EFFECT OF VISUAL BRAND IMAGERY ON CONSUMER BRAND PERCEPTIONS AND SELF-BRAND CONNECTIONS

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EFFECT OF VISUAL BRAND IMAGERY ON CONSUMER BRAND PERCEPTIONS AND SELF-BRAND CONNECTIONS

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To my family and friends who have supported me every step of the way.

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SUMMARY

My research examines whether and how the design of visual brand elements affect brand personality perceptions and self-brand connections. My two essays are linked by the idea that the design of visual brand elements affect the personal meaning of a brand to the consumer. As a result, marketers should systematically choose the design visual brand elements to communicate and strengthen their brand's identity.

The specifics are as follows. Essay 1 examines the role played by symmetry in the design of visual brand elements. Although prior research in aesthetics has established that visual symmetry generates positive affective response, I propose that symmetry can often play an important additional role, by affecting consumer perceptions regarding brand personality. Results of six experiments reveal that: 1) asymmetry in visual brand elements is associated by consumers with an exciting personality, 2) consumers prefer brands whose level of symmetry is congruent with their positioning, and 3) the effects of symmetry on personality perceptions are driven by subjective arousal. Together, my findings demonstrate that visual symmetry plays an important but nuanced role in the communication of brand identity.

Essay 2 demonstrates that facial imagery in advertising leads to lower self-brand connections among female, but not male, consumers. Using literature on gender differences in information processing and face processing, I argue and find that faces in advertisements act as information, and that women, who pay more attention to faces than men, find it more difficult to generate consumption imagery when processing these advertisements. Because women engage in less visualization of themselves using the

brand, they subsequently feel less connected to the brand. These results not only offer insights into how differences in information processing strategies of men and women affect responses to facial imagery in advertising, but also inform theories on how facial information constrains the generation of consumption imagery.

In addition to contributing to the substantive field of visual design in marketing, my dissertation contributes broadly to research on branding by showing how visual brand imagery affects brand personality perceptions and self-brand connections.

CHAPTER 1

INTRODUCTION

Marketers have long recognized the role of visual brand elements (logos, packaging, advertisements etc.) in effective branding. Firms often devote sizeable resources to the design of visual elements that will help to clearly identify and differentiate their brands. Among consumer researchers, there has been growing interest and research in understanding how the design of visual brand elements influences consumer judgment and behavior. The majority of research in this area has focused on aesthetic beauty – i.e., the perceptual attractiveness of a visual design (e.g., Veryzer & Hutchinson, 1998). A consistent principle emerging from such research is that positive consumer aesthetic response predicts various desirable outcomes, including brand liking and choice.

Although I acknowledge the importance of research on attractiveness and beauty, I believe that the design of visual brand elements is worthy of attention for additional reasons. For marketers, the goal of design and visual branding is not only to engender favorable subjective response, but also to establish specific brand associations, and to strengthen self-brand connections (SBC). In my dissertation, I am concerned neither with the manner in which visual brand elements lead to a positive or negative affective response, nor with the aesthetic influence that the design of these elements exerts. Instead, I examine the less frequently posed questions of whether and how the design of visual brand elements affects brand personality perceptions and creates or enhances self-brand connections.

Effects of Visual Design on Brand Perceptions

In my first essay, Chapter 2, I explore connections between a fundamental element of visual design, namely symmetry, and consumer inferences regarding the brand. In contrast to prior work focused on broad affective responses, I propose that symmetry plays an additional, nuanced role in the communication of brand personality. Results of six experiments reveal that asymmetry in visual brand elements is associated by consumers with brand excitement, and that the effect is driven by the experience of subjective arousal. These findings contribute to growing interest in visual design and consumer processing, while extending current understanding regarding the communication of brand personality.

Effect of Facial Imagery in Advertising

Given that faces are commonly used in advertisements to capture consumer attention, a thorough understanding of the impact of facial imagery in advertising is important. In my second essay, Chapter 3, I suggest that the use of facial imagery in advertisements can backfire among women, because women allocate more attention to faces than men. When faces become the focus of attention, to the exclusion of other information in an advertisement designed to evoke consumption imagery, women feel less connected to the advertised brand. The results of this research help to deepen our understanding of the effects of facial imagery in advertising.

In the chapters that follow, I explore the impact of the design of visual brand on brand and consumer outcomes. To do so, I develop theories based on an integration and extension of relevant literature streams, test my theories with a series of studies, and offer theoretical and managerial implications.

CHAPTER 2

BEYOND BEAUTY: DESIGN SYMMETRY AND BRAND PERSONALITY

Introduction

Marketers have long recognized that visual brand elements (e.g., logos, packaging, promotional material) play a critical role in effective branding (Keller & Lehmann, 2006). Firms devote sizeable resources to the design of visual elements that will help to clearly identify and differentiate their brands, and many historically successful brands are instantly recognizable by their distinct visual elements: e.g., Nike's 'swoosh,' McDonald's golden arches, and Coke's contour bottle. Although consumer research on visual design was once lacking, the topic has received increased attention due to growing interest in sensory marketing and related topics (Krishna & Schwarz, 2014). The majority of research in this area has focused on aesthetic beauty – i.e., the perceptual attractiveness of a design (e.g., Hoegg & Alba, 2008; Veryzer & Hutchinson, 1998). A consistent principle emerging from such research is that positive aesthetic responses predict a variety of desirable outcomes, including brand liking and choice (e.g., Bloch 1995; Veryzer, 1993)

For marketers, however, the goal of design and visual branding is not only to engender favorable subjective responses, but also to establish and enhance specific brand associations. Therefore, it stands to reason that scholarship in this area must move 'beyond' aesthetic beauty alone, to examine the effects of visual design on other brand-relevant judgments. I apply this principle by examining how impressions of a brand's personality are influenced by the design of its visual brand elements. In particular, I focus

on the design property of visual symmetry. As typically defined, visual symmetry indicates the extent to which an image retains its shape when reflected about a central axis (Wagemans, 1997); extreme symmetry is therefore captured by a 'mirror image.' Symmetry is considered to be a fundamental component of visual design, and its role in perception and aesthetic experience has fascinated researchers across disciplines (Reber, Schwarz, & Winkielman, 2004).

Building on existing scholarship in the use of visual design to communicate brand associations (e.g., Henderson, Giese, & Cote, 2004), I assert that salient characteristics of visual brand elements are assimilated by perceivers into impressions regarding the brand itself. Specifically, I draw on the five-factor model of brand personality (Aaker, 1997) to examine effects of symmetry on impressions of brand excitement. My primary assertion is that the presence of asymmetry will increase perceptions of a brand as exciting. A corollary of this premise is that brands positioned as exciting will benefit from identification with asymmetric visual elements. Moreover, I suggest that a key process variable underlying these effects is subjective arousal, such that asymmetric visual elements are associated with greater arousal which then 'spills over' to perceptions of the brand itself.

