

Copenhagen Business School
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THE FIRST SECONDS OF THE BRAND EFFECTS

Investigation of the conscious and unconscious mechanisms of the effects of
brands on preferences: an eye-tracking experiment

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Executive summary

The main concern of the branding field is to understand brand information effects on decision making. Brands affect the consumers from the first seconds they are exposed to them. Brand knowledge creates the expectancy that consequently leads to the subjective feeling enhanced by the brand as well as motivated buying behaviour. Brand value computation is a complex process comprising both the conscious and unconscious brand activity. This process is ruled by emotions that are considered as implicit automatic reactions. Branding professionals and scholars of different fields are witnessing the emergence of new approaches explaining the neuropsychological mechanisms of the brand effects on preferences. Thus, this thesis examines the conscious and unconscious dimensions of these processes exemplifying the case on the fashion market. The study builds on a range of literature specifically focusing on brand equity theories and knowledge deducted from the modern cognitive neuroscience views.

Behavioural and physiological methods are employed to investigate how brands can bias product preference; what the emotional and cognitive reactions involved in processing of brand and product information that can manifest brand effects are; and to what extent these effects can operate without conscious awareness. For these purposes a laboratory eye-tracking experiment, consisting of two conscious and unconscious outfit rating tasks, was run. Here, first of all, brands were manipulated under the conscious awareness employing the priming procedure. Afterwards, brands were presented simultaneously with fashion clothing.

The findings of the study have shown that brand preference can positively bias the product preference in both the conscious and unconscious perspectives. The significant relationship between the pupil dilation and brand liking as well as outfit preference suggested that brands induce automatic emotional reactions. Changes in visual attention, where conscious brand exposition with fashion clothing enhanced faster attention towards the clothing and longer time spent looking at the brand, provided valuable information about how value encoded in the brands affects the processing of brand and product information. Furthermore, it has been shown that time spent looking at the product may be an efficient predictor of choice. The unconscious experiment demonstrated the unconscious branding effects. This led to new insights informing the academic and corporate fields about the internal mechanisms of brand effects on preferences.

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“The heart has reasons that reason cannot know”
Blaise Pascal

Acknowledgement

The question of mind-brain distinction may be traced back to XVI century and even earlier. Different philosophers as René Descartes, psychologists, neuroscientists, and corporate world professionals have been investigating the processes of human mind for decades to understand *why we do what we do*. Following the same wonder, the unexplored notions of unconsciousness in branding have inspired me to write this paper.

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*“In a lot of ways, branding is simply telling a story”
French fashion designer Coco Chanel*

(Tungate, 2005)

1. Introduction

The term fashion involves “*change, defined as a succession of short-term trends or fads*” (Easey, 2009, p. 3), “*anything that members of a population deem desirable at a given time*” (Rath et al., 2008, p. 6). Fashion conveys symbolic value that is strongly interrelated with consumer’s self-conception, emotional states, product aesthetical designs, the concept of beauty and symbols as ***brands***. But how do the ***brands work***?

From economic man to intuition

Researchers have studied brand effects on consumers for decades to understand brand information impact on decision making (Ailawadi & Keller, 2004). For a long time, consumer brand choices were explained on the basis of economical assumptions of behaviour. Brands were seen as part of the traditional marketing mix and were used only to reduce the uncertainty of the transaction (Borden, 1984; McCarthy, 1975). Consumers were perceived as rational individuals relying on the conscious choice evaluations to maximize their utilities. Desires and irrational hedonic consumption of brands were highly neglected (Heding, Knudtzen, & Bjerre, 2008).

In the early 1980s, a wave of experiments focusing on the cognitive-decision problems was undertaken by Nobel laureate Daniel Kahneman and his colleague Amos Tversky (1981). While manipulating problem related information (see: Framing effect),¹ they presented the effects on the cognitive plausibility of decisions that consequently challenged the traditional economic accounts of human rationality. As a result, a new focus on the intuitive and emotional processes involved in decision making was introduced bringing new insights into the study of consumer choice (Ibid).

Kahneman (2003) made several important contributions to this new line of thought. He argues that there are two cognitive systems that are responsible for decision making; the first one is fast,

¹ Framing is used in decision science for choice manipulation since the manner in which choice is presented and how it is framed by different information can affect decision making and choice preference. It proposes that relative attractiveness of options may vary as a result of different perception of decision problem or changed predictability and evaluation of problem outcomes elicited through the memory system (Tversky & Kahneman, 1981).

automatic and effortless and is called “intuition” whereas the other one is slow, flexible, and consciously controlled and is called “reasoning”. In the consumer behaviour literature, these intuitive decisions are referred to as affective. They lead to reactions that are consciously experienced as “feeling right” or “fitting like a glove” (Arnould, Price, & Zinkhan, 2005).

Evolution of the branding discipline

Evolution of thought in the marketing field led scholars and corporate professionals focus on branding as a discipline on its own. The brand was thus perceived to comprise distinct elements (a name, term, sign, symbol, design or combinations of them) that Keller (1993) came to define as “identities”. These then became the core elements of explaining the differential effect of the added value on products that were developed to satisfy the same need (Aaker, 1991; 1996; 2008; Keller, 1993; 2008). According to Aaker, this value can be defined as functional, self-expressive, emotional benefits. And Keller reflects to it as the tangible product attributes and intangible emotions. A mental, behavioural and financial perspective of this value is defined as “brand equity”. Consequently, sociological and anthropological theories on the social and cultural dimension of consumption as well as psychological notions of the internal states of consumers were adopted to explain how brands affect consumer choices (Arnould, Price, & Zinkhan, 2005).

Demand of the cognitive neuroscience knowledge for brand research

For the past decades, both corporate and academic fields have shown a growing interest in the application of neuroscience tools and theories on research in marketing, branding and consumer behaviour. The amount of marketing publications containing the term “neuromarketing” grew from five published papers in 2000 to more than 150 in 2010 (Plassmann, Ramsøy, & Milosavljevic, 2012). Cognitive neuroscience approaches based on the analysis of biological and physiological reactions challenged traditional research methods. Through application of the different ways of perceiving the brain such as neuroimaging, electroencephalography et cetera², it brings in new insights of neural representations of the brands. Moreover, it taps into the internal mechanisms of information processing expressed through emotional and cognitive reactions (Knutson et al., 2007; Foxall, 2008; Plassmann, Ramsøy, & Milosavljevic, 2012; Rangel, Camerer, & Montague, 2008).

² Introduction to the brain measurement techniques is presented in the Appendix 1, p. 95

1.1 Research question

According to the computational neuroscientist Read Montague (2007), the brain is developed as an efficient tool to make fast calculations to save energy and minimize the resources for humans while making choices. Therefore, choosing a brand is just another choice situation. Damasio (with Bechara, 2005), the father of the theory of “somatic markers”, explains that the valuation of different alternatives is guided by prior emotional processing in particular by the marker signals that arise in bioregulatory processes. This influence takes place on different operational levels where some of them reach the consciousness and some only happen non-consciously (Ibid). Indeed, 95% of the brain activities are believed to happen below the conscious awareness and roughly 5 % call for conscious self to guide the decisions (Baargh & Chartrand, 1999).

The topics of the neural representations of brands, the concepts of consciousness and unconsciousness and their effects on decision making, dimensions of feelings and emotions and knowledge of the underlying branding mechanisms now have become at the core interest of branding professionals willing to add this knowledge to existing theories (Gordon, 2001; du Plessis, 2005; 2011; Walvis, 2007; Hansen & Christensen, 2007).

“Ordinary people often struggle to articulate how they think and feel about the brands”, “professionals determinedly try to identify reasons behind brand choice”; “there is an apparent paradox” (Gordon, 2001, p. 281-282). “There is a soma involved in the decision”, “marketers needs to manage this soma”; “ to find a way to measure it” (du Plessis, 2011, p.25)

In spite of a demand for scientific knowledge on how brands work, there is still a scant understanding of cognitive and emotional processes involved in branded product choices. This offers the potential for this thesis’ research. The following presents the research question:

What are the conscious and unconscious mechanisms of the effects of brands on preferences?

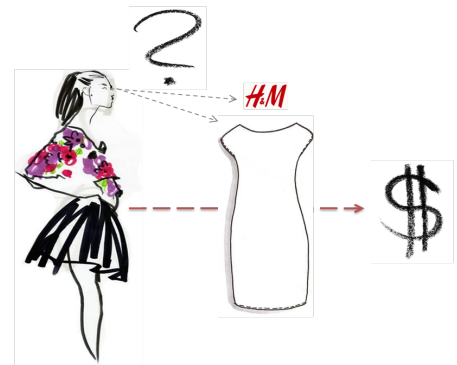


Figure 1. The model of the thesis research area³.

³ Fashion model is sketched by an artist Geoffry Gertz, <http://www.geoffrygertz.com/>

1.2 Fashion industry as a source of inspiration

“You don’t buy clothes – you buy an identity.”

Fashion photographer Vincent Peters

(Tungate, 2005)

Global fashion market is one of the most competitive world trade sectors. Different marketing strategies regarding the price, distribution, outfit design, seasonality, externalization of the visual brand elements, celebrity endorsements, and other are employed to gain the unique position in the market and in the consumer minds (Rath et al., 2008; Kapferer & Bastien, 2009; Easey, 2009). Moreover, sensory experiences as smell, vision, touch and hearing are stimulated and embedded in the consumer brand memories through the artistic shapes and colours, arrangement of the clothing, or symbolic means of advertising pictures (Rath et al., 2008; Easey, 2009).

Fashion market structure and peculiarities of branding strategies

A fashion market can be ranged all the way from the street fashion of mass markets to “haute couture”⁴ (Easey, 2009). Brands like Dior, Gucci, and Prada comprise the biggest fashion houses in the world of internationally recognized designers that carry out artistic customized handmade production. Nowadays, most of the haute couture houses produce a “ready-to-wear” (prêt-à-porter) fashion as well based on the industrial assembly of the famous patterns and designs. For prestige luxurious brands it returns a greater profit as the garment may be distributed for a greater number of clients, through standardized sizes in a broader edition.

Moreover, high fashion houses also tend to use different brand communication solutions. For instance, exclusivity, product craftsmanship, premium pricing, high quality, mythical story, and good taste are at the core of their strategic creation of brand identity (Tungate, 2005; Kapferer & Bastien, 2009).

Mass fashion brands such as H&M, Zara and Vila were initially established for the purpose of fast fashion (Kapferer & Bastien, 2009). They differ from the high fashion houses in their industrial mass production nature. Clothing is produced in a high number of items and sold with cheaper prices. Nowadays, because of economic and financial changes, fashion consumers have

⁴ Based on Oxford Dictionary definition, haute couture is expensive, fashionable clothes produced by leading fashion. Literally the name originated in France and can be referred as “high dressmaking”.

become extremely demanding. They look for top designer names and celebrity endorsements in both a high and a mass fashion markets (Euromonitor International, 2011). This leads to an even greater competition between all fashion brands that creates a slight diffusion in the line of luxury.

For instance, Zara is known for its specific brand strategy. Rather than spending money on the advertising, Zara relies on the exclusive store environments and specific approach on collections. It brings the high fashion sense in the streets (Tungate, 2005). Each month Zara introduces new collections or modifies the existing ones through less than four weeks if they lack of popularity.

On the other hand, H&M, the Swedish giant, relies on massive investments in advertising, employing TV, social media, printed advertisement or outdoors promotional channels. Moreover, the H&M brand is famous for the strategic alliances and projects relating to top high fashion designer names. For instance, it has collaborated with Karl Lagerfeld, also with singer Kylie Minogue who dedicated her name for a collection in China (Tungate, 2005; Euromonitor International, 2011).

To sum up, branding is essential in the fashion market. Generally, brands work as a “placebo effect”. Such as, knowing that the particular dress is a Gucci may lead to different emotional and cognitive processes related to the outfit’s evaluation, experience, preference and purchase decision compared to knowing that it is a Zara dress (McClure et al., 2004).

The aforementioned fashion market peculiarities make fashion industry an interesting case to investigate conscious and unconscious mechanisms of the effects of brands on preferences. Fashion outfit choices reflect the situation where consumer is faced with information about a brand as well as a product. This leads to a wondering, how brands shown with the products actually can immediately affect the reactions, how this can bias and lead the decision towards the outfits and to what extent these effects are consciously perceived. In this thesis, international brands like Gucci, Dior and Prada, Zara, H&M and Vila will be used as case examples⁵. However, the main focus will be based on the branding topic. Accordingly, fashion market will only be reflected to exemplify the theoretical perspectives and conduct the empirical research.

⁵ Introduction to each fashion brand is presented in the Appendix 2, p.96.

1.3 Reader's guide

In order to answer the research question and investigate, *the conscious and unconscious mechanisms of the effects of brands on preferences*, the following part frames the research paper structure presented in the Figure 1.

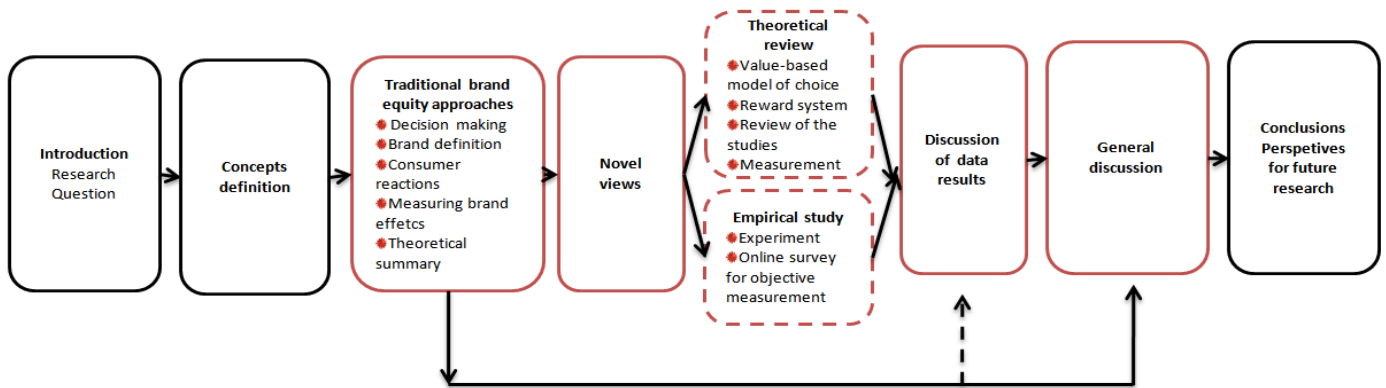


Figure 1. Thesis structure. Composed by the author of thesis.

Introduction section describes the background of the problem area that outlines the research question. It includes a description of the fashion branding peculiarities that inspired this research and exemplified the case. Moreover, primary methodological considerations are further defined to introduce the reader to the applied philosophy and guiding principles of the research. Traditional branding approaches as well as modern cognitive neuroscience theories are delimited in order to get in-depth insight in the specific issues.

The section called *Concepts definition*, clarifies the definitions of “consciousness” and “unconsciousness”, “emotions” and “feelings” that are used throughout the study.

Theoretical literature review will begin with a discussion of the traditional brand management approaches, in particular focusing on Aaker’s and Keller’s brand equity theories. The goal of this part is to study how traditional branding approaches explain the consumer decision making, how they define the brand, what kind of mental and behavioural reactions brands induce, and how much the unconsciousness plays a role in the branded product choice. Afterwards, a recap of these notions is presented in the chapter called *Theoretical summary of the traditional brand equity approaches*.

The following part, *Modern cognitive neuroscience views*, presents a review of cognitive neuroscience literature concentrating on explanation of neuropsychology of brands and their effect on preferences through the application of value-based model of choice. The aim of this section is to investigate how brand effects occur in the brain, to what extent they take part in unconsciousness, how this affects decisions and what are the related cognitive and emotional processes that can be traced through the visual system. For these purposes relevant theories and recent research on the branding effects on the preferences and eye-tracking technique are overviewed. Thus this grounds the hypotheses that follow.

Research framework part includes a definition of hypothesis deduced from the literature review and a description of the experiment conducted to test the hypothesis.

Following chapters, *Results* and *Discussion of the results* presents and discourses the results in relation to theoretical approaches. Moreover, it includes an evaluation of the chosen experiment methodology based on the criticism on the validity, reliability, sensitivity. The part of *General discussion* merges the knowledge of theoretical analysis with the empirical part and presents the implications of the produced knowledge in academic field and marketing practice.

The last parts of research paper, *Conclusions* and *Perspectives for future research* sums up the thesis research findings and proposes suggestions for further research.

1.4 Primary methodological considerations

To conduct the theoretical and empirical research, first of all, primary methodological principles are considered and presented in the following section.

The choice of the philosophy defines the way the knowledge is developed and accepted. According to Guba and Lincoln (1994), questions of research methods should be of the secondary importance as both qualitative and quantitative research methods could be applied within any of philosophies. In order to add deductively produced knowledge to the social science of branding, the scientific philosophy of positivism is adopted as the guiding principle.

“Positivism holds that all phenomena should be understood through the employment of scientific method and aims to create the theoretically neutral language of observation by stripping the hypothesis and theories of subjective content” (Collins, 2010, p. 42)

The choice of a positivistic view brings in the related assumptions providing a platform for launching the research strategy. The researcher is *“independent of and neither affects nor is affected by the subject of the research”* (Saunders, Lewis, & Thornhill, 2009, p.114). Reality is assumed to be naturally observable. For instance, during the data collection process, the researcher and the subject are both independent and do not attach any personal meaning or feelings to the research in contrary to what could be assumed to occur while employing a personal interview technique or a focus group (Ibid).

Positivism is an empirical view. For empirical research proposition hypothetic-deductive research approach is applied where *“laws present the basis of explanation, allow the anticipation of phenomena, predict occurrence and therefore permit them to be controlled”* (Saunders, Lewis, & Thornhill, 2009, p. 117). The knowledge deducted from the hard field of cognitive neuroscience brings in the empirically endorsed reliability and contributes to the constructivist narrative notions of the brand management field (Walvis, 2007). This choice is defended by the experimental research. The goal of it is to identify the causal relationships between the independent and dependent variables (Zikmund et al., 2010). In particular, to investigate the behavioural and physiological effects of brands on the outfit preferences and visual processing cues. Moreover, only empirically verified ideas are accepted as knowledge and “truth” in the results discussion part. For these purposes, the hypotheses are empirically verified using statistical analysis of the SAP based tool JMP (Saunders, Lewis, & Thornhill, 2009; Collins, 2010).⁶ Afterwards, experiment methodology is evaluated based on the factors of validity, reliability and sensitivity (Zikmund et al., 2010).

Benefits and drawbacks of the taken methodological approach

Generally branding discipline perceives consumers to be the social entities affected by the society and culture. Reflecting this view qualitative data collection and measurement approaches could

⁶ Data collection methods and experiment design is presented in the part of *Research design framework*.

be very useful for the brand research (Walvis, 2007). However, they are considered to be more suitable for analysing the personal meaning of the brands (Heding, Knudtzen, & Bjerre, 2008); *“Qualitative observations about the shape of a brand in the mind and how it might be influencing behaviour are not measured”* (Gordon, 2001, p. 291).

The brand effects investigation relates to the subjective experience and related perceptions of the brand and this may appear to deviate from the traditional positivistic view in this thesis. However the main focus is on the quantitative behavioural and physiological changes induced by the brands. Selecting quantitative methods for these purposes yields the objective conclusions while minimizing the subjective judgment and providing the accurate predictions (Hair, Bush, & Ortinau, 2009). However, unlike phenomenological research, it fails to provide the information on the context which leads to the abstract knowledge.

Following the notion of Guba and Lincoln (1994), that both quantitative and qualitative methods can be applied in the positivistic philosophy, quantitative approach is embedded with the qualitative technique of the Free associations test. A qualitative approach is additionally taken for parts of discussion, however only to make the assumptions and the explanation of potential individual effects and suggestions for further research.

1.5 Delimitations

Due to the narrow scope of the study, the subsequent section presents the theoretical and methodological delimitations.

Brand management theories

Branding discipline involves a range of the brand management approaches: the economic, the identity, the consumer-based, the personality, the relationship, the community and the cultural, reflecting a different marketer-consumer relationship (Heding, Knudtzen, & Bjerre, 2008). Moreover, different brand communication effects theories such as Response-Hierarchy-Models as for instance AIDA (Attention-Interest-Desire-Action) that investigate the stages consumers have to pass for communication effects to occur; Elaboration-Likelihood Model, investigating routes of persuasion (central and peripheral); information processing models such as Rossiter-Percy Grid based on high/low involvement and positive/negative motivation; are employed in

marketing and branding literature to explain the consumer responses towards the brands and marketing communications (Belch & Belch, 2008; De Pelsmacker, Geuens, & Van den Bergh, 2007; Vakratsas & Ambler, 1999).

Because of the limited scope of the thesis, two brand equity approaches of the leading pioneering strategic brand management scholars David Aaker's (1991; 1996; 2008) and Kevin Keller's (1993; 2008) are selected for discussion in the research paper. Here consumer reactions towards the brands are explained digging into the learning and memory systems (Erdem et al., 1999). The aforementioned choice is influenced by the fact that related brand equity models are highly applied in the academic (Cobb-Walgren, Ruble, & Donthu, 1995; Erdem, et al., 1999; Fayrene & Lee, 2011) as well as in corporate worlds as guiding principles of brand effects investigation and strategic brand communication.

Cognitive neuroscience theories

Brand effects analysis from the cognitive neuroscience point of view is a complex and broad research area. It involves different topics such as memory system, reward structure analysis, unconsciousness and its role in brand research and marketing. This thesis' topic is delimited on the value calculations (Plassmann, Ramsøy, & Milosavljevic, 2012; Berridge, 2009a; 2009b; Berridge & Robinson, 2003; Berridge & Kringelbach, 2008), emotional and cognitive processes investigation that are induced by the marketing information (McClure et al., 2004; Plassmann et al., 2008; Kirk et al., 2009), and unconscious effects of brands on preferences (Baargh & Chartrand, 1999; Chartrand et al., 2008).

Experiment⁷

This thesis' research experiment is conducted in the hypothetical environment in an artificial situation in the laboratory. The nature of the study is pioneering. Application of the eye-tracking device to measure the physiological and behavioural reactions enhanced by brands on preferences in this particular set can serve as a pilot study. The results of this experiment may give hints for the future academic investigation.

⁷ The benefits and the drawbacks of the laboratory versus real-life experiment set up are discussed in the part of *Experiment quality evaluation*.

2. Concepts definition

In order to simplify the complexity of the topic and clearly speak about the differences in the definitions employed in academic literature, the following section provides an introduction to the main concepts applied in this research.

Consciousness and unconsciousness

Different scholars have been arguing about the exact definition of consciousness and unconsciousness. Hence, in this thesis consciousness reflects the ability to be aware of an event and to be able to report it whereas unconsciousness takes part below the awareness threshold (Dijkterhuis & Aarts, 2010; Baars & Gage, 2010). For instance, conscious stimuli recognition threshold is measured in millisecond duration, where it takes a hundred of them for the visual stimuli to become conscious (Baars & Gage, 2010).

Consciousness involves the mental acts that people intend, they can control, and as well that require efforts, whereas unconsciousness refers to effortless and automatic processes (Bargh & Chartrand, 1999).

Emotions and feelings

A central tenet of the branding and marketing field lies in the notion that concepts of “emotions” and “feelings” can be used interchangeably. However, the field of cognitive neuroscience suggests that emotions and feelings should be viewed as related but separate constructs. As, from the evolutionary point of view, “*human emotions biological roots come from mammalian brain that is regulated by the layers of neocortex*” (Baars & Gage, 2010, p. 14).

Emotions are primitive, unconscious and automatic and occur in different situations ranging from the dangerous threats (LeDoux, 2003) to the shopping behaviour and brand choice (Hansen & Christensen, 2007; Hansen, 2005). They have an essential effect on implicit emotional learning and memory, perception, attention and motivational state, whereas cognitive processes are considered to be involved in the information processing functions, executive function and action selection (Baars & Gage, 2010). Physiologically emotions enact in the heart rate changes, endocrine release et cetera. Hence, an external observer cannot perceive these reactions.

Moreover, emotions elicit the musculoskeletal system changes as well that can be traced through the facial expressions, posture or behavioural changes (Ibid).

Emotions can be defined as *“a collection of changes in body and brain states triggered by a dedicated brain system that responds to specific contents of one’s perceptions, actual or recalled, relative to particular object or event”* (Bechara & Damasio, 2005, p.339).

Feeling, however, is defined as a perceived subjective emotional valence. Feelings result from the interplay of the brain systems responsible for conscious awareness and unconscious processes. It is a conscious experience of being in a certain emotional state. It is led by the emotions, in particular, nerve activation patterns that correspond to that state (Damasio, 2000). However, emotions do not necessarily lead to the conscious feelings.

3. Traditional brand equity approaches

In branding field creation of a strong brand equity is considered to be the main purpose of the brand building (Aaker, 1991; 1996; 2008; Keller, 1993; 2008). Brand equity endows the products with the value that helps consumers to interpret, process and store information about it. Moreover, it enhances preferences and purchase intentions (Cobb-Walgren, Ruble, & Donthu, 1995; Moradi & Zarei, 2011).

According to Aaker (1991), brand equity⁸ is *“the set of brand assets and liabilities linked to the brand, its name, and symbol, that adds or subtracts values to a product or service for a firm/or its customers”* (p.15). Brand loyalty is the behavioural reaction, whereas brand awareness, associations and perceived quality reflect the mental constructs of the brands.

According to Keller (1993;2008), the power of brand lies in the knowledge that resides in consumer minds and is called “Consumer-Based Brand Equity” (CBBE).⁹ It is defined as *“differential effect that brand knowledge has on a customer response to marketing of that brand”* and consists of brand awareness and brand image - associations attached to the brand (2008, p.48).

⁸ David Aaker’s brand equity model is presented in the Appendix 3, p. 97

⁹ Kevin Keller’s CBBE pyramid model is presented in the Appendix 4, p. 98

Generally, “Behavioural brand equity” is linked to the behavioural brand responses such as repeated purchase, “Mental brand equity” - to the consumer responses based on the brand knowledge in memory and “Financial brand equity” referred as a market responses to it (Hansen & Christensen, 2007).

The goal of next section is to understand how the pioneering traditional brand management academics David Aaker (1991; 1996; 2008) and Kevin Keller (1993; 2008) explain the underlying branding mechanisms and the effects of brands on preferences. In particular consumer decision making, brand definition, consumer reactions, unconscious branding and brand measurement methods are further discussed initially focusing on the first topic.

3.1 Consumer as a cognitive decision maker

Brand equity approaches are rooted in the traditional cognitive research where the consumer is believed to rely on the deliberate reasoning and systematic combination of different information while making a decision (Heding, Knudtzen, & Bjerre, 2008; Arnould, Price, & Zinkhan, 2005; Hansen, 2005). He always consciously processes, engages and elaborates on the information before making a choice (Dijksterhuis et al., 2005). Chaotic, autonomous and unpredictable consumers are not considered while studying the choices (Heding, Knudtzen, & Bjerre, 2008).

Based on cognitive psychology view, the interaction between the brand and the consumer is guided by the if-then logic. Consumer is seen as a computer (Figure 2). For instance, branding specialist can induce the intended reaction to the brand that is assigned to the product resulting in choice through skilled communication while choosing the right elements of the brand to be mapped in his head (Heding, Knudtzen, & Bjerre, 2008; Keller, 2008; Aaker, 1991).



Figure 2. “Consumer as computer” (Heding, Knudtzen, & Bjerre, 2008, p. 86).

