Does it move?

An experimental study in the effects of color contrasts
and structures within a static logo on perceived movement

Master Thesis

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Abstract

Within the last years, markets are flooded with brands from all over the world leading to more competition between them. Logos visually represent companies in their values, beliefs, and goals. It is one of the first and most frequent impressions of a brand people are exposed to. Therefore, companies face the task to create positive associations already at first sight to stay economically competitive.

Previous research regarding logos and their designs addresses mainly differences in cultural perceptions or general designing principles. Only little research focuses on abstract concepts from other disciplines. This study aimed to explore the effect of perceived movement in a static logo on people's perceptions of the brand.

A 2 (color: high contrast vs. low contrast) x 2 (structure: dynamic vs. static) x 2 (corporate identity: active vs. passive) design and an Implicit Association Test were used among N = 311 participants. The present study examined the effects of color contrasts and structures within logos on perceived movement, brand attitudes, engagement and brand personalities. The research is one of the firsts, connecting the concept of perceived movement, attitude forming, and brand personalities. Moreover, this study delivers practical insights on how marketers can create the perception of movement by changing simple logo properties. Fundamental to this research was the idea of embodied persuasion, assuming that behaviors unconsciously affect cognitive processing and subsequently attitudes and perception.

Results show that people hold an implicit preference for movement within brand logos. Dynamic logo structures reveal an effect on the perception of movement within a static logo. A high color contrast only shows to have a potential effect on perceived movement while paired with an active description of a brand. Still, a high color contrast and a dynamic structure were capable of increasing people's attitudes towards the brand already at the first impression. Additionally, the study was able to detect a mediating effect of engagement between movement and brand attitudes. Lastly, the study revealed that dynamic structures and color contrasts strengthen different personalities of a brand.

Future research is addressed to take a more in-depth look at different color combinations and other structures to develop a mature framework and understanding of the subject. In the course of the study, also implications for follow-up research are discussed.

Keywords

movement, logos, color contrast, structure, brand attitudes, brand personality

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1 Introduction

In the last decade, several big companies invested millions of dollars in the creation of new logo designs (Davies & Paterson, 2000; Edwards, 2008; Hardy, 2012). It is not a surprising development considering the progress of globalization. In an age where markets are flooded with new brands on a daily basis, companies are forced to differentiate themselves more from competitors than ever (Harrison, Rutherford & Tarr, 2014). Cian, Krishna and Elder (2014) state that this trend causes brand-logos to become a more significant part of every successful companies' communication mix. Because logos are often the first contact between a brand and its customers it is necessary to ensure positive associations at this point already.

A logo is one of the key element within a brands' corporate visual identity (CVI). It functions as a marketing tool on its own as it inhibits the potential to communicate desired messages to the public. Hagtvedt (2011) for instance indicated a significant influence of logos on the perception of people towards brands. Likewise, several studies underline the power of logos to change or influence people's perception, product experience or attitudes just by looking at it (Bromley, 2001; Byrom & Lehman, 2007).

Until now, studies in the field of logo designs concentrate predominantly on the elements of color, shape, typography, and their cross-cultural effects. The composition of these elements and their general effects are well studied (Henderson & Cote, 1998; Hynes, 2009; Scott, 1994). As opposed to this, more abstract concepts from other studies are only little represented. For instance, the concept of perceived movement is an extensively researched topic in the field of natural sciences, but insights are only little incorporated into the field of social sciences and marketing related sector of human behavior and cognition. Regarding logos, this is surprising as several studies show that the human brain is able to generate representations of static objects. These, in turn, are stored as changeable mental templates, influencing the unconscious perception of the actual object (Cian et al., 2014; Stafford, Tripp & Bienstock, 2004). A first step in a new direction can be found in research by Cian et al. (2014), who indicate the power of static movement within logos to influence the perception of the brand. Within their study, representations of actual movement (e.g., a jumping horse) were used to illustrate movement within a logo. Results deliver interesting new perspectives in the field of logo designs and movement.

This study enters the field of perceived movement in logos based on the idea of embodied persuasion. Generally speaking, it states that the human cognition depends on physical feedback of the body which influences cognitive processing. Several research underlines its potential to impact attitudes and behavior (Briñol & Petty, 2008; Sherman,

Gangi & White, 2010). Based on this assumption, it is purposed that simple logo properties might inhibit the potential to create the perception of movement. More concrete, this research aims to gather relevant and practical information in the field of perceived movement for color contrasts and structures within a logo and potential aftereffects on attitudes.

Additionally, past research did not establish a connection between brand personalities, movement, and attitude forming. This is a surprising gap, as several researchers agree on the connection between brand personalities and their significant influence on all kinds of stakeholders (Aaker, 1997; Murphy, Moscardo & Benckendorff, 2007). Therefore, this study aims to provide a foundation for perceived movement in logos and brand personalities.

Based on the discussion above, the research questions are formulated as follows:

RQ 1: *Are color contrasts and structures within logos capable of illustrating the perception of movement?*

RQ 2: *Do logos portraying movement enhance brand attitudes?*

RQ 3: *Will a logos' color contrast and a structure influence personalities associated with a brand?*

2 Theoretical framework

This section of the study assembles relevant theoretical data towards a conceptual research model. The primary focus is brand attitude, its connection to perceived movement, brand personalities, and opportunities emerging from a logo's color and structure to influence the other variables. It serves as the foundation for the practical execution of the research and underlines its relevance.

2.1 Corporate visual identity: logos

The corporate visual identity (CVI) is a goal oriented, visual expression of a company and communicates organizational characteristics towards its stakeholders (Van den Bosh & De Jong, 2005; Van Riel & Van den Ban, 2001). Iyamabo, Owolawi, Otubanja and, Balogun (2013, p. 30) describe it as the representing part of corporate identity as it functions as 'the outer sign of the inward commitment.' The term corporate identity includes a set of brand characteristics through which it allows itself to be known and through which stakeholders can describe, remember and relate to it (Van Rekom, 1997). The CVI embraces these elements of corporal identity on a visual basis and aims to communicate their meaning towards people. A corporate visual identity is composed of different elements often resulting in names, symbols, logos, typography, colors, slogans or other graphical features (Van den Bosh & De Jong 2005). They serve as a brands' means and are implemented within every successful communication mix (Van den Bosh & De Jong, 2005). Consequently, the end of corporate visual identity is to shape people's perceptions concerning a desired corporate identity in their heads.

The present study focusses on logos, the corporate symbol that visually represents a brand (Van den Bosh & De Jong, 2005). It is defined as the 'visual signature of the brand responsible for conveying the brand's personality' and functions to ensure successful and meaningful communication towards all stakeholders (Bromley, 2001; Byrom & Lehman, 2007; Cian et al., 2014). It is usually the first as well as the most persistent feature of a brand people are exposed to and can impact people's attitudes, impressions and behaviors (Hagtvedt, 2011; Snyder, 1993).

2.2 Perceived movement and logos

A current study by Cian et al. (2014) argues that research regarding movement has only focused on its causes but not on its posterior consequences. In particular, the principle of hedonistic aesthetics justifies the capability of static stimuli to convey the perception of movement. It appears that people play with images in their head, whereby cognitive engagement shifts their perception towards movement of the actual object (Cian et al., 2014). In this context, scholarly work states that the human brain can create mental representations of fixed objects to facilitate information processing as well as cognitive organizing (Freyd, 1993; Pavio & Clark, 1991).

Although research acknowledges the possible perception of movement, e.g., within a logo, Leborg (2006) argues that movement can only be shown as a representation of itself within a static image. The term visual grammar covers here objects, structures, activities, and relations of different elements within a static stimulus. They help to communicate a desired meaning, impression or message based on visual stimulation of the human eye (Leborg, 2006). Likewise, Vinson and Reed (2002) referred to a phenomenon called 'frozen motion.' These are snapshots of people or objects in motion and inhibit the quality to indicate perceived movement within a static picture (Vinson & Reed, 2002). Additionally, Cian et. al (2014) were able to create the perception of movement within a logo based on a frozen motion picture.

Still, only a few researchers transferred results into the marketing related sector. Previously, images of frozen motion are the only connection between logos and movement. Accordingly, the connection between the concepts of perceived movement and logos is a mostly unviolated field. For instance, there is no study concerning the question of how to enhance perceived movement on the basis of logo properties without showing movement explicitly (e.g., frozen motion). Furthermore, the enhancement of brand attitudes and brand personalities through perceived movement within a logo are not addressed as of now. Summarizing, this study considers that static logo properties (color vs. structure) can be altered to create the perception of movement to impact brand attitudes and personalities.

2.3 Brand Attitudes and movement

Within social sciences, researchers agree on the definition that an attitude is a 'psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor' (Eagly & Chaiken, 1993; Solomon, Bamossy, Askegarrd & Hogg, 2013). Among other factors, Grass and Seitner (2015) characterize attitudes as the foundation of human behavior. They are formed through cognitive processing and lead either to positive or negative evaluations, which in turn function as mental templates guiding actions (Grass & Seitner, 2015; Dillard, 1993). Especially brands strive for a positive reputation, which is crucial to survive among competitors. They want to establish favorable, unique, and strong associations in the heads of customers (Suh & Youjae, 2006). Previous research observes that favorable attitudes positively influence consumer evaluations. For example, Collins-Dodd and Lindley (2003) demonstrate a positive relationship between consumers' perceptions of store own brands and attitudes towards the store in general. Similarly, Suh and Youjae (2006) acknowledge that positive brand attitudes strengthen people's brand loyalty and brand satisfaction. Furthermore, past research confirms that attitudes towards a brand are inter alia influenced by the corporate identity of a brand (Barich & Kolter, 1991; Keller, 2003).

By establishing a connection between perceived movement and brand attitudes, literature addresses cognitive engagement. Accordingly, visual stimuli can enhance cognitive engagement leading to the perception of movement within a static object based on the fact that 'consumers are not passive recipients of information; they are participants' (Ashley & Tuten, 2015). Since visual stimuli trigger the human imagination, simple visual cues within logos promise to be able to circumvent the mind and to increase cognitive engagement (Conway, Kitaoka, Yazdanbakhsh, Pack & Livingstone, 2005; Lutz & Lutz, 1978). This study expects that active processing enhances people's engagement with a static logo. Subsequently, higher customer engagement will lead to more positive attitudes. In this context, previous research states that visual cues inhibit the power to have a persuading effect on people (Peracchio & Meyers-Levy, 2005; Zeltner, 1975). Also, the phenomenon of embodied persuasion states that cognitive processing, evoked through body reactions, might affect people's attitude, behavior and perception (Briñol & Petty, 2008). In support of such direct effect on brand attitudes, Cian et al. (2014) suggest that dynamic imagery in logos can enhance brand attitudes. Consequently, this study aims to investigate the elements of perceived movement and engagement in logos as essential factors for positive brand attitudes.

H1: *Brand logos which are perceived to indicate movement will create more positive attitudes towards the brand.*

H2: *The effect of perceived movement on brand attitudes will be mediated through cognitive engagement.*

2.4 Brand personality and brand attitudes

Companies want to establish a specific image of themselves in the heads of their stakeholders (e.g., exciting, competent or expensive). Therefore, logos serve the purpose of communicating the desired brand image towards different stakeholders. In this context, brand personalities are defined as a 'set of human characteristics associated with a brand' which can positively affect people's loyalty or preference towards the brand (Aaker, 1997, p. 347; Aaker, 1999; Fournier, 1998). Also, Kim, Han, and Park (2001) demonstrate that customer identification with a brand influences positively word-of-mouth advertising and brand loyalty. As companies aim to develop a brand personality by themselves, it is fundamental to understand how particular characteristics might be conveyed to the target audience.

