

The final step was to test for the assumption of homogeneity of regression slopes. For this purpose, the MANCOVA model was customised. The analysis revealed non-significant interaction effects of the grouping variables with the potential covariates. Those results can be found in Table C5.3. Concluding, the assumptions a MANCOVA requires have been fulfilled.

Table C5.3. Homogeneity of Regression Slopes

Interaction Effect	Multivariate Tests
Weight x Texture x Gender	V= 0.17, F(20, 616)= 1.38, *ns*
Weight x Texture x Familiarity	V= 0.14, F(20, 616)= 1.12, *ns*
Weight x Texture x Gender x Familiarity	V= 0.17, F(20, 616)= 1.36, *ns*

C.6 Results Multivariate Analysis of Covariance

Table C6.1. ANCOVA Results for Study 1

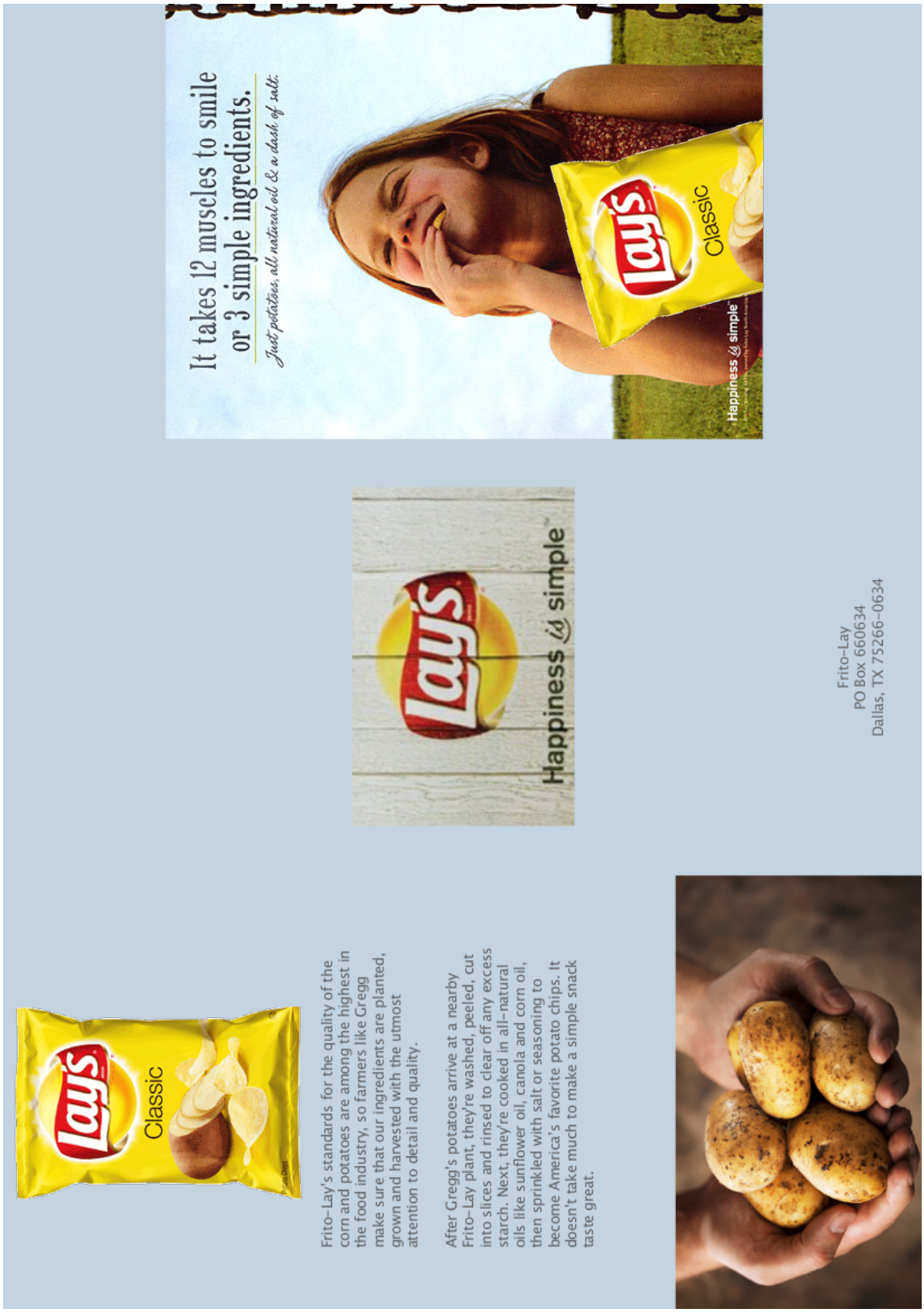
Source	*df*	*F*	*p*	η^2
A. Tests of Between-Subject Effects for Brochure Attractiveness				
Familiarity (Covariate)	1	8.76	.00	.05
Weight	1	1.74	.19	.01
Texture	1	4.20	.04	.03
Error	163			
B. Tests of Between-Subject Effects for Brochure Quality				
Familiarity (Covariate)	1	6.16	.01	.04
Weight	1	14.25	.00	.08
Texture	1	8.28	.01	.05
Error	163			
C. Tests of Between-Subject Effects for Brand Evaluation				
Familiarity (Covariate)	1	14.40	.00	.10
Weight	1	0.28	.60	.00
Texture	1	1.48	.23	.01
Error	163			
D. Tests of Between-Subject Effects for Brand Credibility and Trust				
Familiarity (Covariate)	1	3.62	.06	.02
Weight	1	1.62	.21	.01
Texture	1	5.83	.02	.04
Weight x Texture	1	0.07	.79	.00
Error	163			