Kevin Keller, CBBE approach

CBBE approach is led by the assumption that if the marketer creates the knowledge of the brand based on strong, unique and favorable associations in the consumer memory, this knowledge will lead to the brand/product preference and behavioural and cognitive loyalty (Keller, 1993; 2003; 2008; Cobb-Walgren, Ruble, & Donthu, 1995). Behavioural loyalty refers to the frequency and amounts to the purchasing of the brand, whereas cognitive loyalty can be reflected as a feeling which stretches beyond the positive attitude (e.g “loving” the brand) (Keller, 2008). These three brand knowledge dimensions determine the differential response thus leading to a higher growth in sales, higher market share, relatively higher price, lower promotion cost, and better level of distribution (Keller, 2008; Rosenbaum-Elliott, Percy, & Pervan, 2011).

Even though CBBE roots come from traditional cognitive perspectives, Keller (2003) does not neglect the impact of the other scientific disciplines on consumer-based approach - *“this essay presented a representation of brand knowledge based largely on cognitive psychology. Important perspectives on branding and brand knowledge obviously can, and have been, gained from other disciplinary viewpoints, for example, anthropological or ethnographic approaches”* (p.600).

3.2 A brand is a “mental box”

A brand, according to Aaker (1991) is a mental construct in consumer’s head hence it is defined as a “mental box”. Consumer after receiving information about a certain product, for example viewing the Dior collection of outfits in the show, labels this information as Dior and saves it in the “box”. In the long term, only a small amount of information can be retrieved. However, the consumer knows two dimensions related to it – if it is a heavy or light and what position it is stored in - with the positive boxes where objects that *“earned positive feelings and attitudes”* are filled or with the negative ones (Aaker, 1996, p.10).

A brand, according to Keller (2003) consists of a *“personal meaning about a brand stored in memory that is all descriptive and evaluative brand-related information”* (p.596). This information is stored in consumers heads as cognitive elements that are interrelated in networks. For instance, the nodes in the networks refers to the information itself, whereas the links - strength of this associative information (Keller, 2008). When consumers engage in problem

solving activities or are faced with a choice situation amongst different options, they tend to connect, weight and compare these elements to decide (Heding, Knudtzen, & Bjerre, 2008).

Two examples of association networks regarding the fashion brands of Dior and H&M are presented in the Figure 3.

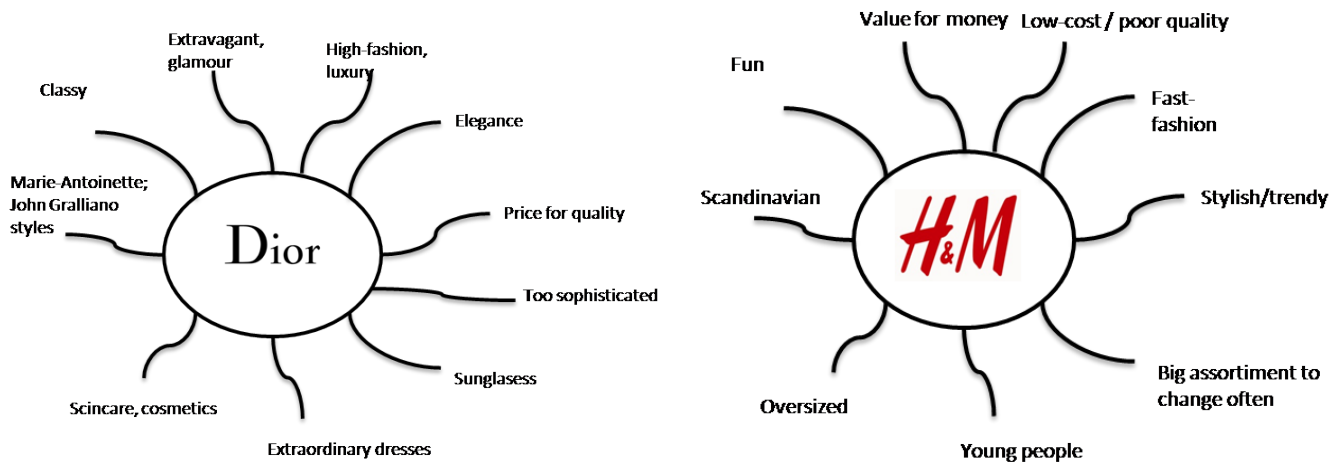


Figure 3. Dior and H&M network of associations. Adopted from Keller (2008, p.52). Free associations test¹⁰

3.3 Consumer reactions induced by the brands

While being presented with a brand, certain perceptions attached to the brand are triggered, that may lead to the certain brand/product choice depending on the information attached to the brand. According to Aaker (1991), “A brand association is anything “linked” in memory to a brand”. Associations “represent the basis for purchase decision and brand loyalty” (p.109-110). Thus, the strongest overall brand identity in consumer minds according to him, have to rely on affective dimension of the brand proposition reflecting to the emotional and self-expressive benefits (Aaker, 2008).

Emotional and self-expressive benefits

Emotional benefits are “the ability of the brand to make the buyer or user of a brand feel something during the purchase experience; “it is all about statement “I feel”” (Aaker, 2008, p.164). Such as, feeling good while buying a Dior dress is important in a clothing choice situation (Aaker, 1996; 2008). Emotional benefits provide profoundness to owning and consuming the

¹⁰ Associations for each brand indicated during the experiment in Free association test are presented in the Appendix 5, p.99

goods. They are usually strongly related to the functional benefit that provides consumers with the functional utility (e.g. good material of the dress may enhance a pleasure of wearing it).

Self-expressive benefits refer to the feeling arising from the self-concept rather than product usage experience. It is related to the act of using the product (e.g. wearing a Dior dress confirms to be sophisticated), and expression of that act through the elegant and sophisticated self-image to others. The aspiration and future rather than memories in the past as well as public setting rather than private play a crucial role in this case (Aaker, 2008).

Perceived quality – the overall “intangible” brand feeling

Perceived quality is a brand association that is defined as “*the customer’s perception of the overall quality or superiority of a product or service with respect to its intended purpose, relative to alternatives*” (Aaker, 1991, p.85). Perceived quality is “*intangible overall feeling about a brand*” (p.86). It is strongly related to the product characteristics such as performance, durability, and reliability attached to the brand and the evaluations of important aspects to the consumer. It is often the point of differentiation between the prestige and premium brands (Aaker, 1996) which is very important in fashion brand choices.

Brand image and brand meaning

According to Keller (1993; 2008) associations attached to the brand containing the meaning of the brand for consumers are defined as “brand image”. Indeed, they are the beliefs formed towards the specific brand “attributes” – “*descriptive features that characterize the product*” (e.g. skincare cosmetic of Dior) and “benefits” – “*personal meaning that consumer attach to the product’s or service’s attributes*” (e.g. extraordinary dresses of Dior) (Keller, 2008, p.57).

Brand image affects the judgment of the brand and brand attitudes. There are two types of meaning that can be linked to the brand – brand performance and brand imagery¹¹. Brand performance refers to the satisfaction of consumer’s needs, brand imagery is the intangible associations related to the social and psychological needs. It is the way consumers think about a brand in abstract terms (e.g. Dior is an extravagant brand). Fashion market reflects the symbolic

¹¹ CBBE pyramid with reflections upon each component is presented in the Appendix 6, p.100

consumption, brand imagery here is strategically important as it usually leads to the brand choice (Keller, 2008).

Brand responses: feeling and thinking

Based on CBBE approach, associations that create the brand meaning induce two types of consumer reactions towards the brands – either brand judgement or brand feeling. Consumers evaluate associations on what they feel and what they think about them. Feeling is the “*emotional response and reaction towards the brand*” and thinking is the brand judgements reflecting “*personal opinions about and evaluations of the brand which consumers form by putting together all the different brand performance and imagery associations*”(Keller, 2008, p.68). Judgements are usually made on quality, credibility, consideration and superiority. Consideration is a important filter as if likability of certain associations attached to the brand has no relevance to the consumer while buying a brand, than consumer is not going to consider it during purchase.

In fact, according to Keller, the essential thing is not if the brand associations induce thinking or feeling responses but how positive both of them are. Moreover, if these responses are accesible to the mind when consumers think about the brand and if consumers internalize and think about them in relevant touchpoints (Keller, 2008).

Brand attitude and its calculation

Brand attitudes relate to the overall evaluations of the brand (Keller, 2008). Attitudes that are formed from the direct behaviour and experience are considered to be accesible higher than the ones that are learnt from the different marketing communication channels or indirect behaviour (Keller, 1993) such as incidental encounters. Abstract associations as brand benefits and attitudes are more durable and faster retrieved from the memory faced with the brand (Ibid). According to Aaker and Joachimsthaler (2000), familiarity increases possitive attitudes¹². Inexperienced buyers are especially sensitive to purchasing a familiar brand (Arnould, Price, & Zinkhan, 2005).

Brand attitude, may be explained through the mathematical calculation (Arnould, Price, & Zinkhan, 2005; Percy & Elliott, 2009). The most infleuncial multiattribute model as well

¹² Familiarity effect on liking as well referred as “mere exposure” is more explicitly explained in the section of modern cognitive neuroscience views called *What creates liking?*

employed in fashion marketing literature as a one way to explain consumer evaluation stage in the decision making (Rath et al., 2008) and to analyse consumer perceptions (Birtwistle & Shearer, 2001) is the Expectancy-Value Model (see: Figure 4). It suggests that consumer's attitude towards the brand for example Dior (A) is calculated through “*summing all things he believes about it (b1) weighted by how important each of those things are to him (a1)*” (Percy & Elliott, 2009, p. 179).

$$\text{Dior (A)} = \sum_{i=1}^n a_i b_i^{13}$$

A- attitude towards Dior brand; a1 – importance of belief; b1 – belief towards Dior brand

Figure 4. Multiattribute Expectancy-Value calculation formula (Percy & Elliott, 2009, p. 179).

According to Keller, this model shows the perception of the favourability of the different brand associations that presents the overall evaluation consumer has towards the brand (Keller, 1993). Generally, in traditional cognitive approaches, there is a direct linkage between the brand attitude and the choice (Percy & Elliott, 2009; Arnould, Price, & Zinkhan, 2005).

3.4 Brand information learning under the conscious awareness

According to Keller, “*any encounter with a brand - marketing initiated or not – has the opportunity to change the mental representation of the brand and the kinds of information that can appear in consumer memory*” (Keller, 2003, p.597). Valence, number, uniqueness and origin of the direct and indirect learning of associations through the brand experience or incidental brand encounters affect the consumer reactions towards them (Krishnan, 1996). For instance, unique experience in the Dior shop may add new positive association which if it proves important to the consumer may lead to the choice of the Dior dress. While Aaker (1991) argues that familiarity effect on brand liking can appear “*below the threshold of recognition measurement*” (p.65). Even though these implicit reactions beyond the threshold of awareness are reflected, however, no clear explanations about them are presented.

¹³ Application of the Multiattribute Expectancy-Value attitude model for Dior brand attitude calculation is presented in the Appendix 7, p.101.

3.5 Measuring brand effects

Usually two kinds of measurements of brand effects are applied in the brand research, related to the consumer perceptions and the behavioural reactions (Cobb-Walgren, Ruble, & Donthu, 1995). Brand perception analysis uncovers the driving force of the consumer minds. In traditional branding research, direct and indirect measurement techniques are employed to study consumer attitudes, feelings and their intended behaviour.

Generally, direct approaches relate to directly asking people about the meaning of the brand employing the survey techniques or running focus group's discussions. According to Keller (2008), direct techniques are useful in studying the low-level evaluations of descriptive thoughts of consumer. To study specific dimensions related to brands such as uniqueness, multidimensional scales can be used (e.g. "How unique is the Dior brand in terms of the clothing design, where 1 is not unique at all, 7 – strongly unique") (ibid). According to Aaker (1991), emotional reactions related to brands should be research through asking the questions of feelings (e.g. "What do you feel wearing a Dior dress?").

Whereas, indirect approaches are effective for elimination of the situations where consumers are not willing to answer because of privacy reasons or are not able to do so because of not knowing their reasons (Aaker, 1991). The most common methods are the Free associations task, where consumers are asked what comes to their mind in relation to a brand (e.g. "What do you associate Dior with?"); the archetype technique, where unconscious motives are investigated through searching for the imprinting moments during the visualization and relaxation exercises (Aaker, 1991; Keller, 2008); the projective techniques where the consumer can "*project himself into a context which bypasses the inhibitions or limitations of more direct questioning*" (Aaker, 1991, p.136).

4. Theoretical summary of the brand equity approaches

First of all, Aaker (1991; 1996; 2008) and Keller (1993; 2008) define a brand as additional value consisting of tangible (functional) and intangible (feeling related) value attached to the product that resides in the minds of consumers. It differentiates one product from the others. Brand equity approaches are rooted in the traditional cognitive research where consumer is believed to rely on

deliberate reasoning and systematic combination of different information while making a decision (Heding, Knudtzen, & Bjerre, 2008; Arnould, Price, & Zinkhan, 2005; Hansen, 2005).

The guiding notion of the traditional branding approaches is that the information about the brand is learnt and coded in the cognitive elements. It is weighted on to determine how important they are for the consumer that consequently leads to the brand attitudes those usually in cognitive models are perceived to have the direct linkage with consumer behaviour expressed through the choice (Arnould, Price, & Zinkhan, 2005; Keller, 2008; Hansen & Christensen, 2007; Percy & Elliott, 2009). This relationship can be indicated as follows in the Figure 5.

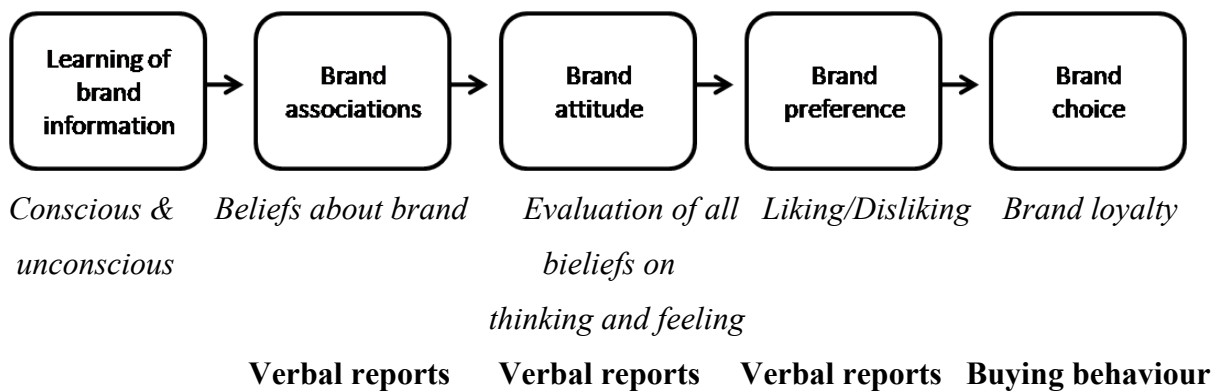


Figure 5. The process of the brand choice, adopted by the author of the thesis

Meanwhile, when talking about the unconscious processes related to the brands, both aforementioned scholars stress the unconscious learning. Aaker (1991) reflects to the familiarity effect on brand liking happening below the threshold of awareness and Keller (2008) mentions the incidental learning faced in the external environment. Furthermore, Aaker says that only a certain amount of the memory is consciously retrieved highlighting that some of it is implicit. However, no definitions related to the consciousness and unconsciousness as well as no thorough explanations of these processes are given.

Besides that, reflecting on the emotional aspect of the brands, Aaker (1991) refers to the emotional benefits that, according to him, lead to a certain feeling. Moreover, he adds up the self-expressive benefits, they are highly related to the feeling rising from the communication of self-concept to others. Reflecting the overall affective dimension of the brand's effect on consumer, Aaker identifies the perceived quality – overall intangible feeling of the brand (Ibid). Whereas,

Keller is not very explicit about what kind of affective reactions he is talking about when referring to feelings and emotions. According to him, feelings are “*emotional responses and reactions towards the brand*” (Keller, 2008, p.68). However, his definition is rooted primarily to cognitive psychology that refers to the cognitive response that forms judgment (Hansen & Christensen, 2007). For instance, calculating the favorability of the brand based on Expectancy-Value model where separate dimensions are measured by how important they are.

Finally, the core of understanding of the effect of a brand according to the aforementioned scholars Aaker (1991; 1996) and Keller (1993; 2008) relies on the investigation of the consumer mental states - defined as beliefs, attitudes or feelings. Moreover, while talking about the brand effects analysis scholars’ stress the verbal reports of the feelings that brand induce to the consumers. However, as stated before, emotions are implicit in nature and take part in the unconscious. People, first of all, are poor at understanding them, and, secondly, miserable at reporting them. “*A great mismatch exists between the way consumers experience and think about their world and the methods marketers use to collect that information*”, “*Feeling, the conscious experience of emotions, are only the top of the iceberg*” (Zaltman, 2003). In addition to that, the explicit brand effect measurement through self-reported techniques has a high possibility to be misleading because of the shaped responses affected by the filters of sense, and social desirability that consumers apply (Nevid, 2010; Dimofte, 2010; Arnould, Price, & Zinkhan, 2005).

5. Modern cognitive neuroscience views

Decision making arises from the complex interplay between emotions and cognition. This view challenges prior assumptions about rational choice and acknowledges the crucial impact of emotions on reasoning in decision making (Shiv & Fedorikhin, 1999, Bechara & Damasio, 2005; Zaltman, 2003). This impact further transcends into the study of effects of brands on preferences. The next section provides an outlook on the modern approaches based on the biological and physiological reactions that challenge the traditional sociological, anthropological and psychological marketing research propositions.

Brand name is shown to have a strong influence on consumer thoughts, feelings and actions (Aaker, 1991; Keller, 2008). Recent neuroimaging studies on the fast neural correlates of

processing marketing information (e.g. price, brand name) have shown that there are different brain activities modulations reflecting the effects of the branding and marketing actions (McClure et al., 2004; Plassmann et al., 2008; Kirk et al., 2009; Erk et al., 2002).

In order to understand the neuropsychological mechanisms of the effects of brands on preferences, four underlying components are presented as an explanatory framework for further analysis. These components are inspired by the interdisciplinary value-based model of choice, proposed by Plassmann, Ramsøy and Milosavljevic, which integrates consumer psychology and cognitive neuroscience (2012).

5.1 Value-based model of choice

The suggested framework divides the preference formation process into four parts interacting over the course of the timeline: (1) representation and attention, (2) predicted value, (3) experienced value, (4a; 4b) remembered value and learning. These four stages are presented in the value-based decision model depicted below in the Figure 6.

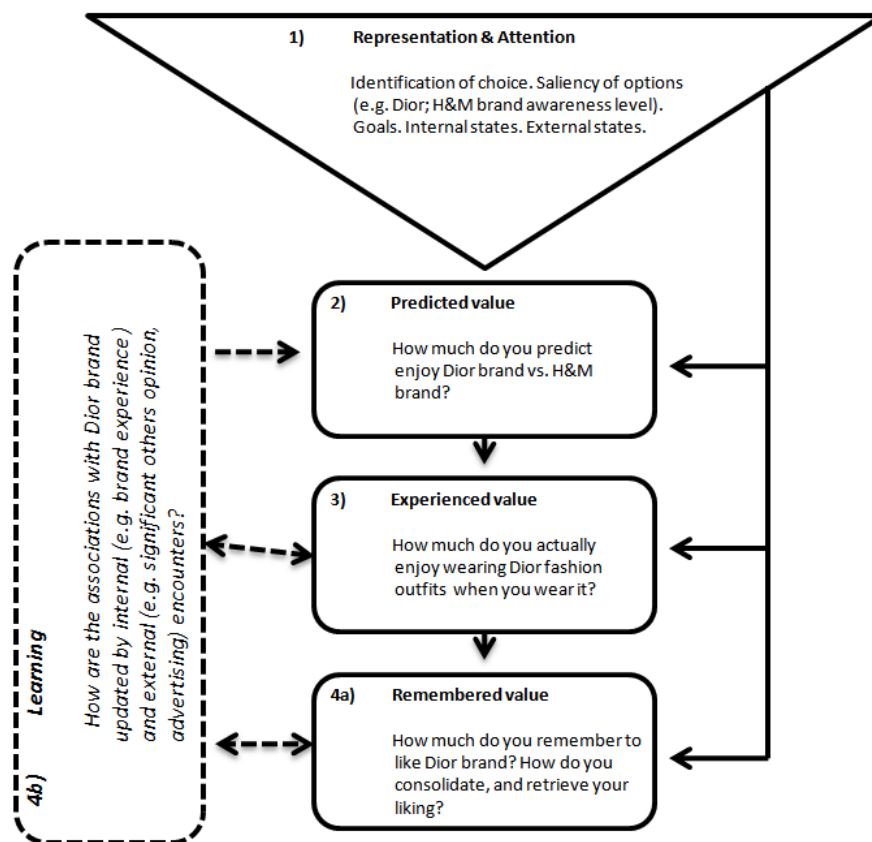


Figure 6. Model of choice. Adopted from Plassmann, Ramsøy, and Milosavljevic, exemplified with the case of fashion brands (2012, p. 3).

Value-based decision making is a computation set of steps, where the brain is encoding signals of value and evaluates it for every option of action in the consideration (Rangel, Camerer, & Montague, 2008; Plassmann, Ramsøy, & Milosavljevic, 2012).

In the preliminary step of the model, representation and attention, the consumer is introduced to a set of choices (e.g. Dior, H&M or other brands). Here, attention is defined as the function of the mind that makes one focus on one thing instead of the other (Duchowski, 2007; Baars & Gage, 2010). Firstly, visual information related to the brands is instantly filtered through the saliency filters of visual attention. Additionally, relevant information is encoded from environment, internal states and working memory. Visual attention and focus on the brand or product may be enhanced by different factors. For example, saliency may be induced by a repeated exposure effect to the brand created using different marketing strategies (e.g. product placement in popular movies, fashion outfit advertisements in “Vogue” magazine) (Aaker, 1991). Also, it can be caused by incidental fashion brand encounters in everyday life (e.g meeting a friend wearing a Dior dress on the street) (Ferraro, Bettman, & Chartrand, 2009).

Furthermore, attention may be guided by external goals such as social status or cultural norms that are related to brands and implicitly also outfits. In fashion, factors such as leisure activities, working standards, seasonal changes strongly influence the clothing habits (Easey, 2009). That is why the casual H&M brand may appeal more to Scandinavian people whereas the French may be more attracted to the extravagant brand Dior.

Also, emotions highly affect attention. Stronger emotional stimuli compared to neutral stimuli result in higher attention as people cannot voluntarily direct it away (Wedel & Pieters, 2008). As such, emotional impact of the Dior fashion brand could enhance a higher attention on the dress rather than looking around in the shop.

After seeing the brand, a calculation of the value is computed in the brain based on the reward expectancy and predicted value (2). The second step reflects “*consumer’s belief about the experienced value at some time in the future*” (Plassmann, Ramsøy, & Milosavljevic, 2012, p.5). For instance, looking at and imagining wearing a luxury Dior fashion brand which can enhance

sense of elegance may enhance a more pleasurable predicted experience by itself than looking at the same dress assigned the H&M brand. Here, expectation is based on the brand memory.

In the third step of the model, the experienced value (3), the level of pleasure experienced while consuming the chosen outfits of a certain brand is determined. This step reflects an actual value derived from the consumption experience. Hence the same dress assigned to Dior or H&M may be experienced in different levels of valence and intensity.

The interaction of both the predicted value of the dress and the true experience is considered to be the most important part of the value-based decision making model. Essentially, this is where the different motivational values towards the outfits related to a different brand are revealed.

In fact, the actual choice of a certain brand is highly dependent on the consumer's remembered value (4a) of the brand exposures. The remembered value of the brand refers to the associations that are "*encoded, consolidated and retrieved in the consumer's memory*" (Plassmann, Ramsøy, & Milosavljevic, 2012, p.10). For example, a woman deciding to buy the dress would perhaps have remembered the Dior advertisement starring the actress Charlize Theron. In the ad for the Dior "j'adore" fragrance, the gold-covered actress moves elegantly while creating the image of "*fascinating woman with the ability to combine most modernity with timeless elegance*"¹⁴. If predicted reward error (Foxall, 2008) that is when the predicted value attached to the brand of Dior dress (e.g. expected pleasure due to the enhanced sense of elegance) confront with the true experience of dress consumption, the learning process (4b) occurs while encoding and consolidating new-experienced value.

5.1.1 Prominent brain systems involved in consumer choice

According to value-based model of choice, the encoding of brand value entails four steps that take part in the brain. The following model in Figure 7 presents the prominent/dominant brain areas that are involved in these processes.

¹⁴Taken from Dior brand positioning strategy presented in the Appendix 2, p.96

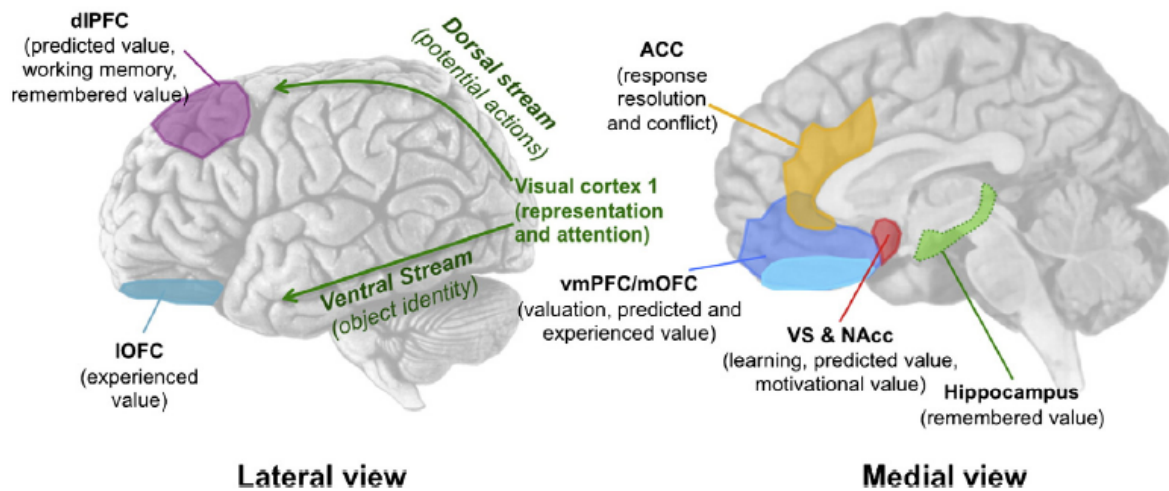


Figure 7. ¹⁵Prominent brain structures related to value computation. The model adopted from, Ramsøy, & Milosavljevic (2012, p.3).

First of all, while being exposed to the branded product, visual information comes through the visual cortex and takes two roads presented in green arrows in the model. For instance, the dorsal visual cortical route helps to categorize the spacial attention and is responsible for attention functions attention of “where and how” (Plassmann, Ramsøy, & Milosavljevic, 2012). A factor of “where” would help to identify the dress in the shopping surrounding. A factor of “how” would reflect the action of intentionally taking a hanger with a dress. It is involved in the perceptual expectations of what to do with the dress (Duchowski, 2007). The dorsal pathway proceeds to the dlPFC (pink colour in the model). dlPFC, vmPFC as well as the striatum are particularly important structures involved in the predicted value calculation of Dior dress.