My distinct approach offers several contributions to existing work on consumer response to design. Prior examination of design elements including color, prototypically, shape, texture etc., has tended to focus on either broad evaluations of liking or beauty (Hoegg & Alba, 2008; Kumar & Garg, 2010; Raghubir & Greenleaf, 2006; Silvera, Josephs, & Giesler, 2002; Veryzer & Hutchinson, 1998), or on narrower judgments of product attributes (Folkes & Matta, 2004; Garber, Hyatt, & Starr, 2000; Page & Herr,

2002; Wansink, 1996; Yang & Raghubir, 2005). Although it has been suggested that visual elements might impact the personality associated with a brand (Batra, Lehmann, & Singh, 1993), this idea has received little direct investigation (c. f. Orth & Malkewitz, 2008, who examine package design). By revealing an unexplored connection between a fundamental design property (symmetry) and a fundamental brand characteristic (excitement), my approach differs from the valence or congruency-based effects often observed in sensory marketing (e.g., pleasant odors induce positive evaluations, and vice versa), Moreover, my theory suggests a novel form of 'spillover' effect in visual design (Hagtvedt & Patrick, 2008), which occurs independently of specific visual content.

In the following sections, I briefly review literature on visual symmetry and brand personality, and then develop my framework in which symmetry in visual brand elements influences perceptions of brand excitement through a process based on subjective arousal. Next, I report six studies to examine three key hypotheses emerging from my framework. I conclude by discussing implications of my findings and avenues for future research.

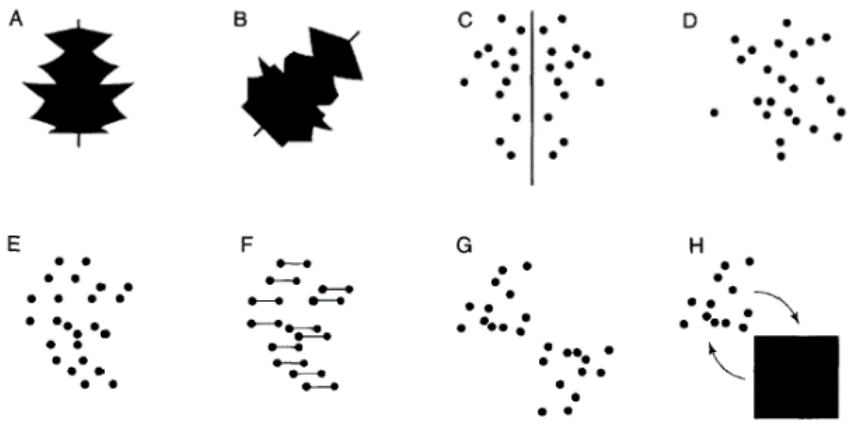
Theoretical Background

Symmetry in Visual Design

The perception of symmetry is a fundamental component of human sensory processing (Yantis, 2001). When exposed to a visual stimulus, observers are capable of detecting its symmetry with little or no effort, across a vast range of stimuli and viewing conditions (Barlow & Reeves, 1979; Carmody, Nodine, & Locher, 1977; Julesz, 1971). The broader concept of symmetry has fascinated artists and philosophers from the time of the ancient Greece (Pollitt & Seaver, 1974), and symmetry has received diverse scholarly

attention in areas including mathematics, biology, chemistry, history, religion and culture (Cubas, Vincent, & Coen, 1999; Hydon & Hydon, 2000; Pauling, 1985). In the field of consumer research, however, the topic remains surprisingly unexplored.

Visual symmetry is defined as the extent to which an image retains its shape when reflected about a central axis. More formally, symmetry refers to self-similarity under a specific class of transformations, usually restricted to Euclidean transformations in a plane: reflections, translations, and rotations (Wagemans, 1997). Representative transformations are depicted in figure 2.1 (adapted from Wagemans, 1997). As shown in figure 2.1, mirror (reflective) symmetry involves the action of 'flipping' a figure to produce two halves that are identical across a central axis (patterns A-C). Translational symmetry involves the action of 'sliding' a figure in any direction (patterns E-F), and rotational symmetry involves the action of 'turning' a figure around a vertex (patterns G-H). Of these three types, mirror symmetry about a vertical axis has been studied the most extensively. I utilize mirror symmetry in the experiments presented later, and I refer to "mirror symmetry" and "symmetry" interchangeably for the remainder of this article.



*** (A) A polygon with mirror symmetry about a vertical axis (indicated by the solid line). (B) A polygon with mirror symmetry about a diagonal axis. (C) A dot pattern with mirror symmetry about a vertical axis. (D) A random dot pattern. (E) A dot pattern with translational symmetry; the translation is indicated in (F). (G) A dot pattern with rotational (180°) symmetry; the rotation is indicated in (H).**

Figure 2.1: Symmetry Examples

Preference for Symmetry

In research on visual perception, a vast body of evidence supports the claim that in general, people tend to evaluate symmetric stimuli more favorably than asymmetric stimuli (Arnheim, 1974; Berlyne, 1971; Birkhoff, 1933; Corballis & Roldan, 1975; Pashler, 1990; Pomerantz, 1977; Reber, et al., 2004), although there are individual differences in the effect (Jacobson & Hofel, 2002, Palmer & Griscom, 2012). Several theories have been advanced to explain this general preference for symmetry.

Evolutionary theorists suggest that preference for symmetry plays an adaptive role in functional domains such as mate selection; e.g., physical symmetry is a reliable

indicator of the genetic quality of potential mates (Thornhill & Gangstead, 1993). Developmental psychologists suggest that a consistent preference for symmetry arises in early perceptual development, and may be related to the abundance of vertical symmetries in the natural visual environment (Bornstein, Ferdinandsen, & Gross, 1981).

A different account for symmetric preference, based on the notions of processing efficiency and fluency, relies on the notion that symmetric patterns are easier to process than asymmetric patterns because they contain less information (Attneave, 1954, 1955; Garner, 1970, 1974). By this account, the subjective ease of processing associated with symmetric patterns evokes a more positive evaluative response (Reber, et al., 2004; Schwarz, 1990).

Symmetry in Consumer Perception

In recent consumer research on visual design, an especially prominent topic has been the connection between design and aesthetic beauty (Hoegg, Alba & Dahl, 2010). Broadly speaking, aesthetic beauty is defined as an inherent property of an object that produces a pleasurable experience in perceivers (e.g., Arnheim, 1974; Gombrich, 1984; Humphrey, 1997). Both conventional wisdom and existing research suggest that aesthetic beauty is valuable for evoking positive consumer response. Relevant investigations have identified associations between aesthetic beauty and a variety of desirable outcomes, including an immediate desire to own (Norman, 2004), higher willingness to pay (Bloch, Brunel & Arnold, 2003), and increased inclination to display or care for aesthetic products (Bloch, 1995). Other research demonstrates that aesthetics guides consumer choices when performance information is absent or ambiguous (Yamamoto & Lambert,

1994), and can even alter evaluations in situations where design is irrelevant (e.g., Madzharov & Block, 2010; Townsend & Shu, 2010). Providing evidence of a neurological foundation for such effects, Reimann, Zaichkowsky, Neuhaus, Bender, and Weber (2010) show that the brain's reward systems plays a significant role in the processing of aesthetic package designs.