In contrast to a human personality, which is acquired through an individual's behavior, appearance, attitude and other factors, the creation of a brand personality requires less information about the target (Ouwersloot & Tundorica, 2001). Already indirect or short impressions like logos can have a major influence on the perceived brand personality and influence the relationship between consumer and brand (Aaker, 1997, Ouwersloot & Tudorica, 2001). This is an important factor considering that this study focusses on the short exposure to a logo of a company. In this context, Aaker (1997) suggests five distinct dimensions of brand personalities by the names of excitement, sincerity, competence, sophistication, and ruggedness.

Hence, this study assumes that simple visual changes in a logo influence the way in which people interpret a company's personality as a whole. Furthermore, it will be hypothesized that certain personality traits of a company will have a positive impact on attitudes towards the related brand.

H3: *Differences in the properties of a logo will lead to different characterizations of brand personalities.*

H4: *Different personality traits will influence the attitudes people hold towards the brand.*

Table 1. *Aaker's brand personality framework (1994)*

Dimension	Facets
Excitement	Daring
	Spirited
	Imaginative
	Up-to-date
Sincerity	Down-to-earth
	Honest
	Wholesome
	Cheerful
Competence	Reliable
	Intelligent
	Successful
Sophistication	Upper class
	Charming
Ruggedness	Outdoorsy
	Tough

2.5 Corporate identity: moderator between logos and brand personality

As aforementioned, a logo is the visually representing part of the corporate identity of a company. The concept of corporate identity includes organizational activities, its culture, values, corporate behavior, strategy, products, and services and vice versa people's reactions to it (Melewar & Saunders, 1998; Van Rekom, 1997). Balmer (2001) describes it as 'the mix of elements which gives organizations their distinctiveness: the foundation of business identities.' Regarding this study, it is expected that different corporate identities will moderate the effect between different logos and the perceived personalities. This assumption is based on research conducted by Melewar and Saunders (1998) who identified the interacting relationship of CI (in the case of this study paraphrased through different brand values) and CVI (in the case of this study paraphrased as the logo). As Lee, Aparna and Labroo (2004) indicated, coinciding sets of stimuli can lead to higher degrees of positive attitudes. Discrepancies between the two constructs would lead to dissonances in the perception of the corresponding company and might influence attitudes towards it negatively.

H5: The corporate identity will influence the potential effect of logos on brand personalities.

2.6 Color contrast and perceived movement

Color has been established to play an essential role in the marketing sector. People receive physical information (e.g., hue or color combinations) from a stimulus, evoking cognitive reactions which are subsequently reflected in people's behavior (Garber, Burke & Jones, 2000). Concerning the connection of logo-colors and brand attitudes, Labrecque and Milne (2012) identified the potential of colors alone to elicit positive associations in people's minds. Additionally, research by Bottomley and Doyle (2006) exhibits the power of colors within a logo to enhance a brand's desired image. These findings are consistent with other research stating that colors impact first product experiences and the purchase process (Wei-Lun & Hsieh-Liang, 2010). Nevertheless, the connection between colors and perceived movement is an untouched field within the sector of social sciences.

Leborg (2006) argues that static stimuli need to represent actual movement for people to perceive it as moving. However, literature in the field of color contrasts and the natural sciences implies the theoretical potential to generate the perception of movement within a logo without directly representing it. Inside the human brain, motion detectors are 'sensitive to the sign of contrast' and inhibit the power to evoke a static movement illusion (Conway, Kitaoka, Yazdanbakhsh, Pack & Livingstone, 2005, p. 5651). Several studies explain this by stating that the perception of movement originates from the existence of 'differences of response timing of visual neurons' (Manusell & Gibson, 1992; Kitaoka & Ahida, 2003). Moreover, studies by Fraser and Wilcox (1979) and Faubert and Herbert (1999) indicate that colors of low contrast illustrate only weak illusions of motion. Kitaoka and Ashida (2003) agree in the fact that the visual system perceives high degrees of motion if nearby colors are high in contrast.

Consequently, this study hypothesizes that logos including high contrast colors will lead to the perception of movement. Furthermore, it is suspected that logos containing a high color contrast lead to more favorable attitudes towards a brand as the human brain reacts time-displaced to different colors leading to higher degrees of engagement (Manusell & Gibson, 1992; Kitaoka & Ahida, 2003; Cian et al., 2014).

H6a: *Logos containing high contrast colors will be perceived as more moving than those containing low contrast colors.*

H6b: *Logos containing high contrast colors will lead to more favorable attitudes based on perceived movement.*

2.7 Logo structure and perceived movement

Leborg (2006) analyzed in the context of design principles the factor 'activities' as a static representation of movement. In total twelve activities are mentioned whereby a 'path' inhibits the potential to create illusions of movement. It suggests that an object traveling along an imaginary line or curve (path) represents motion (Leborg, 2006). Besides, 'continuation' is a principle referring to the movement of the eye from one object to another. It is mentioned in the 'Gestalt' psychology touching upon theories regarding visual perception. More precisely, the theories attempt to describe the organization of visual stimuli from single elements into a unified entity (Koffka, 2013).

Both principles assume that a static object inhibits the power to evoke the cognitive representation of motion through the physical movement of the eyes. Valins (1966) states here that cognition and action behave in a reciprocating relationship. Thoughts influence behavior as certain behavior influences thoughts in turn. Wells and Petty (1980) enhance this hypothesis by stating that body feedback inhibits attitude changing capabilities. This type of embodied persuasion is based on the fact that the body itself serves as a simple peripheral cue to affect structural properties of thoughts (Briñol, McCaslin & Petty, 2012). Thus, embodied persuasion in the context of logos will be hypothesized to create the illusion of movement.

This study assumes consequently that by combining the fields of 'path' and 'continuation' an illusion of movement can be created. By forcing people to actively engage in the logo by moving their eyes (e.g., from left to right) and simultaneously by creating a precast path the eyes can follow. As a result, it is expected that people perceive movement within a static logo. Ultimately, the exposure to a logo with said attributes might positively influence people's attitudes towards the brand. In the case of this study, logos containing the above-mentioned elements will be characterized as dynamic whereas logos without those properties as static.

H7a: *Logos containing a dynamic structure will be perceived as more moving than those with a static one.*

H7b: *Logos containing a dynamic structure will lead to more favorable attitudes towards the brand based on perceived movement*

2.8 Congruence between the elements of color contrast and structure

Logo designs are composed out of single elements which are perceived as an overall holistic impression. Congruence between different design elements helps people to process information with a minor degree of active, cognitive effort (Van Rompay, Pruyn & Tieke, 2009). Several studies identified that fluent processing of elements has a positive impact on consumer evaluations (Becker, van Rompay, Schifferstein & Galetzka, 2011; Lee & Lambroo, 2004; Reber, Schwarz & Winkielman, 2004). Furthermore, Leborg (2006) mentions in his explanation of visual grammar that objects within imagery relate to each other and create an overall impression of the design.

Regarding logos, research often addresses congruence between logos and other brand factors like personalities, products or advertisement. However, less research focuses on the congruence of elements within a logo especially not on the variable of perceived movement. Hence, in the case of this study, it will be hypothesized that the manipulations of color and structure will have a positive influence on each other. Logos containing both manipulations will be perceived as more moving as they strengthen one another's impact.

H8: *Logos containing both manipulations (high color contrast and dynamic structure) will inhibit higher levels of perceived movement.*
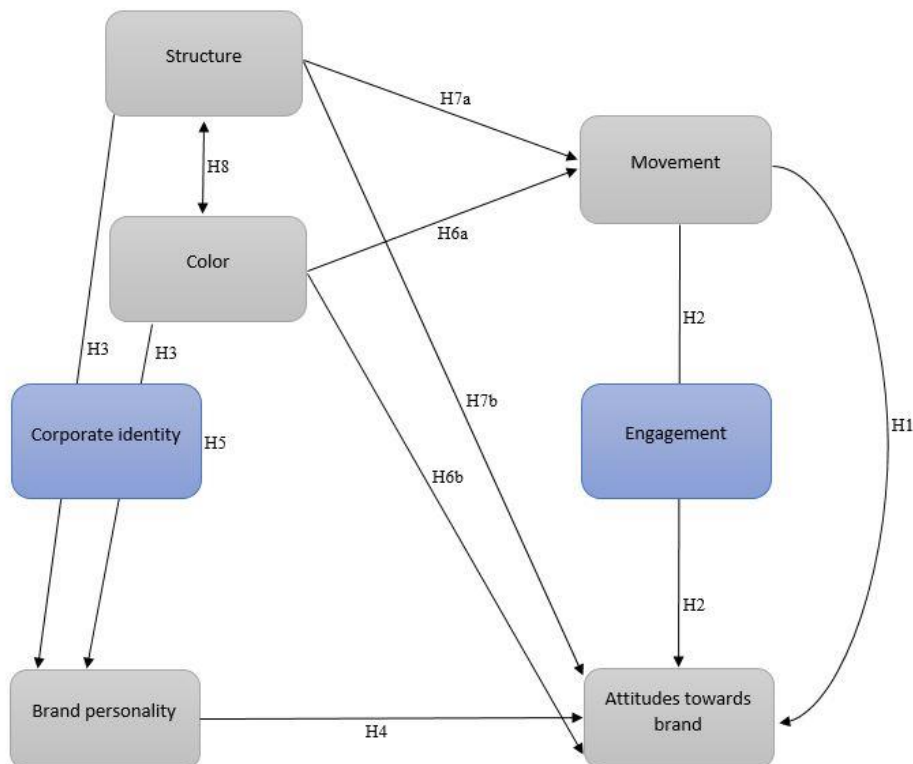

Figure 1. *Conceptual research model*

3 Methods

3.1 Research design and data collection

The study has been conducted as an experimental 2 (color: high contrast vs. low contrast) x 2 (structure: dynamic vs. static) x 2 (corporate identity: active vs. passive) between subjects design. In total eight different homepages of a brand were created which served as independent variables (see Table 2; Appendix A). Attitudes towards the brand, perceived movement, and brand personalities represented the dependent variables. Furthermore, engagement has been hypothesized to function as a mediating variable accounting for the relation between movement and attitudes.

Data was collected through an online questionnaire and has been supported by an Implicit Association Test (IAT). By using an online survey, the aim was to reach out to a significant sample of people to ensure high external validity.

3.2 Stimulus material: pretest and manipulation check

Preliminary, a pretest was conducted to examine whether the created manipulations were indeed perceived as intended. The main study assumed that logos containing high contrast colors and/or a dynamic structure would lead to higher degrees of perceived movement. Moreover, it was hypothesized that the two different brand descriptions differ on the dimension of perceived activeness.

Participants (n=15) rated all 4 logos on the dimension of perceived movement. Moreover, for each logo two manipulation check questions were created to indicate differences in the perception of color contrasts and structure. Also, for the two different brand descriptions a manipulation check was conducted. Each construct was measured using a 7-point Likert scale (1=Strongly disagree; 7=Strongly agree).