Another cortical route, responsible for attention function of “what”, is called a ventral stream. This function would help to recognize and understand the dress through uniting the curves, lines and other elements into the representational percept of it (Duchowski, 2007). From visual cortex V1 it goes to IOFC and vmPFC (blue colours in the model). OFC is the crucial system that would encode and process the value of Dior dress. It would result in the conscious experience of the pleasure wearing a Dior dress (Sescousse, Redouté, & Dreher, 2010). Hippocampus is a memory

¹⁵ Abbreviations: ACC=anterior cingulate cortex; dLPFC=dorsolateral prefrontal cortex; lOPFC=lateral orbifrontal cortex; mOFC=medial orbifrontal cortex; NAcc=nucleus accumbens; vmPC=ventromedial prefrontal cortex; VS=ventral striatum.

system as well responsible for associative networks. This is where the key to the women associations to the brand of Dior lies.

The framework of the brand value calculation model presented in the first part will be followed in the whole part of the modern cognitive neuroscience approaches. The aforementioned processes will be discussed in details exploring to what extent they can operate at the unconscious level and how this can be reflected in the preference and the behaviour. Afterwards, neuroimaging and priming studies reviewing the recent research on the effects of the brands on preferences will be introduced. To begin with, the reward system, which plays an important role in understanding preferences and consumer behaviour, is further explained (Foxall, 2008; Hubert & Kenning, 2008).

5.2 Reward system in the brain

The reward system is a complex network of neural structures. Through evolution, the brain has created the mechanism to rank the “*behavioural options ordinally*” (Foxall, 2008, p.370) and serve as a control function deciding how much time to allocate to the specific stimuli. It evolved to evaluate the predicted value of outcomes and compare them with remembered value of outcomes. That is to rapidly maximize the fitness of choice (Montague, 2007).

Generally, the reward system takes on a motivational function that regulates human approach-avoidance behaviour. Positive stimuli motivate the reward-directed behaviour, whereas negative stimuli cause the avoidance (Baars & Gage, 2010; Foxall, 2008). Neurobiologically, natural reinforcers such as sexual stimuli, food, facial attractiveness or pleasant odour are the primary rewards encoded in the brain systems as necessary for survival purposes (Foxall, 2008). However, recent studies have provided evidence for the fact that a brand can work as a reward cue where the brain system learns and reacts to the rewarding properties of the brands in the same neurobiological fashion (Erk et al., 2002; Schaefer & Rotte, 2007). Thus, the encoded motivational value of brand can lead to effortful behavioural reactions (Erk et al., 2002; Foxall, 2008).

Three reward system's components of liking, wanting and learning involved in value calculations of the rewarding properties of brands are further discussed ¹⁶ (Berridge, 2009a; Berridge, 2009b; Berridge & Robinson, 2003; Winkielman & Berridge, 2003; Berridge & Kringelbach, 2008).

5.3 Liking, wanting and learning

Liking and wanting are two preference indexes that do not only reflect people's beliefs but also uncover the biopsychological processes. Traditionally, in consumer choice models, the interaction of liking and wanting is taken for granted. Such as people know what they want – consciously desire, as they are expecting to like it. They understand the causalities of the act and the outcome. Moreover, they have an intention and plan how to get what they want (Arnould, Price, & Zinkhan, 2005). However, in the literature on cognitive neuroscience, liking and wanting are seen as two dissociable components of rewards that can be analysed both at the conscious and unconscious level (Berridge, 2009a; Berridge & Robinson, 2003; Berridge & Kringelbach, 2008).

5.3.1 Liking

Liking is a hedonic subjective pleasure, a conscious experience of the reward. In the framework of the value-based decision making model it is referred to as experienced value (Plassmann, Ramsøy, & Milosavljevic, 2012). In neoclassical literature on economics and rational choice, it is referred to as the experienced utility that may be reported instantly (instant utility) or based on the past experience of total pleasure/displeasure (remembered utility) related to brands (Kahneman, Wakker, & Sarin, 1997). Within the traditional branding field, it is defined as a feeling (Aaker, 1991; Keller, 2008). Hedonic subjective liking is related to the cognitive brain mechanism that translates the implicit emotions into the subjective conscious experience of pleasure (Berridge & Kringelbach, 2008).

Liking as well may be defined as a core “liking” that reflects the reactions that may take place unconsciously per se (Berridge & Robinson, 2003; Berridge & Kringelbach, 2008). It is induced through hedonic implicit impact and results in behavioural reactions such as facial expressions that person is not aware of. In most of the cases, conscious liking is the result of the core liking.

¹⁶ A model of reward components is presented in the Appendix 8, p.102

What can create liking?

One way to explain liking is through the “mere exposure” effect. This psychological phenomenon refers to the notion that repeated exposure of stimuli positively affects preferences towards it (Fang, Singh, & Ahluwalia, 2007; Zajonc, 2001; Ferraro, Bettman, & Chartrand, 2009). In branding literature, it may take the form of a repeated exposure of a brand name or other brand related information and was reflected as a factor which increases the brand liking (Aaker, 1991).

A fundamental premise explaining the enhancement of the repeatedly exposed stimuli evaluation is based on the notion of “*fluency – the ease with which a given stimuli is processed*” (Ferraro, Bettman, & Chartrand, 2009, p. 730). However, the context of the mere exposure matters as well. For instance, consumer-brand encounters tend to occur at different intensities. A brief encounter would occur while passing the woman wearing Dior glasses on the street, and more direct and engaging while interacting in the bar with the girl who wears a Gucci dress. A longer encounter results not only in information processing about the brand but as well about a verbal and nonverbal interaction with the person who wears the brand - his attitudes, character, lifestyle, or gender (Ibid). Moreover, it is important to notice, that fluency may not necessary modify the liking score. If ceiling, which is the highest possible preference that cannot be further enhanced, is reached. This is a result of the pre-existing positive attitudes. Nevertheless, this rule does not apply for choice that may be still positively affected (Ibid).

In addition to that, mere exposure effect may occur while affecting people subliminally. For instance, when people are shown different stimuli under the threshold of awareness more frequently, those stimuli result in higher liking (Monahan, Murphy, & Zajonc, 2000).

Another way of explaining the liking relies on the notion of aesthetical preference. Professor of psychology Daniel Berlyne (with Lawrence, 1964; 1970) has provided a tremendous contribution in understanding aesthetic preference by the role of collative variables, in particular, complexity, novelty and incongruity. According to his theory, “*Aesthetic preference is related to stimulus arousal potential in introverted-U shape pattern*”(Cox & Cox, 1994, p. 554). It means that people tend to prefer intermediately complex and novel visual stimuli rather than too simple and too familiar or too complex and novel. Too simple and familiar stimuli elicit a negative response,

whereas too complex and novel tends to increase the arousal of the subject beyond the preferred level (Ibid).

In addition to that, complexity variable on its own can have a variance of factors such as the number of elements, symmetry, and organization et cetera that can explain the liking reactions (Roberts, 2007). However, because of the scope of the thesis, in-depth research related to that can be proposed for the future perspectives.

5.3.2 *Wanting*

Wanting relates to the incentive salience and motivation to obtain the reward (Winkielman & Berridge, 2003; Berridge & Kringelbach, 2008). It can involve both, the unconscious processes as well as cognitive conscious goals called desires. The conscious wanting usually is based on the imagination and memory that can be consciously understood and reported. For instance, woman imagines Dior to be pleasurable and has a desire for it. The unconscious wanting enacts in different brain system, which is separated from the one involved in cognitive expectation and conscious planning (Berridge & Kringelbach, 2008).

Both the unconscious and conscious wanting can take part together. However, unconscious wanting is the one, which leads the behaviour, since it enhances conscious desires to action (Berridge, 2009a). Unconscious wanting makes stimuli attractive and increases the efforts to obtain it. For instance, being exposed to the brand, the motivation induced by the rewarding properties related to it can cause longer viewing times spend looking at it (Plassmann, Ramsøy, & Milosavljevic, 2012). Moreover, the studies accomplished involving people with drug addictions have shown that even though people consciously were not willing to take drugs, unconscious wanting was the one which consequently led to the consumption (Ibid). Usually, unconscious wanting is congruent with liking. Nevertheless, sometimes reactions of the unconscious wanting may fail to cause the pleasure reactions (Berridge, 2009a) that could be very well illustrated in a drug addiction case.

5.3.3 *Learning*

The third component of reward as mentioned before is learning (Berridge, 2009a). Our brain continuously updates the values of specific associations regarding the context-action relationship in the proportion of the predicted reward error. Learning for instance requires knowledge in order

to make the prediction. Learning can be associative and cognitive reflecting conscious memories and habits (Berridge & Robinson, 2003; Berridge & Kringelbach, 2008).

Pessiglione and his colleagues (2008) have shown that the brain can process and learn the rewarding value of the contextual cues and bias the choices - motivate the behaviour unconsciously. For instance, they conducted a subliminal conditioning experiment where they masked novel abstract symbols presented under the conscious awareness and paired them with the monetary outcomes (-1; 0; 1). Two symbols were paired either with reward (+1) or punishment (-1). People could see only the outcomes. Participants were told that the monetary reward would depend on the cue hidden behind the visual mask. They were encouraged to take the risky choice “GO” if they felt they are winning and safe choice “NOGO”, if they felt they are losing the trial. 0 was shown if people continuously chose the same response. Afterwards subjects were asked to rate the symbols. Here, significantly higher ratings were assigned for the reward related cues rather than the punishment cues. As well, neuroimaging results revealed that the ventral striatum, a reward structure related to learning, was activated during conditioning.

5.4 Review of the studies

5.4.1 Modulation of neural activities by marketing information: neuroimaging experiments

The following section reviews relevant experiments on preferences conducted with fMRI that show the evidence of neural activations in the brain induced by branding and marketing actions.

Plassmann and her colleagues (2008) conducted a study where participants were all given identically tasting wine to drink in the fMRI scanner and were introduced either a higher or lower price. Subjects were instructed to subjectively report how pleasurable the flavour of the wine is. The blood-oxygen-level-dependent activity in medial OFC, an area that is widely thought to encode the experienced pleasantness, was correlated with the subjective liking reports. The experiment results showed a significant increase in both reactions of reported subjective pleasure of the wine taste as well as higher activities in the medial OFC when being told a higher price. The study brought evidence that marketing information can affect the expectation of a reward. That is, bias the consciously experienced hedonic value, liking, one of the indexes of preference as mentioned before (Ibid).

Another study conducted by McClure and his colleagues (2004) was aimed at analysing the effect brand knowledge has on the preferences. They did an experiment using two soft drinks that have nearly identical chemical composition of Coke and Pepsi. Subjects were asked to indicate their preference for the drinks outside the fMRI scanner and taste the drinks inside it. During the blind test, the higher reported taste preference was for Pepsi. Nevertheless, after being introduced with the brand name, brand knowledge for Coke, had a dramatic influence on the expressed behavioural preferences and on the measured brain responses. The brand knowledge has shown to bias the preference decisions activating the memory systems (Ibid).

One more group of neuroimaging studies was aimed at exploring the role of the emotional system involved in the decision making (Deppe et al., 2007; De Martino et al., 2006; Zheng, Wang, & Zhu, 2010). Deppe and his colleagues (2007) ran the experiment, where participants had to evaluate printed advertising firstly outside and afterwards inside the fMRI scanner. During the fMRI study, they were shown 30 advertisements fictitiously framed with logos of four very well known German newsmagazines. Afterwards, they had to report whether they liked the ads or not on a forced-choice task while pressing the button compatible with the magnetic resonance scanner. Significant correlation induced by the brands to susceptibilities of the participant judgments and cortical activity in the brain regions involved in processing emotions was shown. It justifies that emotional information that is integrated into the decision making and is elicited by specific frame such as brand name information strongly affects the decision judgment (Ibid).

5.4.2 Unconscious branding effects: priming experiments

The mind can detect and process subliminal information, which may lead to behavioural and mental changes (Dijksterhuis, Aarts, & Smith, 2005; Fitzsimons, Chartrand, & Fitzsimons, 2008; Bargh & Chartrand, 2000; Baars & Gage, 2010; Stahan, Spencer, & Zanna, 2002). This shows that attention processes of brand identification may take part unconsciously (Dijksterhuis & Aarts, 2010). In order to review the research upon the unconscious processes induced by the brands, following section presents the studies conducted with the priming techniques.

Priming techniques are applied to investigate the automatic reactions to the cues presented under the threshold of conscious awareness (Stahan, Spencer, & Zanna, 2002; Dijksterhuis, Aarts, & Smith, 2005). It helps to study the information in the memory that is not consciously recalled. Priming is known as the “*preparedness of mental representations to serve a response function*”

and exposes the unconscious consequences related to the stimuli on following thoughts, feelings and behaviour. However, it “*can only activate preexisting mental representation*” (Bargh & Chartrand, 2000, p. 3).

In advertising and marketing, subliminal manipulation under the conscious awareness is well known in the form of hidden persuaders. Subliminal audio messages or visual cues are used to influence consumer minds (Belch & Belch, 2008; Pratkanis & Greenwald, 1988). A good example of popular interpretation of subliminal influence may be an advertisement of pictorial fashion clothing that involves printed words as “SEX” integrated into the communicating picture. However, scientific research conducted on the unconscious effects on enhancement of the choice and behaviour has shown that subliminal cues may affect the behaviour only if the goal is primed or when the person affected has the motivation to accomplish the action (Fitzsimons, Chartrand, & Fitzsimons, 2008; Verwijmeren et al., 2010; Karremans, Stroebe, & Claus, 2006).

Chartrand and colleagues (2008) ran a group of experiments. Four studies were conducted where thrift and prestige goals were primed to investigate their effect on hypothetical and real choices. Results of studies have shown that goals can affect the behaviour without the participants even knowing about the goals. Subliminally evoked brand cues may activate specific purchase goal (Ibid). For instance, being exposed to the status symbol may activate the unconscious goals of self-confidence inducement and lead to the purchase of a Dior dress.

According to Plassmann, Ramsøy and Milosavljevic, unconscious cues can activate unconscious memories. This can impact the cognitive and emotional processing hence affect the behaviour (2012). The incidental environment cue may be learnt as if consumer is accomplishing a certain goal frequently in that environment; it becomes linked in the memory (Chartrand et al., 2008). In fashion market, a great example of this could be sensory experience of specific music style traced in the memory while shopping in the Zara shop. Most of the rules of sensory systems take part below the conscious awareness (Zaltman, 2000).

5.5 Measuring conscious and unconscious effects of brands on preferences

Various methods such of brain activity measurement and behavioural implicit research techniques as priming are adopted from the discipline of cognitive neuroscience to understand the internal processes related to the effects of brands on preferences. Further, the application of the physiological measurement tool of eye-tracking for studying the emotional and cognitive processes is presented.

5.5.1 Eye-tracking

Eye-tracking is a technique employed to measure the physiological responses to the stimuli¹⁷ tracked through the visual system. An eye tracker can be employed to study different processes involved in the decision making. It helps to investigate how emotions affect the cognition. It is an effective tool for diagnostics of immediate emotional reactions induced by the branded product as well evaluation, experience or judgment procedures. For instance, in advertising it is highly applied to study the effectiveness of the brand communication techniques such as video, printed advertising, online banners et cetera (Lohse, 1997; Wedel & Pieters, 2004). As well, it is a useful method to be applied in testing the effects brand has on visual attention and perception of a product in different choice situations. Eye movement helps to identify the sequence of information selection and acquisition (Rupp & Wallen, 2007). Moreover, it is valuable technique that may help to establish the sequence and relationship of the effects. Such as, visual attention measurement can be correlated with reported preferences.

In the following part, the main constructs of this thesis interest of pupil dilation, time to first fixation and total fixation time are introduced.

5.5.2 Pupil dilation, time to first fixation, total fixation time

First of all, while the eye is exposed to specific visual stimuli (e.g. fashion outfit with the brand name H&M) the pupil dilates in response to the autonomic nervous activity. Pupil size may show the instant emotional reaction, which is a great indicator of the emotional hedonic valence (Rupp & Wallen, 2007; Bradley et al., 2008). *“Arousal is the basis of emotions, motivation, informational processing and behavioural reactions”* (Groeppel-Klein, 2005, p. 428). The larger the pupils are - the more emotionally aroused person looking at the stimuli is regardless of those

¹⁷ Description of the eye-tracking device applied in this research is presented in the Appendix 9, p.103.

being pleasant or unpleasant. However, pupil dilation may be as well affected by other factors, such as light intensity of the image (Bradley et al., 2008), cognitive load of the information (Beatty, 1982), tonic state (Laeng, Sirois, & Gredebäck, 2012).

Secondly, emotional stimuli tend to draw the attention and are detected faster than neutral ones. Meaning that the stronger the emotional inducement is, the less time there is spent on decoding the information, leading to faster first fixation on the stimuli (Rupp & Wallen, 2007). The construct of the Time to first fixation (TTFF) gives the opportunity to measure the instant reaction not driven by the conscious deliberation.

In addition to that, another visual attention construct indexed as Total fixation time (TFT) reveals the greater differentiation of the visual stimuli amongst the others. It is measured via longer duration of the total fixations in the defined areas of interest (AOI) (e.g. brand versus clothing). TFT identifies the depth of cognitive processing or attention engagement. Moreover, it may predict the preferences. Study done with shelter advertising by Maughan, Gutnikov and Stevens (2007) showed that longer fixation duration correlates with positive evaluation of the advertising.

6. Theoretical summary: proposition for the empirical research

Based on the previous literature and empirical studies analysis, there is evidence that brands have an effect not only at the conscious level but also at the unconscious level. Brand value computation takes place in particular regions of the brain where only a part of the computations become a part of the awareness. These processes are ruled by emotions that are considered as implicit and automatic responses that initially takes part unconsciously.

Prior studies established that brand name and other market information such as price can induce the preference and consumer choice of the products even the link between the brand and product is fictitious (McClure et al., 2004; Plassmann et al., 2008). Priming experiments support the notion that consumers are able to process the subliminal information and be affected by brands below the conscious awareness (Dijksterhuis, Aarts, & Smith, 2005; Fitzsimons, Chartrand, & Fitzsimons, 2008; Bargh & Chartrand, 2000). Moreover, unconscious cues can activate the goals hence lead to motivated behaviour. Neuroimaging brand experiments shown the effects on memory systems as hippocampus and dlPFC (McClure et al., 2004), other studies have shown

effects on reward structures such OFC (Plassmann et al., 2008) or ventrum striatum (Pessiglione et al., 2008) providing the evidence of valuation processes happening in the brains. These studies give a better understanding of neuropsychology of brands regarding value-based decision making and brain structures involved in the value calculations related to brands. This helps to establish the framework for brand effects on preferences study.

However, the understanding of the emotional and cognitive reactions involved in processing the branded product information in conscious and unconscious perspectives still remains scant. In this case, a knowledge of the visual system domain and the eye-tracking studies gives a valuable ground to develop the empirical study aimed at investigating the underlying mechanisms of brand effects on preferences.

7. Research design framework

The objective of the experiment is to investigate the effects brands have on emotion, attention and preference of the fashion clothing. In particular, to study 1) the bias of the brands on preferences of the clothing; 2) emotional and cognitive reactions manifested while visually processing the branded product information. In the following section hypotheses are defined, research design, as well as selected data collection techniques are described.

7.1 Hypothesis definition

Based on the prior findings, the following hypotheses assume these behavioural and physiological effects of brands on preferences for the products 1) while consciously presenting brands with the outfits (H1); 2) while unconsciously showing the brands before the outfit evaluation task (H2):

H₁: Individual preference for brands has a general positive impact on preference for simultaneously presented fashion outfits.

H_{1a}: Brands for which there is a higher or lower individual preference lead to stronger pupil dilation response compared to brands with an average preference.

H₀: Brands for which there is a higher or lower individual preference have no significant effect on stronger pupil dilation response compared to brands with an average preference.

H_{1b}: Outfits that lead to higher or lower preference are related to stronger pupil dilation response, compared to outfits that lead to average preference.

H₀: Outfits that lead to higher or lower preference have no significant relationship with stronger pupil dilation response, compared to outfits that lead to average preference.

H_{1c}: Brand preference is related to faster viewing towards the brand and more time spent overall looking between the brand and the clothing.

H₀: Brand preference has no significant relationship with faster viewing towards the brand and more time spent overall looking between the brand and the clothing.

H₂: Individual preference for subliminally presented brands has a general positive impact on preference for simultaneously presented fashion outfits.

H_{2a}: Subliminally presented brands for which there is a higher or lower individual preference lead to stronger pupil dilation responses, compared to brands with an average brand preference.

H₀: Subliminally presented brands for which there is a higher or lower individual preference have no significant effect on stronger pupil dilation responses, compared to brands with an average brand preference.

H_{2b}: Higher and lower preference of outfits, compared to the average preference, induced by subliminally presented brands, is related to stronger pupil dilation responses when viewing the subsequently presented clothing.

H₀: Higher and lower preference of outfits, compared to the average preference, induced by subliminally presented brands, has no significant relationship with stronger pupil dilation responses when viewing the subsequently presented clothing.

H_{2c}: Subliminally presented brands that lead to increased preference of outfits are related to more time spent overall looking towards the clothing.

H₀: Subliminally presented brands that lead to increased preference of outfits have no significant relationship with more time spent overall looking towards the clothing.

7.2 Definition of variables

In order to conduct the research, first of all relevant variables are defined. Table 1 presents a summary of the concepts that are referred through the rest of the study.

Table 1. Explanation of variables

Term	Measurement	Explanations
Variables related to the brand construct and outfit preference		
Independent rating	Online survey. 10 point Likert scale ranging from “Dislike very much” to “Like very much”. Counted as a mean of aesthetic preference for each outfit used in the experiment.	In the analysis and discussion part it can be referred as the outfit appeals, aesthetic liking, and aesthetic preference;
Outfit rating	Experiment. Behavioural task of outfit’s rating. Continuous visual analog rating scale ranging from “Dislike very much” to “Like very much”.	Outfit liking, outfit preference;
Brand shown	Experiment. Individual brand effects of Gucci, Prada, Dior, Zara, H&M, Vila.	It reflects brand value in itself consisting of both the conscious subjective liking as well as individual unconscious brand perceptions;
Brand liking	Questionnaire. 10 centimeters continuous visual analog rating scale ranging from “Dislike very much” to “Like very much”. Counted for each brand.	Brand preference, conscious brand liking, subjective brand liking, subjective brand preference, explicit reported liking, feeling towards the brand;
Variables related to visual mechanism (iMotions, 2011).		
Pupil dilation (Pupil Left)	Eye tracking. Counted in millimeters measuring the pupil diameter size while looking at the stimuli.	In analysis part only one pupil size is taken as a variable;
Time to first fixation (TTFF)	Eye tracking. Counted as the time span in milliseconds of the first fixation on the specific area of interest (AOI)	Time spent to firstly fixate within an area of interest, viewing pace;
Total fixation time (TFT)	Eye tracking. Counted as time spent in AOI in milliseconds, based on total duration of all respondent fixations	Total time spent fixating within AOI, looking time, viewing time;

Definition of areas of interest (AOI)

To answer the specific hypotheses concerning effects of branding on visual attention (TTFF; TFT) and pupil dilation, first of all, the regions of the visual display are specified. Here, regions of interest related to brand, clothing and irrelevant objects are depicted.

Conscious study (Test 2): H_1

Model

- ⇒ Head;
- ⇒ Torso;
- ⇒ Waist;
- ⇒ Legs;
- ⇒ Feet;

Brand

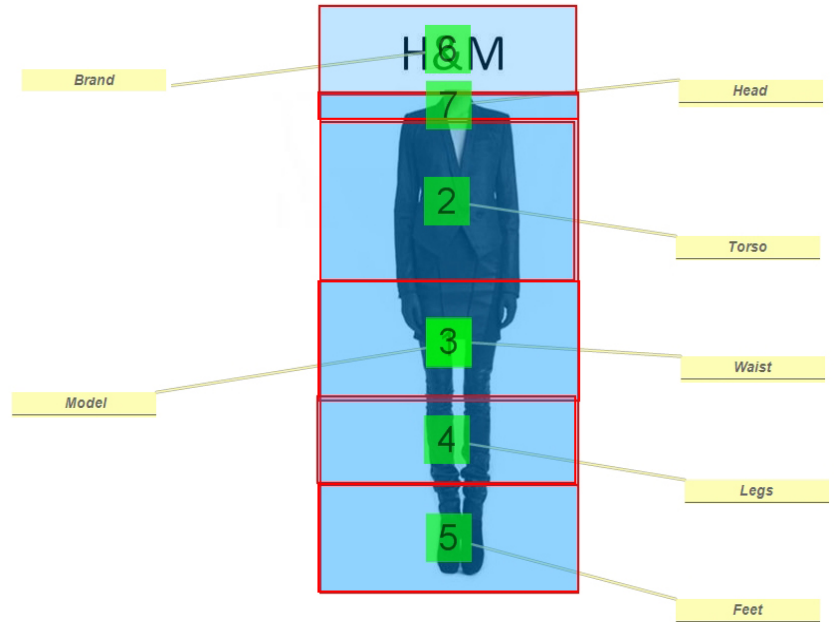


Figure 8. AOIs for conscious Test

Unconscious study (Test 1): H_2

Model

- ⇒ Head;
- ⇒ Torso;
- ⇒ Waist;
- ⇒ Legs;
- ⇒ Feet

Distractors

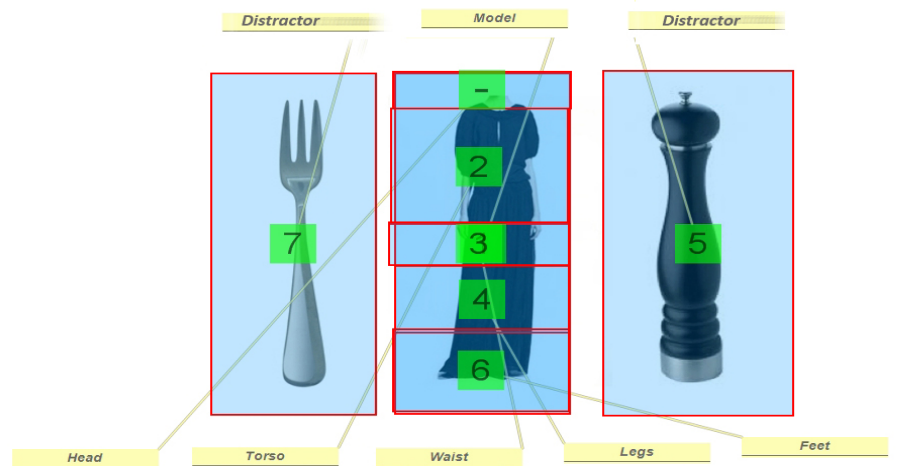


Figure 9. AOIs for unconscious Test

7.3 Research methods

Behavioural and physiological measurement methods are employed. Behavioural preference is measured through the outfit evaluation task. Visual attention and arousal level responses to the presented stimuli are measured using an eye-tracking procedure. In detail, an SMI RED eye tracker (60 Hz; 19" screen) integrated with the "Attention tool" is employed at an approximate viewing distance of 60 centimeters. Visual attention changes are tracked every 16 milliseconds. The study was run in the Decision Neuroscience Research Group (DNRG) Senselab at CBS¹⁸.

¹⁸ DNRG runs SenseLab, a test laboratory at CBS with facilities for Computer Assisted Personal Interviewing (CAPI), Galvanic Skin Response (GSR) and response time measurements. As well, DNRG group is working with neuroimaging methods such as fMRI and other measures such as eye-tracking, electroencephalography (EEG) and galvanic skin response (GSR).