Among various antecedents to aesthetic beauty and liking, consumer researchers have identified stimulus factors including physical size (Silvera, Josephs, & Giesler, 2002), prototypicality and unity (Kumar & Garg, 2010; Veryzer & Hutchinson, 1998), design complexity, and exposure frequency (Cox & Cox, 2002). Others have investigated the consequences of symmetry, focusing on its role in aesthetic response. For example, Henderson and Cote (1998) identified a consistent positive relationship between visual harmony in brand logos (comprised of symmetry and balance), subjective ratings of those logos, and later recognition. Subsequent research (Henderson, et al., 2004) revealed that harmonious typefaces were perceived as more 'pleasing' and 'reassuring' than typefaces low in harmony. However, only a small body of work has extended 'beyond beauty' to explore how other consequential responses are impacted by specific design characteristics. In most cases, these exceptions have focused on logo design (Hagtvedt, 2011; Henderson & Cote, 1998; Schechter, 1993). For example, Hagtvedt (2011) demonstrated that consumers exposed to visually incomplete brand logos form lower perceptions of brand trustworthiness – but higher perceptions of brand innovativeness – than consumers exposed to logos that are visually complete.

To the extent that visual symmetry may influence a variety of consumer perceptions, I suggest that the established, positive effects of symmetry on aesthetic

beauty and liking may be misleading. In the following section, I consider the influence of symmetry in brand elements on consumer perceptions of brand excitement and I provide theoretical insights into a mechanism producing adverse reactions to symmetry.

Conveying Excitement through Symmetry: Brand Personality

The concept of brand personality provides an important tool for categorizing brands according to the generalizable impressions and responses that they produce (Aaker, 1997, 1999; Aaker, Fournier, & Brasel, 2004). A well-defined brand personality, characterized by favorable, strong, and unique associations with the brand, represents a powerful form of differentiation (Keller, 1993). Strong brand personalities are conducive to strong consumer-brand relationships, which help to maintain brand attitudes and act as a buffer in the face of negative information (Ahluwalia, Burnkrant, & Unnava, 2000; Fournier, 1998). As a conceptual framework, I adopt Aaker's (1997) seminal five-factor model, which includes trait dimensions of *sincerity*, *competence*, *excitement*, *ruggedness*, and *sophistication*. The number and nature of the five dimensions has been validated by others (Sweeney & Brandon, 2006), and the model appears to generalize reasonably well across product categories and cultures (Aaker, Benet-Martinez, & Garolera, 2001; Sung & Tinkham, 2005). Although the five-factor model has been subject to criticism (e.g., Austin, Siguaw, & Mattila, 2003; Azoulay & Kapferer, 2003), it is widely recognized as the standard for measuring brand personality in research and applied settings.

As developed below, my theoretical model of design symmetry focuses on the personality trait of *excitement.* Excitement captures the extent to which brands are characterized by adjectives such as "daring," "fun," "youthful" and "imaginative" (Aaker

et. al 2004). Well-known exemplars of brands rated high in excitement include Virgin, MTV, and YAHOO!

The Role of Arousal

I begin by assuming that a consumer is exposed to communications for an unfamiliar brand, and that these communications include prominent visual brand elements (logo, packaging, etc.). I further assume that the consumer is actively forming an initial impression of the brand, based on the communications provided. Given these assumptions, I argue that asymmetry in visual brand elements will systematically enhance consumer perceptions of the brand as *exciting.* As the psychological mechanism driving this effect, I focus on the role of stimulus-evoked arousal.

Traditionally defined, arousal occurs when a change in sensory input produces a measurable increment to a physiological response (e.g., galvanic skin response) or a behavioral response (e.g., locomotor activity – Pribram & McGuinness, 1975). In the experiments below, I utilize measures of subjective arousal, defined as the perceptual experience of energy mobilization as a result of stimulation from the environment (Mehrabian & Russell, 1974; Russell & Barrett, 1999). Subjective measures ask respondents to identify their experience on scales ranging from "calm" or "relaxed" to "excited" or "stimulated" (e.g., Greenwald, Cook, & Lang, 1989; Lang, Bradley, & Cuthbert, 1999). Such measures are popular in sensory research due to their non-invasiveness and ease of administration. Abundant evidence demonstrates that subjective measures of arousal correlate well with physiological measures such as heart rate and

skin conductance (Chartrand, van Baaren, & Bargh, 2006; Husain, Thompson, & Schellenberg, 2002; Juslin & Vastfjall, 2008; Lang, Bradley, & Cuthbert, 1999).

An important premise of the visual perception literature is that specific, identifiable stimulus properties consistently and predictably induce arousal among viewers of those stimuli (Berlyne, 1957, 1960; Schachter & Singer, 1962). For example, psychophysical properties including intensity, pitch, and brightness are directly and positively associated with induced arousal (Berlyne, 1971). More relevant to my framework, viewer arousal is also influenced by 'collative variables' such as novelty, complexity, uncertainty, and unfamiliarity (Berlyne, 1960, 1971; Silvia, 2005). By definition, a key feature shared by collative variables is that they all involve the comparison of different pieces of information; for example, novelty and uncertainty involve comparison between incoming and expected information, while conflict and complexity involve comparison of different informational elements within a visual field.

Linking Asymmetry to Arousal

For predicting the consequences of symmetry, a key principle of the collative approach is that complexity arising from irregular arrangement of elements in a stimulus creates uncertainty regarding stimulus properties, which in turn leads to arousal as perceivers attempt to resolve that uncertainty (Berlyne, 1960, 1971). Because the fundamental property of visual symmetry is self-similarity (see above), a symmetric stimulus will necessarily contain a more regular arrangement of elements than its asymmetric counterpart. Therefore, symmetric stimuli will receive less perceptual exploration and generate less arousal. Osborne (1986, p.81) presents a compelling logic:

"…the symmetry of repeating patterns provides a very elementary aesthetic stimulus. It may serve to arouse attention, particularly if the repeating elements are unfamiliar or if they carry personal associations. But it cannot hold or enhance perceptual attention."

Although the arousal evoked by visual stimuli can be captured using both physiological and subjective measures, researchers examining the association between symmetry and arousal have tended to utilize the former approach. For example, Krupinski and Locher (1988) manipulated the symmetry contained in a range of non-representational compositions, and then asked respondents to judge each composition while simultaneously measuring their skin conductance. Findings revealed a systematic pattern whereby asymmetric compositions induced substantially greater arousal. Similarly, Locher and Nodine (1989) asked participants to evaluate a series of symmetric and asymmetric paintings while their eye fixation patterns were recorded. Findings revealed that visual exploration was greater for the asymmetric paintings, indicating higher levels of physiological arousal.