A correlated t-test indicated a significant difference in the scores for high- and low contrast logos. Logos 1 and 3 (M = 5.7, SD = 0.84) indicated higher scores on the perceived color contrast than logos 2 and 4 (M = 1.7, SD = 0.42); $t(14) = 14.29$, $p = 0.0$. Furthermore, the t-test revealed a significant difference in the perception of dynamic logos (M = 5, SD = 1.24) versus static logos (M = 4.2, SD = 0.61); $t(14) = 4.74$, $p = 0.0$. Lastly the analyzes indicated a significant difference between the two brand conditions (M = 6.4, SD = 0.24 vs. M = 4.3, SD = 0.31) on the construct of activeness; $t(14) = 3.99$, $p = 0.001$.

Therefore, it can be concluded that all manipulations were perceived as intended for the main study.

Table 2. *Conditions of the 2x2x2 design*

	High contrast colors (moving)	Low contrast colors (static)
High structure (moving)	**Logo 1** High contrast & dynamic structure (active brand vs. passive brand)	**Logo 2** Low contrast & dynamic structure (active brand vs. passive brand)
Low structure (static)	**Logo 3** High contrast & static structure (active brand vs. passive brand)	**Logo 4** Low contrast & static structure (active brand vs. passive brand)

3.3 Research instrument and measures

For each logo the variables of brand attitudes, perceived movement, engagement and different brand personality types were measured. A 7-point Likert scale (1=strongly disagree; 7=strongly agree) served to collect the data for each item of the constructs. In the first instance, Cronbach's Alpha was measured to ensure internal consistency of the different constructs.

Table 3. *Overview Reliability Analyzes of Variables*

Scale	N-items	N-deleted	Cronbach's Alpha
Brand Attitudes	5	-	0.94
Movement	2	-	0.68
Engagement	4	-	0.91
Brand Personality - Sincerity	4	-	0.78
Brand Personality - Excitement	4	-	0.86
Brand Personality - Competence	3	-	0.81
Brand Personality - Sophistication	2	-	0.70
Brand Personality - Ruggedness	2	-	0.78

3.3.1 Brand Attitudes

This variable consisted out of five different items which all demonstrate to form a reliable and valid measurement with a Cronbach's Alpha value of 0.94. The items were as follows: appealing, good, pleasant, favorable and likeable.

3.3.2 Movement

This study relied on a two-item scale, constructed by Cian et al. (2014), to measure the perceived movement within logos. The items were as follows: no movement at all/a lot of movement and not at all dynamic/extremely dynamic. The reliability analyses showed a Cronbach's Alpha value of 0.68.

3.3.3 Brand Personality

Aaker (1997) constructed a reliable and valid instrument to measure different personality traits of a brand. In total, the scale consisted of five different constructs by names of sincerity, excitement, competence, sophistication, and ruggedness. All of the constructs indicated to form a reliable scale of brand personalities with Cronbach's Alpha values between 0.7 and 0.86.

3.3.4 Engagement

Engagement has been measured based on an adapted scale created by Cian et al. (2014). The construct was based on four different items, which were as follows: involving, engaging, boring and stimulating. In the analysis stage, the item 'boring' was reversed. The Cronbach's Alpha value of 0.91 indicates a reliable scale.

3.4 Procedure: online survey

At the beginning of the survey, participants were informed about the purpose of the study and processing of personal data. Considering that this study was interested in the effect of colors, the questionnaire started with a screening question to ensure valid and reliable responses for the logos containing a high contrast. The question was formulated as follows: *'Do you suffer from any form of color blindness or related conditions?'*.

In the following, respondents were randomly assigned to one of the eight possible conditions. Either they were exposed to a logo combined with a description of an 'active' or 'passive' depicted company. Next, questions were asked considering brand attitudes, movement, engagement and brand personalities. In the next part, each respondent was asked to perform an implicit association test. In the end of the survey demographical data was collected.

3.4.1 The implicit association test

Greenwald, McGhee, and Schwartz (1998) define the Implicit Association Test as a method to measure 'associations of two target concepts with an attribute.' Several studies state that the test aims to provoke unconscious reactions about attitudes of people (Fazio, 1993; Perdue & Gurtman, 1990). Grenwald et al. (1998) argue in this context that some evaluations 'are manifest as actions or judgments that are under the control of automatically activated evaluation, without the performer's awareness of that causation.' In the case of this study, the test aimed to reveal a possible preference within people for dynamic and moving logos

relative to static ones. Data emerging from the Implicit Association Test was collected through the measurement of reaction times.

3.4.2 Procedure: implicit association test

Participants had to perform a series of five different attribution-tasks towards brand attitudes. In each step, respondents were confronted with two categories and one stimulus at a time. One category was presented in the top left-hand corner, whereas the other one was in the top right-hand corner. The middle of the screen showed this very stimulus. Participants were asked to sort it in the appropriate category by pressing one of two keys representing one corner each (e.g., press 'E' for top left-hand corner or 'I' for top right-hand corner). A wrong combination (e.g., assigning the word 'happy' to the category 'unpleasant' instead of 'pleasant') caused an error message to show up until the participant figured the right combination out. After completing an attribution-task, respondents were automatically referred to the next sequence.

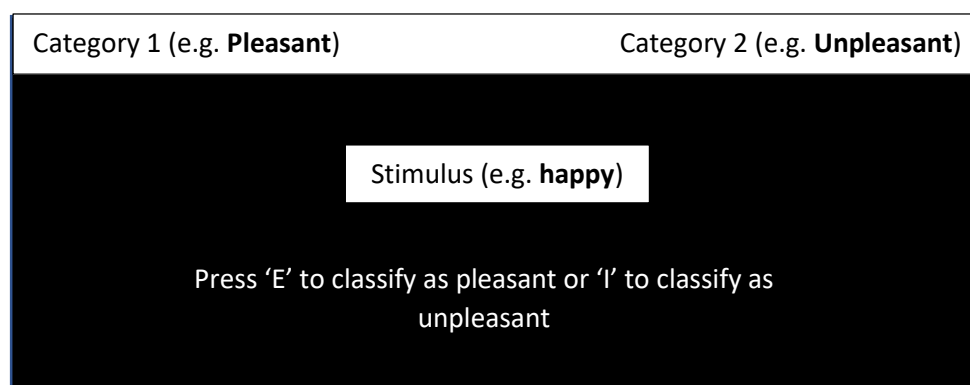| Category 1 (e.g. **Pleasant**)	Category 2 (e.g. **Unpleasant**)
Stimulus (e.g. **happy**)	
Press 'E' to classify as pleasant or 'I' to classify as unpleasant	

Figure 2. *Example IAT procedure (Task 2)*

In the first sequence, participants were asked to categorize eight different logo designs (4 indicating movement vs. 4 indicating no movement) into the two categories of 'moving' or 'static.' Logos have been adopted from a study conducted by Cian et al. (2014), which was able to indicate a total of eight logo designs differencing on the dimension of dynamism (see Appendix B). Participants saw the categories within the top left- and right-hand corner. In the second sequence, participants were confronted with the categories of 'pleasant' and 'unpleasant' and asked to assign eight different words (4 pleasant vs. 4 unpleasant) to the appropriate corner. Used terms have been adopted from a study conducted by Greenwald et al. (1998). In sequence three participants' response times were collected for the first time. In the sequence, 'moving/pleasant' appeared in the top left-hand corner and 'static/unpleasant' in the top right-hand corner. The eight stimuli in this round were a combination out of logos and

words. Sequence 4 was a repeated task variation of sequence 1 with the difference that categories switched the sides on the participants' screen. The last task and second data collection was a repetition of the third sequence with variations in combination and positioning of categories and stimuli. The complete procedure is visualized in appendix C.

3.5 Participants

A total of 311 people participated in the study. Participants were recruited via social media, sharing communities and email. Frequencies of gender, age and educational level can be found in Table 4.

Table 4. *Demographics*

Variable	Frequency (n)	Percentage (%)
Gender		
Male	127	40.8 %
Female	184	59.2 %
Total	311	100 %
Age		
Under 21	24	7.8 %
21-35	264	85.3 %
36-50	18	5.4 %
51 or over	5	1.5 %
Education		
Primary school	8	2.6 %
High school	67	21.5 %
Intermediate vocational education (MBO)	27	8.7 %
Bachelor (HBO)	120	38.6 %
Master (WO)	71	22.8 %
Other	18	5.8 %

4 Analysis of data

In the first step, descriptive statistics of the sample were analyzed utilizing demographical attributes of all participants. Before conducting regression analysis, the sample was tested for outliners and the normal distribution of the dependent variables. Within SPSS, a MANOVA, several ANOVAs, and regression- and correlation analyses were conducted. For each of the analysis, an alpha level of 0.05 was used. Data emerging from the IAT has been analyzed within RStudio. An algorithm was used, recommended by Greenwald, Nosek, and Banaji (2003).

5 Results

To ensure valid and reliable results from the two-way ANOVAs the data set was checked for significant outliners. According to a box-plot inspection of all responses on the dependent variables, a total of n = 17 outliners was found. Based on the large sample size (N = 311) it can be expected that values might appear in the lower and upper ends of the distribution. In a next step, a Shapiro-Wilk test of normality was conducted. The analysis showed several normal distributed Q-Q plots with p-values for the dependent variables of $p < 0.05$.

5.1 Perceived movement

Two separate ANOVAs were conducted on the influence of the two independent variables (color vs. structure) on the construct of perceived movement for the active (n = 159) and the passive brand condition (n = 152).

In the active brand condition, the variance analysis revealed a marginally significant main effect for color contrast on the dependent variable perceived movement $F(1,159) = 4.05$, $p = 0.06$. Logos combined with the passive condition revealed no significant main effect on perceived movement $F(1,152) = 1.04$, $p = 0.3$.

In the active condition, the level of perceived movement differed statistically significant for the independent variable of structure $F(1, 159) = 6.99$, $p = 0.01$. Logos containing a dynamic structure (M = 4.7, SD = 1.12) indicated higher scores than those with a static structure (M = 4.2, SD = 1.5). Also, in the passive condition, the two-way ANOVA revealed a significant main effect for the structure of a logo on perceived movement $F(1,152) = 11.7$, $p = 0.01$. A dynamic structure (M = 4.49, SD = 1.49) leads to higher scores of perceived movement than a static one (M = 3.6, SD = 1.65).

In both conditions, an interaction effect between color contrast and structure on perceived movement is absent $F(1,159) = 0.92$, $p = 0.34$; $F(1,152) = 2.4$, $p = 0.12$.

Table 5. *One-way ANOVAs with perceived movement as dependent variable and color contrast and structure as independent variables*

Independent variable	ANOVAs Active brand			ANOVAs Passive brand		
	F(159)	Sig. (p)	n²	F(152)	Sig. (p)	n²
Color contrast	4.05	0.06*	0.25	1.04	0.31	0.01
Structure	6.99	0.01	0.43	11.7	0.01	0.72

Note. '*' indicate the marginal significant effect

5.2 Brand attitudes

Separate two-way analyses of variance were conducted on the influence of the two independent variables (color vs. structure) on the dependent variable brand attitudes for both conditions (active vs. passive).