7.4 Pretest

A pretest was conducted before running an actual study. First of all, the research framework was presented for DNRG group. Members gave the professional feedback for possible design modifications. Afterwards, for pioneering purposes to eliminate the uncertainties, 3 subjects selected by nonprobability convenience sampling method were recruited to test the experiment design (Hair, Bush, & Ortinau, 2009). The conscious and the unconscious tests, and follow up questionnaires were improved according to the received comments and suggestions.

7.5 Experiment design

In order to test the hypotheses, experiment consisting of two tests and follow up questionnaire is employed. To gain the objective measurement of the aesthetical preference of the used visual stimuli of fashion outfits, online survey conducted with independent group of women is included in the research procedure (Figure 10).

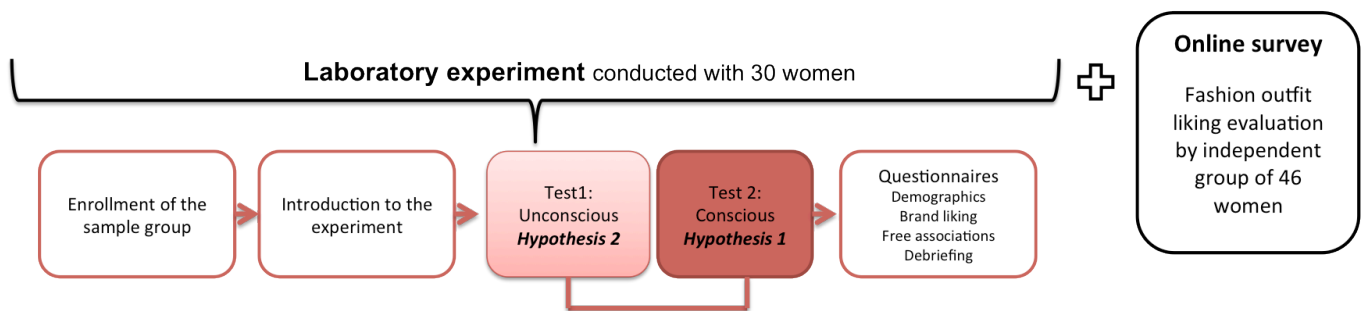


Figure 10. The sequence of the empirical research procedure.

Test 1 is set up to study the unconscious (H_2) and Test 2 the conscious (H_1) perspectives. Since prior representation of brand names may result in intention to visually search for it during the unconscious brand manipulation, this order of tests ensures that brand names would not be noticed in the unconscious test (Pessiglione et al., 2008).

During both tests women were asked to perform the rating tasks in which they had to evaluate the clothing displayed on the computer screen. That is, to indicate the answer while clicking the mouse in the position that most closely reflects the personal view on a continuous visual analog scale ranging from “Dislike very much” to “Like very much”. In the Test 1 women were manipulated the brand name unconsciously. It was displayed in 0.3 milliseconds using forward

and backward masking procedure followed by outfit presentation with two distracters. In Test 2, brand name was presented simultaneously on top of each clothing outfits. Gucci, Dior, Prada, Zara, Vila, and H&M brands were selected as frames. During the whole experiment the eye tracker tracked visual attention and pupil dilation.

After both tests participants were asked to fill in an additional questionnaire where subjective reported brand preference (brand liking) for each of the brands. As well additional information was collected. In addition to that, in order to correct the data results by the aesthetical preference for each clothing item, experiment was accompanied by an online survey¹⁹. 46 random women made objective measurement of aesthetic preference. They were asked to evaluate the outfits using the 10-point Likert scale varying from “Dislike very much” to “Like very much”. The mean of this measure for each outfit was indexed as independent rating.

First of all Test 2, which studies the conscious H_1 , and afterwards Test 1, which studies the unconscious H_2 , will be presented. The same order will be followed through the data analysis part.

7.5.1 Conscious rating task (Test 2): H_1

The sequence and design of the conscious Test 2 is presented in the Figure 11.

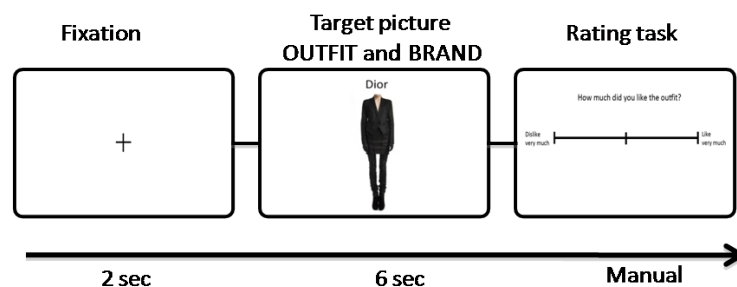


Figure 11. Conscious Test 2 design and sequence

32 images of women wearing different fashion outfits²⁰ paired with randomly assigned Gucci, Prada, Dior, H&M, Vila or Zara fashion brands are consciously presented. The same fashion outfit is shown with both a high fashion brand and a low fashion brand. Each subject sees only one of them. After each presentation of the target picture, subjects are asked to evaluate only the outfit.

¹⁹ Online survey example is presented in the Appendix 10, p.105.

²⁰ Fashion outfits used in conscious Test 2 with independent ratings are presented in the Appendix 11, p.106.

7.5.2 Unconscious rating task (Test 1): H_2

The sequence and design of the unconscious Test 1 is presented in the Figure 12.

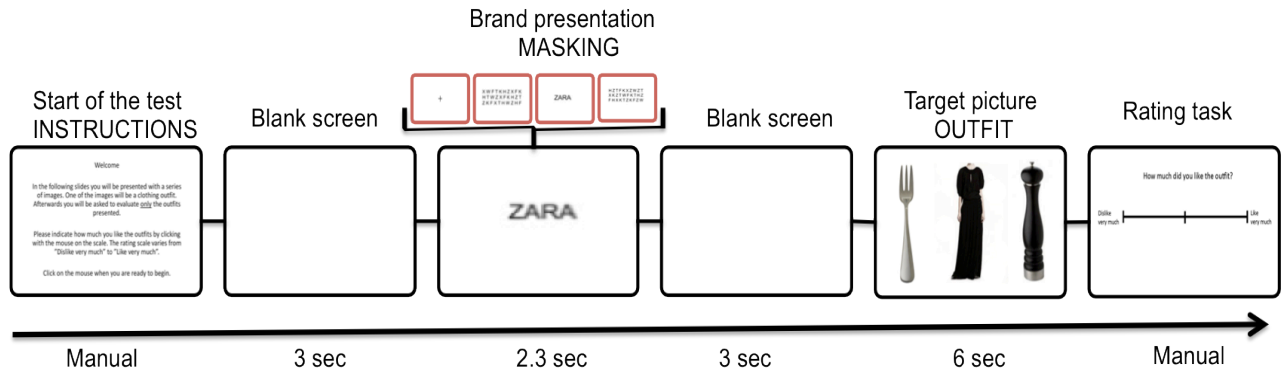


Figure 12. Unconscious Test 1 design and sequence.

First of all, in order to activate the internal mental states towards the fashion brand, the subliminal brand name manipulation following three priming rules is designed (Bargh & Chartrand, 2000). Brand masking procedure is depicted in Figure 13.

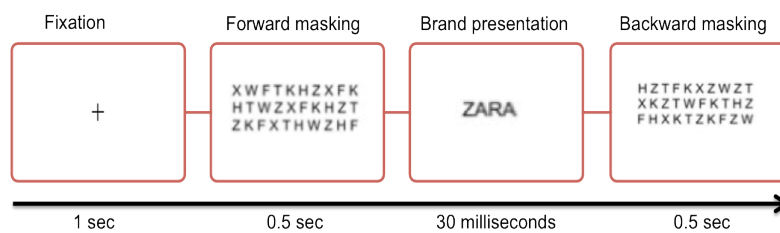


Figure 13. Conscious Test (2) design and sequence

Here, brand name is briefly shown for 0.3 milliseconds. This duration, which usually depends on two conditions, whether stimulus is masked and which visual field (foveal or parafoveal)²¹ it is presented to, ensures that brand prime would not have been noticed. Bearing in mind that after the physical exposition of the brand name on the screen, it is still stored in iconic visual memory for a certain time, pattern mask is used. Letters, which are not the words itself, are used as the forward and backward masking strings. Moreover, the visual attention of the participant is controlled with the fixation point located in the same position where the brand name prime is later exposed. Finally, to assure that none of the individuals recognized brand names during the test, participants are debriefed about their awareness (Ibid).

²¹ Explanation of foveal and parafoveal visual fields is presented in the Appendix 12, p.107.

After a subliminal brand name presentation, target image consisting fashion outfit and two distracters is shown. One of 24 images of a model wearing a fashion item²² is randomly presented with two randomly chosen distracters. 48 random objects as technical devices, office supplies, and household goods having no connection with the fashion outfits are used as distracters²³. In order to bypass the expectation bias for the subject to see the clothing in the certain side of the image, location of the model was randomly arranged either presenting it on the left, on the right or in the center²⁴. Experiment is designed to make sure that the same fashion outfit would be primed with all of the brands: Gucci, Dior, Prada, Zara, Vila, and H&M. The same participant should see fashion outfit only once with randomly presented brand name. This particular setting of the experiment gives the opportunity to measure and compare the strength of these brands. After each target image participants are asked to evaluate only the fashion outfit on a continuous visual analog scale.

7.5.3 Questionnaire

After both tests, participants are asked to fill in the questionnaires in order to collect the following background information:

- ⇒ Demographical data as age and nationality;
- ⇒ Subjective brand preference (brand liking), Free associations test;
- ⇒ Physiological state that could affect the eye-tracking results: well-being, medication, smoking, memory problems;
- ⇒ Debriefing: awareness check for subliminal manipulation, opinion towards brand effects;

7.6 Sample population

30 women ranging from 19 – 32 years old with normal or corrected to normal vision from 13 European countries including Lithuania, Denmark, Sweden, Norway, Poland, Estonia, Slovakia, France, Italy, Bulgaria, Finland, Greece, and Germany but living in Copenhagen were recruited to the experiment. 33% of them were from Scandinavia. Nonprobability volunteer convenience sampling method was employed for the sample selection. Generally, convenience samples have a high possibility to bias results, since some of people may be more eager to volunteer than others.

²² Fashion outfits used in unconscious Test 1 with independent ratings are presented in the Appendix 13, p. 108.

²³ Distracters are presented in the Appendix 14, p.109

²⁴ Examples of two target images layouts are presented in Appendix 15, p.110.

However, to add validity, the expertise in fashion market, and age range were taken into the consideration for final selection. In addition to that, it is believed that bias mostly depends on the treatments during experiment (Agresti & Christine, 2009). That is why randomization during the experiment was ensured.

The invitation to the experiment was posted on the biggest social network of Facebook, moreover, women were invited personally through sending the invitation to the created event. Personal networks and word-of-mouth of the participants were highly encouraged. In practice, most of the population signed in through the Facebook and personal references.

7.7 Testing procedure

Based on a positivistic approach to employ the highly structured methodology, the created procedural guideline was followed²⁵(Saunders, Lewis, & Thornhill, 2009). First of all, the participant was invited to sit down in front of the computer and was introduced to the procedure of the experiment. Afterwards, eye calibration was done and Test 1, where the brands are primed unconsciously was presented. Participant is instructed to look at the images and evaluate the fashion outfit after each exposure. Afterwards eye calibration is done again, and Test 2 is run. Subsequently, after completing both the conscious and the unconscious brand framing tests, participant is asked to fill the questionnaires following the study. The experiment took about 30 Minutes.

8. Results

The aim of this experiment was to test if individual brand preference can positively affect the preference for the products in conscious (H_1) and unconscious (H_2) perspectives; to establish effects of brand mechanisms through investigation of emotional and cognitive visual processing reactions related to the behavioural effects (H_{1a} ; H_{1b} ; H_{1c} ; H_{2a} ; H_{2b} ; H_{2c}).

Employing eye-tracking procedure pupil dilation, TTFF and TFT in specified AOIs were measured and are analysed in relation to the reported brand liking for each brand, brand shown, and outfit rating which was indicated through the evaluation task. Independent rating of the outfit

²⁵ The guideline is presented in the Appendix 16, p.111.

aesthetic appeal was included into the analysis. The following will present the hypotheses findings.

8.1 Brand liking: individual subjective brand preferences

First of all subjective reported brand preference differences (brand liking) are investigated. Based on a one-way ANOVA means test, results are highly significant ($F=193.81$, $p<0.0001$). R^2 is 0.126954, meaning that model explains 13% of the variance of the data (Agresti & Christine, 2009). Figure 14 shows the effects per individual brand.

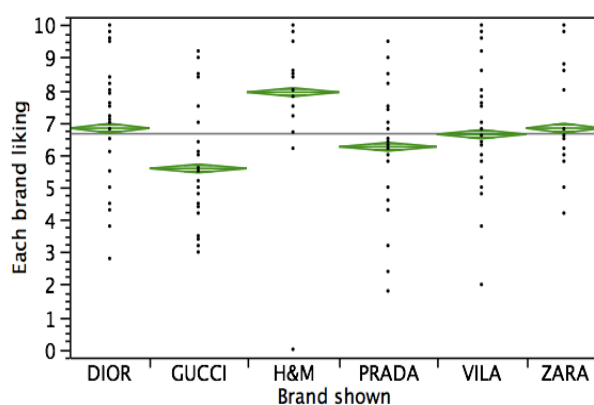


Figure 14. Subjective brand liking per individual brand: means distribution.

8.2 Conscious rating task (Test 2): results of H_1

In order to accept or deny the H_1 , initially, the impact of each brand shown on outfit preferences is investigated. Based on one way ANOVA means analysis, the model is highly significant ($F=43.96$, $p<0.0001$). The strongest positive brand effect on the ratings of the outfits is present for Dior, Gucci and H&M brands, but not for Vila and Zara.²⁶

However, by exploring the data, with ANOVA F-test, significant difference ($F=43.2$, $p<0.0001$) in how appealing the clothing shown with the certain fashion brand is found.²⁷ This suggests that there was a bias while selecting the clothing. Hence, independent rating is further taken as a covariate to correct the collected data results for the effects it has on the effects of brands.

²⁶ Brand effects on the outfit ratings: means distribution is presented in the Appendix 17 Figure 17, p.112

²⁷ Mean distribution of independent rating per individual brand is presented in the Appendix 17, Figure 18, p.112.

Brand liking and independent rating as explanatory variables for outfit preference

To study to what extent the subjective brand preference and aesthetical appeal of the clothing can explain the outfit preferences; the Standard Least Square model is employed. Brand liking, independent rating and their interaction are modeled where outfit rating is selected as a dependent variable. The significant interplay between each of the variables as well as their interaction ($t=2.27$, $p = 0.0233$) is found.²⁸ Figure 15 shows the positive effect of both the brand liking and independent rating on outfit preference.

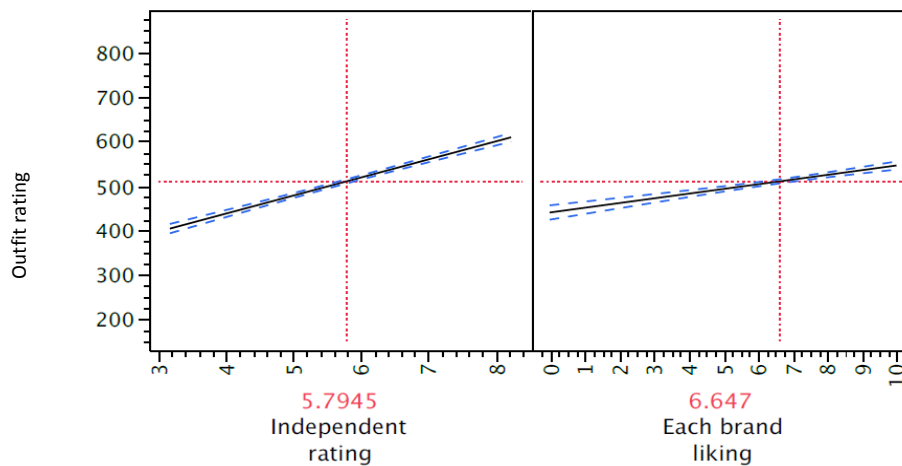


Figure 15. Effects of brand liking and independent rating on the outfit preferences.

8.2.1 Behavioural effects of brands on outfit preferences

Going further, to explore the behavioural effects induced by the brands on outfit preferences corrected by the independent rating, Standard Least Squares regression model is applied. Brand shown, independent rating and their interaction are modeled where outfit rating is taken as a dependent variable.

Statistically significant effect ($F= 18.46$, $p < 0.0001$) of brands on outfit preferences is found. In addition to that, there is an additional effect of the independent rating on the outfit preference ($F=337.62$, $p < 0.0001$). It means that subjects who participated in the experiment tend to rate the clothing in much the same way as the independent group who rated it in online survey. Furthermore, there is a statistically significant effect of the brand and the independent rating interaction on preferences ($F=18.72$, $p < 0.0001$). Figure 16 exposes these behavioural effects.

²⁸Statistics of brand liking and independent rating relation to outfit preferences is presented in Appendix 17, Table 4, p. 113.

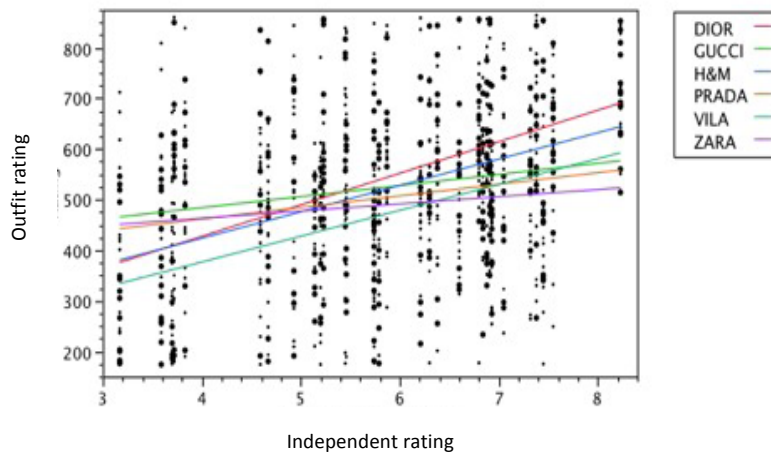


Figure16. Individual brand effects on the outfit preferences corrected by the independent rating.

8.2.2 Eye-tracking results²⁹: pupil dilation and visual attention

To study the emotional and cognitive reactions reflecting the behavioural results (H_{1a} ; H_{1b} ; H_{1c}), following impacts on visual attention processes are researched:

- Pupil dilation in relation to brand liking
- Pupil dilation in relation to outfit preferences
- TTFF in relation to brand liking and brand shown within brand AOI, model AOI and AOIs within the model
- TFT in relation to brand liking and brand shown within brand AOI, model AOI and AOIs within the model

8.2.2.1 Pupil dilation effects analysis: H_{1a} ; H_{1b}

Pupil dilation in relation to brand liking

To analyse the relationship of brand liking and pupil dilation while looking at the clothing exposed with the brand, a non-linear second order polynomial regression model is employed. The significant non-linear relationship where $t=18.22$ and $p<0.0001$ is found and presented in the Figure 17.

²⁹ Bearing in mind that eye-tracking data was not normally distributed; exponential correction of data is used in the visual attention constructs analysis.

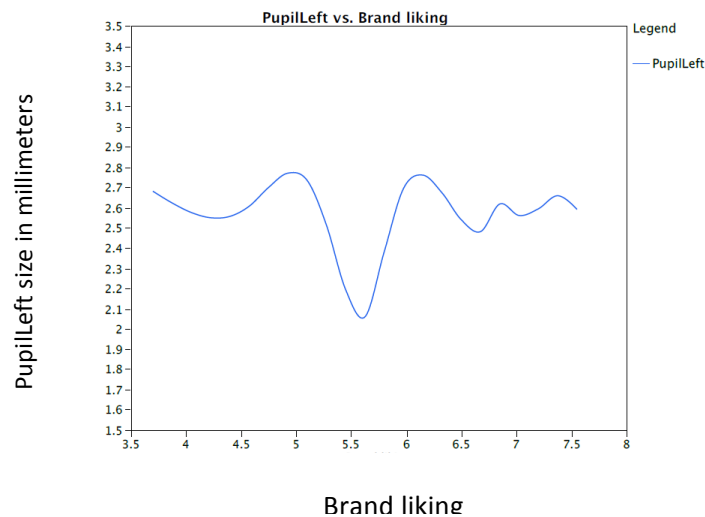


Figure 17. Pupil dilation in relation to the brand liking.

To analyse pupil dilation per individual brand, ANOVA F-test is conducted. Results are statistically significant ($F=20.4$, $p<0.0001$).³⁰

Pupil dilation in relation to outfit preferences

To check how pupil dilation can reflect the preference ratings of outfits, further non-linear regression model is applied where outfit rating is taken as a dependent and pupil diameter size as independent variables. Statistically significant effect is found ($t=44.79$, $p=0.000$). The green curve depicted in the Figure 18 shows the non-linear U-shaped relationship.

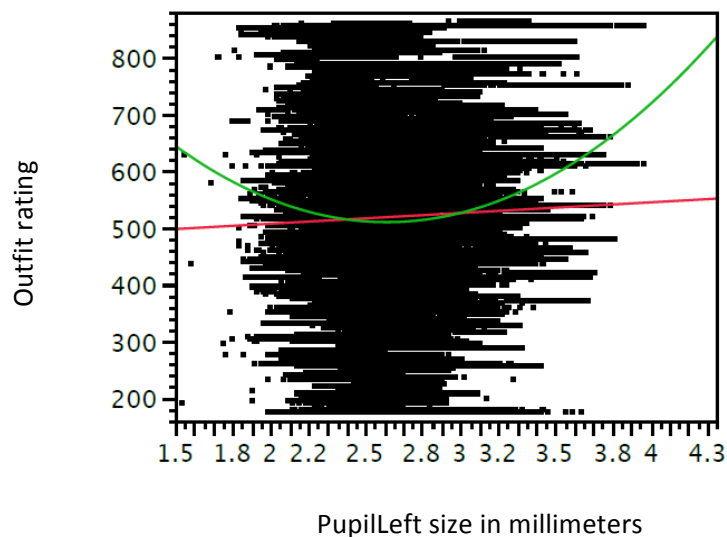


Figure 18. Pupil dilation in relation to the outfit preferences.

³⁰ Pupil dilation effects per individual brand are presented in the Appendix 17, Figure 19, p.113.

8.2.2.2 Time to first fixation and Total fixation time analysis in defined AOIs: H_{1c}

In order to explore the effects of brands on the processing of the brands themselves and the fashion outfits, brand effects (brand liking and brand shown) corrected by independent rating are analysed in relation to the time to first fixation and total time spent within the defined areas of interest.

TTFF in relation to brand liking and brand shown within defined AOIs

For initial viewing time analysis, three variables of brand liking, brand shown and independent rating are modeled employing General Linear regression model within AOIs of the brand, the model and parts of the model (head, torso, waist, legs, feet). TTFF is a dependent variable.

Brand AOI

No effects have been found in brand AOI. The overall model is not statistically significant, where $x^2 = 4.8$, $p = 0.6847$.

Model AOI

Statistically significant effects of both brand liking ($x^2 = 58.65$, $p < 0.0001$) and brand shown ($x^2 = 169.68$, $p < 0.0001$) are found within the model AOI. Moreover, independent rating as well has shown a significant effect ($x^2 = 7.81$, $p = 0.0052$). Brand liking tends to have a negative effect on TTFF (estimate = -0.000428). Figure 19 presents effects per individual brand within brand model AOI based on ANOVA means analysis ($F = 3.34$, $p = 0.0053$).

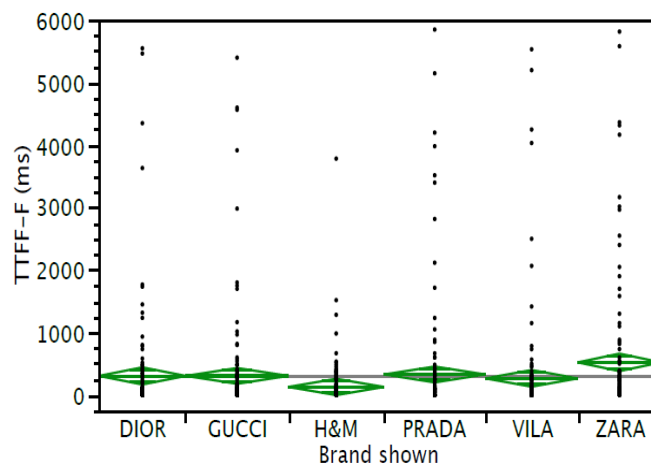


Figure 19. Individual brand effects on TTFF in model AOI.

Head, torso, waist, legs, feet AOIs

Statistically significant effects for each brand liking ($x^2=40.46$, $p<0.0001$), and for brand shown ($x^2=4.06$, $p=0.00439$) are found within a torso AOI. Brand liking effect is a negative one (estimate= -0.000142). In addition to that, waist as well has shown some statistically significant results for brand liking ($x^2=19.96$, $p<0.0001$) and for brands shown ($x^2=16.74$, $p=0.0050$). Here, brand liking as well has a negative effect (estimate= -0.000109). However, none of the effects regarding the brands are manifested in the head, feet, and legs AOIs.³¹

TFT in relation to brand liking and brand shown within defined AOIs

Furthermore, to look at how brands impact the time spent looking at the brand and the product, brand liking, brand shown and the independent rating are modeled using General Linear regression model. TFT is taken as a dependent variable. Statistically significant effect of brand shown on TFT within brand AOI ($x^2=11.85$, $p=0.0370$) is found. However, none of the significant changes induced by the brands are tracked within model AOI ($x^2 = 1.39$, $p=0.2385$ for each brand liking and $x^2=7.18$, $p=0.2076$ for brand shown)³².

Predicting the outfit preferences

To check if the time to first fixation and the time spent looking at the clothing can predict the outfit preference, the TTFF and TFT are modeled using the regression analysis where outfit rating is taken as a dependent variable within all AOIs. The overall model is significant in torso AOI, where $F=4.38$ and $p=0.0128$.

While looking at the individual effects only in torso AOI, there is no significant effect of TTFF on the outfit preferences ($t=0.87$, $p=0.3849$), however there is a statistically significant effect of TFT on outfit preferences ($t=2.89$, $p=0.0040$). It shows the positive effect (estimate=0.0180176).

³¹ Statistics of brand liking, brand shown and independent rating effects on TTFF within torso, waist, head, feet and legs AOIs is presented in the Appendix 17, Table 5, p. 114.

³² Statistics of each brand liking, brand shown and independent rating relation to TFT within brand, model, torso, waist, feet, legs and head AOIs are presented in the Appendix 17, Table 6, p.115.

8.3 Unconscious rating task (Test 1): results of H₂

In order to accept or deny the H₂, firstly, unconscious brand impact on the ratings of outfits is investigated running one-way ANOVA test. Statistically significant ($F=20.4$, $p<0.0001$)³³ results are found.

8.3.1 Behavioural effects of brands on outfit preferences

To study the individual effects of brands presented subliminally corrected by the independent rating on the outfit preferences, the brand shown, independent rating and their interaction are modeled using a multiple regression model. Statistically significant subliminally manipulated brand effect on outfit preferences ($F=23.86$, $p<0.0001$) is found. In addition to that, there is an independent rating effect ($F=1000.42$, $p<0.0001$) and the effect of the interaction between the brand and the independent rating ($F=4.25$, $p=0.0007$). Figure 20 shows the results.