Attributing Arousal to the Brand

The final proposition in my framework is that subjective responses to the design of visual brand elements are attributed by consumers to the brand that those elements represent. To the extent that asymmetry evokes arousal, therefore, the evoked arousal will be attributed to the brand itself. In terms of brand personality, the most important consequence of this attribution is that consumers experiencing greater subjective arousal will perceive the brand as more exciting.

My proposition is consistent with the well-established principle that arousal is attributed and labeled based on salient environmental cues (Cooper, Zanna, & Taves, 1978; Schachter & Singer, 1962). Moreover, my proposition is also consistent with evidence for various 'spillover effects' in the study of consumer perception. One prominent example is the 'art infusion' phenomenon (Hagtvedt & Patrick, 2008), whereby consumer products benefit from association with works of art (via packaging, advertising, etc.), as perceptions of luxury evoked by the art are incorporated into assessments of the product.

Combining the ideas above, I predict the following:

H_1a: Symmetry in visual brand elements is negatively associated with consumer perceptions of brand excitement.

H1b: The effects of symmetry described in H_1 are driven in part by subjective arousal.

My second hypothesis concerns the 'fit' between a brand's positioning and its representative visual imagery. Brand positioning and personality are inherently intertwined: the personality ascribed to a brand directly influences consumer perceptions of its prominent attributes (Aaker, 1997). Intuitively, a brand positioned around core benefits related to 'excitement' will be expected to convey an exciting brand personality. My framework suggests that visual elements offer an especially powerful means of doing so, and that design asymmetry in particular is a signal of brand excitement. Therefore, although consumers may exhibit a generalized preference for symmetry in visual brand elements (see above), this preference will be reduced or eliminated for brands positioned as exciting. Stated formally:

H2: Consumers will be more likely to prefer asymmetric brand imagery when a brand is positioned as exciting.

Overview of Studies

I conducted six laboratory experiments to examine the relationship between symmetry in visual design and consumer perceptions of brand excitement. Study 1 investigated my first hypothesis directly, by collecting ratings of brand excitement for brand logos varying in dimensions of brand personality. Study 2a and 2b provided further evidence for my first hypothesis, while also investigating arousal as a process variable (H_{1b}). Studies 3-4 explored my second hypothesis in a decision setting, where participants chose between logos, as well as artwork, differing in symmetry. Study 5 probed my theory more deeply by use of a novel 'production' task, in which participants were asked to design their own brand logos. My final study investigated the effect of brand imagery-personality 'fit' on downstream consumer choice, and also examined the role of text descriptions as a theoretically relevant moderator of the effect.

Study 1: Logo Evaluation

The objective of my first study was to directly measure the impact of logo design elements (including symmetry) on perceptions of brand personality. Participants completed a survey in which they observed a collection of logos and provided their impressions regarding the personality of the underlying brands.

In keeping with others (e.g., Henderson & Cote, 1998), I use the term 'logo' to refer to a graphic design, with or without an attached brand name, that is used by a firm to identify itself or its products. Logos in all my studies were black-and-white and contained only graphical (non-verbal) elements. To avoid pre-existing associations, I

used logos that were either not in use or used by small, regional brands. In addition, I restricted all studies to participants with no formal artistic training (Bezruczko & Schroeder, 1994; Silvia, 2006).

Method

Participants

The survey was administered online to 147 undergraduates who received course credit for their participation.

Design and Procedure

The study utilized a repeated-measures design, in which each design variable varied at three levels (high vs. medium vs. low; see below).

Target stimuli consisted of a collection of 50 brand logos created by a professional designer. The complete set of logos is provided in Appendix A. The collection was divided randomly into two sets of 25 logos, and participants were assigned randomly to one of the two sets. The collection represented a diverse range of styles, content, and design. Each logo was classified by two design professionals on each of eight design characteristics previously identified by Henderson and Cote (1998): *organic, parallel, golden ratio, round, symmetric, elaborate, representative, and repetitive*. For each characteristic, the coders applied a three-point scale (low, medium, high), and disagreements were resolved in an iterative manner. Appendix B provides an explanation of each design characteristic with examples of representative logos.

Participants were told that the purpose of the study was to understand how consumers perceive the logos of different brands and companies. Next, all participants were presented with 25 logos, one at a time and in random order. As they viewed each logo, participants were asked for their perceptions of the associated brand, based on its logo alone. Participants rated the brands on each of Aaker's (1997) five personality dimensions (*sincerity*, *competence*, *excitement*, *ruggedness*, and *sophistication*), one dimension at a time; i.e., all 25 logos were rated on a single dimension before moving to the next dimension. Measures consisted of two items per dimension; the excitement dimension was measured with the items "exciting" and "daring." All items utilized nine-point scales anchored at 1 (*not at all [trait]*) and 9 (*extremely [trait]*).

Results

To investigate the influence of logo design characteristics on perceptions of brand personality, I ran a series of five regressions in which the eight characteristics were entered simultaneously as predictors of each personality dimension. Separate analyses were performed at the aggregate level (across brands) and the individual level (including a brand fixed-effect); results of the two analyses were consistent, and I focus here on the individual-level results, which are presented in Appendix C. For all five personality dimensions, specific logo design characteristics were significantly associated with respondent perceptions. For example: brands were considered more sincere to the extent that their logos were more representative, organic, elaborate, and parallel; brands were considered more sophisticated to the extent that their logos were more symmetric and round, etc. Most important for my purposes, results indicated that perceptions of brand

excitement were substantially (and significantly) related to the level of symmetry in their logos, such that more asymmetric logos were viewed as more exciting (β = - .32, p < .02). Other findings indicated that logos were rated as more exciting when their designs were more elaborate, less parallel, and made greater use of the golden ratio (all ps < .01).

Discussion

Study 1 provided initial evidence of a relationship between asymmetry in visual brand elements and perceptions of the underlying brands. When presented with a collection of diverse and realistic logos, participants judged brands represented by more asymmetric logos to be to be more exciting. However, the correlational nature of the study constrained my ability to draw causal inferences, and the design did not permit examination of my key process variable, subjective arousal. My next studies were designed to address these limitations.

Study 2a: Arousal Evoked by Logos

The primary objective of Study 2a was to examine the role of my proposed mediating variable, subjective arousal. Participants completed a survey containing logos that were preselected to be symmetric or asymmetric. For each logo, participants provided their impressions regarding the excitement of the underlying brand, along with their reactions to the logo itself.

Method

Participants

One-hundred and fifty respondents on Mechanical Turk participated in the study in exchange for payment.