The first analysis revealed a main effect for color on attitudes towards the brand $F(1,159) = 5.56$, $p = 0.02$. In the active brand condition, logos including a high color contrast led to more favorable brand attitudes (M = 5.04, SD = 1.2) than those including a low color contrast (M = 4.56, SD = 1.34). Also, in the passive condition, a significant main effect can be observed $F(1,152) = 11.99$, $p = 0.001$. Scores on brand attitudes differ significantly for logos containing high contrast colors (M = 4.94, SD = 1.14) from those containing a low contrast (M = 4.22, SD = 1.41).

Moreover, a main effect of structure can be observed affecting brand attitudes in both conditions $F(1,159) = 8.77$, $p = 0.004$; $F(1,152) = 5.63$, $p = 0.02$. In the active condition, significant differences emerged in the scores for attitudes towards the brand between a dynamic structure (M = 4.84, SD = 1.14) and a static structure (M = 4.5, SD = 1.28). Also in the passive condition, a significant difference can be observed between dynamic structures (M = 4.82, SD = 1.07) and static structures (M = 4.32, SD = 1.45).

In both conditions, an interaction effect for the two variables is absent $F(1,155) = 0.48$, $p = 0.49$; $F(1,152) = 0.13$, $p = 0.96$.

Table 6. *One-way ANOVAs with brand attitudes as dependent variable and color contrast and structures as independent variables*

Independent variable	ANOVAs Active brand			ANOVAs Passive brand		
	F(159)	Sig. (p)	n²	F(152)	Sig. (p)	n²
Color contrast	5.56	0.02	0.03	11.99	0.001	0.07
Structure	8.77	0.004	0.43	5.63	0.02	0.72

5.3 Engagement, movement and brand attitudes

A multiple linear regression analysis was conducted to predict brand attitudes based on scores for perceived movement and engagement. Within the analysis, brand attitudes functioned as dependent variable whereas perceived movement and engagement were defined as independent variables. It revealed a significant regression equation [$F(2,304) = 88.44$, $p < 0.00$] with an R^2 of 0.368.

Brand attitudes increased 0.58 scale points for each point in engagement and 0.33 points for perceived movement. Both, engagement and movement were significant predictors of brand attitudes with a p-value of $p < 0.05$. However, beta values indicate that engagement ($\beta = 0.52$) has a stronger impact on brand attitudes than perceived movement ($\beta = 0.16$).

Following, a linear regression analysis was conducted with movement as dependent- and engagement as the independent variable. It indicates a significant regression $F(1,305) = 78.45$, $p < 0.00$ with an R^2 of 0.21. The two variables correlate at a beta value of $\beta = 0.45$.
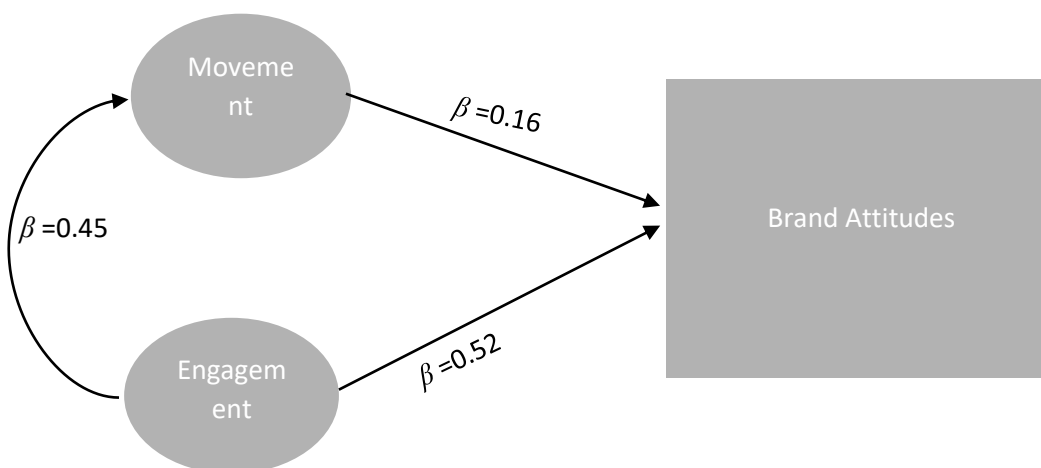

Figure 3. *Prediction of brand attitudes through movement and engagement with beta-values*

5.4 Brand personalities and corporate identity

Before conducting a one-way multivariate analysis of variance (MANOVA), a series of Person correlations were conducted between all the brand personality variables in order to test the assumption that the dependent variables are correlated with each other in the moderate range (Meyer, Gampst & Guarino, 2006). Within Table 7 a meaningful pattern of correlations can be observed amongst all dependent variables, suggesting the appropriateness of a MANOVA analysis. Additionally, an M-Box test with a value of 128,002 was associated with a p-value of 0.14, which is interpreted as non-significant based on Huberty and Petoskey's (2000) guideline (i.e., $p < 0.005$). Hence, the covariance matrices between the groups are assumed to be equal for the analysis.

Table 7. *Pearson correlations, means (M), and standard deviations (SD) associated with the Brand Personality Scale*

	Sincerity	Excitement	Competence	Sophistication	Ruggedness	M	SD
Sincerity	1.0	0.36	0.49	0.48	0.17	4.5	1.03
Excitement	0.36	1.0	0.44	0.35	0.58	4.49	1.31
Competence	0.49	0.44	1.0	0.6	0.23	4.85	1.03
Sophistication	0.48	0.35	0.6	1.0	0.13	4.65	1.29
Ruggedness	0.17	0.58	0.23	0.13	1.0	4.2	1.5

A one-way MANOVA was conducted to test the hypothesis that brand personalities are affect by the two brand conditions (active vs. passive). Afterward, single ANOVAs were conducted to test the effect of the independent variables (color vs structures) on brand personalities in the two conditions.

A statistically significant effect was obtained, Pillais' Trace = 0.58, $F(35, 1515) = 5.7$, $p < 0.005$. The multivariate effect size was estimated at 0.12 which implies that 12.0 % of the variance in the dependent variable was accounted for by the brand condition participants were in. Before conducting a follow-up of several ANOVAs, the homogeneity of variance was tested for the five personality traits. Levene's F test revealed that all variables fulfill the assumption of $p > 0.05$, assuming robust ANOVAs (Howell, 2009). The ANOVAs were conducted on each of the five brand personality types. Table 8 shows that three of the five

analysis were statistically significant with effect sizes (partial n²) ranging from a low of 0.62 to a high of 1.

Table 8. *One-way ANOVAs with brand personalities as dependent variables and corporate identities (active vs. passive) as independent variable*

	ANOVAs			Active Brand		Passive Brand	
	F(7, 303)	Sig. (p)	n²	M	SD	M	SD
Sincerity	1.9	0.07	0.75	4.79	1.02	4.56	0.99
Excitement	10.17	0.00	1	4.96	1.13	3.99	1.24
Competence	1.48	0.17	0.62	4.83	0.97	4.87	1.06
Sophistication	3.8	0.001	0.98	4.39	1.11	4.91	1.29
Ruggedness	24.2	0.00	1	5.1	1.09	3.35	1.29

Finally, a series of post-hoc analyses (Fisher's LSD) were performed to examine individual mean differences for the different logo manipulations on the brand personality straits in the active and the passive condition. In general, results indicate that next to the brand condition also the logo designs had a statistically significant influence ($p < 0.05$) on the perceived personality of a brand. Color contrasts had a main effect on the personality traits of excitement, competence and, sophistication with *p*-values of $p < 0.05$. Structure affected statistically significant only the trait of sincerity $F(1, 155) = 10.2, p = 0.002$.

Table 9. *Differences in Brand Personality for different Logo Manipulations (active condition)*

	High Color		Low Color		Sig. (p)	Dynamic Structure		Static Structure		Sig. (p)
	M	SD	M	SD		M	SD	M	SD	
Sincerity	4.55	1	4.38	1.13	0.4	4.73	0.95	4.18	1.13	0.02
Excitement	5.2	1.03	4.73	1.23	0.008	5	1.1	4.9	1.15	0.55
Competence	5.03	0.97	4.63	1	0.019	5.23	0.93	4.77	1	0.39
Sophistication	4.65	1.1	4.2	1.15	0.014	4.55	1.05	4.25	1.2	0.09
Ruggedness	5.2	1.05	4.9	1.15	0.12	5.05	1.05	5	1.1	0.72

Within the passive brand condition, analyzes only showed a main effect of color contrast on the trait of excitement $F(1, 148) = 5.1$, $p = 0.026$. A high color contrast (M = 4.23, SD = 1.15) led brands to be perceived as more exciting than a low one (M = 3.78, SD = 1.35).

5.4.1 Influence of brand personalities on brand attitudes

A last multiple linear regression analysis has been conducted using brand attitudes as dependent and the five personality traits as independent ones. Results indicate a statistically significant regression for $F(2, 305) = 73.2$, $p < 0.00$ with an R^2 value of 0.74. Sincerity, excitement, competence and, sophistication all reveal to have a positively correlated impact on the dependent variable with p-values of $p < 0.05$. Table 10 illustrates beta-values and the regression coefficients, representing the rate of change in brand attitudes.

Table 10. *Beta values and regression coefficients for brand personalities as predictors for brand attitudes*

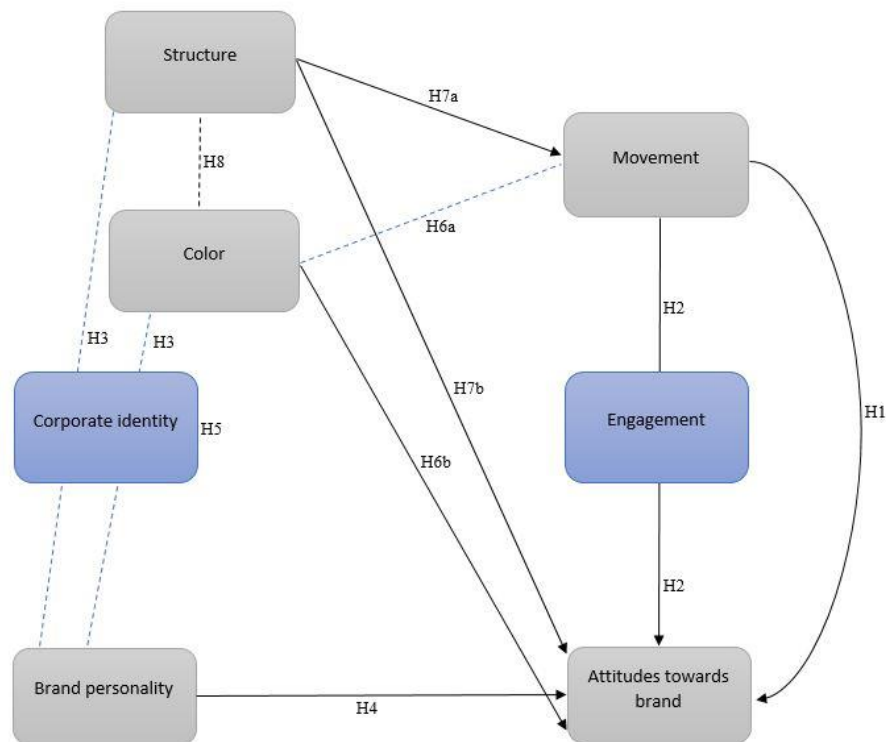|	Regression coefficient	Beta-value	Sig. (p)
Sincerity	0.51	0.32	0.00
Excitement	0.34	0.27	0.00
Competence	0.44	0.21	0.00
Sophistication	0.34	0.13	0.01
Ruggedness	0.16	0.07	0.13