E. Tests of Between-Subject Effects for Behavioural Intention

Familiarity (Covariate)	1	23.35	.00	.13
Weight	1	2.61	.11	.02
Texture	1	3.83	.05	.02
Error	163			

Appendix D: Visual Communication Used for Study 2

D.1 Advertising Material Version Lay's Classic



The life of a Frito-Lay potato or corn chip is a pretty simple one, and that's the way we like it. Because we start with farm grown ingredients, the less we do to them, the better they are.

It all starts in the rich soil of an American farm, like Black Gold Potato, in North Dakota. Black Gold's CEO, Gregg Halverson, takes great pride in being a third generation farmer and one of Frito-Lay's largest suppliers.

"Our potatoes are specifically grown to be Frito-Lay potato chips," says Gregg. "We have quality controls at each of our farms to make sure our potatoes are of the highest grade."

"We have quality controls at each of our farms to make sure our potatoes are of the highest grade " - Gregg Halverson, CEO, Black Gold Potato

3 Simple Ingredients

Lay's® Classic Potato Chips are made with these three simple ingredients and that's it. After all, Happiness is Simple™.

Grade A Potatoes

It all starts with the highest quality potatoes, which we harvest from over 80 farms across America to make Lay's® Potato Chips.

All Natural Oil

Lay's® Classic Potato Chips are cooked in healthier oils like sunflower and corn oil, which contain 0g trans fat and are lower in saturated fats.

A Dash of Salt

A 1 ounce bag of Lay's® Classic Potato Chips contains less than 1/12th of a teaspoon of salt. In fact, there's more salt in one slice of bread than there is in a serving of Lay's® Classic Chips.

Simple to make.

All across America potatoes are specifically grown for Frito-Lay to make great tasting chips. Upon arrival at one of our plants, it can take as little as 24 hours for the chips to be made because we keep the process so simple.

Wash We bathe and clean whole potatoes thoroughly in water.

Peel Next we gently peel the skin so that the flavor remains.

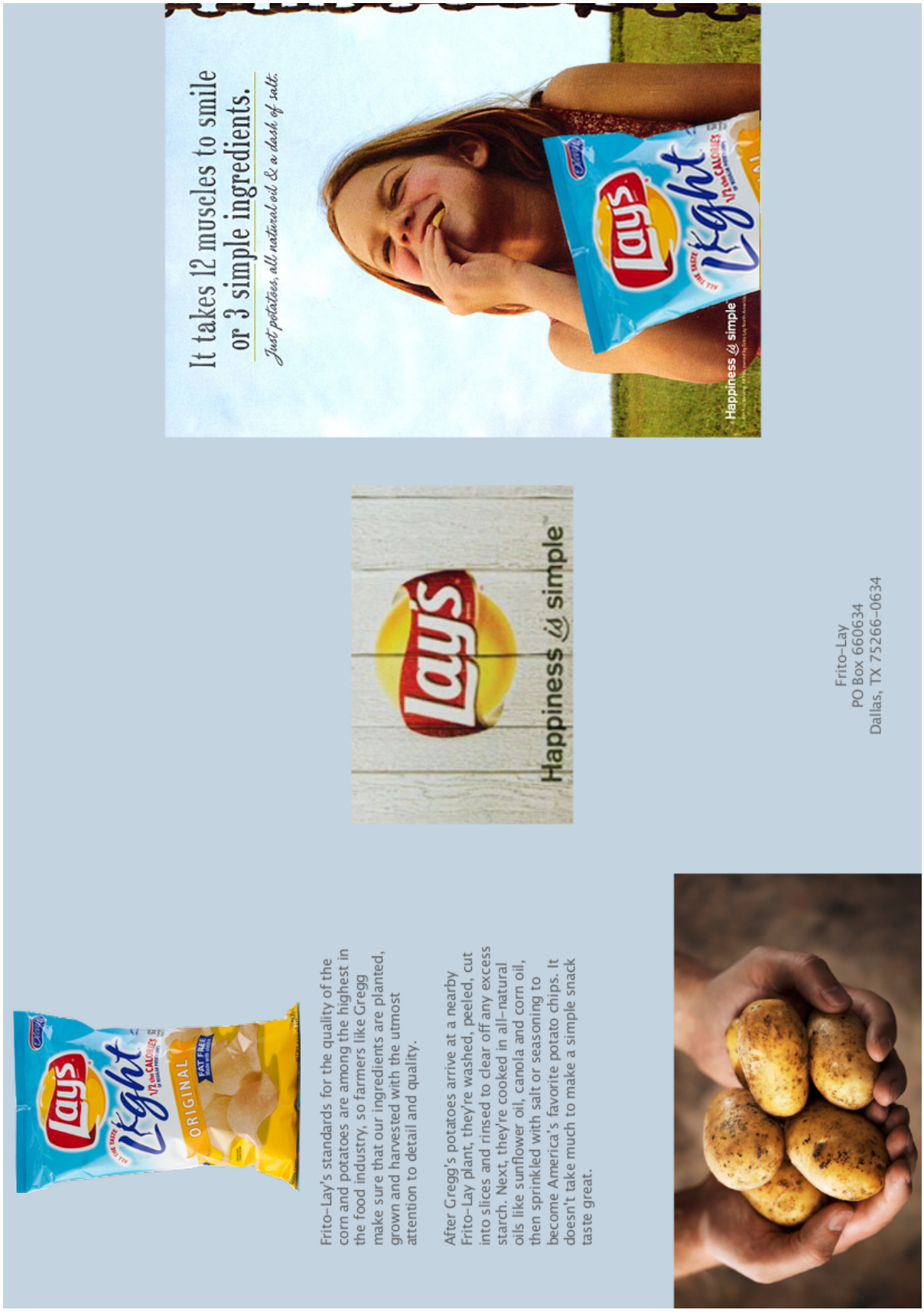
Slice The potatoes are thinly sliced and rinsed again to remove any excess starch.