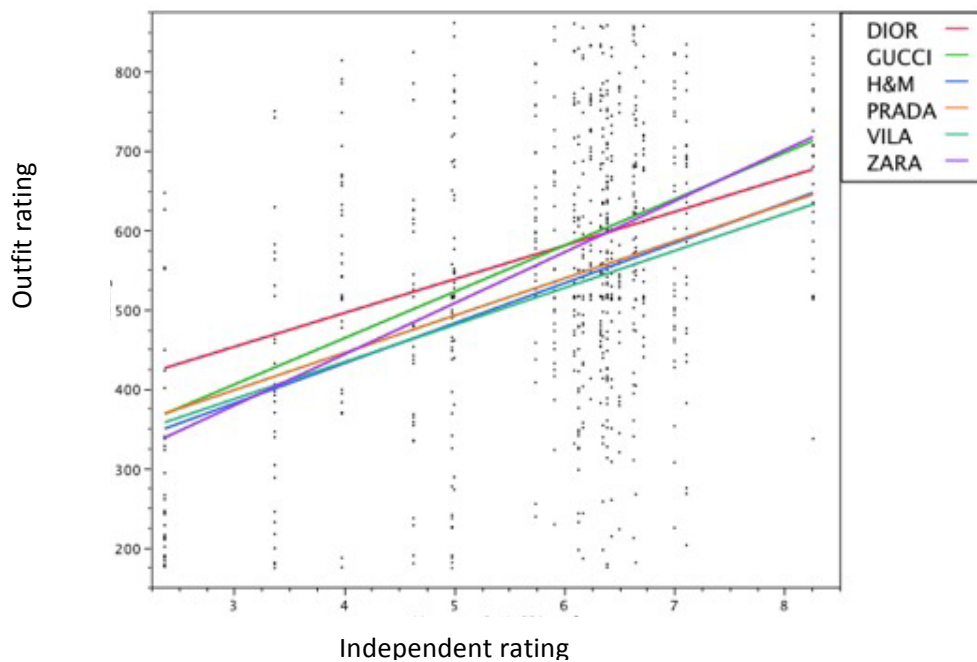


Figure 20. Individual brand effects on the outfit preferences corrected by independent rating.

8.3.2 Eye-tracking results: pupil dilation and visual attention

Next, emotional and cognitive reactions that can reflect the aforementioned behavioural results of brand effects on outfit preferences (H_{2a}; H_{2b}; H_{2c}) are investigated. The following presents the research areas:

³³ Individual brand effects on outfit preferences are presented in the Appendix 17, Figure 20, p. 116.

- Pupil dilation in relation to brand liking and brand shown
- Pupil dilation in relation to outfit preferences
- TFT in relation to the outfit preferences within different AOIs

8.3.2.1 Pupil dilation effects analysis: H_{2a} ; H_{2b}

Pupil dilation in relation to the brand liking

To investigate how pupil dilation relates to the subjective brand liking, non-linear second order polynomial regression model is employed; pupil diameter size and each brand liking are investigated. Two timelines of pupil dilation are selected for the analysis 1) prime time when women were looking at the subliminal brands; 2) outfit's judgment time when women were looking at the clothing.

Significant effects for both timelines were found.³⁴ Figure 21 presents the non-linear relationship of pupil dilation and indicated subjective brand liking while showing the brand primes and during the time when women looked at the clothing.

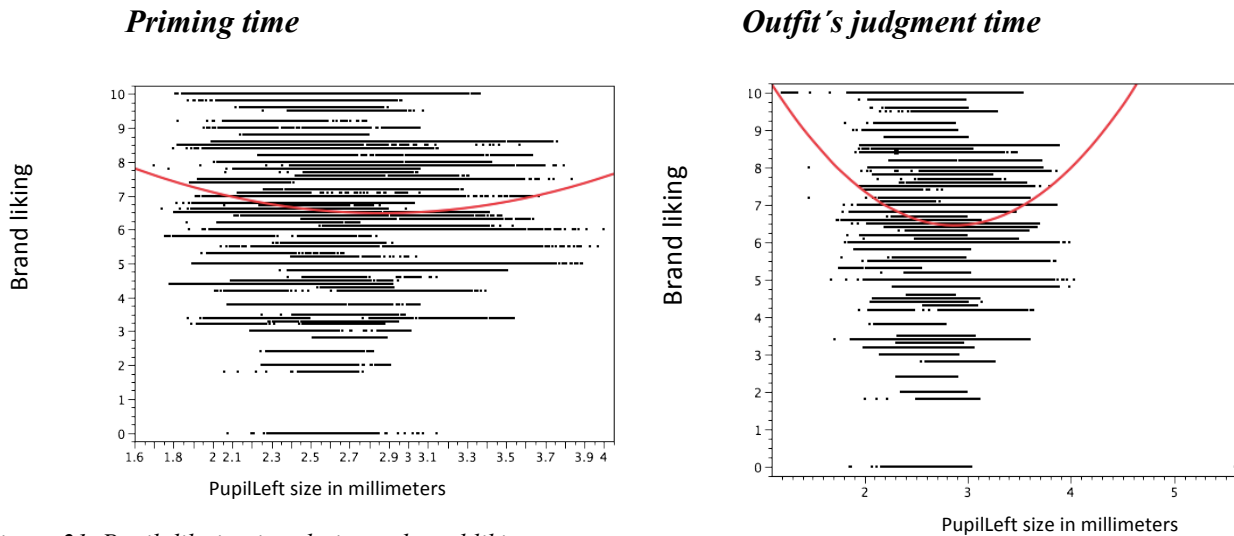


Figure 21. Pupil dilation in relation to brand liking.

Pupil dilation per brand shown

To analyse the pupil dilation per individual brand during the unconscious priming time, ANOVA F-test is conducted. Figure 22 presents the statistically significant effects per individual brand ($F=3.1791$, $p<0.0072$).

³⁴ Statistics of pupil dilation relationship to brand liking for priming time and outfits' judgment time is presented in the Appendix 17, Tables 7 and 8, p.116.

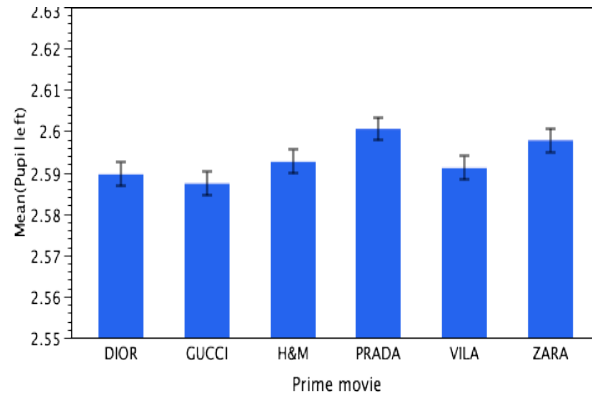


Figure 22. Pupil dilation effect per individual brand.

Pupil dilation in relation to the outfit preferences

To investigate how pupil dilation can reflect the preference of outfits while being affected unconsciously by brand names, further non-linear regression model is applied where outfit rating is taken as a dependent and pupil diameter size as independent variables. Statistically significant results are found ($t = -17.89$, $p < 0.0001$) and presented in the Figure 23.

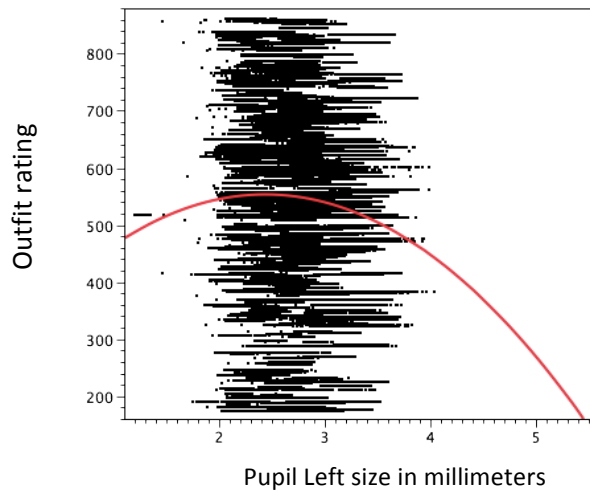


Figure 23. Pupil dilation in relation to outfit preferences.

8.3.2.2 TFT in relation to the outfit preferences within different AOIs: H_{2c}

To see if longer time spent looking at the model AOI (including AOIs within the model) compared to the distracters, while being primed with the individual brands under a conscious awareness, would relate to higher preferences of outfits, Standard Least Squares regression model is applied³⁵. Outfit rating is taken as a dependent variable and modeled with TFT, AOI, and interaction of TFT and AOI. A significant effect of TFT and AOI interaction on the outfit preference rating is found ($F = 3.18$, $p = 0.0041$). Figure 24 shows the effects within each AOI.

³⁵ Statistics of AOI, TFT and AOI*TFT effects on outfit preferences is presented in the Appendix 17, Table 9, p.117.

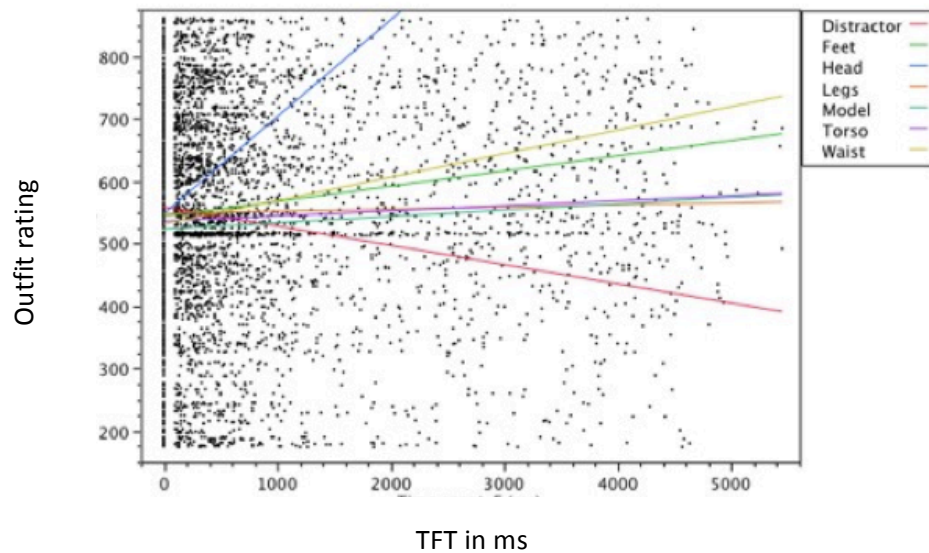


Figure 24. The effect of TFT and AOI interaction on outfit preference.

Further, in order to study, if brands can affect the time spent looking at the head and waist AOIs that showed the strongest effects, General Linear model is applied. TFT is taken as dependent variable and modeled with the brand shown, outfit rating, interaction of brand shown and outfit rating. Independent rating is taken as covariate. All effects are statistically significant in the head AOI³⁶.

As well, there is a statistically significant effect of the outfit rating on time spent ($x^2 = 15.77$, $p < 0.000$) and the effects of the brand shown and the outfit rating interaction ($x^2 = 12.38$, $p = 0.03$) in the waist AIO.

9. Discussion of the results

The aim of this study was to investigate the conscious and the unconscious mechanisms of the effects of brands on preferences. For this purpose:

- 1) The effect of independent brand preference on behavioural preference of the clothing outfit was studied.
- 2) Emotional and cognitive reactions manifested through the visual processing of the brand and product information were analysed.

³⁶ Statistics of brand shown, outfit rating and their interaction on TFT in head and waist AOIs is presented in Appendix 17, Table 10, p.117.

Behavioural outfit preference, pupil dilation, time to first fixation and total fixation time in specified AOIs (brand, model, and areas within the model such as head, torso, waist, legs, and feet) were measured and correlated. As well, reported each brand liking and aesthetical clothing appeal measured by independent group was included into the analysis of the effects. The results of the analysis have shown a range of significant effects of brands on emotion, attention and preference of fashion clothing. Those are further discussed in this section.

9.1 Brand liking: individual subjective brand preferences

First of all, individual subjective brand preferences were analysed for each brand. In the questionnaire women were asked how much they like the brand and what they associate it with. The indicated answers were tested employing one-way ANOVA means analysis (Figure 14). Significant individual differences in the reported brand liking scores verify that brand perception is a subjective matter for every individual and is based on the positive or negative associations attached to the brand (Aaker, 1991; Keller, 2008).

In this test, Gucci had the lowest reported brand preference. Based on the Free associations test results³⁷, Gucci was associated with the upper class, as well as with fake bags, cheap taste, obsession with logos or older women. Given that Gucci ³⁸is one of the most popular counterfeit brands, potential negative effect of the counterfeit production image could have been a cause of lower brand liking. Since low-priced replica consumption is usually associated with the lower status and highly related to the moral beliefs of individuals (Wilcox, Kim, & Sen, 2009).

Even though Prada was positively associated with a sense of modernity and elegance, the negative associations of old-fashioned women and those who want to show off could have led to the lower than average rating. H&M was mostly preferred. Women associated it with big assortment, stylish designs, cheap and trendy clothing. Vila, however, was reported to be boring. Dior and Zara were liked almost equally. Zara was associated with fashionable replicas of the high-end fashion designs. Dior was related to extraordinary design, elegance and a sense of extravaganza.

³⁷ Free associations test results is presented in the Appendix 5, p.99.

³⁸ According to the study on the % of the detected intellectual property incidents in 2005 conducted in 80 countries, Gucci have been ranked in the 4th place. (Black Book - PPR: Value-Creation Through Luxury Focus, 2007).

Brand liking is a subjective conscious feeling, which can be affected by the filters of sense, rationalization, and conscious discounting (Plassmann, Ramsøy, & Milosavljevic, 2012; Nevid, 2010). According to Gordon (2001), the issue with brand research is that people's thinking and behaviour does not correlate. Moreover, the reported reaction in branding literature is believed to be the result of the evaluation of beliefs towards brands (Keller, 2008; Arnould, Price, & Zinkhan, 2005). Thus brand liking does not necessary represent the whole picture of the brand effects.

9.2 Conscious rating task (Test 2): discussion of H₁

In the conscious Test 2 women were shown a brand with clothing, where only the clothing was asked to be evaluated. Individual preference for brands has shown to have a great impact on the preference of clothing, instant emotional reactions and visual processing of the brand and product information. The model composed by the author presents the main empirical findings (Figure 25).

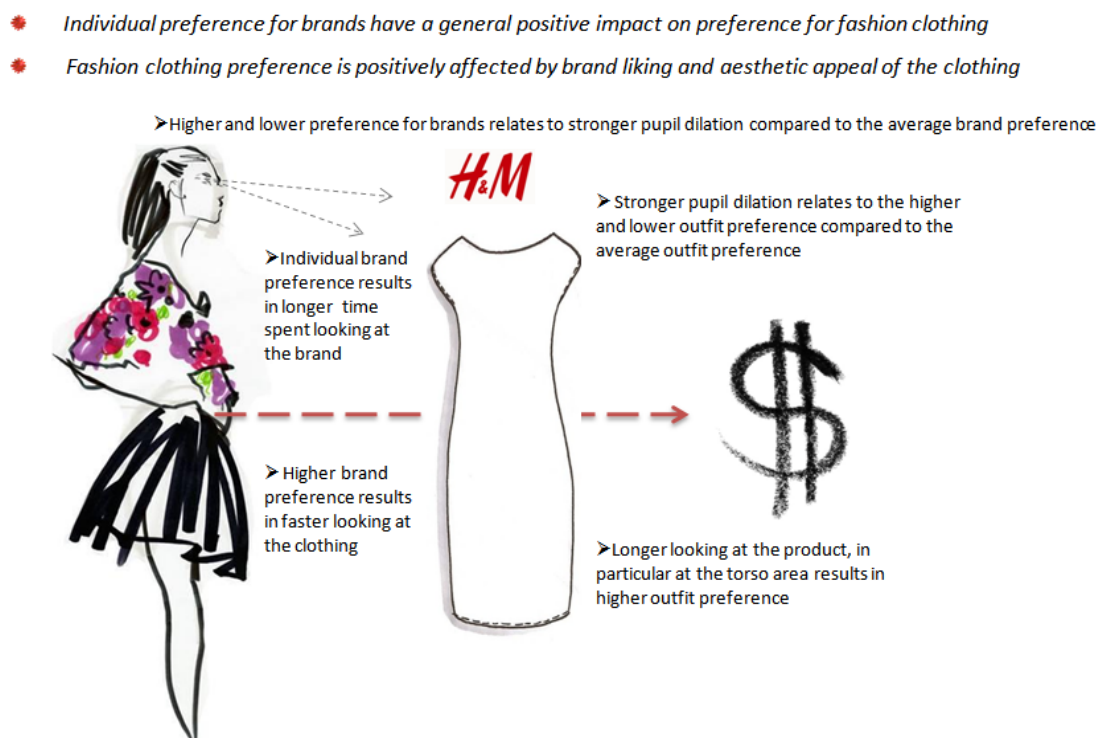


Figure 25. Main findings of the conscious experiment part.³⁹

9.2.1 Behavioural effects of brands on outfit preferences

Positive general behavioural effect of brands on outfit preferences

First of all, behavioural effect of brands corrected by the independent rating of the outfits was studied. Brands simultaneously presented with the fashion outfits had a different positive impact

³⁹ Fashion model is sketched by an artist Geoffry Gertz, <http://www.geoffrygertz.com/>

on the clothing preference thus *confirming the first hypothesis H₁*⁴⁰. Unexpected to this study, the brand effects have shown to work differently for clothing that is independently judged as appealing or unappealing, suggesting that the effects of brands are dependent on the independent value of the clothing.

Going in depth, when investigating to what extent the subjective brand preference and the aesthetic preference of the outfit can explain the behavioural outfit preferences, both factors have shown a positive relationship (Figure 15). This means that the more people like the brand, the higher rating they assign to the clothing presented with the brand. As well, the more appealing the clothing is, the higher the preference for the clothing is. According to Keller (2008), if meaningful associations are created, they affect the attitude of brand feeling thus leading to the positive reactions towards the branded product. Furthermore, familiarity may affect the brand liking which bias the product judgment (Aaker, 1991; Aaker & Joachimsthaler, 2000). It would be useful to investigate the salience of each brand. The independent effects can be explained by complexity of fashion clothing which could have enhanced the corresponding appeals (Roberts, 2007).

Individual brand effects on outfit preferences

The analysis of individual brand effects has shown that the presentation of Gucci and Zara brands does not adjust preferences of the outfits much while showing either more or less appealing fashion clothing (Figure 16). However, Dior, Vila and H&M brands evoke the contrary effects resulting in the strong changes in outfit preferences. The associations attached to it could explain Vila effect; girls told that it is boring. So in this case, maybe the aesthetical preference of the clothing could have increased the brand effect on the outfit preference.

This significant variation in strength of the individual brand effects justifies that the brand has an implicit value, which is not necessarily expressed through the subjective brand liking. Hence consumers sometimes may not be able to express the underlying attitudes because they are bad at explaining and describing their thoughts and emotions (Zaltman, 2003; Gordon, 2001). Moreover,

⁴⁰ H₁: Individual preference for brands has a general positive impact on preference for simultaneously presented fashion outfits.

they can lack insight to perceive these, as emotions in nature are implicit and for most part are active in the unconscious (Plassmann, Ramsøy, & Milosavljevic, 2012).

Moreover, it is worth mentioning that when women were asked if they think they had been affected by brands while evaluating the clothing, most of them denied the brand effects. For instance, in the visual analog 10-point attitude scale, where 1 is “Not affected at all” and 10 “Affected very much”, 27% of women provided answers 0-2, 20% provided 6-7, and only 13% scored 7-10.⁴¹ This suggests that even if people think they are making a decision only about the product itself, they are in fact strongly influenced by being advised of a brand name relating to that product. This supports the notion that brand is an encoded rewarding property. It brand works modulating expectation through memory system that creates bias towards the preference (McClure et al., 2004; Plassmann et al., 2008).

9.2.2 Eye-tracking results: pupil dilation and visual attention

9.2.2.1 Pupil dilation effects: H_{1a} ; H_{1b}

Pupil dilation in relation to brand liking and brand shown

Going further, the second step in the analysis was to stress the immediate unconscious emotional reactions induced by the brands. For these purposes pupil size regulated by the autonomous nerves system (Portala & Surakka, 2003; Bradley et al., 2008) was related to the subjective reported brand liking (H_{1a})⁴². Results have shown that conscious brand liking is associated with a non-linear pupil response (Figure 17). Moreover, individual brand preferences show strong differences in how much they affect the pupil dilation. Both effects *confirm hypothesis H_{1a}* .

As it was expected, pupil diameter tended to be larger when brands were subjectively rated either more negatively or more positively. The lowest emotional arousal indicated through pupil contraction was seen when brands were given an average score (Bradley et al., 2008; Hess & Polt, 1964). According to Berridge and Robinson (2003), the core liking reactions that are unconscious are perceived only when relevant brain structures translate it into the subjective liking. The results of this part demonstrates that what is considered to be the systematic deliberation

⁴¹ The distribution of the answers is presented in the Appendix 18, p.118.

⁴² H_{1a} : Brands for which there is a higher or lower individual preference lead to stronger pupil dilation response compared to brands with an average preference.

weighting beliefs towards different brand associations according to traditional brand management approaches (Keller, 2008; Aaker, 1991) is led by the immediate automatic emotional reactions towards the brands (Shiv & Fedorikhin, 1999, Bechara & Damasio, 2005).

Reflecting the individual effects, showing Zara, Vila and Dior brand names next to the outfits, induces the strongest emotional reaction while looking at the brand and clothing presented simultaneously.

Pupil dilation in relation to outfit preferences

In addition to that, the relationship of pupil dilation and behavioural outfit preference was investigated. Here, the results of statistical analysis have proved that pupil dilation may reflect the emotional inducement of the brands on the outfits. For instance, pupil dilation was stronger when a person was looking at the clothing shown together with brands and the preferences of these outfits were rated significantly higher or significantly lower than average (Figure 18). Thus the *hypothesis H_{1b}* ⁴³ was verified.

The present study contributed to the understanding of the effects of pupil dilation. For instance, in this study larger pupil dilation resulted in a relatively stronger positive outfit preference rather than a negative one. Hess and Polt (1960) investigating the relationship between pupil dilation and emotional reactions have argued that this shows an interest in the visual stimuli. This consequently could be related to the motivational value of positive action, unconscious wanting reaction that leads to the purchase of clothing.

Another explanation of this could be the gender effect as suggested by Portala and Surakka (2003). They investigated pupil dilation in relation to affective and neutral sounds arguing that even though the pupillary responses for both negative and positive sounds were stronger, female women showed slightly stronger reactions towards positive and neutral sounds compared to the males. In order to check if a gender could have influenced the results of the present experiment, further research should be done.

⁴³ H_{1b} : Outfits that lead to higher or lower preference are related to stronger pupil dilation response, compared to outfits that lead to average preference.

Alternative explanation of differences in pupil dilation

One way of explaining the individual differences of pupil dilation per individual brands could be based on the aesthetical preference theory proposed by Berlyne (1970). Complexity and novelty can affect the level of the arousal accordingly. Bearing in mind that brands were shown together with the clothing, aesthetical value has already shown to affect the reactions. In this case, excessive complexity and familiarity or unduly simplicity and novelty of visual stimuli could have affected the arousal negatively eliciting it beyond the preferred level (Cox & Cox, 1994).

Besides that, the brightness of a picture can cause a contraction of the pupil (Bradley et al., 2008; Laeng, Sirois, & Gredebäck, 2012). Since the luminosity of the images was not controlled for any, this could have brought additional noise.

Generally, the study justified the proposition that brands can induce these physiological automatic changes (Laeng, Sirois, & Gredebäck, 2012). To sum up, the results have proved that pupil dilation is a complex phenomenon reflecting the dynamic emotional changes; however as well it may fluctuate based on the other factors.

9.2.2.2 Time to first fixation and time spent in defined AOIs: H_{1c}

To see if individual brand preferences may have an effect on how long it takes to look at the brand and how much time women spend looking at the clothing, TTFF and TFT in brand, model, and areas within the model were further analysed (H_{1c})⁴⁴. It was expected that women who were shown the fashion brand together with the fashion outfits would judge the brand while going back and forward between the fixations on the brand and on the model. However, no effect of TTFF on the brand AOI as well as no effect on TFT on the whole model and its parts, including the pieces of clothing, was found. But, significant brand effects on the length of time needed to firstly look at the clothing induced by the brands were present, thus *H_{1c} hypothesis was partly verified*.

TTFF in relation to brand liking, brand shown within defined AOIs

To begin with, it was expected that subjects would be quicker to view the brand while being shown different independent preference having brands. However, results have shown that there

⁴⁴ H_{1c} : Brand preference is related to faster viewing towards the brand and more time spent overall looking between the brand and the clothing.

were no differences in initially processing the brand information disregarding the initial subjective conscious more positive or negative brand perception (brand liking), neither the individual brand value of each brand (brand shown).

Nevertheless, unexpectedly to this study, the brand effects were found on the model AOI, torso and waist, where subjective conscious brand liking presented a negative effect on the TTFF. It showed that the higher the conscious preference towards the brand, the less time it is needed for women to look at the model with clothing paired with the brand. To explain this effect one assumption could be made, that after seeing a brand they prefer women do not need any further conviction and therefore automatically spend less time to look at the clothing.

As well, the effect of the individual brand shown has indicated that different brand names affect the instant reactions to the clothing. H&M and Zara had the most prominent effects. H&M induced the shortest time needed to look at the model and clothing whereas Zara brand enhanced longer reaction (Figure 19). However, in this case the brand knowledge should also be investigated, as salience of a brand may induce the faster attention (Plassmann, Ramsøy, and Milosavljevic, 2012).

TFT: no brands effect on time spent looking at the model and within model

In this part no effect of the brand liking, neither brands shown was found on the time spent looking neither at the model wearing the clothing nor at the parts of the clothing while consciously affecting people by brands exposed with the certain outfits’.

Unexpectedly, a significant effect on the time spent looking at the brand itself has been found. Individual preferences for brands increased the viewing times. Visual attention and perception has a motivational purpose (Balcetis & Dunning, 2006). An assumption can be made that the emotional reaction induced by the brand as emotional stimuli rather than neutral sustains the attention (Wedel & Pieters, 2008).

Another assumption could be based on the fact that during the debriefing procedure some women asked if some of the brands were really the ones that should belong to the specific designer. In this case, longer looking could have been caused by the intention to make sense of it, to judge if the brand has been ascribed to the item of clothing.

One more explanation could suggested reflecting the study on the aesthetical viewing made by Park and DeLong (2008). They found that untrained people do not know where and what to look for and focus more on the whole image or representational aspects of the image. It could be assumed that if subjects had a weak knowledge in fashion, as well as in brands, they were looking at the clothing in total. It means that attention could have been divided to look at the whole representation of the image rather than on the specific elements. However, this assumption should be investigated while analysing the expertise as well as brand knowledge effects and could be purposed by further perspectives of the research. Even though only non-experts have been selected as sample group, there could have been some differences in the related knowledge based on the interest rather than profession or education.

Predicting the preferences from time spent looking at clothing

In addition to that, the relationship between the time spent looking at the product and its preference was investigated. Supporting the evidence of Glaholt, Wu, and Reingold (2009) in present study results as well have shown that longer looking at the fashion outfit can predict the higher preference to that particular item.