Design and Procedure

The study utilized a repeated-measures design in which symmetry was varied at two levels (symmetric vs. asymmetric). Target stimuli consisted of 12 black-and-white logos, of which six were high in visual symmetry and six were low in visual symmetry. The logos were taken from the collection used in Study 1. Based on the coding obtained in that study, I utilized a 'matching' process to identify six pairs of logos, such that members in each pair differed heavily in symmetry but were similar on other design characteristics. The stimuli are depicted in Appendix D.

In the introduction to the study, participants received the same cover story presented in Study 1. Next, participants were presented with all 12 logos, one at a time and in random order. As they viewed each logo, participants were asked to provide their perceptions of the associated brand, based on its logo alone. Participants rated each brand on two personality dimensions, excitement and sophistication, one dimension at a time and in counterbalanced order. As in the prior study, personality measures consisted of two items per dimension, anchored at 1(*not at all [trait]*) and 9 (*extremely [trait]*).

After responding to the personality measures, participants were asked about their reactions to the logos themselves. Items included the following measures, each of which utilized a nine-point scale: subjective arousal (*arousing* / *calming),* complexity (*complex* / *simple),* and liking (*like it very much* / *do not like it at all).* Participants provided their assessments of all 12 logos, one logo at a time, and pictures of the logos were provided

alongside corresponding items. Finally, participants completed an open-ended suspicion probe asking them to guess the purpose of the study.

Results

Examination of the suspicion probe for this and subsequent studies revealed no evidence that participants were aware of the experimental manipulation or hypotheses being tested.

Prior to the main analysis, I examined participants' liking for the logos. Results of a paired *t*-test indicated that on average, the symmetric logos were evaluated more favorably than the asymmetric logos (M = 5.10 vs. 4.39, $t(149) = 6.13$, $p < 0.01$). Consistent with prior research, therefore, symmetric designs appeared to generate a more positive aesthetic response. Figure 2.2 depicts average participant ratings of the logos on liking and other measures.

To examine my primary hypothesis, I conducted a paired *t*-test comparing average ratings of brand excitement for the two sets of logos. Results of the analysis revealed a significant difference in perceived excitement: as predicted by H_{1a}, brands with asymmetric logos were perceived to be more exciting than brands with symmetric logos (M = 4.13 vs. 3.65, $t(149) = 5.83$, $p < .05$). A subsequent analysis of the complexity measure revealed that the asymmetric logos were perceived on average as more complex than the symmetric logos (M = 4.87 vs. 4.53, $t(149) = 3.57$, $p < .05$). To address this potential confound, I re-ran my main analyses with participant-level differences in complexity for symmetric and asymmetric logos included as an additional predictor. The

effect of symmetry remained significant and did not interact with complexity. Analysis of sophistication did not reveal anything interesting and will not be discussed further.

Next, I investigated my process model by examining whether effects of symmetry on perceptions of excitement were mediated by subjective arousal. To do so, I followed the three-step procedure recommended by Judd, Kenny, and McClelland (2001) for testing mediation in within-subjects designs. In the first step, I tested the relationship between the independent variable (symmetry) and the dependent variable (brand excitement). As shown above, this relationship was significant and in the expected direction. In the second step, I tested the relationship between symmetry and the proposed mediator (arousal). Findings revealed a significant difference in the expected direction, such that average arousal was higher for asymmetric logos than for symmetric logos (M = 5.34 vs. 4.17, $t(149) = 10.86$, $p < .01$). In the third step, I regressed the difference in the dependent variable (excitement) across asymmetric and symmetric logos on both the sum of arousal (A_s) and the difference in arousal (A_d). Results indicated that A_d was a marginally significant predictor of the difference in excitement ($t(148) = 1.67$, $p < .10$), but A_s was not ($p > .2$). Consistent with H_{1b}, these results provide suggestive evidence that the association between symmetry and perceptions of brand excitement was mediated by subjective arousal.

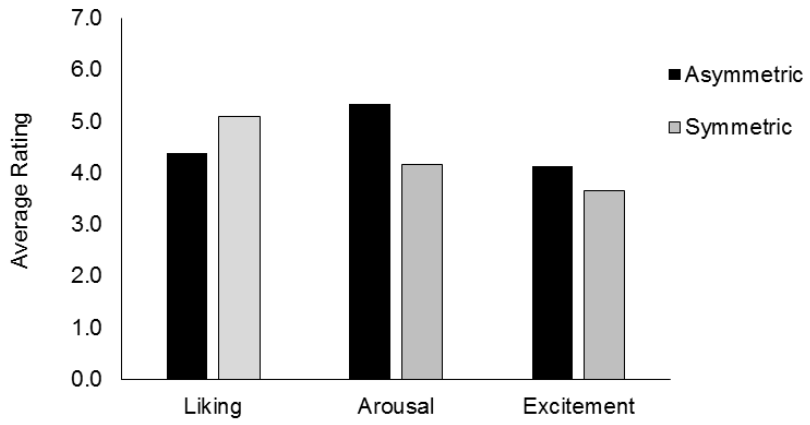


Figure 2.2: Effect of Symmetry on Brand and Logo Perceptions (Study 2a)

Discussion

Replicating Study 1, findings of my second study revealed that asymmetry in the design of visual brand elements produces perceptions of brand excitement. Moreover, Study 2 provided evidence for a direct role of subjective arousal in the process, such that the subjective arousal induced by visual asymmetry 'spilled over' to perceptions of the brand itself.

Study 2b: Arousal Evoked by Artwork

The primary objective of Study 2b was to obtain direct evidence regarding the role of subjective arousal in the process underlying the effect of symmetry on excitement. To this end, a multi-item subjective arousal scale was added to Study 2b to capture the level of arousal evoked by the stimuli presented. In addition, I sought to rule out the possibility that results of the prior logo study were due to the specific logo stimuli chosen. Therefore, symmetry was manipulated in Study 2b through the use of artwork. The application of artistic imagery in marketing is a common tactic for capturing

consumer attention and communicating brand meaning (Epstein, 1982; Hagtvedt & Patrick, 2008; Hetsroni & Tukachinsky, 2005; Lewis, 1996). Compared to the black-and-white logos of the prior studies, such imagery tends to be considerably more diverse and complex. However, existing research on symmetry in art has obtained findings analogous to those obtained with basic visual patterns (Kawabata & Zeki, 2004; Vartanian & Goel, 2004); in particular, exposure times as low as 50-100 milliseconds have been shown sufficient for the perception of symmetry in abstract art (Locher & Nodine, 1989).

Method

Participants

One-hundred and two respondents on Mechanical Turk participated in the study in exchange for payment.

Design and Procedure

The study utilized a repeated-measures design, in which bilateral symmetry was varied within-subjects at two levels (asymmetric vs. symmetric), and, unlike previous studies, positioning was varied between-subjects at two levels (exciting vs. calming). In order to allow for both exciting and calming conditions, the target category of perfumes was selected for the study (see below); an informal survey of real-world perfume brands revealed that both positioning are common.