Cook The slices are cooked to a crispy crunch in all-natural oil.

Season Finally, the chips are topped with a sprinkle of salt.

The potatoes are now delicious chips and are packed and delivered to a store near you.

D.2 Advertising Material Version Lay's Light



The life of a Frito-Lay potato or corn chip is a pretty simple one, and that's the way we like it. Because we start with farm grown ingredients, the less we do to them, the better they are.

It all starts in the rich soil of an American farm, like Black Gold Potato, in North Dakota. Black Gold's CEO, Gregg Halverson, takes great pride in being a third generation farmer and one of Frito-Lay's largest suppliers.

"Our potatoes are specifically grown to be Frito-Lay potato chips," says Gregg. "We have quality controls at each of our farms to make sure our potatoes are of the highest grade."

"We have quality controls at each of our farms to make sure our potatoes are of the highest grade " - Gregg Halverson, CEO, Black Gold Potato

3 Simple Ingredients

Lay's® Classic Potato Chips are made with these three simple ingredients and that's it. After all, Happiness is Simple™.

Grade A Potatoes

It all starts with the highest quality potatoes, which we harvest from over 80 farms across America to make Lay's® Potato Chips.

All Natural Oil

Lay's® Classic Potato Chips are cooked in healthier oils like sunflower and corn oil, which contain 0g trans fat and are lower in saturated fats.

A Dash of Salt

A 1 ounce bag of Lay's® Classic Potato Chips contains less than 1/12th of a teaspoon of salt. In fact, there's more salt in one slice of bread than there is in a serving of Lay's® Classic Chips.

Simple to make.

All across America potatoes are specifically grown for Frito-Lay to make great tasting chips. Upon arrival at one of our plants, it can take as little as 24 hours for the chips to be made because we keep the process so simple.

Wash We bathe and clean whole potatoes thoroughly in water.

Peel Next we gently peel the skin so that the flavor remains.

Slice The potatoes are thinly sliced and rinsed again to remove any excess starch.

Cook The slices are cooked to a crispy crunch in all-natural oil.

Season Finally, the chips are topped with a sprinkle of salt.

The potatoes are now delicious chips and are packed and delivered to a store near you.

D.3 Advertising Material (Anchor) Nespresso

NESPRESSO Accessories

For the complete experience, serve your coffee with the accessories that we have created especially for you from porcelain cups, sweet delicacies and disposable cups, to storage solutions.

Art of Presentation

Art of Enjoyment

Around the Machine

Gastronomy and Hotel

NESPRESSO

Exceptional Grands Crus, whatever your tastes…

To satisfy all tastes, *Nespresso* has a range of seven coffee varieties for business customers that guarantee perfect coffee, each and every time.

Ristretto

Ristretto
Full-bodied and persistent

Pure and dark roasted South and Central American Arabicas make Ristretto a coffee with a dense body and distinct cocoa notes. Intensity 9

Espresso

Espresso Forte
Round and balanced

Made exclusively from South and Central American Arabicas, the complex aroma of this intensely roasted espresso is a balance of strong roasted and fruity notes. Intensity 7

Espresso Leggero
Light and refreshing

A delicious blend of South American Arabica and Robusta, Espresso Leggero adds smooth cocoa and cereal notes to a well-balanced body. Intensity 6

Lungo

Lungo Forte
Elegant and roasted

A complex blend of South and Central American Arabicas, Lungo Forte holds intense roasted notes with a subtle hint of fruit. Lungo Forte is sourced 100% from the *Nespresso* AAA Sustainable Quality™ Program, a farmer-support initiative co-managed with the Rainforest Alliance. Visit www.nespresso.com/aaa-program. Intensity 4

Lungo Leggero
Flowery and refreshing

A delicate blend of lightly roasted East African and South and Central American Arabicas. Lungo Leggero is an aromatic coffee with mild notes of jasmine. Intensity 2