9.3 Unconscious rating task (Test 1): discussion of H₂

The following section presents the results for the unconscious experiment part.

9.3.1 Behavioural effects of brands on the outfit preferences

First of all, general positive effect of brands on outfit preferences was found. It leads to the conclusion that people can detect and process subliminal information (Dijksterhuis et al., 2005; Chartrand et al., 2008). Moreover, brand can work unconsciously biasing the choices and enhancing the preferences. Thus, H_2 ⁴⁵ was verified. These findings justify that the brain can process the rewarded values not being consciously aware of that (Pessiglione et al., 2008).

⁴⁵ H₂: Individual preference for subliminally presented brands has a general positive impact on preference for simultaneously presented fashion outfits.

Individual brand effects on outfit preferences

While looking upon the individual brand impacts, H&M, Gucci, and Zara had steeper curves demonstrating stronger effects (Figure 20). However, Dior, Vila and Prada showed a slightly less steeped curve. Again, the clothing appeal had an effect on the strength of the subliminal brand effects on preferences. Moreover, while analysing the individual effects, individual differences in effects of brands could be explained through the implicit memory (Bargh & Chartrand, 1999). For instance, it could have been the automatic activation of the attitudes that were saved in the memory from the previous information processing times (Dijksterhuis et al., 2005).

9.3.2 Eye-tracking results: pupil dilation and visual attention

9.3.2.1 Pupil dilation effects analysis: H_{2a} ; H_{2b}

Pupil dilation to brand liking

Furthermore, in order to study the unconscious emotional reaction induced by brands, pupil size was correlated with subjective reported brand liking (H_{2a}).⁴⁶ Two periods of time were investigated. Firstly, pupil dilation while looking at the subliminal brands during the priming movies was correlated with reported brand liking. Secondly, pupil dilation while looking at the clothing and distracters was correlated with the subjective brand liking (Figure 21). It was expected that stronger pupil dilation response would correlate with higher and lower preferences of the brands rather than average. Statistics have shown significant effects of non-linear correlation, however, these were unexpected to this thesis. Thus H_{2a} was not scientifically supported, verifying the H_0 .

The findings have shown that those brands that women subjectively reported to like the most could be related to the pupil contraction as well as to the strongest dilation in both periods of times. These brands that women reported to like the least showed the average pupil dilation.

Interestingly, individual brands have shown significant independent effects while showing them subliminally. During priming, Prada and Zara enhanced the strongest pupil dilation. H&M, Vila, and Dior - a little bit weaker. An exposure to Gucci brand has shown to result in the smallest pupil size (Figure 22). However, in this study, because of the technical problems there has been a

⁴⁶ H_{2a} : Subliminally presented brands for which there is a higher or lower individual preference lead to stronger pupil dilation responses, compared to brands with an average brand preference.

limitation to investigate pupil dilation changes in particular timeline, for instance only in those 30 milliseconds when a brand prime was shown. That is why the results could have been affected by the letter masking. However, a trend of individual emotional strength of the brands is still present.

Pupil dilation in relation to the outfit preferences

Furthermore, the relationship between the stronger pupil dilation and higher and lower behavioural outfit preferences rather than average induced by subliminal brands was investigated (H_{2b}).⁴⁷ Significant effects have been found, however they were not anticipated by this study. Thus H_{2b} was not scientifically supported, verifying the H_0 .

The results have shown that the strongest pupil dilation is strongly related to the lowest preference of the clothing while being affected by subliminal brands. The average pupil dilation is related to the highest rating of the clothing (Figure 23).

In brief, the theories reflecting the pupil dilation relation to emotional impact in this case cannot be fully referred to. Even though, it could be assumed that because of the fact that there is not a really big difference in preferences (from 450-550 points in the ratings) the pupil contracts and slightly dilates. However, when ratings are given from 100 to 450, people have a strong negative reaction, that is pupil strongly dilates. Nevertheless, the alternative notions could make maybe more reasonable explanations.

First of all, pupil dilation can reflect the unconscious attention. During the prime movie, increase in the pupil dilation could have been a result of the identification of the brand name in between the visual masks (Laeng, Sirois, & Gredebäck, 2012). Furthermore, the tonic state of the person may affect the pupil dilation. If a person is feeling tired or sleepy, the average diameter of a pupil tends to gradually decrease (Laeng, Sirois, & Gredebäck, 2012). In the first experiment, some of the women reported that it is a little difficult to retain concentration. Some of them came early in the morning and this could have affected their first test results.

⁴⁷ H_{2b} : Higher and lower preference of outfits, compared to the average preference, induced by subliminally presented brands, is related to stronger pupil dilation responses when viewing the subsequently presented clothing.

In addition to that, the cognitive load on information affects the pupil dilation as well. Hess and Polt (1964) demonstrated that the difficulties of mental calculations positively affected pupil size. Also, some studies have shown that when the task is demanding for cognitive activities, pupil dilates in response to the mental workload and peaks around 1-2 seconds after the task is given. When the task is completed, pupil constricts (Beatty, 1982). For instance, at the beginning of the test, women were asked to evaluate the outfits paired with distracters. Moreover, each outfit was shown on the different side of the frame, either on the right, on the left or in the center. Searching for outfits while avoiding looking at the distracters could have affected the pupil dilation. Some women reported wondering why the outfit was shown with the objects. It could be assumed that women were trying to make sense of this resulting in increased mental activity.

Additionally, as mentioned before, light intensity could have affected the pupil dilation. For instance, a brand name was shown in 0.3 milliseconds where the fast flash of the image could have caused the pupil contraction (Bradley et al., 2008).

9.3.2.2 TFT in relation to the outfit preferences within different AOIs: H_{1c}

TFT relation to outfit preferences within different AOIs

Furthermore, the experiment has shown that the preference of the outfits can be related to the increased attention to those outfits or parts of them rather than to the distracting objects. Significant effects have shown that brands that induce positive effects on preferences can also result in the attention being allocated towards the waist and head (neck) parts of the model shown with the clothing (Figure 24). Hence, H_{2c} ⁴⁸ hypothesis was verified.

Higher rating is related to more time spent looking at the head (neck), the waist and the feet. Whereas, lower rating is associated with longer time spent looking at the distracters. These effects could be explained by the fact that the attention is assumed as being led by the motivational goals. One suggestion can be made by the knowledge acquired from the fashion advertisement experiments. Here, eye movements are explained by the personal characteristics. For instance reported social comparison and “thin-ideal” correlated with the longer time spent looking at the model instead of other advertising elements (Ju & Johnson, 2010). It would be

⁴⁸ H_{2c} : Subliminally presented brands that lead to increased preference of outfits are related to more time spent overall looking towards the clothing.

interesting to investigate if girls were imagining themselves with that clothing while looking more.

10.Experiment quality evaluation

10.1 Validity

Validity refers to the extent to which the measurement represents the concept accurately (Zikmund et al., 2010). In order to maximize it while running the eye-tracking experiment, the following factors were taken into consideration.

Control of the experiment environment

Experiment has been conducted in the artificial controlled laboratory environment. It gave the researcher a possibility to control the setting of research and extraneous factors such as lighting conditions or other additional noise (Zikmund et al., 2010). For this purpose, a guidance of the eye-tracking device suppliers iMotions (2011) was followed: 1) Constant light condition for each subject was ensured turning off the ceilings lights to the level of the ambient lighting; 2) Each participant was seated on a stable armless chair with no wheels keeping the 60 centimeters distance from the eye-tracking device.

However, even though laboratory experiment has a higher internal validity, it has a limited external validity (Hair, Bush, & Ortinau, 2009). Field experiments can create a higher level of realism, as they are conducted in the natural setting. Referring to the shopping decisions, consumers as well are highly affected by the social situation – significant others or decision stage (Percy & Elliott, 2009), as well as retail environment, such as music background or the layout of the outfits (Andreu et al., 2006). Yet, this also could bring the additional noise in the study and may lead to the misleading results. Furthermore, pupil dilation measurement is very sensitive that calls for strict extraneous factors control. Nevertheless, retesting of the main effects of brand on preferences in real-life situations is highly encouraged.

Control of demand, Hawthorne and experimenter effects

A “demand effect” reflects the fact that during the experiment procedure participants may be unintentionally affected by the clues about hypothesis and research objectives. If participants understand the purpose of the experiment, they may bias their answers by responding to the question in what they would consider a right way (Zikmund et al., 2010). In the case of the conscious Test 2 (H1), during the debriefing procedure participants reported that they figured out the purpose of investigating the perception of the outfits enhanced by the brands shown next to it. This potentially could have affected the validity of the results.

Another phenomenon of “Hawthorne effect” was taken into consideration as well. It suggests that subjects may act and respond differently when knowing they are the experiment participants (Zikmund et al., 2010). Moreover, due to the fact that they can change their answers if they notice experimenter unintentionally reacting such as smiling or gesticulating, researcher was aware to not interact with the participants during the tests. This phenomenon reflects the “experimenter effect” (Pole & Lampard, 2002).

Moreover, bearing in mind these effects, the guideline of the testing procedure was prepared and followed during the study (Zikmund et al., 2010). All subjects were treated in the same manner. During recruitment process participants were not fully informed about the purpose of the experiment. Rather they were invited to participate in an outfit preference study conducted with the eye-tracking technique. Besides, subjects were isolated from each other and asked to not give out the information about the experiment procedure to the other participants.

Validity of selected fashion outfit images and directing objects

First of all, aesthetic preference impact on brand effects on outfit preference was controlled. Online survey provided by Survey Monkey was employed to measure the fashion outfit preference by the independent group. Including subjective outfit measurement task into the experiment could have resulted in misleading results. For instance, asking the subjects to rate the outfits before the study would frame their answers during the test, and evaluation of outfits after the study would have been affected by brands shown during the tests (Tversky & Kahneman, 1981; De Martino et al., 2006).

In addition to that, in order to avoid the distracters bias in the unconscious Test 1, random objects having no connection with the fashion outfit were chosen and randomly assigned to the outfits. Natural reinforcers necessary for survival purposes such as food, sexual stimuli or facial attractiveness were disregarded in order not to bring the additional noise to the study results (Baars & Gage, 2010). To certify randomization and arrangement of the presented stimuli, the randomized.org program was used for both assignment of the distracters to the clothing and presentation of the target image while conducting both tests.

Nevertheless, a limitation of this research potentially could be the lack of control of the visual stimuli brightness. This could have had an effect on the pupil dilation as brightness can cause the subtraction of the pupil diameter (Bradley et al., 2008). The brightness control should be taken into the consideration in further research. Moreover, bearing in mind that more complex objects tend to result in higher beauty ratings, complexity test could be done for distracters, or the full image with the clothing in order to control of distracters effect on the rating of the outfit preference in unconscious experiment part (Roberts, 2007). As well, the most valid results would be given if analysis of the pupil dilation would be conducted dividing the timeline in smaller periods. However, these show the limitations that could have caused the issues in the unconscious pupil dilation measurement part.

Sample population representiveness

One of the most important goals of quantitative research is results generalization. For these purposes the probability sampling methods are the most suitable (Collins, 2010). Selected present nonprobability sampling method inhibits the generalization of these findings for other populations into the overall fashion market application. Results should be restricted to the sample population age range as selecting older women to be tested could result in significant differences while evaluating brand effects on the outfit preferences. However, the application of the results in the broader perspective is not limited. Bearing in mind that there is no high variation in the population, the bias problem may be overwhelmed (Saunders, Lewis, & Thornhill, 2009). Moreover, as the purpose of the study was to understand the conscious and unconscious branding mechanisms, experiment shows the confident result. In order to trace these significant effects and stress the unconscious reactions, small sample of the population is enough.

Debriefing

Following the principles of effective brand priming, probe for awareness of the subliminal brands was conducted after the experiment (Bargh & Chartrand, 2000). Questionnaire⁴⁹ consisting questions about the unconscious Test 1 and conscious Test 2 were provided. To ensure that participants were not aware and have not been consciously affected by the brand names in unconscious Test 1, they were asked to report if they noticed or expected to be presented with the brand names: *“Did you notice any brand names? Did you expect to be presented any brand names? What do you think Test 1 was about?”*. To validate the results of the Test 2, following questions were asked: *“Did you notice any brand names? How much do you think you were affected by brand names? What do you think the test was about?”*.

10.2 Reliability

The concept of reliability covers the consistency of the measurement. Internal validity includes the homogeneity of measures. Reliability refers to the repeatability of the experiment meaning that if experiment would be conducted again, it would show the same results (Zikmund et al., 2010). Bearing in mind the nature of data collection technique of eye-tracking, there is a high possibility that the outcome of the experiment would vary each time experiment would be replicated and conducted with the same sample population as well as the new one. Whether the results differ and to what degree depends on the physiological conditions and the mood felt by each participant at the moment experiment is run and data collected. Moreover, taken into account the fact that memories are built continuously, if experiment would be repeated in a long run, individual brand effects may differ. However, the general effects of the brands on products should remain the same.

10.3 Sensitivity

“Sensitivity of a scale is important measurement concept, when changes in attitudes are under investigation” (Zikmund et al., 2010, p.309). It refers to the ability of the scale to represent the variability. The most common scholars’ approach that is used for attitude and behaviour measurement is rating scales. Likert scales, semantic differential scales, and behaviour intention scales are usually applied in market research (Brace, 2004; Hair, Bush, & Ortinau, 2009). However, all of them have a drawback of proposing specific classified rating weight that may

⁴⁹ Debriefing questionnaire is presented in the Appendix 19, p.119.

frame the subjective answer of the participant. For example, Likert scale is usually designed to examine the agreement and disagreement with the specific statement expressed through five-point, seven-point free-choice format dimensions (Brace, 2004). In order to reach a higher degree of reliability and subjective discrimination of the attitudes, visual analogues scale has been selected (Wewers & Lowe, 1990). Application of this particular scale gives an advantage of a sensitive and precise attitude measurement for each individual across the continuum of values (Ibid). Moreover, bearing in mind the experimental part, the consistent rating scale approach have been applied during the experiment rating task and in the following questionnaires in order to compare the data and investigate the relationships.

11. General discussion

The aim of this study was to investigate, *the conscious and unconscious mechanisms of the effects of brands on preferences*. The research question was inspired by the fashion industry where six fashion brands Dior, Prada, Gucci, H&M, Zara and Vila were used as examples. Fashion outfit choice is a good case of the situation where brand plays an important role. This led to a wondering of how brands can immediately affect the decision making, what are the emotional and cognitive processes that brands enhance and that results in bias towards the choices of the outfits. Furthermore, to what extent brand effects can operate in the conscious and unconscious perspectives.

First of all, traditional brand management theories, in particular David Aaker's and Kevin Keller's brand equity models were reviewed. The particular areas of research involved decision making processes, brand definition, and consumer responses enhanced by the brands. Secondly, the modern approaches based on the biological and physiological reactions that challenge traditional brand understanding were discussed. The knowledge deducted from the theoretical literature review and relevant neuroscientific and behavioural studies on branding and preferences outlined the empirical research proposition. To test the hypotheses, behavioural and physiological methods were employed during the laboratory eye-tracking experiment. It was as well accompanied by the questionnaire and objective measurement of the aesthetical preference of the outfits.

Based on the test of 30 women, results showed that independent brand preference affect emotion, attention and preference in many different ways:

- ⇒ There is a positive effect of brands on outfit preferences in both the conscious and unconscious perspectives. This shows that brands affect the product evaluation even though people think that they are not affected by that. Moreover, effects shown in the unconscious part present the implicit emotional reactions that are not filtered by the conscious sense.
- ⇒ The effect of aesthetical appeal presents that both brand value and aesthetic value play a role in the outfit choice.
- ⇒ A non-linear U-shape relationship between the brand liking and pupil dilation in the conscious part reflects that the brand can induce the instant automatic emotional reactions.
- ⇒ Changes in visual attention, in particular faster fixation on the clothing and longer time spent looking at the brand itself provides valuable information about how value encoded in the brands affect the processing of brand and clothing information.
- ⇒ The significant results of longer time spent looking at the clothing and its relation to the outfit preference have shown that this can be a good predictor of the choice.
- ⇒ The fact that subliminally presented brands that also induce outfit preference are related to the longer looking at the clothing clarifies that brands can activate unconscious memory and goals. That gives some hints about unconscious branding and predictions of choices.
- ⇒ Differences in the effects of subjective preference and individual preference of each brand justify that brands consist of both the explicit and implicit value that not always is reflected in the conscious self-reports.

The general discussion on what can be learnt in both the academic and corporate worlds from the knowledge produced from the findings in relation to the theoretical framework will be further presented.

11.1 Academic implications

Input in pupil dilation notions

Based on the pupil dilation literature, stronger pupil dilation is related to the more negative or more positive emotional valence reaction rather than the neutral enhanced by the stimuli (Bradley et al., 2008; Hess & Polt, 1964). The present study in the conscious part has shown that these effects can be induced by brands. Furthermore, while analysing the relationship of pupil dilation

with outfit preferences, larger pupil dilation was related slightly more with higher outfit preferences rather than with lower. This could potentially be a valuable insight while developing new theories regarding the choices and prediction of them merging the branding and cognitive neuroscience fields. Some of alternative pupil diameter size changes explanations such as gender effect and light intensity effect were proposed. Furthermore, the unconscious study has shown some unexpected results. This asks for further research.

Effects of pupil dilation per individual brands presented significant differences in both perspectives. Generally, pupil dilation could be a useful measurement technique of the unconscious brand strength as subliminal reward cues can trigger pupil dilation that can be proportional to the value of the cue (Laeng, Sirois, & Gredebäck, 2012).

Extending the model of value-based decision making

In addition to that, this study may also propose the extension to the value-based decision making model (Plassmann, Ramsøy, & Milosavljevic, 2012). The knowledge produced in the conscious part supplements the model with the insights on the emotional and cognitive reactions that are manifested through visual mechanisms. This expands the understanding of what is going on in between the steps of 2) experienced value and 3) predicted value. Such as, when a brand is exposed, the pupil dilates if the brand has emotional impact. This is the first automatic reaction to the brand. For instance, after a brand is being shown, the expectation towards the brand leads the visual attention focusing more on the brand in itself and faster starting to view the related product.

Informing brand research methods

Although consumer perceptions and internal mental states are at the core of the brand effects analysis, contrary than in the cognitive neuroscience discipline, brand researchers rely on the descriptive explanation of the mental representation (Heding, Knudtzen, & Bjerre, 2008). Traditional branding academics highlight the verbal techniques. In some case they are accurate enough; however, sometimes they can lead to the misleading results (Zaltman, 2003). Generally, conscious and unconscious reactions are taken for granted as the integrated constructs measuring the phenomenology of gestalt - meaning instead of causality.

In the present study Vila had negative associations attached to the brand such as being boring or providing bad quality clothing. However, in the unconscious experiment part Vila enhanced the positive effect on the outfit preferences. Even though aesthetical appeal of the clothing impacted these results, implicit memory of the brand as well played a crucial role. The response to the brand was not affected by different strategies consumers apply such as to stay objective or deny the fact of being affected by marketing communication actions (Dimofte, 2010). Aaker (1991) and Keller (2008) as well purpose the unconscious hidden motives research by investigation of imprinting moments during the visualization and relaxation exercises, however, according to Zaltman (2000), questions that researcher asks involves his personal reflections. That can eventually mislead the results.

In brand research, analysis of brand associations helps to investigate the meaning of the brand rather than reactions towards the brand while being faced with the decision in different situations (Walvis, 2007). In this case measurement lacks of the explanations about how fast different reactions towards brand occur as well how relatively strong affect each of the dimensions have on the brand choice. According to Gordon (2001), meaning is not necessary what leads the decision, because of the inconsistency of the consumer reports and their actual behaviour. Pupil dilation and time to first fixation could explain the pace of the reaction induced by brands and expand the consumer-based brand equity approach to the somatic brand equity approach.

Beyond the cognitive decision making

The cognitive understanding of the consumer applied in the traditional strategic brand management discipline may be updated. For instance, Aaker (1991; 1996) and Keller (1993; 2008) identified the brand as a cognitive construct in the consumer's head. Experiment results provide the evidence that viewing the consumer in this way is very narrow and limited. "*The mind is what the brain does*", however this relationship is continuous and two-way (Zaltman, 2000, p.425).

According to Keller (2008), the marketer is able to program the intended reaction towards the brand while effectively planning and strategically communicating the brand's promise. Moreover, the core interest of traditional models is attitudes that can be either cognitive (thinking dimension in Keller CBBE model) or affective (feeling dimension). Whenever people are faced with the

brand, they should think about a particular attitude that leads to the choice of the product (Ibid). In the strategic brand equity approaches, emotions are not explicitly defined regarding their unconscious nature as it is in neuroscience. Emotional reactions what they talk about rather reflects the emotional states, subjective conscious experience. It can be consciously perceived, expressed and self-reported by the person (Hansen & Christensen, 2007; Hansen, 2005). This kind of understanding can be challenged by the unconscious part of the experiment which has shown that in order to activate the consumer reactions by brands, there is no need to consciously think about them. Here independent preference to brands enhanced the preference of fashion outfits. It leads to the conclusion that what is traditionally considered as the result of logics and systematic conscious evaluation, in the branding and consumer behaviour literature, is actually initially driven by the automatic processes. They are very fast and they guide the decision making (Shiv & Fedorikhin, 1999, Bechara & Damasio, 2005).

Moreover, brand effect on faster fixation on clothing justifies that brand can bias behaviour by its motivational incentive value (Dijksterhuis & Aarts, 2010). In this case it could be not only the pleasure reaction (not only experienced feeling) involved but as well to be the manifestation of the unconscious wanting.

In conclusion, even though traditional academics rely on the approaches seeing the consumer as a cognitive decision maker while studying brand effects on preferences, some of them as Keller do not neglect that there is a high need to integrate different theories and paradigms to synthesize the branding discipline: *“Part of the challenge in developing mental maps for consumers that accurately reflect their brand knowledge is how to incorporate theoretical or methodological paradigms”* (Keller, 2003, p.600).

In order to expand the traditional cognitive approach, based on the knowledge produced in this thesis, the model of a consumer computer referred in the brand management part (Figure 2) could be elaborated while adding one more dimension where emotional processes initiating the cognitive information processing should be involved.

Unconscious information processing

Reflecting the question of unconscious brand information learning during unconscious touch points and their effect on the consumer behaviour, Aaker (1991) and Keller (1993) do not neglect the existence of the unconscious branding side. However, they do stress the conscious branding perspective as they do not thoroughly explain about how the brand exposition effect occurs under the conscious awareness.

Contrary, this experiment brings in evidence that brand information can be learnt unconsciously and as well can bias the choices (Pessiglione et al., 2008). Moreover, unconscious brand cues may activate the unconscious relevant goals and behaviour, for instance through activating the unconscious memories (Plassmann, Ramsøy, & Milosavljevic, 2012). This effect can be shown in the unconscious part of experiment where subliminal brands positively affected the outfit preferences.

Eye-tracking knowledge

Most of the eye-tracking studies focus either on pupil dilation measurement, either on visual attention constructs. This particular experiment presents the opportunities of combining the knowledge of both. Furthermore, most of the studies either rely on the advertisement effectiveness research, or on the product design and aesthetics. This research proposes that eye-tracking may be applied as well in a broader context regarding brand choice. For instance, this could involve creating an artificial choice situation in the unconscious experiment set.

11.2 Implication for brand managers

Brand management professionals highlight that hard natural science based discipline of cognitive neuroscience should be integrated with soft social science roots having branding discipline in order to reach the most effective brand building strategies (Gordon, 2001; Walvis, 2007), the following part will present the suggested implications for the strategic brand managers in the corporate world.

Informing brand communication strategies

Marketing professionals are usually taught to develop brand communication strategies based on the models of think and then react whereas the rule coming from the nature and being applied for

the human behaviour is led by the notion of react first and then think (du Plessis, 2005). Present study suggests that higher attention should be paid to the reaction first as it usually guides the decisions. This can be noticed in the study where time spent looking on the model was induced by the brands that positively enhanced the outfit preferences. As well in unconscious part, where pupil dilated in relation to the subjective brand preference in the non-linear U-shaped manner as mentioned before.

Furthermore, there is still a gap between the brand execution and brand strategy development and the true behaviour of the people (Gordon, 2001). In this case, causal point of view of the brand and consumer relationship as well as brand induced reactions has to be stressed for instance focusing more on neuropsychological internal mechanisms of the brands. As Hansen and Christensen (2007) claimed of the understanding of emotional response can help to create the most effective communication solutions.

Why understanding of emotions is important for branding people?

The choice of the certain brand is the main goal of the branding professional. Emotions are the best predictors of consistent preference and behaviour (Lee, Amir, & Ariely, 2009). Since conscious preference, as for example feeling, can be instable and change depending on new information that enters the mind during decision making. As it can be seen in the conscious part of the experiment, brand liking was a bad predictor of visual attention changes. In addition to that, while subjectively evaluating the brands some of them were assigned higher rating, however, they showed different results in the behavioural task and in pupil dilation dynamics. Zaltman (2000) suggest that all the decision processes may even take part without any surfacing as conscious feeling; this was verified by unconscious part of the experiment.

Reflecting the literature review part, Berridge (2009 a) has argued that unconscious wanting is the one, which leads the behaviour. Having a better understanding of it may help to target the unconscious mind by effective communication messages.

Informing the market research about the modern techniques

Despite the fact that there is still a debate about the relevance of implicit measurements, the fact that implicit measurements show relatively higher predictability of the behaviour highlights the

importance of marketing professionals to pay a higher attention to them. Moreover, the notions proposed by cognitive neuroscience highlight that investigating the unconscious mind can help the marketing research to overcome the limitation of the explicit self-reported techniques (Baars & Gauge, 2010; Plassmann, Ramsøy, & Milosavljevic, 2012).

For instance, the reluctance and inability to report the states consumers are in may be bypassed (Dimofte, 2010). Implicit reactions measurement tools could be useful in the situation where consumers are sensitive to the topic. A good example would be while investigating the topics related to their self-confidence, weight problems or look for the purposes of the brand identity development of the new fashion brand. In addition to that, usually people are asked by the marketer, this as such may lead to less honest responses while being examined through implicit measurements (Zikmund et al., 2010).

Physiological measurements in this case give the possibility to track the reactions that are not expressed in verbal language and are the gateway for raw ideas and pure emotional physiological reactions elicited by brands (Hubert & Kenning, 2008).

To sum up, cognitive neuroscience is not a mean to revolutionize the existing knowledge; however, it is a great complementary advancement of the traditional approaches and further investigation of decision making. Explicit measurement techniques should not be neglected in brand research too; combination of implicit and explicit measurement methods may lead to better insights (Zaltman, 2003). If combining both techniques they can add validity, reliability and in-depth information in branding research.

Fashion market and choices

In fashion market, people rarely buy products for utilitarian function. Usually these decisions are made instantly in the shopping environment. The knowledge gained in the experiment, such as that individual brand preference can affect how fast women look at the clothing may be used for the window-shopping strategies. As well, the unconscious study has shown that implicit brand memory may bias the decision. Different techniques can be employed to induce the unconscious learning and activate it in the shopping environment.

12. Conclusions

Brands do make a difference in choice from the first seconds customers are exposed to the branded product. Different scholars concerned about the brand effects have been arguing about the questions of how much the conscious and unconscious automatic processes happening in the mind of the consumer can affect product choices. Traditional branding and marketing fields have been relying on the consumer approaches rooted in cognitive psychology, where consumers were seen as deliberate, systematic decision makers regarding the brands and the products. Modern cognitive neuroscience research has shown that these processes are ruled by emotions that are considered as implicit and automatic responses that initially takes part below the conscious awareness. Neuroscientific studies have proved that brand information can modulate the neural correlation in the brains and based on the knowledge attached to the brand change product experience. Priming experiments provided evidence that cues related to brands can be processed unconsciously, thus activate the motivated buying behaviour.