5.5 Conceptual model and hypothesis

Figure 4. *Confirmation/rejection of hypotheses: active condition*
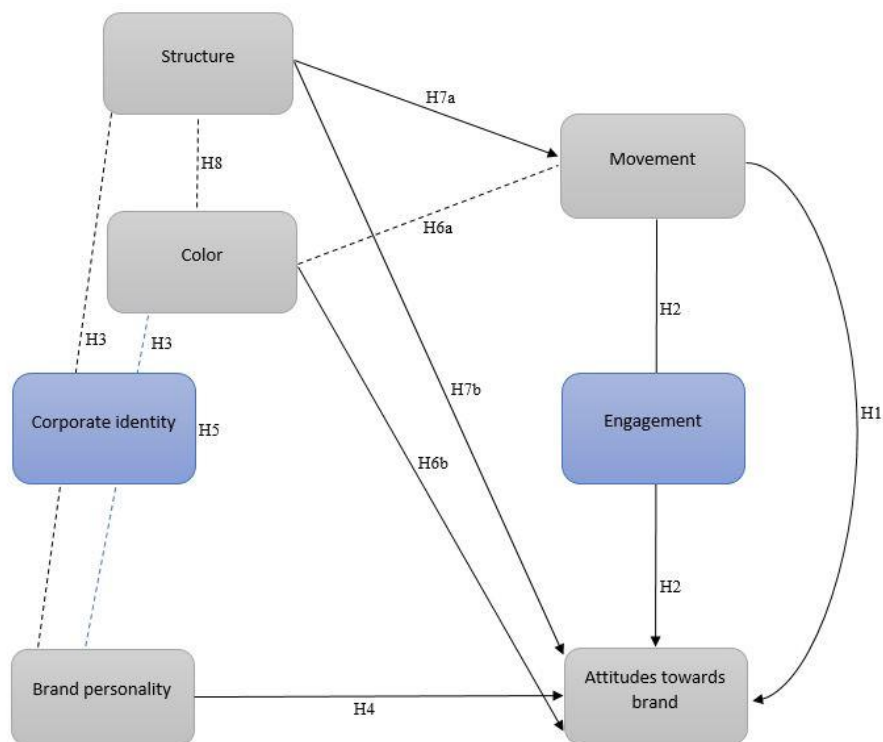
Note. → confirmed; --- rejected; --- partly supported

Figure 5. *Confirmation/rejection of hypotheses: passive condition*

5.6 Implicit Association Test

5.6.1 Data reduction

The number of timeout rates was low at < 0.001% of the trails. In total, 35 participants (N = 311) were not included because of to excessive response times < 300ms. Furthermore, the IAT exhibits an error rate of 13%.

5.6.2 Reliability estimation

The IAT proves to be internally consistent with a reliability estimate of 0.78.

5.6.3 Implicit Bias

The test observed an implicit preference towards logos which indicate movement, M = 0.27, SD = 0.42. Scores differed statistically significant from zero, 95% CI [0.28, 0.33], $t(230) =$ 9.95, $p < 0.00$, d=0.65. Hence, these results show that dynamic logos lead to more positive associations than static ones.

6 Discussion

The present study investigated research in the field of perceived movement within a static stimulus. More specifically, it aimed to create the perception of movement within a logo to examine whether it inhibits the capabilities to change brand attitudes based on its visual appearance. Additionally, the effect of color contrasts and structures on brand personalities was taken into account. The governing research questions of this study were formulated as follows: '*Are color contrasts and structures within logos capable of illustrating the perception of movement?* ', '*Do logos portraying movement enhance brand attitudes?*', '*Will a logo's color contrast and a structure influence personalities associated with a brand?*'.

The results of the main study show that a dynamic structure of a logo is capable of creating the perception of movement in the eye of the receiver. On the contrary, a high color contrast only indicates to have a potential effect on logos paired with an active brand description. Nevertheless, both manipulations regarding color contrast and structure were able to positively influence people's attitudes towards the referring brand. Furthermore, results demonstrate that a high color contrast and a dynamic structure influence perceptions of personality traits associated with the brand. This effect is mediated by the corporate identity of a brand. In addition, such brand personalities concede predictions of attitudes people hold towards a brand.

6.1 Perceived movement

The results reveal that a dynamic structure in a logo is capable of evoking the perception of movement. In both brand conditions (active vs. passive), participants perceived movement when confronted with a dynamic logo. An explanation relates to the phenomena of embodied persuasion and hedonistic aesthetics. Accordingly, a dynamic structure forces the beholder of it actually to move his or her eyes. Though the physical movement of the eye, people are more inclined to report the perception of movement within a logo explicitly. This is consistent with previous research which shows that the human body inhibits the power to function as an external cue, influencing thoughts and consequently perception (Briñol, McCaslin and Petty, 2012). Moreover, in the active brand condition, ratings on movement of the logos were overall higher than in the passive one. Such difference indicates the impact of the CI (active vs. passive) on the CVI (logo) of a brand (Melewar & Saunders, 1998). An active description of a brand might, therefore, influence people's thoughts and subsequently their perception. Hence, it can be argued that by priming someone's state of mind towards the concept of activeness, their perceptions of movement within static stimuli might be enhanced.

Notwithstanding non-significant effects of color contrasts in a logo on perceived movement we can expect, within the active brand condition, that a high color contrast might have a potential effect on movement based on a marginal statistical significance. Again, by considering the relationship between CI and CVI, an explanation might be found. The active brand description impacts people's thoughts leading them to unconsciously transfer the construct of activeness towards the construct of movement. These findings are consistent with previous research, which shows the connectedness of CI and CVI (Melewar & Saunders, 1998; Balmer, 2001). Nevertheless, it is proposed that a high color contrast by itself was not able to create movement within a static stimulus. This result was not expected as past research identified that the human eye is sensitive to color contrasts and perceives different colors time-displaced leading to an illusion of static movement (Conway, Kitaoka, Yazdanbakhsh, Pack & Livingstone, 2005; Kiatoka & Ahida, 2003). Arguably, body reactions must overcome a certain threshold to create the perception of movement within a static stimulus based on embodied persuasion. With respect to the analyses, the study indicates that engagement has a significant effect on perceived movement of a logo. Through eye-movement, a dynamic structure forces people to feel unconsciously engaged in the logo. In contrast, a high color contrast only evokes unnoticeable body reactions by perceiving colors time displaced. It is possible that this minimal body reaction does not transcend the threshold of engagement to evoke the effect of embodied persuasion leading to the perception of movement. At this point, we might consider that the surface of the used logos did not provide enough space for color contrasts to enhance cognitive and/or physical engagement leading to perceived movement. For instance, other studies in the field often use whole images full of color contrasts to create the illusion of movement (Backus & Oruç, 2005, see Appendix D)

Moreover, results show that the two manipulations do not affect each other. It was expected that the combination of a high color contrast and a dynamic structure would lead to significant higher levels of perceived movement. Taking only results from logos in active brand into consideration, this is an unexpected insight. Within these conditions, both manipulations (high contrast color & dynamic structure) led to (potential) higher levels of perceived movement. Where other research acknowledges the power of congruence between elements, this research was not able to confirm this assumption (Leborg, 2006; Becker, van Rompay, Schifferstein & Galetzka, 2011). Nevertheless, an explanation might be found by taking reasons behind the perception of movement into account. Where it was expected that the potential effect for a high color contrast is only caused by the interaction effect of CI and

CVI, a dynamic structure causes movement through embodied persuasion and engagement. Arguably, people perceive these differences unconscious as a dissonance within a logo leading to the absence of enhancement through each other.

Summarizing, it might be stated that without a certain level of physical or cognitive engagement a static logo is not capable of evoking the perception of movement by itself.

6.2 Brand attitudes and movement

Notwithstanding missing significant results for color on perceived movement, a high contrast inhibits to affect people's attitudes towards a brand. In both conditions, participants reported for more positive attitudes towards the brand if they encountered a logo containing a high color contrast. Likewise, dynamic structures led people to form more positive attitudes towards the brand. Therefore, evidence gathered supports the effectiveness of the utilized manipulations on the construct of brand attitudes.

These results are partly unexpected considering the relationship between movement engagement and brand attitudes. The study hypothesized that perceived movement within logos would lead to more favorable attitudes towards the brand caused by engagement. Past research by Cian et al. (2014) confirms this by stating that engagement is positively correlated towards attitude forming. Hence, only an increase in brand attitudes for logos containing a dynamic structure was expected. Regarding the dynamic structure, we can furthermore argue that positive attitudes towards the brand are caused due to implicit attitudes people hold towards movement. The Implicit Association Test (IAT) used in this study, revealed that people hold a slightly positive preference towards logos indicating movement. A regression analysis validated this statement, as higher levels of perceived movement have a positive impact on brand attitudes.

Where statistically analyzes revealed an effect but until now no explanation for the influence of color contrasts on brand attitudes it is necessary to find alternative reasons. Arguably, previous research in the marketing related sector indicates the power of colors alone to create favorable attitudes towards products (Meyers-Levy & Peracchio, 1995). We might argue that the engagement-movement-attitude relationship does not account for the color contrast, but rather the blueish color itself evokes favorable brand associations. Taking the Elaboration Likelihood Model (ELM) into consideration, this could clarify why participants form positive attitudes when exposed to a high color contrast. The missing cognitive effort through engagement might lead people to rely on heuristics to process the presented logo. By associating the lighter blue color within the contrast with positive

attributes, people process the logo via the peripheral route, which has a persuading impact towards positive attitudes (Petty & Cacioppo, 1981). This argumentation is in line with results emerging from a study conducted by Middelstadt (1990), who indicated that blue colors indeed trigger changes in attitudes and behavior.

Overall, it can be concluded that two different approaches must explain the influence of structure and color contrasts on brand attitudes. Where structure seems to affect cognitive processing, the color contrast evokes more affective reactions creating positive brand associations. Past research confirms this explanation and states that affective responses are 'directly transferred to the product,' whereby in the case of this study they are transferred to the presented brand (Middlestadt, 1990; Gresham & Shimp, 1985). It is still in question whether positive attitudes with regards to color are evoked through the contrast or the blueish color itself.

6.3 Brand personalities and attitudes

Past research in the field of brand personalities argues that in practice a variety of brand variables are needed to form a brand personality (Plummer, 1985; Batra, Lehmann & Singh, 1993). However, this study demonstrates that a high color contrast alone is capable of embodying a brand as more exciting, more competent and more sophisticated. In contrast, a dynamic structure only influenced the personality trait of sincerity. As expected, the experiment also found evidence that brand personalities (except for ruggedness) have a major influence on attitudes people hold towards the referred brand. Results conciliate with other findings stating the importance to create a brand personality as it influences brand associations, attitudes, and evaluations (Freling & Forbes, 2005). For now, it can be stated that a high color contrast is able to communicate certain personality traits towards people whereas a dynamic structure only helps to increase sincerity.