Target stimuli consisted of 14 real-world artwork images (see Appendix E), of which seven were high in visual symmetry and seven were low in visual symmetry. The

stimuli were collected by searching online repositories of paintings by Western artists. To ensure consistency and mitigate potential confounds, the artwork was selected in pairs consisting of one symmetric and one asymmetric page, and the collection process was constrained so that the artwork within each pair was drawn by the same artist, represented the same style, and included the same predominant colors.

Prior to the study, participants were randomly assigned to either the exciting or the calming condition. In the introductory scenario, participants in both conditions were asked to imagine that they were employed by the marketing division of a prominent fragrance company. Participants were further told that the company would be introducing a new brand of fragrances, and that they would be helping to select appropriate visual imagery for the brand. They were informed that the visual imagery would take the form of artwork, and would be used for a variety of different purposes including advertising, branding, packaging, and other marketing materials.

At the end of the introduction, participants read a positioning statement for the new brand of perfumes, depending on the condition they had been randomly assigned to. In the exciting condition, participants read**:**

> "These exciting fragrances are designed to create a playful and intriguing aroma. Formulated with the essences of uplifting jasmine, crisp cedar and spicy peppermint, these fragrances help to invigorate the mind and the body."

In the calming condition, participants read:

> "These calming fragrances are designed to create a relaxing and soothing aroma. Formulated with the essences of gentle lavender, warm pine and mild vanilla, these fragrance help to soothe tensions of the mind and the body."

Next, participants were presented with all 14 images, one at a time and in random order. After each image, participants were presented a series of questions. First, they were asked to provide ratings of liking and prior familiarity with the artwork. Liking was measured using two 9-point semantic differential scales: "Please provide your opinion of this artwork, using the following scales…[strongly dislike/strongly like] and [unpleasant/pleasant]". Prior familiarity was measured using a seven-point scale anchored at 1 (*not at all familiar*) and 7 (*extremely familiar*).

Next, participants were asked to report the level of subjective arousal evoked by the artwork. Subjective arousal was measured using four 9-point semantic differential scales, adapted from Mehrabian & Russell (1974): "How do you feel while viewing this artwork? … [relaxed/stimulated], [frenzied/sluggish], [dull/jittery], [unaroused/aroused]".

After responding to the arousal measure, participants provided their assessments regarding the appropriateness of that artwork for the new fragrance brand. Appropriateness was measured using a three 7-point semantic differential scales: "To what extent do you think this artwork is appropriate for a perfume brand?... [not at all appropriate / very appropriate], [does not fit at all /fits very well] and [not at all effective / very effective].

At the end of the procedure, participants completed an attention check in which they were asked to identify the positioning of the perfume brand in the scenario from four options ("exciting and calming", "exciting only", "calming only", "none of the above").

Results

Preliminary examination indicated that twenty-eight percent subjects failed the attention check. As before, we retained the full sample for analysis. Participants were largely unfamiliar with all 14 samples of artwork (max = 2.39 / 7). Unlike prior studies, reported liking did not differ across symmetric and asymmetric artwork ($M_{symmetric}$ = 5.70 versus $M_{asymmetric}$ = 5.69, p = .92).

Examination of appropriateness scale items yielded a Cronbach's alpha of .97, implying sufficient internal consistency. Examination of arousal scale items also yielded a Cronbach's alpha of .77, implying sufficient internal consistency. Figures 2.3 and 2.4 depict the means of rated appropriateness and arousal, respectively, by condition. To examine my primary hypothesis, I conducted a mixed ANOVA that included symmetry (symmetric, asymmetric) as a within-subjects factor and positioning (exciting, calming) as a between-subjects factor. Results of the ANOVA revealed a significant interaction between symmetry and positioning, (F(2, 100) = 16.49, p < 0.01). The main effect of symmetry was not significant (F(1, 101) = .33, p > .57). The main effect of positioning was significant (F(1, 101) = 6.13, p < .03).

Planned follow-up comparisons revealed a pattern consistent with hypotheses. When selecting imagery for the exciting fragrance brand, participants rated symmetric artwork as significantly less appropriate than asymmetric artwork (M_{diff} = -.282, p < .01). When selecting imagery for the calming brand, however, subjects rated symmetric artwork as significantly more appropriate than asymmetric artwork (M_{diff} =.213, p < .02).

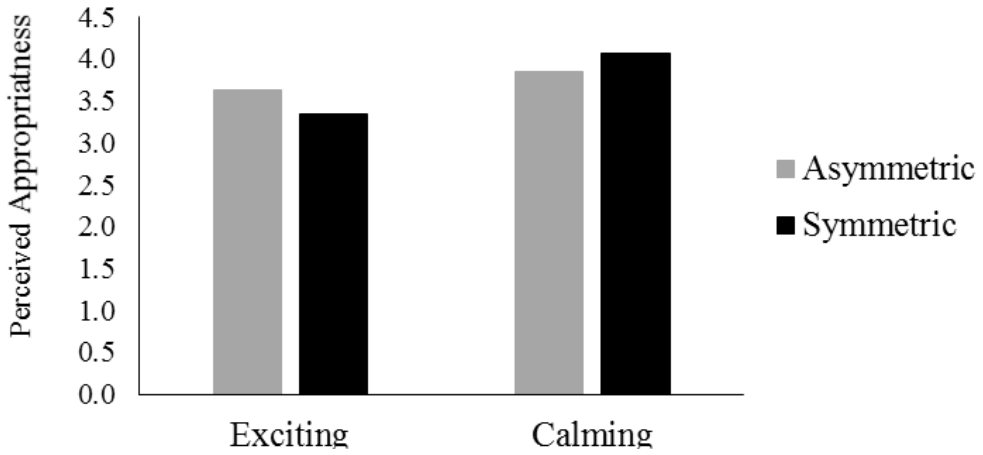


Figure 2.3: Effect of Positioning on Appropriateness of Symmetric Artwork (Study 2b)

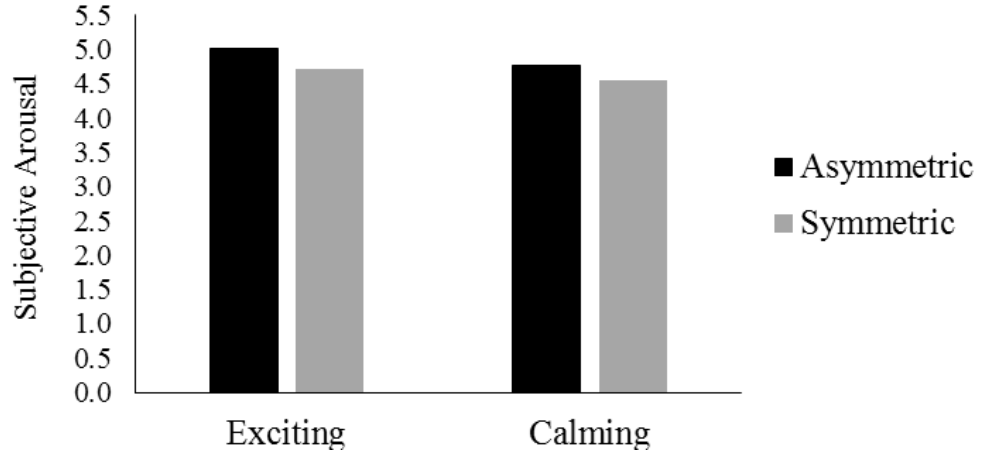


Figure 2.4: Effect of Positioning on Arousal Evoked by Symmetric Artwork (Study 2b)