Decaffeinato

Espresso Decaffeinato
Dense and powerful

Dark roasted South American Arabicas with a touch of Robusta bring out the subtle cocoa and roasted cereal notes of this full-bodied decaffeinated espresso. Intensity 7

Lungo Decaffeinato
Velvety and aromatic

A blend of naturally decaffeinated South American Arabicas and Robusta, this coffee reveals flavours of red fruit balanced with sweet cereal notes. Intensity 2

Tasting suggestions

Half-filled Espresso cup 25 ml	Espresso cup 40 ml	Lungo cup 110 ml	Milk recipe

NESPRESSO

Savour the most delicious coffee recipes…

CAFFÈ LATTE

Pour hot milk into a recipe glass. Prepare a Lungo Forte (110 ml) into the glass and mix your drink with a recipe spoon.

CAPPUCCINO

Prepare an Espresso (40 ml) with one of the three suggested varieties in a Cappuccino cup and fill it with milk froth (70 ml). If you wish, sprinkle some cocoa powder on top before enjoying.

LATTE MACCHIATO

Fill a recipe glass (350 ml) with milk froth. Prepare an Espresso (40 ml) with one of the three suggested varieties and pour it onto the back of a spoon and down the side of the glass to produce a graduation of coffee through the milk and a three-layer effect (hot milk at the base, coffee, topped with milk froth).

ESPRESSO MACCHIATO

Prepare one of the three Espresso varieties (40 ml) in an Espresso cup. Add a touch of milk froth, which should be prepared in advance using your milk frothing device.

NESPRESSO
Coffee, body and soul

www.nespresso-pro.com

Appendix E: Study 2

E.1 Questionnaire: Nespresso

Just try to get an overall impression by studying the brochure. Then, you are asked to indicate to what extent you agree with the following statements. For this purpose tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1	I feel positive about Nespresso.	☐	☐	☐	☐	☐	☐	☐
2	Nespresso is a fine brand.	☐	☐	☐	☐	☐	☐	☐
3	I have the impression Nespresso is a poor brand.	☐	☐	☐	☐	☐	☐	☐
4	Nespresso is a trustworthy brand.	☐	☐	☐	☐	☐	☐	☐
5	The brand Nespresso makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
6	I would not trust this brand.	☐	☐	☐	☐	☐	☐	☐
7	I want to taste Nespresso coffee.	☐	☐	☐	☐	☐	☐	☐
8	I will go to a supermarket to buy Nespresso coffee.	☐	☐	☐	☐	☐	☐	☐
9	I would love to buy Nespresso coffee.	☐	☐	☐	☐	☐	☐	☐

E.2 Questionnaire: Lay's

Dear participant,

companies spend a lot of time and effort in creating advertising material that convey the right brand image to customers. The company *Frito-Lay* intents to place new information material about the brand *Lay's* on the market. Thereby, they are aiming at developing a brochure, which is appealing to potential customers and induces future purchases of Lay's chips. To make sure the 'right' image comes across, Frito-Lay is interested in your perception of this brand.

Answering the questions below will take approximately 10 minutes. Your answers will be treated confidentially and anonymously. Some statements will sound similar to you. However, please answer all questions accurately. Also, it is important to answer all questions in the given order.

Kind regards,

Corinna Gerst
c.gerst@student.utwente.nl

What is your nationality?

- ☐ Dutch
- ☐ German
- ☐ Other: _____

What is your gender?

- ☐ female
- ☐ male

How old are you?

_____

Are you familiar with the brand Lay's?

- ☐ yes
- ☐ not really, just heard/ saw it once
- ☐ no

How often do you eat chips?

- ☐ > once a week
- ☐ once a week
- ☐ < once a week
- ☐ never

Just try to get an overall impression by studying the brochure. Then, you are asked to indicate to what extent you agree with the following statements. For this purpose tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
1	I feel positive about this brand.	☐	☐	☐	☐	☐	☐	☐
2	Lay's is a fine brand.	☐	☐	☐	☐	☐	☐	☐
3	I have the impression Lay's is a poor brand.	☐	☐	☐	☐	☐	☐	☐
4	Lay's is a trustworthy brand.	☐	☐	☐	☐	☐	☐	☐
5	The brand Lay's makes a reliable impression.	☐	☐	☐	☐	☐	☐	☐
6	I would not trust this brand.	☐	☐	☐	☐	☐	☐	☐
7	I want to taste Lay's chips.	☐	☐	☐	☐	☐	☐	☐
8	I will go to a supermarket to buy Lay's chips.	☐	☐	☐	☐	☐	☐	☐
9	I would love to buy Lay's chips.	☐	☐	☐	☐	☐	☐	☐

Here, you are asked to indicate which of the following adjective-pairs you consider as a more appropriate description of the brand Lay's.

10	trivial	☐	☐	☐	☐	☐	☐	serious
11	insubstantial	☐	☐	☐	☐	☐	☐	substantial
12	important	☐	☐	☐	☐	☐	☐	unimportant

Again, you are asked to indicate to what extent you agree with the following statements. For this purpose tick the corresponding box ranging from 1 (definitely disagree) to 7 (definitely agree).