The urge of new insights, thus acknowledged by scholars and corporate branding professionals in understanding the underlying brand effects on product preferences in both the conscious and unconscious perspectives, has built a ground for this research. The research question was inspired by the fashion industry where six fashion brands of Dior, Prada, Gucci, H&M, Zara and Vila were used as case examples in the thesis. The merging border of the high and fast fashion concepts based on the high consumer demands and constant battle of brands for the narrow space in the consumer heads have lead to a wondering how brands works on preferences.

The main goal of this thesis was to investigate the bias of the brands on the outfit preferences. Furthermore, to investigate the emotional and cognitive reactions manifested through the visual processing of brand and product information. Results of this study have shown that in perspectives, the conscious and the unconscious, individual brand preference can positively affect clothing preference. H_1 and H_2 anticipating these effects were both verified. Moreover, results have presented that effects of brands are dependent on the independent appeal of the clothing.

In the conscious experiment part brands enhanced emotional reactions at the first seconds when they were exposed to the consumer. Pupil dilation measured while looking at the brand and product information presented together was associated with the reported subjective brand

preference in non-linear relationship, where stronger pupil dilation was related to higher and lower than average brand preference. Furthermore, pupil dilation has been shown to reflect the outfit preferences in the same fashion – where pupil dilated stronger liking more or disliking more the dress rather than being indifferent. Hence these effects verified H_{1a} and H_{1b} . Furthermore, the hypothesis H_{1c} , where it was expected that individual brand preference would enhance faster viewing towards the brand and more time spent overall looking between the brand and the clothing, was partly verified and informed. Individual brand preference enhanced faster initial viewing towards the clothing and longer time spent looking at the brand itself that gave valuable information about how women tend to process brand and product information.

In the unconscious experiment part, pupil dilation has shown unexpected results, which gave some hints about the limitation of the research design. H_{2a} and H_{2b} were not scientifically supported. These findings led to the conclusion that pupil dilation is a complex phenomenon reflecting dynamic emotional changes. However it may also fluctuate based on other factors, such as for example the light intensity of the visual stimuli, cognitive load of information, gender, and fatigue. In contrast, visual attention findings have shown that visual attention may relate to preference of the outfit even being affected by the brands subliminally. Here higher outfit preference was related to the increased focus on the products rather than on the distracting objects. Furthermore brands that positively affected the outfit preference enhanced longer looking at the girl wearing the dress, thus confirming the H_{2c} hypothesis.

Generally, these findings are valuable not only for branding as well as cognitive neuroscience academic disciplines, but they are also particularly useful in the corporate world. Consumers are not rational individuals; neither are they always fully informed. First of all, the traditional notion of consumer to be the cognitive decision maker may be informed, highlighting the role of the emotional processes involved in decision making. Furthermore, the implicit measurement tools can supplement traditional verbal techniques used to investigate brand perception.

Finally, one very important aspect of the study conducted is the explorative nature of the research in the sense that nobody has done this kind of study before. Because of this reason, some issues regarding the validity and reliability of the results, in particular in the unconscious experiment

part should be taken into consideration. Therefore, it would be relevant to conduct more research to better understand the relationships between and the causes of, these effects.

13. Perspectives for future research

Since the choice of the experiment set-up was limited because of the narrow scope of the research, the following part presents perspectives for the future research.

Pupil dilation investigation

Different factors should be taken into account and investigated more thoroughly in brands and pupil dilation research. First of all, the luminance of the pictures should be controlled (Bradley et al., 2008). Secondly, individuals who had an equal amount of sleeping hours should be selected (Laeng, Sirois, & Gredebäck, 2012). In addition to that, gender effect could be considered (Portala & Surakka, 2003).

Real-life experiment in the shopping environment

Bearing in mind the limitation of application of the laboratory experiment results (Hair, Bush, & Ortinau, 2009) in the shopping environment, real-life experiment using portable eye-tracking device could be further conducted. However, the drawbacks of the natural setting mentioned in the validation part should be also considered.

Sample population of fashion experts

Experiment could be replicated recruiting fashion experts. Moreover, comparison of expert and non-expert groups' could be done. The expertise affects the aesthetical viewing towards the clothing, such as they could look longer in order to judge the symmetry, curves et cetera (Park & DeLong, 2010). Moreover, brands may induce different behavioural preferences of the outfits as the relevance and understanding of the brands would differ on distinctive criteria. Here the difference of high and mass fashion brands would be interesting to be studied.

Brand prime effect investigation on the shopping behaviour

Brand name can affect the consumer behaviour unconsciously. It would be interesting to investigate if those brands that induced stronger pupil dilation would enhance the real buying behaviour. For instance, women could be given monetary reward of a certain amount of money

and told that after the experiment they can buy any brand of six shown. It would give a better insight in liking and wanting components of the reward system.

Brand knowledge effect

Visual attention and liking are strongly affected by salience of the brands that is why, these effects should be investigated in order to validate and further explain the results.

Different markets analysis

According to Percy and Elliot (2009) involvement reflects the decision type defined as a high or low depending on the physical and psychological risks (financial and symbolic) associated with the brand preference. This affects how likely consumers are to engage in the cognitive information processing while making the decision (Percy & Elliott, 2009; Belch & Belch, 2008). Different theories on low and high involvement product categories could be investigated and compared applying this dataset.

Furthermore, cultural differences and traditions affect brand perceptions. For instance, according to the market research analysis conducted by KPMG, in China there were 70% more luxury goods purchases in past years than in Europe (KPMG, 2007). In further research, more segments in different regions could be taken into the consideration to measure the brand effects.

14. References

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15. Appendices

Appendix 1: Brain measurement techniques

Brain activity measurement tools could be grouped into those that measure 1) the changes of electromagnetic activity in the brain such as electroencephalography (EEG) or magnetoencephalography (MEG), and 2) changes in cerebral blood flow/metabolism such as positron emission tomography (PET) or functional magnetic resonance imaging (fMRI) (Kenning & Plassmann, 2005; Baars & Gage, 2010). EEG and fMRI are further described.

EEG

EEG measures brain activity while recording the electrical activity produced by the firing neurons through the scalp or the surface of the cortex. EEG tracks the electrical field via the electrodes put on the scalp (Figure 1). It is believed to be the most sensitive to the neurons that are near the surface. Bearing in mind that tens of billions cortical neurons fire about 10Hz and produce incredible amount of electrical events per second, raw data produced by EEG is complicated to be investigated (Baars & Gage, 2010).



Figure 1. EEG⁵⁰

fMRI

fMRI is a brain scanning technique (Figure 2). In brand research market information such as brand logos, mascots and other is manipulated inside the scanner. At the same time, the changes of cerebral blood flow related to the neural activity in the brains whenever some brain regions require more oxygen and glucose are directly observed. Subjects as well perform a certain task- The blood-oxygen-level-dependent activity is then correlated with the behavioural task results.



Figure 2. fMRI scanner⁵¹

⁵⁰ Picture taken from <http://people.brandeis.edu/~sekuler/eegERP.html>

⁵¹ Picture taken from <http://www.wired.com/wiredscience/2009/03/noliemri/>

Appendix 2: Fashion brands presentation

Table 1. Description of the fashion brands and their positioning strategies ⁵²

Brand name	Description	Positioning strategy
Gucci (Gucci Online Boutique; Gucci Facebook page)	Italian fashion brand specializing in leather products, such as luxury handbags, shoes, ready-to wear clothing and small leather goods. It operates internationally and is known as global high fashion brand.	Timeless quality – high price, money invested in long durable product, high-end products, high status. <i>“Quality is remembered for a long time after the price is forgotten”.</i>
Prada (Prada Official website; Prada Facebook page)	Italian fashion brand specializing in luxury goods, such as ready-to-wear clothing, leather accessories, shoes, luggage and hats. It operates internationally.	Fashion is as well the art, high-end fashion products, exceptional services, cutting edge technologies, elegance, chic, social status, prestige.
Dior (Dior Official website; Official Dior Facebook page;	Founded in 1947 as “haute couture” house. Globally known French high fashion brand.	High-end fashion products, luxury that is imposed by creative originality, genuine materials, modern elegance. <i>“Fascinating woman with the ability to combine most modernity with timeless elegance”.</i>
H&M (H&M Official website; Official H&M Facebook page)	The Swedish retailer specializing in fast fashion goods and operating in international market. Recognized as global fashion brand.	High fashion with low prices - quality of brand promise is about more than product and price points. Pioneer of design collaborations with style icons such as Karl Lagerfeld, Stella McCartney, Viktor & Rolf, Roberto Cavalli et al.
Zara (Official Zara Facebook page)	Founded in 1975, one of the largest international fashion companies specializing in clothing.	Zara offers the highest price points amongst fast fashion brands and provides the closest replica of high-fashion clothes.
Vila (VILA Clothes The international branding site; VILA Facebook page)	International fashion company specializing in mass fashion	Price range that is approachable and allows dressing fabulously without compromising with style, quality and the latest trends. Designers are constantly up to date with the latest trend forecasts regarding style, colors and patterns.

⁵² Information Retrieved 12 23, 2011

Appendix 3: Aaker's Brand Equity model. How brand creates value.

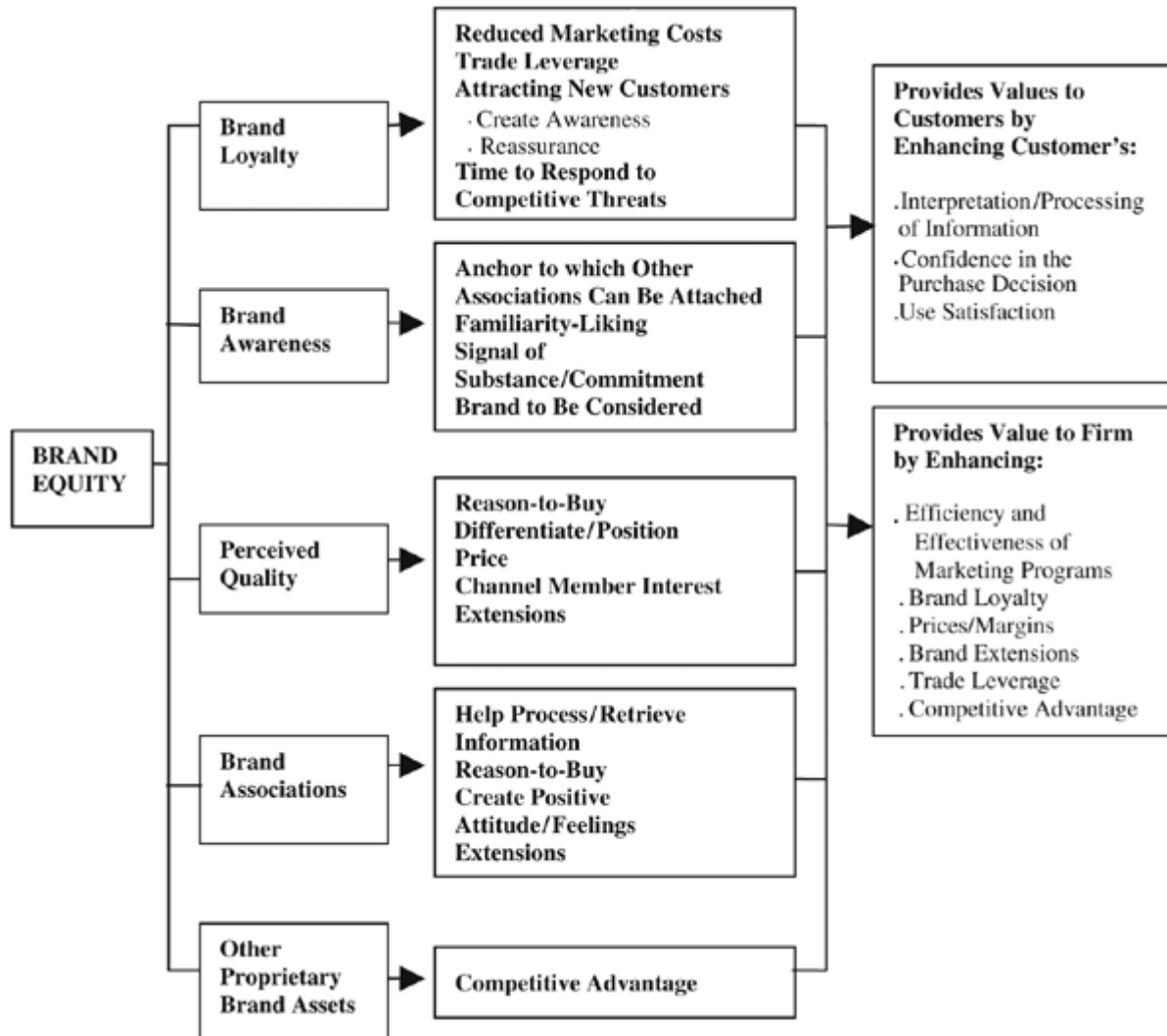


Figure 3. Brand Equity model adapted from Aaker, 1996, p. 9.

Appendix 4: Keller's CBBE model

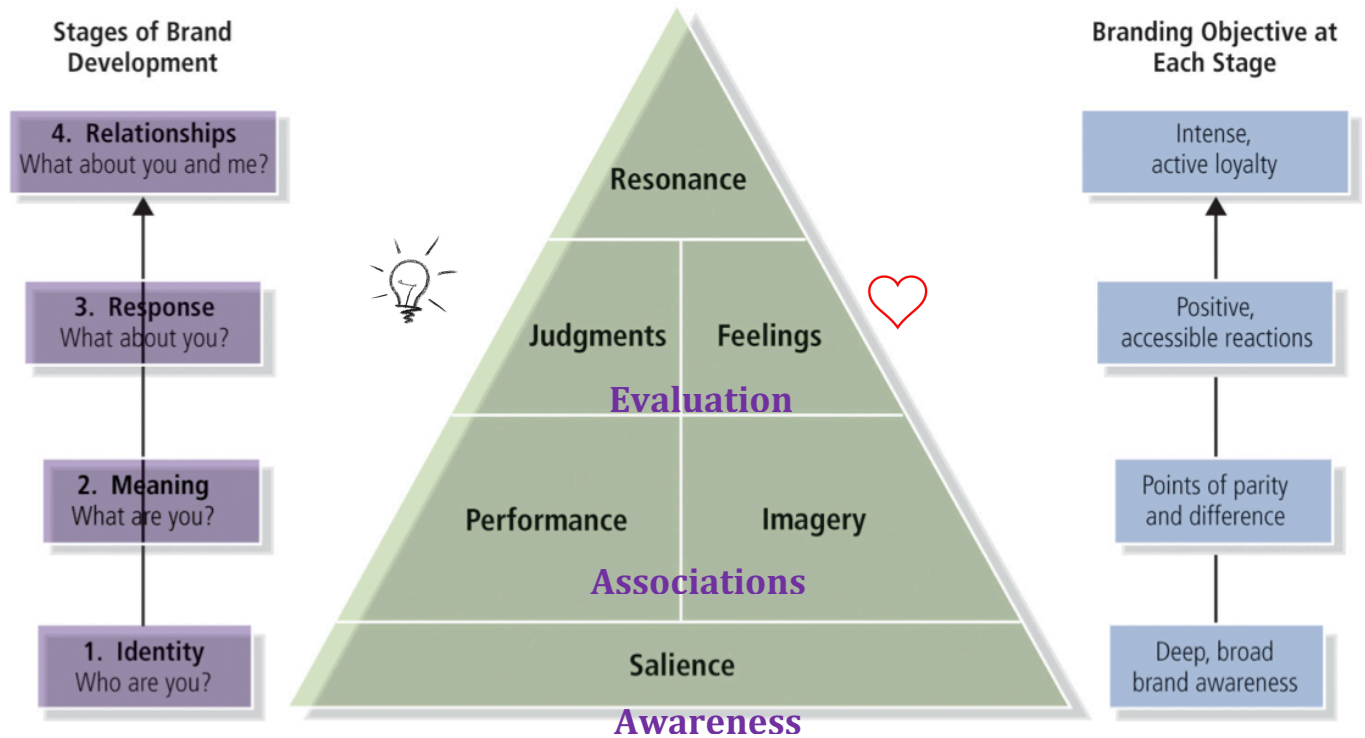


Figure 4. CBBE model adopted from Keller, 2008, p.61

In order to have a strong CBBE, four building blocks should be fulfilled. Brand resonance is the strongest mental response to the brand. It is “*relationship to which consumers feel that they are “in sync” with the brand*” (Keller, 2008, p.72). In order to reach it, first of all, high familiarity with the brand should be ensured, moreover, strong, unique and favourable associations in the memory should be created. If meaningful brand image is created in consumers’ minds, it leads to positive judgments which result in the resonance (Ibid).

Appendix 5: Free associations test results

Table 2. Associations assigned for different brands by women after the experiment (in questionnaire part)

Gucci	Extravagant, for young girls who want to look older, expensive, great feeling, luxury, bags, accessories, extravagant, fake bags, logo maniacs, mini dresses, overpriced, classics, sunglasses, money, Italian, gold and brown colours, never purchased, for 45 years old ladies, old women, shiny, cheap style, upper class, posh, belts, gorgeous, Tom Ford, too sophisticated, too snobby, glamorous and expensive dresses.
Prada	Sporty, elegant, smart, clothes to show-off, high fashion, expensive, great feeling, luxury, elegance, classic, leather bags, posh clothes, parties, "The Devil wears Prada", high-heals, elegant business woman, colourful, playful, sometimes too sweet, sunglasses, shiny, silver, 30 years old woman, innovation, modernity, high quality for a high price, old and strict woman, business style, posh, elite high fashion, nice handbags and jackets, more lady like and old-fashioned, not Nordic style, too bright colours, authentic shoes patterns, dream shoes, snobby, glamorous and expensive dresses, sophistication.
Dior	Classy, high level fashion, superior brand, luxury, red carpet, extreme glamour, Marie-Antoinette style, extraordinary dresses, lip gloss, elegance, classy, black, transparent, soft, sunglasses, feminine, party time, chick, never purchased, 40 years old ladies, elegant, chick, high quality and high price, wealthy, flashy, feminine, beauty, quality, luxury, elegance, rebel conservativeness fashion, classy cosmetics and makeup, upper class, shoes, blondes, pearls, expensive, extravagant, make up, stunning expensive dresses, too sophisticated and snobby, glamorous.
H&M	Funny, party, great to wear for a couple of times, for young people, high street, available designs, not best quality, cheap, quick-fashion, poor quality, basic accessories, shoes, bags, clothes for reasonable price, oversized, low cost, fun, value for money, huge assortment and choice, trendy, breaks easy, cheap, youthful, value for money, cheap clothes for every occasion, poor quality but fashionable style, classy and stylish and cheap, always possible to find something, affordable trends, Scandinavian style, medium quality and cheap, fashionable, trendy, basic clothes, good low fashion brand, for very cheap price very normal outfits, cheap, always may find something, affordable to often change the wardrobe, simple, not so high fashion taste.
Zara	Working woman, acceptable quality daring high street, available, modern, original, simple, stylish, timeless, classic, good looking clothes, poor quality, small sizes, nice design, cotton, trendy, small size, cheap, youthful, quality for money, Spanish chick, nice dresses, pretty shoes, more expensive than H&M, very chick clothes, high street fashion, good mix of assortment, great prices, working lady, parties, casual office style, wealthy, flashy woman, good replication of high fashion, affordable price, silk, tunics, poor people may be stylish, affordable clothes, street fashion, European style, classy and nice, little expensive for quality, a bit upper level than H&M, boring, reasonable price.
Vila	Bad quality, expensive related to quality, young, interesting, poor quality, glitter style, too many details in designs, cheap Scandinavian outfits, Scandinavian style, nice, good outfits, cotton, poor quality, a little boring, cheap summer clothes, colourful, young segment, better quality than H&M, Scandinavian classic lines, affordable, cheap, Scandinavian, classic, good design, fashionable rags, very low quality, used to be very boring, now more romantic Scandinavian style, good value for money, good quality for everyday wear but boring, no light in the stores, not big assortment, cheap, current styles, Nordic, silk, less interesting, cheap Vero Moda, affordable Danish fashion.

Appendix 6: Keller's CBBE model

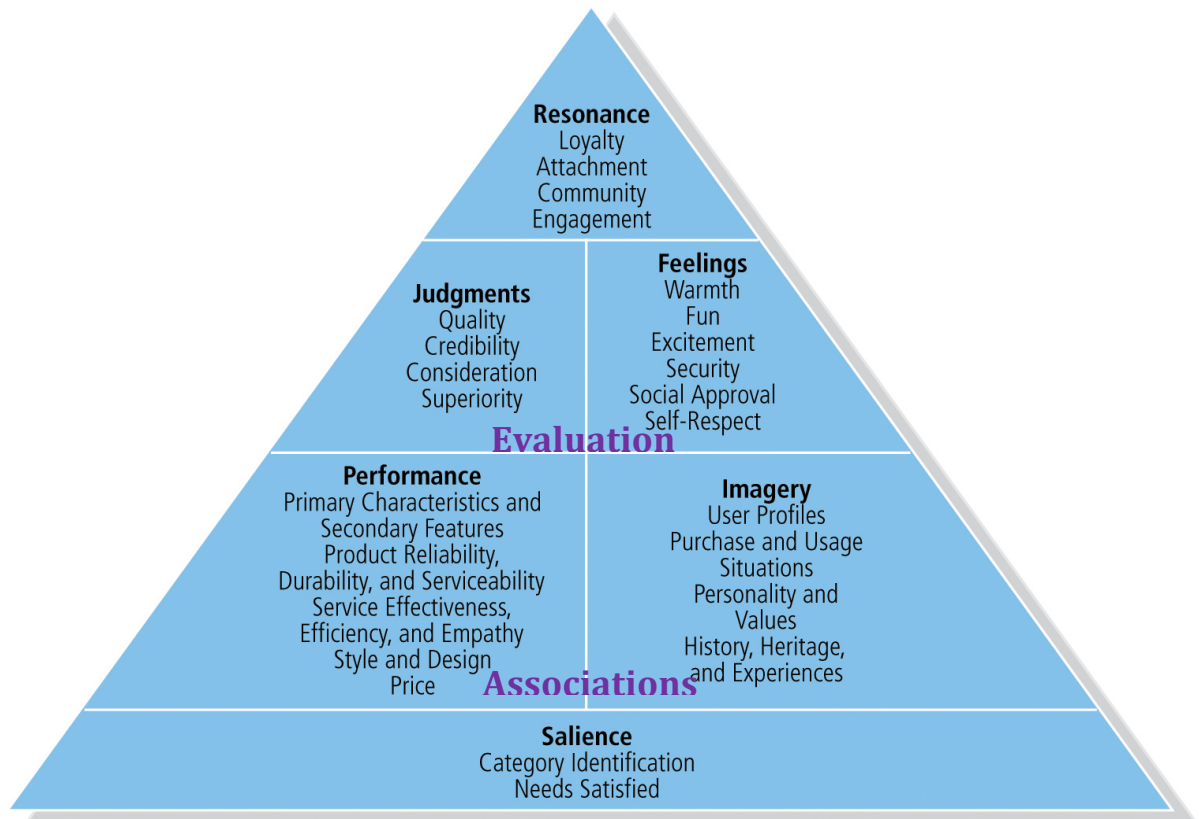


Figure 5. CBBE model adopted from Keller, 2008, p.61

Appendix 7: Dior attitude calculation

Table 3. Multiattribute Expectancy-Value attitude model (Percy & Elliott, 2009, p. 179).

	<i>Importance weight (a₁)</i>	<i>Beliefs (b₁)</i>	<i>Benefit (a_i x b_i)</i>
Provides high status	3	3	9
Sophisticated design	1	3	3
Elegance	3	3	9
A = $\sum_{i=1}^n a_i b_i$			21
A – attitude towards the Dior brand a₁ – importance of belief b₁ – belief towards the Dior	3= essential 1= desirable 0= of no importance	3= definitely delivers 1= does ok 0= does not deliver	

Appendix 8. Reward components

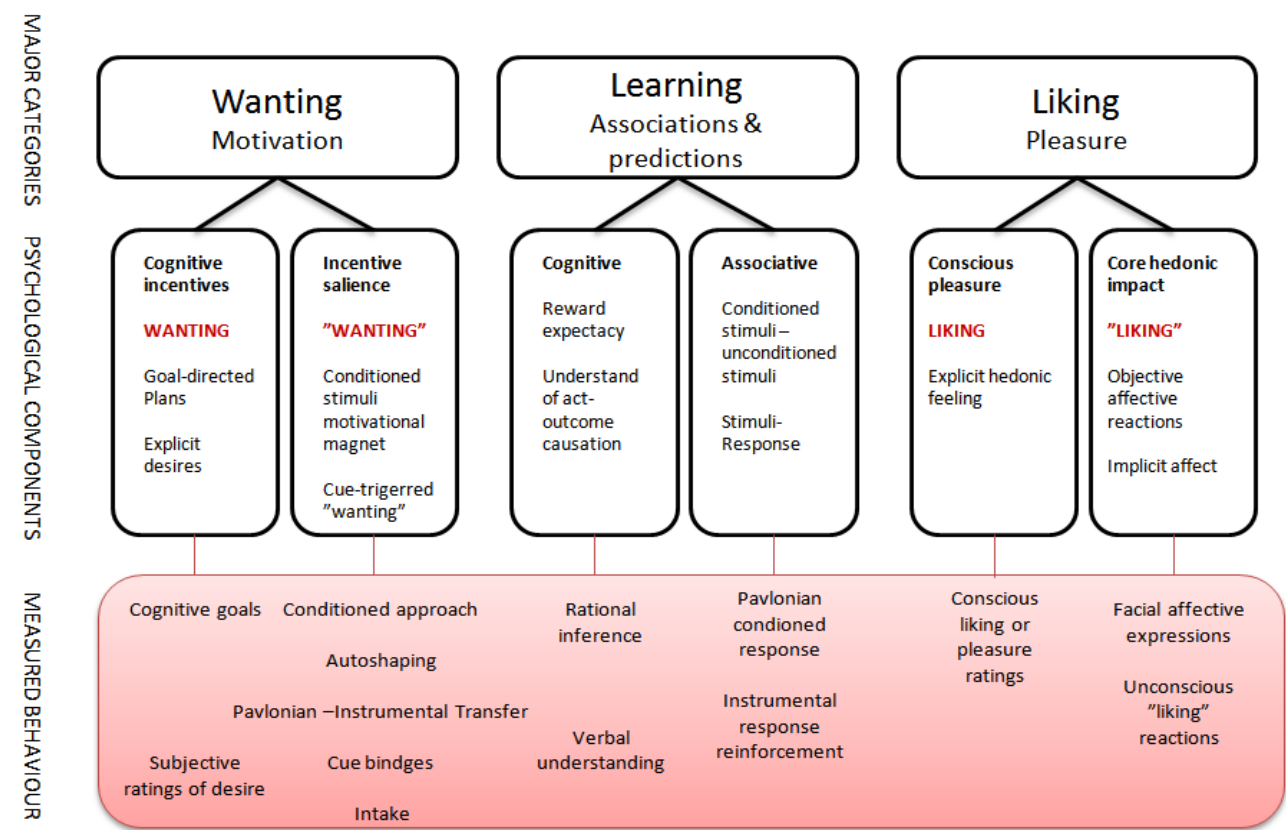


Figure 6. The model that presents the components of reward system, adopted from Berridge, 2009a.