Next, I investigated my process model by examining whether the observed effects of symmetry on perceptions of image appropriateness were mediated by subjective arousal. Given that the hypothesized effects of symmetry through arousal were opposite

for the two positioning, I collapsed the data across the positioning variable by reverse-coding appropriateness ratings for the calming condition. Next, I ran a within-subjects mediation using the same three-step procedure as in Study 2a (Judd, Kenny, & McClelland, 2001). Results of the first step revealed that symmetry had the expected effects on perceived appropriateness ($M_{asymmetrric}$ = 3.87 vs. $M_{symmetrric}$ = 3.62; $t(101)$ = -4.12, $p < .01$). Results of the second step revealed that average arousal was higher for asymmetric artwork than for symmetric artwork (M = 4.89 vs. 4.63, $t(101)$ = 4.17, $p < .01$). In the third step, I regressed the difference in the dependent variable (appropriateness) across asymmetric and symmetric artwork for each subject on both the sum of arousal (A_s) and the difference in arousal (A_d) for that subject. Results indicated that A_d was a significant predictor of the difference in appropriateness ($t(99)$ = 2.31, $p < .03$), but A_s was not ($p > .86$). These results provide evidence that the preference for asymmetric brand imagery, when a brand is positioned as exciting, was mediated by subjective arousal. Consistent with H1b, this suggests that symmetry affects excitement through subjective arousal.

Discussion

Supplementing study 2a, findings of this study showed that symmetric artwork was considered significantly less appropriate than asymmetric artwork for an exciting brand. Conversely, symmetric artwork was considered as significantly more appropriate than asymmetric artwork for a calming brand. The findings also lend further support to my argument that subjective arousal mediates the effect of visual design symmetry on brand excitement. Having established a link between visual symmetry and perceptions of

brand excitement, my next studies introduced a choice task to address the consequences of this relationship for consumer decision making.

Study 3: Logo Choice

Study 3 was an experimental investigation of my second hypothesis, which argued that consumers will favor asymmetric brand imagery when a brand is positioned around excitement. Adopting a common paradigm for examining perceived 'fit,' I created two conditions where the fit between brand positioning and representative visual imagery was distinct and clear. Participants were asked to choose among various logos that were being considered for use by a fictional brand. Depending on condition, participants were informed that brand was positioned in one of two ways, emphasizing either excitement or sophistication. The use of sophistication as an alternative positioning was based on the results of Study 1, as well as the intuitive link between symmetry and sophistication (Granger, 1931; Wolfflin, 2012). Based on my third hypothesis, I expected participants to select fewer symmetric logos when choosing for an exciting brand than a sophisticated brand.

Method

Participants

One hundred and four undergraduates participated in the study for course credit.

Design and Procedure

The study consisted of a single between-subjects factor, brand positioning, with

two levels (exciting and sophisticated) and a single within-subjects factor, realism (basic and realistic). Target stimuli consisted of 12 black-and-white logo pairs. The logos pairs were divided into two subsets: six 'realistic' logo pairs and six 'basic' logo pairs. The realistic logo pairs consisted of the same six logo pairs utilized in Study 2a (see Appendix D). The basic logo pairs developed through a systematic construction process (Jacobsen & Hofel, 2002). Basic logo pairs were created by arranging simple geometrical shapes in one of two versions, whose composition varied in symmetry but were otherwise similar (see Appendix F). Symmetry was operationalized in a biaxial manner, by varying the regularity of these shapes around both the horizontal and vertical axes. The number of constituent shapes was held constant across symmetric and asymmetric versions of a logo in a pair. Novel, abstract patterns were utilized to ensure that judgments would not be based on pre-existing associations. To disguise the purpose of the study, we also included three 'filler' logo pairs, in which both logos were symmetric or both logos were asymmetric.

Participants were randomly assigned to either the exciting condition or the sophisticated condition. Participants in the exciting condition began by reading the following cover story:

> "This survey involves an eyewear company, CAHP Limited. The company will soon be introducing a new brand of sunglasses – Audax. CAHP is constantly evolving its portfolio of brands, and the launch of Audax is aimed at expanding its customer base further. The goal of this survey is to select the logos that will be used to represent the Audax brand. On the following screens, you will be shown information describing the positioning of the Audax. Afterwards, you will be

shown various pairs of logos, and asked to select the logo that you think fits best with the Audax brand."

Participants in the sophisticated condition read the exact same cover story with one key difference- the name of the brand was changed from Audax to Elegans. The category of sunglasses was selected because it allows for both exciting and sophisticated brand positioning; an informal survey of real-world brands revealed that both are common. Artificial brand names were used to ensure that impressions would not be contaminated by preexisting associations.

Next, participants observed the positioning statement for either the exciting brand (Audax) or the sophisticated brand (Elegans), depending on the condition they had been randomly assigned to. To increase the impact of the manipulation, positioning statements included specific adjectives used in Aaker's (1997) brand personality framework. In the exciting condition, participants read**:**

"Audax is designed to be 'fashion' eyewear. Specifically, the company wants to position Audax as a brand that is exciting, up-to-date, daring, spirited, imaginative, youthful, trendy, and cool. Therefore, your goal is to select a logo that will help consumers to perceive the brand as exciting."

In the sophisticated condition, participants read:

"Elegans is designed to be 'luxury' eyewear. Specifically, the company wants to position Elegans as a brand that is sophisticated, glamorous, good looking, premium, upper-class, and prestigious. Therefore, your goal is to select a logo that will help consumers to perceive the brand as sophisticated."

On the following screens, participants were presented the 15 pairs of logos (12 target + 3 filler), one pair at a time, and asked to select from each pair the logo that they thought had the best fit with the Audax/Elegans brand. 'Realistic' and 'basic' logo pairs (see above) were intermixed in the sequence. The symmetric option appeared first in the pair for half of trials and second in the pair for the other half.

After completing the choice task, participants were presented with each logo from the stimulus set, one at a time, and asked to rate their overall liking on a seven-point scale anchored by 1 (*do not like at all*) and 7 (*like very much*). In addition, participants rated the level of energy contained in each logo, using a nine-point scale anchored at 1 (*low*) and 9 (*high*). In contrast to the direct measure of subjective arousal in Study 2, this item was designed to capture arousal indirectly through perceptions of logo. At the end of the procedure, participants completed two multiple-choice attention checks, in which they were asked to identify: 1) the name of the target brand, and 2) its positioning. Finally, participants completed an open-ended suspicion probe asking them to guess the purpose of the study.