To determine which of the personality traits has the most influence on brand attitudes, each one was linear regressed towards it. Sincerity and Excitement were most successful predictors for positive brand attitudes and accounted for 59% alone. Competence and Sophisticated brand personalities have only little relevant influence. Where ruggedness might be an attentional personality trait conveyed by some brands (e.g., Marlboro or Harley Davidson), it indicates to have no impact on consumers' attitudes.

Additionally, the study validates that the corporate identity has a significant impact on different personality types. An active description of a brand leads to changes in excitement and ruggedness. On the other hand, a passive brand enhances the personality trait of

sophistication. Whether a brand is associated with sincerity and competence cannot be determined through an active or passive brand description. Arguably, brand personality constructs include underlying factors which describe the most attributed characteristics towards it (Aaker, 1997, see table 1). Most likely, the personalities of excitement, ruggedness and, sophistication are formed already at the first confrontation with a brand. In contrast, the personality traits of sincerity and competence are either not at all impacted by the CI or require long-term contact with the brand as they include underlying facets like honesty and reliability.

Concluding, Aaker's (1997) framework of brand personalities seems to be a useful construct to predict people's attitudes towards a brand. Furthermore, the study indicates that minimalistic changes in a logo directly affect different brand personality types. One could argue at this point that the framework can be used as a natural and efficient tool for companies while (re)designing a logo towards certain personalities or increased attitudes.

6.4 Limitations and future research directions

Despite new promising insights gained from the present study, several limitations emerged. Within the next paragraph, it will be reflected on these limitations aiming towards future research directions.

Within this study, only one color contrast and one type of dynamic structure were used. Different colors or stronger contrasts might also create the perception of movement as they enhance arousal and might influence engagement in the long run (e.g., red, Reutner, Genshow & Wänker, 2015). Also, colors within this study were arranged in a manner of separation. Future research should address more fluid transitions between colors as it might enhance eye-movement to overcome the threshold of the body to influence the actual perception. Moreover, this study did not take into account that associations towards colors are susceptible to cultural influences. As this study did not collect any information about participant's origins, future research should address this, to indicate possible differences in the effects within other cultures. Hence, results must be considered carefully as another type of contrast or color might lead to different outcomes.

Regarding structures, this study only examined the effects of a path in a logo to enhance engagement and perceived movement. For instance, Leborg (2006) mentions several other visual grammar properties that might inhibit the quality to create the perception of movement. A follow-up study might use other structure types and examine their potential impact on perceived movement. Moreover, this study was not able to create a congruence

between the elements of color contrasts and structures. An interesting field of research might be using congruent elements to create greater levels of perceived movement. For instance, one could combine a dynamic structure from this study with elements of static movement from a study by Cian et. al (2014). Considering the results, it is also advised to determine the actual threshold of cognitive or physical engagement needed to trigger embodied persuasion and consequently the perception of movement in a static stimulus.

Taking the appropriate representation of reality into account, one could argue that the present study only considers the first impression of one fictive logo on people. In the long run, people are often exposed to several logos of competing brands at a time. Future research should consider a long-term study with a pre- and post-test to examine differences for the variables of this study on unknown and/or familiar brands and their logos. Moreover, nowadays digital environment opens up new possibilities in the marketing sector for research on movement. For instance, where this study demonstrated the impact of perceived movement, future experiments could consider logos which are animated or actually move. It would be interesting to examine their potential effects on people's attitudes, loyalty or purchase intentions towards the brand.

Considering the 2x2x2 design of this research, it was necessary to divide participants into two groups with the respective of n = 159 and n = 152. The relatively small sample sizes and the missing disclosure about participants' origins makes it difficult to generalize results. Moreover, 85% of the whole sample N = 311 consisted of people aged 21 to 35 years. This limitation is related to the high number of possible students who participated as 61% of the participants had either a bachelor's or a master's degree. Therefore, this study cannot give implications for other target audiences than 'higher' educated people between the age of 21 and 35. Consequently, it is advised to gather additional information through a larger sample size and other manipulations to make a generalization possible.

7 Conclusion

The present study examined the effects of color contrasts and structures in a logo on the dimensions of perceived movement, engagement, brand attitudes and brand personalities.

Results show that people hold an implicit preference towards movement within brand logos. In practice, the study was able to create the perception of movement within a static logo through a dynamic structure and a high color contrast. Although both manipulations affect the perceived movement of a logo, we argue that results emerged differently. A dynamic structure by itself is able to illustrate movement, as the body exceeds the threshold of body activity to trigger the effect of embodied persuasion through eye movement. On the contrary, a high color contrast does not transcend the threshold but affects perceived movement through the mediating effect of an active corporate identity. However, both manipulations were able to increase attitudes people hold towards a brand.

This study successfully connected the fields of perceived movement, brand attitudes, and brand personalities. Results deliver an understanding of how the phenomenon of embodied persuasion can be used to create the perception of movement in a static logo itself. Equally, the study yields, in the field of marketing communication that simple visual logo properties heavily impact attitudes and brand personalities already at first contact with a brand. Furthermore, the study acknowledges the reciprocal relationship between the elements of CI and CVI.

Future research should address developing a more complete framework and understanding of perceived movement in logos. Interesting fields might be actual moving or animated logos, interaction effects of different structures on perceived movement, more energetic color contrasts or the determination of cognitive and/or physical load needed to trigger embodied persuasion towards perceived movement.

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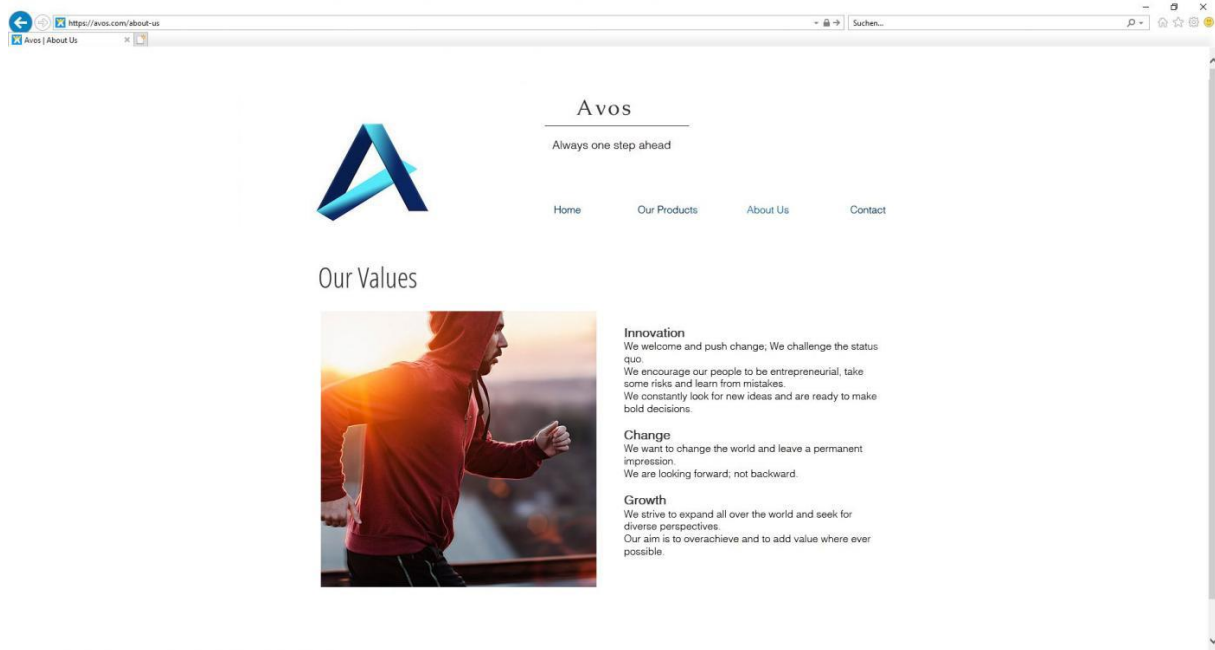
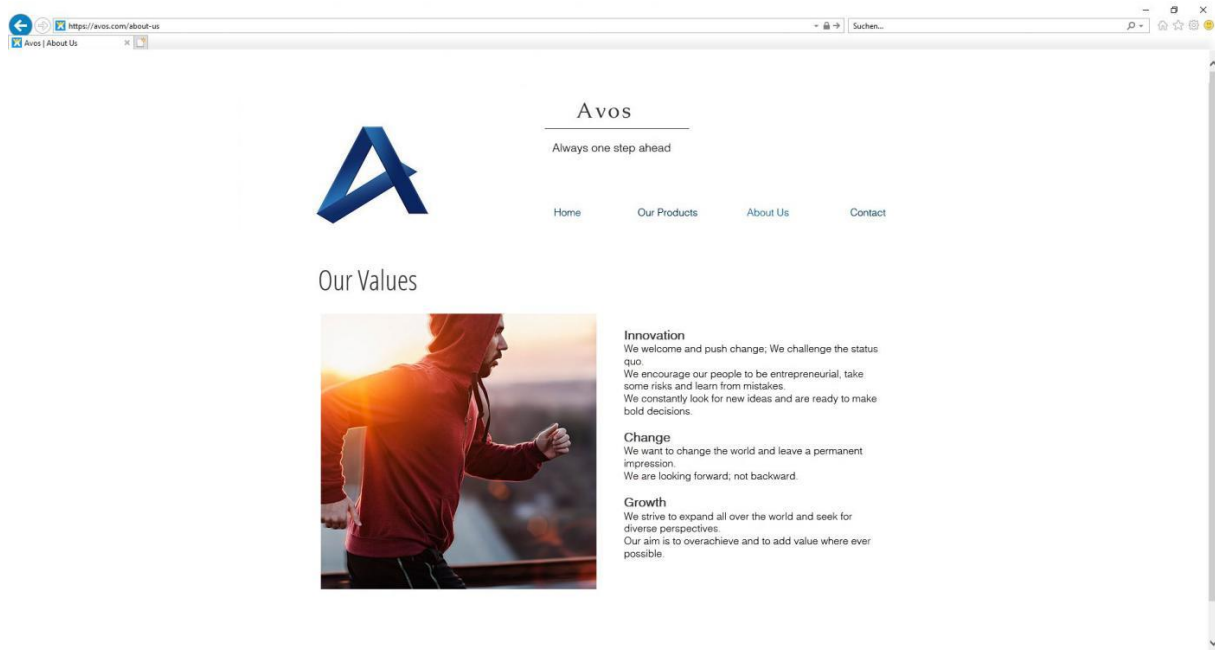# 9 Appendix