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
13	I would rather buy Lay's chips than Pringles.	☐	☐	☐	☐	☐	☐	☐
14	If I had to choose between different brands of chips, I would pick Lay's.	☐	☐	☐	☐	☐	☐	☐
15	I prefer Lay's chips over other brands.	☐	☐	☐	☐	☐	☐	☐
16	I prefer the flavour of Lay's chips as advertised in the brochure over different flavours.	☐	☐	☐	☐	☐	☐	☐
17	I would rather buy another kind of Lay's chips than announced in the brochure.	☐	☐	☐	☐	☐	☐	☐
18	When I buy Lay's chips, I would choose that flavour as advertised in the brochure.	☐	☐	☐	☐	☐	☐	☐
19	This brochure is appealing to me.	☐	☐	☐	☐	☐	☐	☐
20	I do not like this brochure.	☐	☐	☐	☐	☐	☐	☐
21	The brochure is eye-catching.	☐	☐	☐	☐	☐	☐	☐
22	This brochure is of high quality.	☐	☐	☐	☐	☐	☐	☐
23	This brochure belongs to high-class.	☐	☐	☐	☐	☐	☐	☐
24	The quality of this brochure is premium.	☐	☐	☐	☐	☐	☐	☐
25	The first impression of the brochure matches my perceived image of the company Frito-Lay.	☐	☐	☐	☐	☐	☐	☐
26	The design of the brochure matches my perceived image of the company Frito-Lay.	☐	☐	☐	☐	☐	☐	☐

		definitely disagree						definitely agree
		1	2	3	4	5	6	7
27	I like the design of the brochure.	☐	☐	☐	☐	☐	☐	☐
28	The colours used for the brochure are appealing.	☐	☐	☐	☐	☐	☐	☐
29	The quality of printing could be improved.	☐	☐	☐	☐	☐	☐	☐
30	I like the material of the brochure.	☐	☐	☐	☐	☐	☐	☐
31	I think the paper used for the brochure is of low quality.	☐	☐	☐	☐	☐	☐	☐
32	I would prefer to print this brochure on heavier paper.	☐	☐	☐	☐	☐	☐	☐
33	I would rather print this Lay's brochure on the material used for the Nespresso brochure.	☐	☐	☐	☐	☐	☐	☐
34	I consider this brochure as authentic.	☐	☐	☐	☐	☐	☐	☐
35	I think this brochure is real advertising material.	☐	☐	☐	☐	☐	☐	☐
36	In my opinion the brochure will be an effective mean to inform customers.	☐	☐	☐	☐	☐	☐	☐

Thanks a lot for your participation!

E.3 Frequency Distribution

Table E3.1. Frequency Distribution

	familiarity			**Total**
	yes	not really	no	
Version A	31	3	1	**35**
Version B	25	7	3	**35**
Version C	28	3	4	**35**
Version D	26	7	2	**35**
Total	**110**	**20**	**10**	**140**

E.4 Cronbach's Alpha Scores

Using the selected items based on the reliability analysis (Table E4.1), constructs were computed by adding those items and dividing by the total number of items per construct (i.e. 2, 3 or 4). In advance, missing values were identified (2 in total) and replaced by the mean of that specific item within the specific condition.

Above this, two respondents were excluded from the analysis. Both participants missed to fill in page 3 of the questionnaire. Accordingly, more than a third of the items (i.e. 13 out of 36) was not answered and the questionnaire was considered to be inappropriate for further analysis.

Table E4.1. Cronbach's Alpha Scores and Selected Items

Construct	Alpha Before Reduction	Alpha After Reduction	Used items
Brand Evaluation	.788	.788	B1, B2, B3
Brand Credibility and Trust	.780	.780	C1, C2, C3
Behavioural Intention	.898	.898	BI1, BI2, BI3
Seriousness/ Importance	.397	.586	S1, S2
Preference Brand	.884	.884	PB1, PB2, PB3
Preference Kind	.645	.645	PK1, PK2, PK3
Brochure Attractiveness	.837	.837	A1, A2, A3
Brochure Quality	.870	.870	Q1, Q2, Q3
Processing Fluency	.826	.826	PF1, PF2
Material Evaluation	-.297	.643	M1, M2, M4
Authenticity	.676	.676	AU1, AU2, AU3

Behavioural Intention Nespresso	.809	.809	Bn1, Bn2, Bn3
Brand Credibility and Trust Nespresso	.785	.785	Cn1, Cn2, Cn3
Behavioural Intention Nespresso	.832	.832	BIn1, BIn2, BIn3
Evaluation Nespresso Brochure (general)	.869	.869	Bn1, Bn2, Bn3, Cn1, Cn2, Cn3, BIn1, BIn2, BIn3

E.5 Outlier Analysis

An outlier analysis was conducted as a following step. Thereby, boxplots were used to identify the outliers of each construct individually. For this purpose, these constructs were respectively separated by stimulus material, leading to the identification of the following respondents as outliers (Table E5.1).