Appendix 9: iMotions eye-tracking Attention tool presentation

Physiological eye-tracking measurement technique is used to examine the cognitive and emotional mechanisms related to the visual attention. The applied eye tracking device provided by the company iMotions consisted of the eye tracker and Attention tool integrated into the computer.

While looking at the eye tracker's computer screen, eye movements, eye fixation and pupil dilation is tracked (Figure 7).

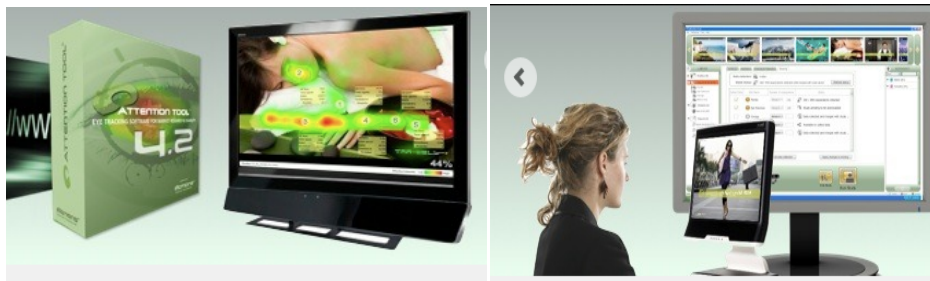


Figure 7. Eye tracking device and Attention tool program⁵³

Attention tool gave the possibility to analyse the animated gaze path for individuals as well as group. Moreover, it provided the visual presentation of defined areas of interest (AOI) (Figure 8, Figure 10) and Heat map (Figure 9) of visual exploration of all group showing the "hot zones" indicating where the subjects focused more frequently. For statistical analysis, the raw visual attention and emotional arousal exported data was used.

⁵³ Taken from <http://www.imotionsglobal.com/>

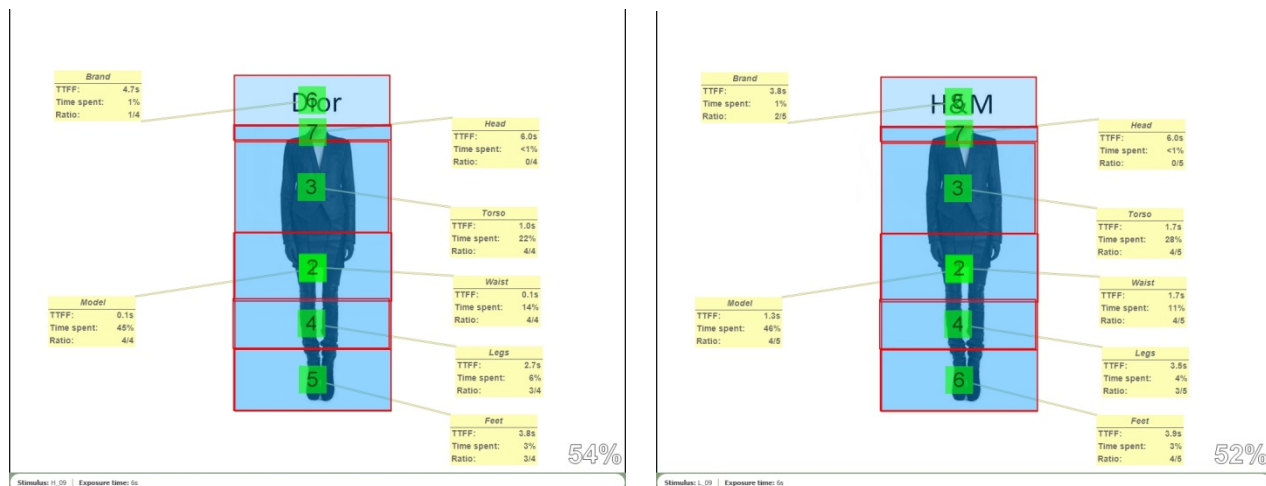


Figure 8. Examples of AOI results when consciously presented with Dior and H&M brands

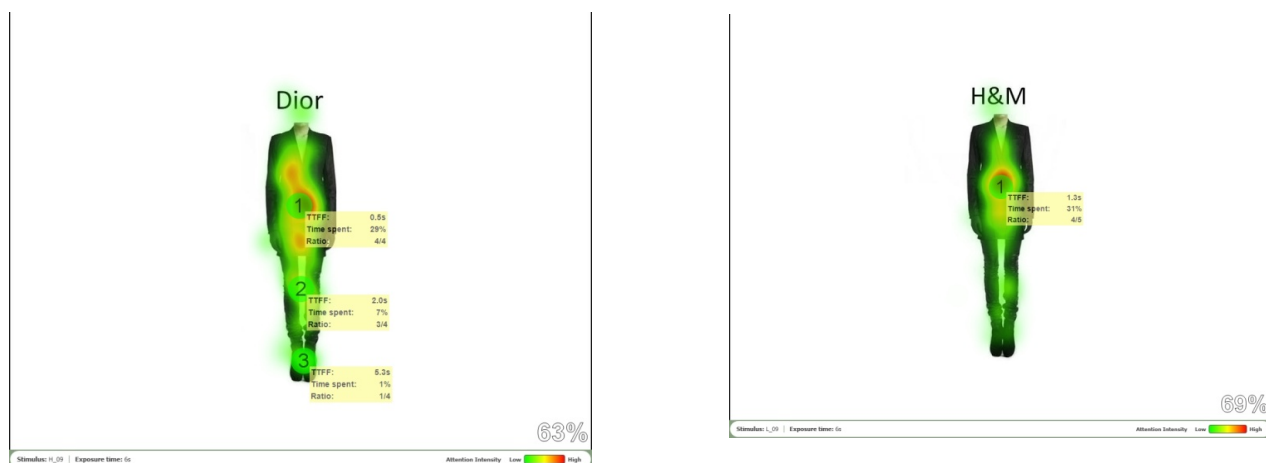


Figure 9. Examples of Heat map results when consciously presented with Dior and H&M brands

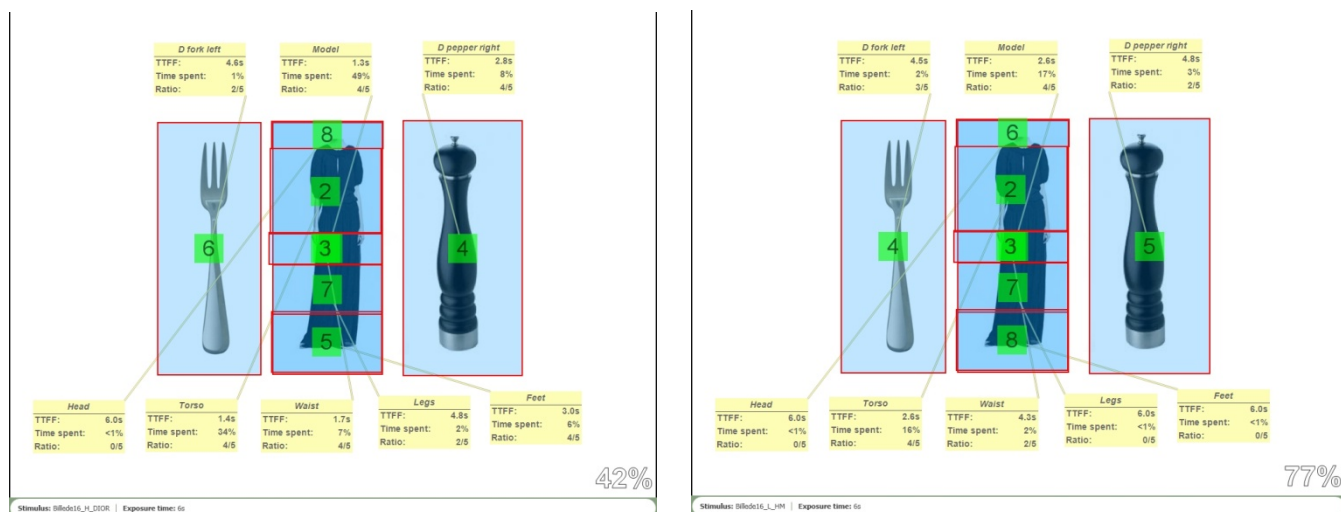


Figure 10. Example of AOI results subliminally primed with Dior and H&M brands

Appendix 10: online survey. Outfit preference study.

You are presented different clothing outfit. Please evaluate each outfit on how do you like it indicating the answer closest to your opinion. The scale ranges from "Dislike very much" to "Like very much".

***1. How much do you like the outfit?**

Dislike very much Like very much

Picture	1	2	3	4	5	6	7	8	9	10	11
Picture 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picture 12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Evaluation was done for each clothing item

Figure 11. Online survey design.

In order to control the data results by the aesthetical preference effect, independent group of 46 women evaluated each of the clothing. Each clothing outfit was assigned an independent rating score counted as a mean of all 46 women.

Appendix 11: Fashion outfits used for conscious Test 2 and independent rating of each

7.32/ 10 7.05/10 8.23/10 4.93/10 6.30/10 6.88/10 3.59/10 5.14/10



5.46/ 10 7.55/10 6.84/10 5.75/10 3.17/10 7.38/10 6.21/10 6.91/10



7.45/ 10 6.60/10 5.23/10 6.38/10 5.45/10 3.70/10 3.83/10 5.74/10



3.72/ 10 5.87/10 6.80/10 4.67/10 5.74/10 6.93/10 4.59/10 5.20/10



*The score is the mean of 46 women evaluation done in 10 point Likert scale, ranging from 1 – “Dislike very much” to 10 – “Like very much”.

Figure 12. Fashion outfits presentation

Appendix 12: Subliminal priming

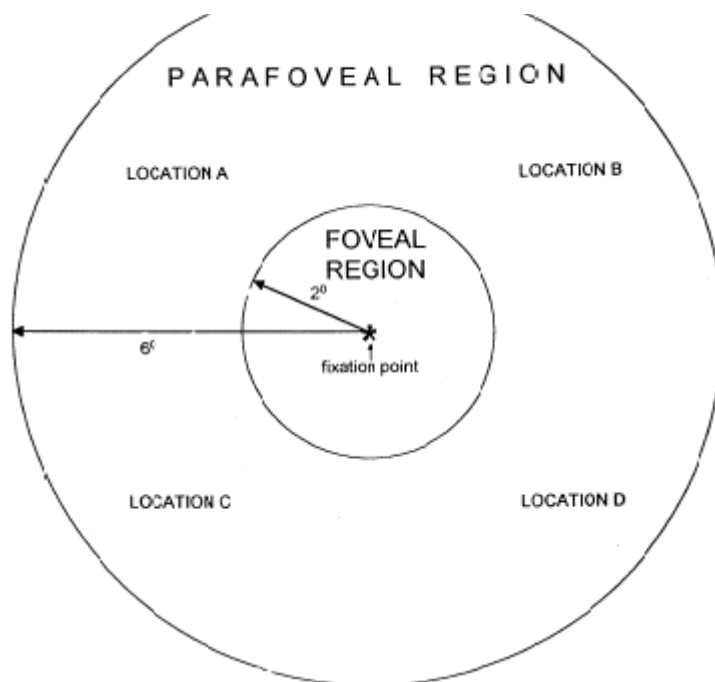


Figure 13. Subliminal priming: the foveal and parafoveal visual fields (Bargh & Chartrand, 2000).

Foveal processing is when focusing in the center of conscious visual attention. On the computer screen experiments, it is accomplished through presenting a fixation point (+) and the stimulus at the same position. Parafoveal field extends the foveal visual field from about 2 to 6 degrees of visual angle.

Appendix 13: Fashion outfits used for unconscious Test 1 and independent rating of each



*The score is the mean of 46 women evaluation done in 10 point Likert scale, ranging from 1 – “Dislike very much” to 10 – “Like very much”.

Figure 14. Fashion outfits presentation

Appendix 14: Distracters used for the unconscious Test 1



Figure 15. Distacrters presentation

Appendix 15: Target images examples used in unconscious Test 1



Figure 16. Two examples of target image design consisting clothing item and two distracters

Appendix 16: Experiment guideline

1. Recruitment: participants are invited to participate in the study only revealing information that study is about outfits preferences run with the eye tracker

2. Registration: participants are provided by registration sheet where they are introduced with the experiment procedure, and asked to fill in personal information.

3. Instruction, testing procedure, greeting the subjects

“Hello, so welcome to the lab where we are doing all kinds of experiments. Here today we going to run the eye tracking study. Please sit down, feel comfortable. So, first of all, I am going to tell you a little bit about the experiment procedure, and the way it is going to be run. This is the eye tracker, here you may see two red circles that actually sense your eyes and tracks your eye fixation and gaze direction. Experiment will consist of two test that are gong to be run each around 10 minutes and afterwards questionnaire. When we finish the study, I will explain you about how the eye tracker works and show some data from the study to introduce you to this research technique. Before starting the experiment, I would like to ask you to fill in the registration form where you have the rules written. You may resign from the experiment any time if you feel uncomfortable, as well this device is not harmful to your health. So, please read it and sign.

Thank you. Now we are ready to start. Beforehand, it is very important that you would find a comfortable position in the sense that eye-tracker could track your eyes and you would feel good though the experiment. Moreover, it is very important that you would not shake your head, would not turn it anywhere from the computer until the study is done. As if you would do it the eye tracker may reconnect and then we will lose the data. This is a mouse, so please check if it is comfortable for you to use it as you need it through the test.

Ok. So, first thing what we are going to do is to calibrate your eyes. Please look at the red dots on the screen. Excellent. Now, let us start the first test. Read the instruction and whenever you are ready click the mouse.

First test is finished. Now let me calibrate your eyes second time for the test 2. Ok. Now let us run the second test 2. Again, read the instructions and whenever you are ready click the mouse.

Here there are 5 questionnaires about interest in fashion, brand knowledge, physiology of the body state and overall experiment. Could you please fill them in.

After debriefing. Do you have any questions you would be interested in?

Thank you for participation and I am going to contact you for the lottery. I would be grateful if you would not tell the purpose of the study for the other girls if you know any who are going to participate.

See you!

Appendix 17: Results of the data analysis

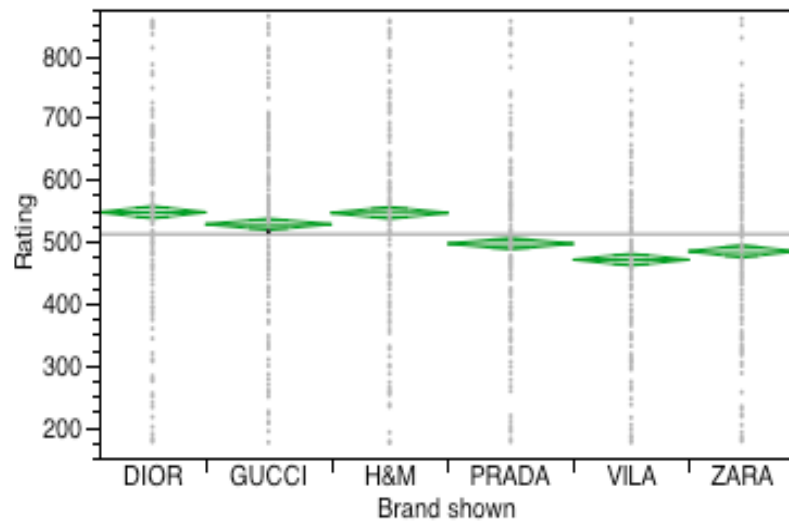


Figure 17. Brand effects on the outfit ratings.

The strongest positive brand effect on the ratings of the outfits is present for Dior, Gucci and H&M brands, but not for Vila and Zara.

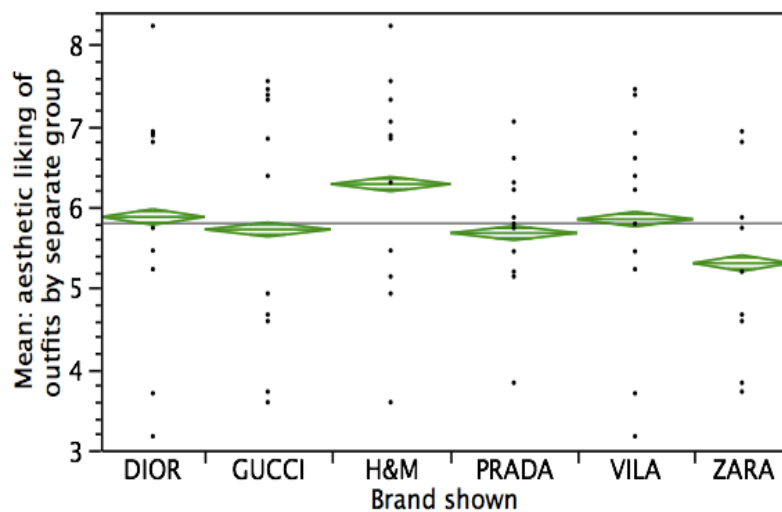


Figure 18. Differences in clothing appeal randomly presented with each brand.

H&M was assigned to the outfits those scored the highest rating in the online test. Zara was assigned to the clothing that scored the lowest rating.

Table 4. Statistics of effects of brand liking, independent rating and the interaction of brand liking and independent rating on the outfit rating

Term	Estimate	Std Error	t ratio	Prob> t
Intercept	204.48424	13.1444	15.56	<.0001*
Independent rating	40.600747	1.830604	22.18	<.0001*
Each brand liking	10.58432	1.186528	8.92	<.0001*
(Each brand liking-6.64738)*(In dependent rating-5.7945)	1.9999907	0.881324	2.27	0.0233*

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

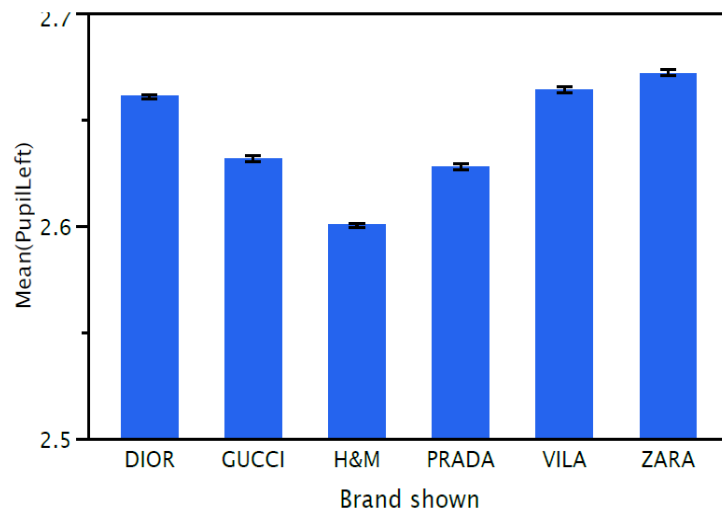


Figure 19. Pupil dilation effect per individual brand.

Zara, Vila and Dior enhance the strongest pupil dilation. Whereas H&M, the lowest pupil dilation.

Table 5. Statistics of brand liking, brand shown and independent rating effects on TTFF in torso, waist, head, feet and legs AOIs

AOI	Source	DF	L-R ChiSquare	Prob>ChiSq
TORSO	Each brand liking	5	40.462655	<0.0001*
	Brand shown	1	4.0598196	0.0439*
	Independent rating	5	40.462655	<0.0001*
WAIST	Each brand liking	1	19.962389	<0.0001*
	Brand shown	5	16.744435	0.0050*
	Independent rating	1	3.8406568	0.0500
HEAD	Each brand liking	1	0.004113	0.9489
	Brand shown	5	6.5877522	0.2531
	Independent rating	1	1.2235574	0.2687
FEET	Each brand liking	1	0.1341097	0.7142
	Brand shown	5	1.3149599	0.9334
	Independent rating	1	3.3781247	0.0661
LEGS	Each brand liking	1	0.1411478	0.7071
	Brand shown	5	0.654895	0.9854
	Independent rating	1	0.7511153	0.3861

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

Table 6. Statistics of brand liking, brand shown and independent rating relation to TFT within brand, model, torso, waist, head, feet, legs AOIs

AOI	Source	DF	L-R ChiSquare	Prob>ChiSq
BRAND	Each brand liking	1	0.4092466	0.5224
	Brand shown	5	11.846665	0.0370*
	Independent rating	1	3.7179954	0.0538
MODEL	Each brand liking	1	1.3893365	0.2385
	Brand shown	5	7.1799976	0.2076
	Independent rating	1	0.2963689	0.5862
TORSO	Each brand liking	1	0.6392264	0.4240
	Brand shown	5	8.9321271	0.1118
	Independent rating	1	0.9656003	0.3258
WAIST	Each brand liking	1	1.7241152	0.1892
	Brand shown	5	4.4250532	0.4900
	Independent rating	1	3.4110107	0.0648
HEAD	Each brand liking	1	0.2824993	0.5951
	Brand shown	5	3.7449858	0.5867
	Independent rating	1	0.2152357	0.6427
FEET	Each brand liking	1	0.5855004	0.4442
	Brand shown	5	3.8279695	0.5744
	Independent rating	1	3.3067463	0.0690
LEGS	Each brand liking	1	0.0143807	0.9045
	Brand shown	5	4.95525	0.4214
	Independent rating	1	1.2229813	0.2688

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

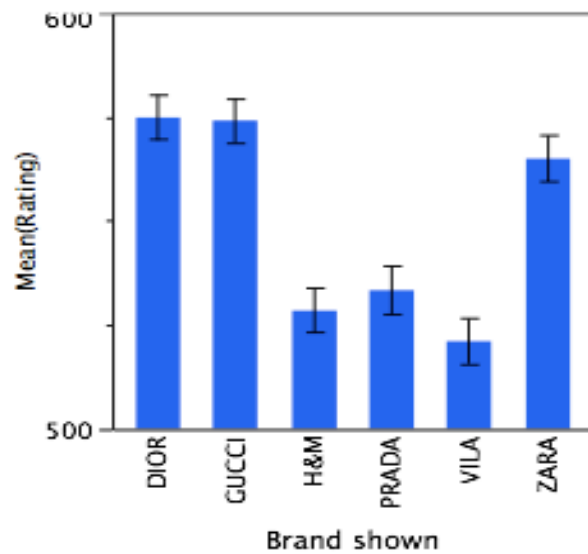


Figure 20. Individual brand effect on the outfit preferences

Dior, Gucci and Zara produce strongest effects while shown unconsciously, H&M and Vila - the weakest one.

Table 7. Statistics of brand liking and pupil dilation relationship for the time when brand primes were shown

Term	Estimate	Std Error	t ratio	Prob> t
Intercept	7.7093631	0.060112	128.25	0.0000*
Pupil left	-0.450114	0.023591	-19.08	<.0001*
(Pupil left-2.59311)^2	0.8278579	0.048701	17.00	<.0001*

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

Table 8. Statistics of brand liking and pupil dilation relationship for the time when target image of clothing and distracters was shown

Term	Estimate	Std Error	t ratio	Prob> t
Intercept	7.7713889	0.035532	218.72	0.0000*
Pupil left	-0.477379	0.013487	-35.40	<.0001*
(Pupil left-2.67262)^2	1.2068666	0.028855	41.83	0.0000*

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

Table9. Statistics of AOI, TFT and AOI*TFT effects on the outfit rating

Source	Sum of Squares	F Ration	Prob>F
AOI-name	326112.07	1.9002	0.0769
Time spent – F (ms)	70502.71	2.4648	0.1165
AOI-Name*Time spent-F (ms)	544959.36	3.1753	0.0041*

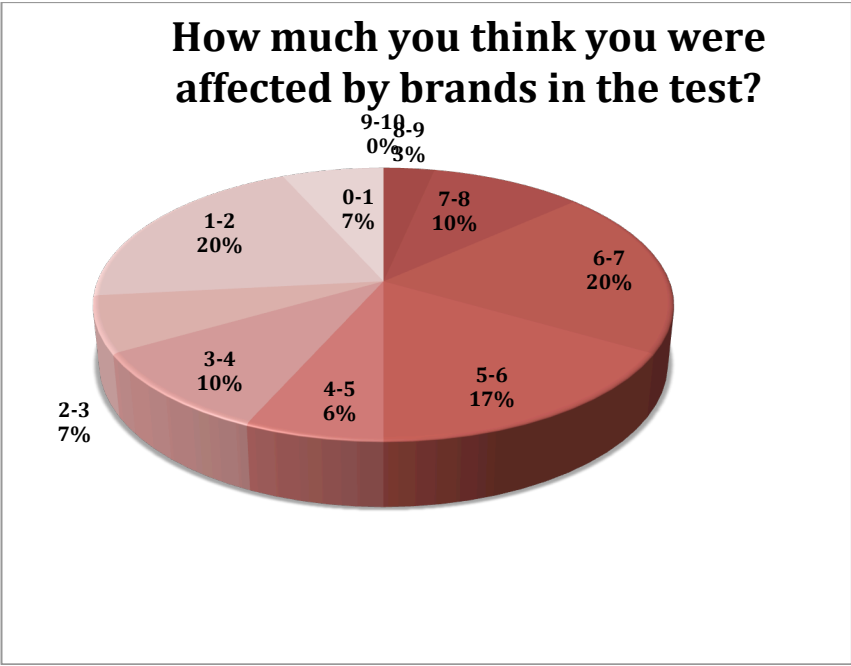
= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

Table 10. Statistics of brand shown, rating and their interaction on TFT in head and waist AOIs

AOI	Source	DF	L-R ChiSquare	Prob>ChiSq
HEAD	Brand shown	5	257.57855	<0.0001*
	Rating	1	34.981635	<0.0001*
	Brand shown*Rating	5	105.25255	<0.0001*
	Independent rating	1	34.987155	<0.0001*
WAIST	Brand shown	1	15.7668	<0.0001*
	Rating	5	8.7342785	0.1201
	Brand shown*Rating	5	12.375681	0.0300*

= the result is significant with a p-value lower than 0.05 () = the result is not significant, but shows a statistical trend

Appendix 18: Opinion about being affected by brands



*The answers are identified on 10 centimeters continuous scale ranging from “Not all” to “Very much”.

Figure 21. Opinion about being affected by brands.



Appendix 19: Debriefing

Please indicate the preferred answer while putting the cross referring to the closest to your opinion.

How often do you rely on the “gut feeling” while judging the clothing choice?

|-----|-----|

Never Very often

How often do you rely on the “rational thinking” while judging the clothing choice?

|-----|-----|

Never Very often

Questions about TEST 1:

In Test 1 you were presented three items which one of them was clothing.

Did you notice something special about test 1? _____

Did you notice any brand names? ☐ ☐
Yes No

If yes, which ones: _____

Did you expect to be presented brand names in test 1? ☐ ☐
Yes No

What do you think test 1 was about? _____

Questions about TEST 2:

In Test 2 you were presented brand names next to the outfit.

Did you notice the brand names? ☐ ☐
Yes No

How much do you think you were affected by the brand names?

(Please indicate the preferred answer while putting the cross on the scale)

|-----|-----|

Not at all A lot

What do you think test 2 was about? _____

Information about the experiment

The first part of the experiment (test 1) was designed to examine the effect that unconscious brand name exposition has on your visual perception of fashion outfits and your preference.

High-end and lower level brand names GUCCI, PRADA, DIOR, ZARA, H&M, and VILA were randomly presented before the outfit evaluation task in 30 milliseconds. Brand names were masked with two letter consisting masking strings. In this way you could have take note of them unconsciously without being aware of the brand names during the task.

Any comments _____