Appendix A: Stimulus material
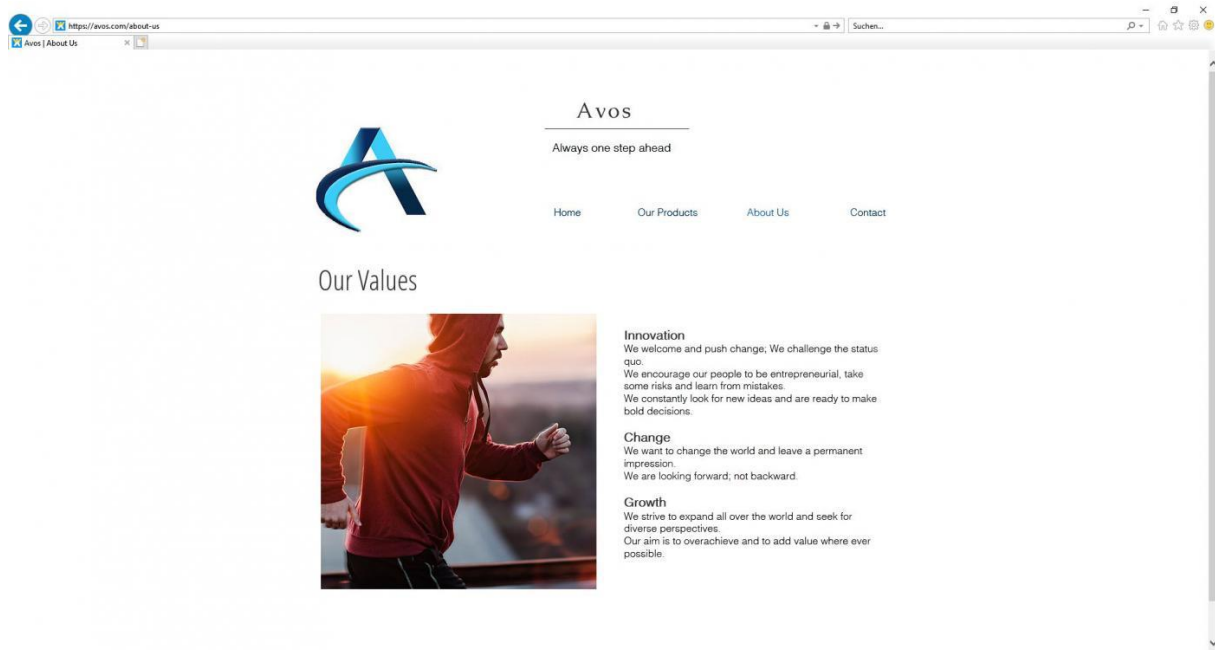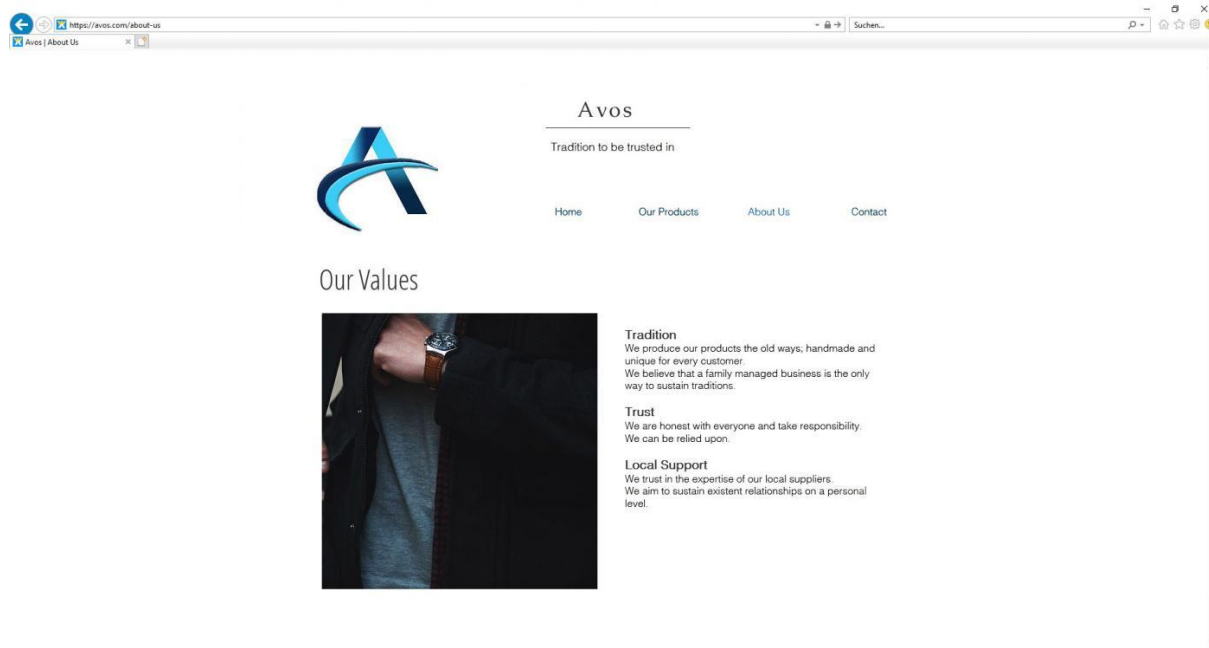

Note. Active brand paired with logo 1
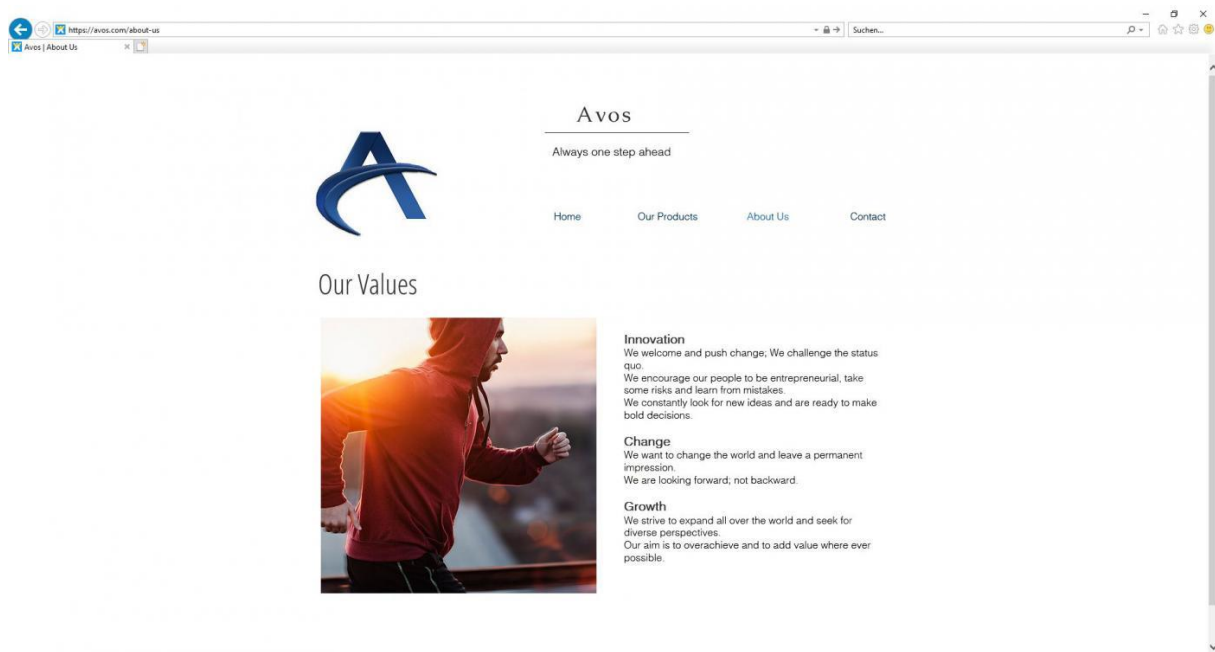
Note. Active brand paired with logo 2
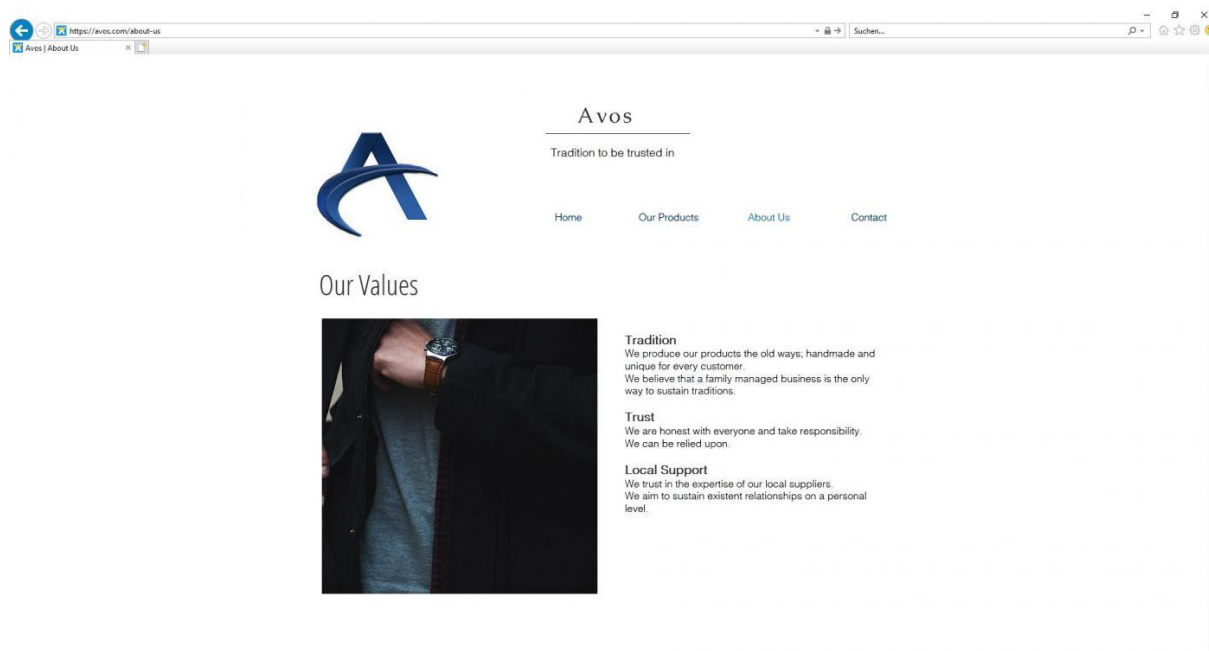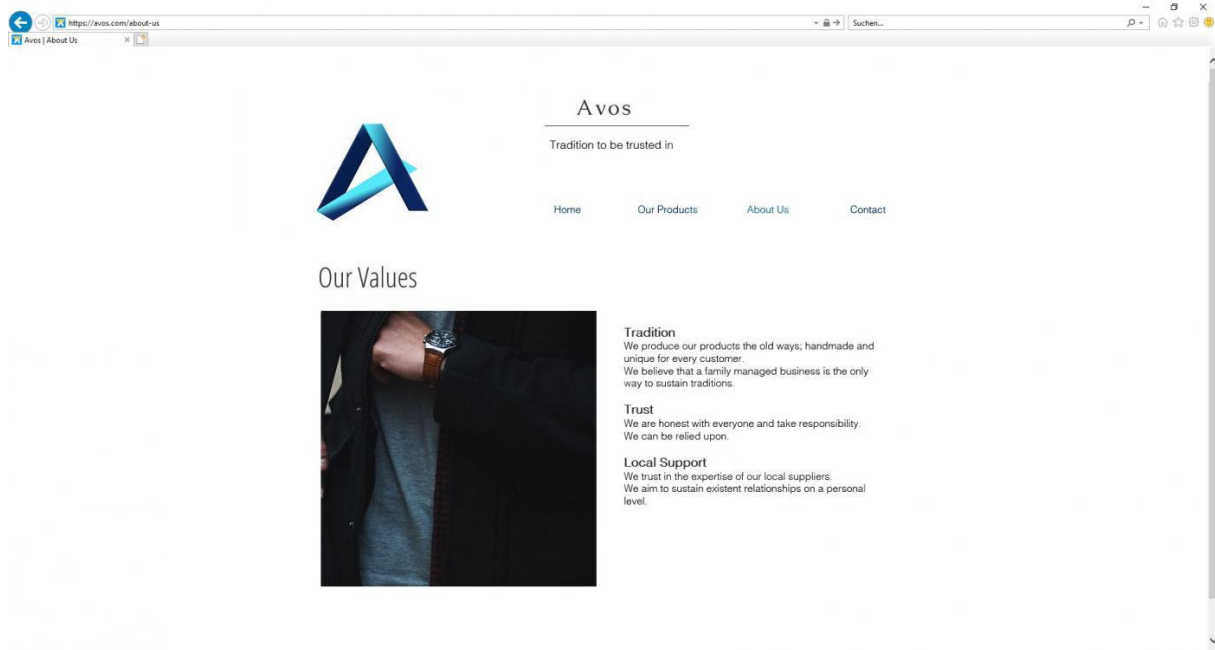
Note. Active brand paired with logo 3