Table E5.1. Identified Outliers

Construct	Version A	Version B	Version C	Version D
Brand Evaluation			17; 52	
Brand Credibility and Trust	2	33		
Behavioural Intention				
Seriousness/ Importance				102
Preference Brand		55		
Preference Kind			44; 106; 107; 114	
Brochure Attractiveness			80	92; 93; 118
Brochure Quality			80	
Processing Fluency	3; 8; 10; 81			
Material Evaluation		28; 63	80	
Authenticity				93
Brand Evaluation Nespresso				
Brand Credibility and Trust Nespresso		27; 57; 68; 75; 93		
Behavioural Intention Nespresso				

Consequently, the scores of these outliers have been adjusted. Depending on their position at the extreme positive or negative side of the scale, these scores have been replaced by the mean of that specific construct in the specific material group plus/ minus two standard deviations.

E.6 Checking Assumptions (MANCOVA)

Since the current study was set up using a factorial design, specifically a 2 (*Weight*: light [90g/m²], heavy [300g/m²]) x 2 (*Flavour*: LAY'S® Classic Potato Chips, LAY'S® Light Original Potato Chips) between-subject design, as well as measuring several dependent variables (i.e. Brand Evaluation, Brand Credibility and Trust, Behavioural Intention, Seriousness/ Importance, Preference Brand, Preference Kind, Brochure Attractiveness, Brochure Quality, Material Evaluation, Authenticity) a multivariate analysis of variance (MANOVA) needs to be conducted in order to investigate possible effects of the paper type. However, it can be assumed that women in general have a different affiliation with chips than men have. Also the fact that some participants knew the brand while others did not, may affect the dependent variables anyway. Likewise, the eating regularity with respect to chips in general, the nationality of the participants and differences in information processing may affect the dependent variables. Above this, the individual perception of brochure authenticity may influence results as well as differences in the prior evaluation of the Nespresso folder. For these reasons it was chosen to include the variables Gender, Familiarity With Brand, Nationality, Eating Regularity, Processing Fluency, Authenticity, and Evaluation Nespresso Brochure as Covariates. Accordingly, the assumptions of conducting an multivariate analysis of covariance (MANCOVA) had to be checked.

Firstly, measurements should be statistically independent (Field, 2009), which is assured by utilising a between-subject design for the current study. Secondly, participants were randomly sampled from the population of interest and dependent variables were measured at an interval level (i.e. likert scale). Thirdly, a homogeneity of variance needs to be present, which was checked by conducting the Levene's test (Table E6.1). Since the sample sizes were equal across the groups (i.e. 42), the Box's test has not been applied. The fourth assumption is a normal distribution of the dependent variables, whereby this needs to be the case across different conditions (not only in general; Field, 2009). The scores on all constructs, except for Preference Brand, were significantly deviating from a normal distribution (Table E6.2). Accordingly, it was tried to transform the data with the aim of arriving at a normal distribution of all dependent variables afterwards. However, none of the applied transformations (i.e. Log transformation, square transformation, square root transformation, 1/square root transformation, and reciprocal transformation) lead to the desired result. Consequently, all subsequent analyses were performed using the original data. Fortunately, the Pillai-Bartlett trace is relatively robust to violations of assumptions (Field, 2009). Accordingly, it was still appropriate to conduct a MAN(C)OVA.

Table E6.1. Homogeneity of Variance

Construct	Levene's Test
Brand Evaluation	F(3, 135)= 5.54 , p < .05
Brand Credibility and Trust	F(3, 135)= 1.35 , *ns*
Behavioural Intention	F(3, 135)= 0.53 , *ns*
Seriousness/ Importance	F(3, 135)= 1.66 , *ns*
Preference Brand	F(3, 135)= 0.90 , *ns*
Preference Kind	F(3, 135)= 1.49 , *ns*
Brochure Attractiveness	F(3, 135)= 4.49 , *ns*
Brochure Quality	F(3, 135)= 1.45 , *ns*
Processing Fluency	F(3, 135)= 1.13 , *ns*
Material Evaluation	F(3, 135)= 2.38 , *ns*
Authenticity	F(3, 135)= 0.31 , *ns*
Brand Evaluation Nespresso	F(3, 135)= 0.57 , *ns*
Brand Credibility and Trust Nespresso	F(3, 135)= 3.81 , p < .05
Behavioural Intention Nespresso	F(3, 135)= 0.42 , *ns*
Evaluation Nespresso Brochure (general)	F(3, 135)= 0.32 , *ns*

Table E6.2. Normal Distribution

Construct	Kolmogorv-Smirnov Test			
	Material A	Material B	Material C	Material D
Brand Evaluation	D(35)= 0.16, p < .05	D(35)= 0.11, *ns*	D(35)= 0.16, p < .05	D(35)= 0.15, p < .05
Brand Credibility and Trust	D(35)= 0.12, *ns*	D(35)= 0.15, *ns*	D(35)= 0.11, *ns*	D(35)= 0.16, p < .05
Behavioural Intention	D(35)= 0.16, p < .05	D(35)= 0.13, *ns*	D(35)= 0.12, *ns*	D(35)= 0.11, *ns*
Seriousness/ Importance	D(35)= 0.13, *ns*	D(35)= 0.14, *ns*	D(35)= 0.13, *ns*	D(35)= 0.16, p < .05
Preference Brand	D(35)= 0.12, *ns*	D(35)= 0.14, *ns*	D(35)= 0.10, *ns*	D(35)= 0.10, *ns*
Preference Kind	D(35)= 0.13, *ns*	D(35)= 0.19, p < .05	D(35)= 0.17, p < .05	D(35)= 0.13, *ns*
Brochure Attractiveness	D(35)= 0.22, p < .05	D(35)= 0.14, *ns*	D(35)= 0.12, *ns*	D(35)= 0.23, p < .05
Brochure Quality	D(35)= 0.11, *ns*	D(35)= 0.15, *ns*	D(35)= 0.22, p < .05	D(35)= 0.13, *ns*
Processing Fluency	D(35)= 0.21, p < .05	D(35)= 0.22, p < .05	D(35)= 0.15, p < .05	D(35)= 0.25, p < .05
Material Evaluation	D(35)= 0.11, *ns*	D(35)= 0.10, *ns*	D(35)= 0.19, p < .05	D(35)= 0.12, *ns*
Authenticity	D(35)= 0.32, *ns*	D(35)= 0.18, p < .05	D(35)= 0.22, p < .05	D(35)= 0.12, *ns*

Brand Evaluation Nespresso	D(140)= 0.16, p < .05
Brand Credibility and Trust Nespresso	D(140)= 0.12, p < .05
Behavioural Intention Nespresso	D(140)= 0.09, p < .05
Evaluation Nespresso Brochure (general)	D(140)= 0.09, p < .05

Subsequently, it was checked for the independence of covariate and treatment effect. For this purpose, a factorial MANOVA was conducted with the potential covariates (Gender, Familiarity, Eating Regularity, Nationality, Authenticity, and Evaluation Nespresso Brochure) as dependent variables and the two grouping variables *Weight* and *Flavour* as fixed factors. There was a non-significant main effect of *Weight* on Gender, Familiarity, and Processing Fluency (Table E6.3). Similarly, the main effect of *Texture* on the dependent variables was non-significant as well. Moreover, the interaction effect between *Weight* and *Flavour* on the mentioned dependent variables was found to be non-significant. However, there was either a main effect of *Weight*, *Flavour* or an interaction effect on the dependent variables Nationality, Eating Regularity, Authenticity, and Evaluation Nespresso Brochure. Accordingly, last mentioned variables could not be included in the following analysis as covariates.

Table E6.3. Independence of Covariate and Treatment Effect

Dependent Variable	Main Effect Weight	Main Effect Flavour	Interaction Effect Weight x Flavour
Gender	F(1, 136)= 0.13, *ns*	F(1, 136)= 3.17, *ns*	F(1, 136)= 0.51, *ns*
Familiarity	F(1, 136)= 0.33, *ns*	F(1, 136)= 1.31, *ns*	F(1, 136)= 1.31, *ns*
Nationality	F(1, 136)= 2.58, p < .05	F(1, 136)= 6.86, p < .05	F(1, 136)= 5.21, p < .05
Eating Regularity	F(1, 136)= 6.28, p < .05	F(1, 136)= 0.30, *ns*	F(1, 136)= 0.01, *ns*
Authenticity	F(1, 136)= 8.52, p < .05	F(1, 136)= 0.87, *ns*	F(1, 136)= 1.59, *ns*
Nespresso	F(1, 136)= 0.48, *ns*	F(1, 136)= 13.13, p < .05	F(1, 136)= 0.49, p < .05

The final step was to test for the assumption of homogeneity of regression slopes. For this purpose, the MANCOVA model was customised. The analysis revealed non-significant interaction effects of the grouping variables with the potential covariate Gender. The interaction effect of the grouping variables and Familiarity, however, was significant and therefore, this variable was not appropriate to include as a covariate. Those results can be found in Table E6.4. Concluding, the assumptions a MANCOVA requires have been fulfilled.

Table E6.4. Homogeneity of Regression Slopes

Interaction Effect	Multivariate Tests
Weight x Flavour x Gender	V= 0.33, F(52, 452)= 0.77, *ns*
Weight x Flavour x Familiarity	V= 0.55, F(52, 452)= 1.40, p < .05

E.7 Results Multivariate Analysis of Variance

Table E7.1 ANOVA Results for Study 2

Source	*df*	*F*	*p*	η^2
A. Tests of Between-Subject Effects for Brand Evaluation				
Weight	1	3.82	.05	.03
Flavour	1	10.38	.00	.08
Error	135			
B. Tests of Between-Subject Effects for Brand Credibility and Trust				
Weight	1	1.15	.29	.01
Flavour	1	3.19	.08	.02
Error	135			
C. Tests of Between-Subject Effects for Behavioural Intention				
Weight	1	0.21	.65	.00
Flavour	1	5.52	.02	.04
Error	135			
D. Tests of Between-Subject Effects for Seriousness/ Importance				
Weight	1	1.56	.21	.01
Flavour	1	0.04	.85	.00
Error	135			
E. Tests of Between-Subject Effects for Preference Brand				
Weight	1	2.47	.12	.02
Flavour	1	0.58	.45	.00
Error	135			
F. Tests of Between-Subject Effects for Preference Kind				
Weight	1	1.44	.23	.01
Flavour	1	2.28	.13	.02
Error	135			