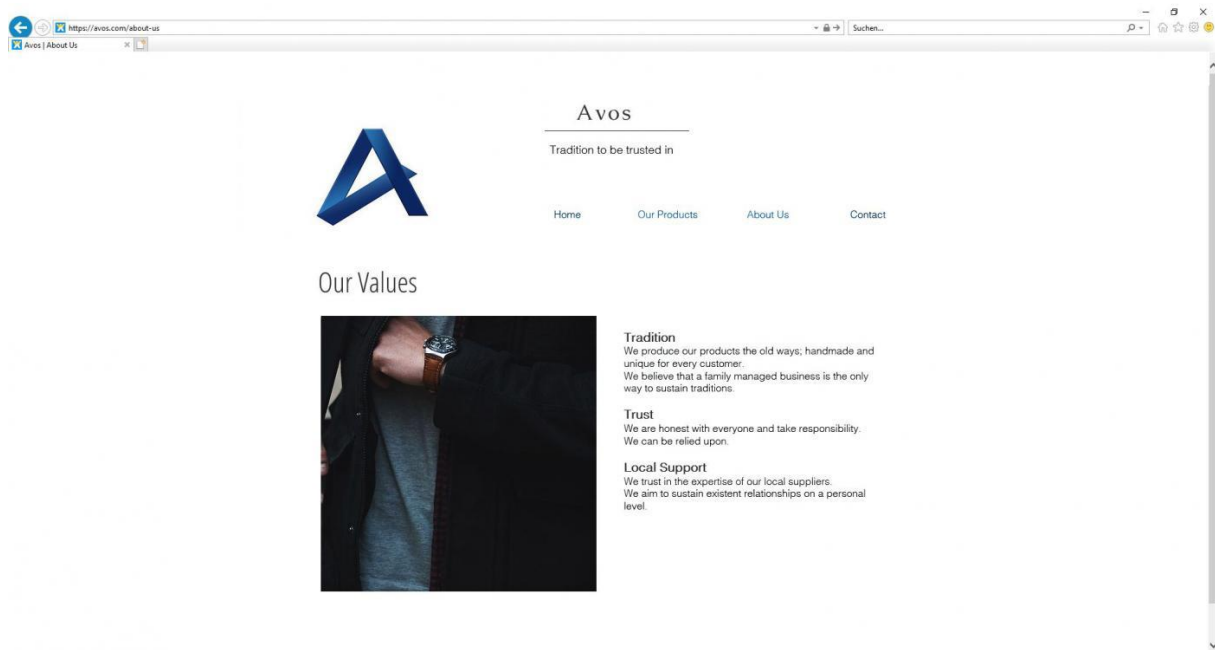*Note.* Active brand paired with logo 4

Note. Passive brand paired with logo 1

Note. Passive brand paired with logo 2

Note. Passive brand paired with logo 3

Note. Passive brand paired with logo 4

Appendix B: logos implicit association test (moving vs. static)


Note. Moving logos for the IAT

Note. Static logos for the IAT

Appendix C: procedure implicit association test

Sequences	1	2	3	4	5
Task description	Initial target concept movement	Associated attribute movement	Initial combined task	Reversed target-concept movement	Reversed combined task
Task instructions	• moving static •	• pleasant unpleasant •	• moving • pleasant static • unpleasant •	moving • • static	moving • • pleasant • static unpleasant •
Sample stimuli	static logo ° ° moving logo ° moving logo static logo ° ° moving logo static logo ° static logo ° ° moving logo	° lucky ° honor poison ° grief ° ° gift disaster ° ° happy hatred °	° moving logo ° lucky static logo ° poison ° static logo ° ° honor ° moving logo grief °	° static logo ° static logo moving logo ° ° static logo moving logo ° moving logo ° ° static logo moving logo °	° gift moving logo ° disaster ° ° static logo ° happy moving logo ° hatred ° ° static logo

Note. Schematic description and illustration of the implicit association test (IAT) The IAT procedure of the present experiment involved a series of five association tasks (numbered columns). A pair of target concepts and an attribute dimension are introduced in the first two steps. Categories for each association is assigned to a loft or right response, indicated by the black circles in the third row. These are combined in the third step and then recombined in the fifth step, after reversing response assignments (in the fourth step) for the target-concept associations.

Appendix D: Movement illusion
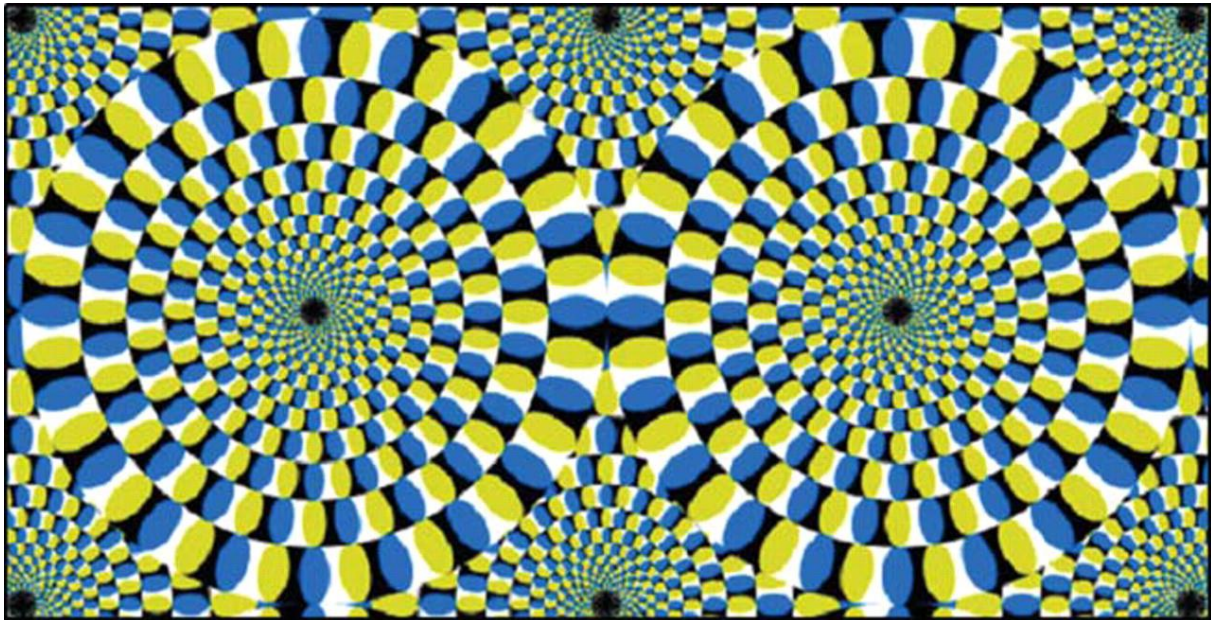
Note. Example of perceived movement in a static stimulus (Backus & Oruç, 2005)

Appendix F: Questionnaire

University of Twente
  As a part of my Master's program at the University of Twente, I am conducting a study in the field of Marketing Communication. Please read the following instructions carefully.
The following survey is divided into two parts. In the first part, you will be asked to answer several questions concerning your impressions about a company. In the second part, you will be asked to take part in a reaction test. It will take approximately 15 minutes to complete the whole survey. All data will be processed anonymously and will only be used for this research.

--Attention, the survey has to be completed on a computer and will not work on a mobile device!--

  Thank you for your cooperation.

Do you suffer from any form of color blindness or related conditions?

○ Yes

○ No

Please take a close and careful look at the homepage of this company. Avos is on the brink to enter the market to sell their running equipment. They ask you for feedback on their logo and values.

at this point the participant was randomly assign to one of the eight conditions

Remember, you can go back to this page at any point of time.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company seems appealing to me	◯	◯	◯	◯	◯	◯	◯
I would characterize the company as good	◯	◯	◯	◯	◯	◯	◯
I would describe the company as pleasant	◯	◯	◯	◯	◯	◯	◯
I think this is a favorable company to buy products from	◯	◯	◯	◯	◯	◯	◯
The company seems to be likeable to me	◯	◯	◯	◯	◯	◯	◯

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The logo is involving	○	○	○	○	○	○	○
The logo is engaging	○	○	○	○	○	○	○
The logo is boring	○	○	○	○	○	○	○
The logo is stimulating	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The logo indicates movement	○	○	○	○	○	○	○
The logo is dynamic	○	○	○	○	○	○	○

End of Block: Factor 1 and 2 and 3 - Brand Attitudes and Engagement and Movement

Start of Block: Factor 4 - Brand Personality

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company seems to be down-to-earth	○	○	○	○	○	○	○
The company seems to be honest with me	○	○	○	○	○	○	○
The company makes a wholesome impression	○	○	○	○	○	○	○
The company seems to be cheerful	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company makes a daring impression	○	○	○	○	○	○	○
The company seems to be spirited in their actions	○	○	○	○	○	○	○
The company seems to be imaginative	○	○	○	○	○	○	○
The company seems to be up-to-date	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company seems to be reliable	○	○	○	○	○	○	○
The company seems to be intelligent	○	○	○	○	○	○	○
I imagine that the company is successful	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company seems to be upper class	○	○	○	○	○	○	○
The company seems to be charming	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The company seems to be outdoorsy	○	○	○	○	○	○	○
The company seems to be tough	○	○	○	○	○	○	○

End of Block: Factor 4 - Brand Personality

Start of Block: Manipulation check

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The color contrast within the logo is high	○	○	○	○	○	○	○
I would describe the structure of the logo as dynamic	○	○	○	○	○	○	○

End of Block: Manipulation check

Start of Block: Information 2

The first part of the study ends here. In the next part, you will be asked to execute a reaction-test. Please read the instructions on the next page carefully.

End of Block: Information 2

Start of Block: Demographics

What is your age?

_____

What is your gender?

○ Male

○ Female

What is your highest level of education?

○ Primary school

○ High school

○ Intermediate vocational education (MBO)

○ Bachelor (HBO)

○ Master (WO)

○ Other, namely _____

End of Block: Demographics