G. Tests of Between-Subject Effects for Brochure Attractiveness

Weight	1	8.71	.00	.06
Flavour	1	9.24	.00	.06
Error	135			

H. Tests of Between-Subject Effects for Brochure Quality

Weight	1	15.67	.00	.10
Flavour	1	5.03	.03	.04
Error	135			

I. Tests of Between-Subject Effects for Material Evaluation

Weight	1	34.41	.00	.20
Flavour	1	3.15	.08	.02
Error	135			

J. Tests of Between-Subject Effects for Authenticity

Weight	1	8.18	.00	.06
Flavour	1	0.93	.34	.01
Error	135			

K. Tests of Between-Subject Effects for Processing Fluency

Weight	1	0.02	.90	.00
Flavour	1	1.83	.18	.01
Error	135			

Appendix F: Summary of Results

Table F.1 Summary of Results

Study	Hypothesis		Results	Source of Statistics
1	**H1**	The visual communication printed on heavy stimulus material will be evaluated more positively with respect to [the dependent variables] than the light stimulus material version (main effect).	*partly supported*	
1	H1a	[Brochure Attractiveness]	not supported	Table C6.1A
1	H1b	[Brochure Quality]	supported	Table C6.1B
1	H1c	[Brand Evaluation]	not supported	Table C6.1C
1	H1d	[Brand Credibility and Trust]	not supported	Table C6.1D
1	H1e	[Behavioural Intention]	not supported	Table C6.1E
1	**H2**	The visual communication printed on rough stimulus material will be evaluated more positively with respect to [the dependent variables] than the glossy stimulus material version (main effect).	*partly supported*	
1	H2a	[Brochure Attractiveness]	supported	Table C6.1A
1	H2b	[Brochure Quality]	supported	Table C6.1B
1	H2c	[Brand Evaluation]	not supported	Table C6.1C
1	H2d	[Brand Credibility and Trust]	supported	Table C6.1D
1	H2e	[Behavioural Intention]	supported	Table C6.1E
1	**H3**	The visual communication printed on the combination heavy and rough stimulus material will be evaluated most positively with respect to [the dependent variables] (interaction effect).	*not supported*	
1	H3a	[Brochure Attractiveness]	not supported	Table C6.1A
1	H3b	[Brochure Quality]	not supported	Table C6.1B
1	H3c	[Brand Evaluation]	not supported	Table C6.1C
1	H3d	[Brand Credibility and Trust]	not supported	Table C6.1D
1	H3e	[Behavioural Intention]	not supported	Table C6.1E
2	**H4**	The visual communication printed on heavy stimulus material will be evaluated more positively with respect to [the dependent variables] than the light stimulus material version (main effect).	*partly supported*	
2	H4a	[Brand Evaluation]	supported	Table E7.1A
2	H4b	[Brand Credibility and Trust]	not supported	Table E7.1B
2	H4c	[Behavioural Intention]	not supported	Table E7.1C
2	H4d	[Seriousness/ Importance]	not supported	Table E7.1D
2	H4e	[Brochure Attractiveness]	not supported	Table E7.1E
2	H4f	[Brochure Quality]	not supported	Table E7.1F
2	H4g	[Material Evaluation]	supported	Table E7.1G
2	H4h	[Authenticity]	supported	Table E7.1H
2	H4i	[Preference Brand]	supported	Table E7.1I
2	H4j	[Preference Kind]	supported	Table E7.1J

2	**H5**	The visual communications connoting congruence among stimulus material and content (i.e. Classical chips advertised on heavy paper version; Light chips advertised on light paper version) will be evaluated more positively with respect to [the dependent variables] than the visual communications connoting incongruence among stimulus material and content (i.e. Classical chips advertised on light paper version; Light chips advertised on heavy paper version) (interaction effect).	*partly supported*	
2	H5a	[Brand Evaluation]	supported	Table E7.1A
2	H5b	[Brand Credibility and Trust]	not supported	Table E7.1B
2	H5c	[Behavioural Intention]	not supported	Table E7.1C
2	H5d	[Seriousness/ Importance]	not supported	Table E7.1D
2	H5e	[Brochure Attractiveness]	not supported	Table E7.1E
2	H5f	[Brochure Quality]	not supported	Table E7.1F
2	H5g	[Material Evaluation]	not supported	Table E7.1G
2	H5h	[Authenticity]	not supported	Table E7.1H
2	H5i	[Preference Brand]	not supported	Table E7.1I
2	H5h	[Preference Kind]	not supported	Table E7.1J
2	**H6**	The expected interaction effect of stimulus material and content with respect to the dependent variables is mediated by Processing Fluency (moderated mediation).	*not supported*	Table 5

Appendix G: Paper Versions Used During Both Studies

Material A: light & glossy

XEROX colotech+ A4 90g/m²

Material B: light & rough

Schneidersöhne Briefblock Leinen A4 90g/m²

Material C: heavy & glossy

XEROX colotech+ A4 300g/m²

Material D: heavy & rough

Marpa Jansen Fotokarton Hochweiss A4 300g/m²

Material A

Material B

Material C

Material D