Results

Analysis of the attention check measures indicated that two participants incorrectly recalled the name of the brand and three participants incorrectly recalled its positioning. No participants failed both checks, so the entire sample (n = 104) was retained for analyses.

Prior to the main analysis, I examined participants' liking for the logos. Consistent with the notion of a general preference for symmetry, as well as the results of

Study 2, a paired *t*-test revealed that average liking for symmetric logos was greater than that for asymmetric logos (M = 4.43 vs. 4.21, $t(103) = 1.74$, $p = .08$). A significant difference was also observed between realistic and basic logos, such that the realistic logos were liked more on average (M = 4.55 vs. 4.08, $t(103) = 3.13$, $p < .01$.

Examination of the energy measure revealed that as expected, asymmetric logos were rated significantly more energetic than symmetric logos (M = 5.21 vs. 4.64, $t(103) = 5.35$, $p < 0.01$). As the dependent variable in the main analysis, I summed the number of pairs for which the symmetric logo was chosen. Consistent with predictions, a paired *t*-test revealed that asymmetric logos were chosen more often for the exciting brand (M = 7.75) than for the sophisticated brand (M = 4.79, $t(102) = 5.89$, $p < 0.01$). Furthermore, the difference was robust to both realistic logo pairs and basic logo pairs (interaction p = .44; realistic logos: M = 3.44 vs. 2.69; basic logos: M = 4.31 vs. 2.10, $ps < .01$).

Discussion

Findings of Study 3 provided additional support for my overall framework by examining downstream effects of the association between visual symmetry and brand personality. Consistent with the notion of 'fit' between the positioning of a brand and its representative visual elements, asymmetric logos were chosen more often to represent a brand whose positioning emphasized excitement. The fact that the result obtained even for simple, geometric logo designs suggests that it was not attributable to logo content or other design factors. Secondly, although the design of the study precluded formal mediation analysis, results of the energy analysis were consistent with my argument that the influence of symmetry is driven in part by evoked arousal. It is useful to reiterate that

while the "level of energy" contained in a logo is a measure of perceived arousal, it is indirectly related to subjective arousal.

Study 4: Artwork Choice

In study 4, I conducted a conceptual replication of Study 3 using real-world artwork. My prediction was that the link between symmetry and brand inference described in my framework would be robust to this setting.

Method

Participants

One hundred and eighteen undergraduates participated for course credit.

Design and Procedure

The study was administered by computer and consisted of two within-subjects factors. The first factor was brand positioning, manipulated at two levels (exciting and sophisticated), and the second factor was representativeness, also manipulated at two levels (abstract and representational; see below).

Target stimuli consisted of 15 pairs of artwork (see Appendix G). Eight of the images were selected from the stimulus presented in Study 2b. The remaining seven images were selected using the same process described in Study 2b; as a result, items in each pair were similar in color, content, etc., but differed in bilateral symmetry

In addition, the stimulus set was constructed to include both "representational" artwork (eight pairs) and "abstract" artwork (seven pairs). Compared to abstract artwork,

representational artwork contains elements that are more familiar and identifiable, includes more traditional content, and shows greater correspondence with visual reality (Wilson, Ausman, & Matthews, 1973). Prior research has shown representational and abstract art to evoke different processing patterns (e.g., distinct regions of brain activation – Vartanian & Goel, 2004); including both types allowed us to identify potential dependencies in the effects of symmetry. Finally, I included six 'filler' pairs to disguise the purpose of the study; items in a filler pair contained similar levels of symmetry but were otherwise unalike.

The introductory screens presented a cover story, instructions, and positioning statements similar to those in Study 3. Instead of logos, however, participants were told that they would be choosing between pairs of artwork for the two sunglasses brands. Next, participants viewed all 21 pairs of artwork (15 target + 6 filler), one pair at a time. Two presentation orders were created, and participants were randomly assigned to one of the two orders. For half of trials, the symmetric option appeared first in the pair, and for half of trials the symmetric option appeared second. As in Study 3, participants were asked to choose the option from each pair that would be most appropriate for use by the brand. Once they had completed their choices for the first brand, participants read the positioning statement for the second brand, observed all 21 pairs again, and again made their choices.

After completing the choice task for both brands, participants were presented with each piece of artwork from the stimulus set, one at a time, and asked to report their liking on a seven-point scale anchored at 1 (*do not like at all*) and 7 *(like very much)*. Due to a programming error, liking was not recorded for two pieces of artwork. In addition,

participants rated the level of energy contained in each artwork, using a seven-point scale anchored at 1 (*low*) and 7 (*high*). At the end of the study, participants provided demographic information and completed an open-ended suspicion probe.

Results

Prior to the analysis, I examined participants' liking for the artwork. Consistent with the prior studies, results of a paired *t*-test indicated that on average, liking for the symmetric artwork was greater than that for the asymmetric artwork, although the difference was marginal (M = 3.89 vs. 3.78, $t(117) = 1.72$, $p = .09$). Comparison of liking for representational and abstract artwork yielded no reliable differences (M = 3.84 vs. 3.83, $t(117) = .14$, $p = .89$),

Examination of the energy measure revealed that as expected, asymmetric artwork were rated significantly more energetic than symmetric artwork (M = 4.01 vs. 3.69, $t(117) = 7.37$, $p < 0.01$). To form the dependent variable for the main analysis, I summed the number of pairs (0-15) for which the symmetric artwork was chosen for each of the two brands. Consistent with predictions, repeated-measures ANOVA revealed that asymmetric artwork was chosen more often for the exciting brand (M = 7.94) than the sophisticated brand (M = 6.64, $t(117) = 4.26$, $p < 0.01$). Moreover, the difference did not interact with representativeness ($p > .6$), suggesting that the result was robust to both representational artwork and abstract artwork (representational: M = 4.03 vs. 3.31; abstract: M = 3.91 vs. 3.33, $ps < .01$).

Discussion

Replicating the results obtained with logos in the previous study, findings of Study 4 supported my contention that symmetry in visual brand elements systematically affects consumer inferences regarding the brand. It is noteworthy that the effect of symmetry was smaller in magnitude than that observed in the third study. I attribute the diminished effect to a weaker manipulation of symmetry and a greater amount of total visual information in the artwork setting. The fact that symmetry continued to exert substantial influence in this setting provides compelling evidence of its role in consumer perception. Secondly, although the design of the study precluded a formal mediation analysis, results of the energy analysis were consistent with my argument that the influence of symmetry is driven in part by evoked arousal.

Study 5: Logo Design

In my Study 5, I investigated my theoretical framework using a unique approach, based on the "method of production" in aesthetic research (Fechner, 1871). In the method of production, respondents are allowed to independently produce aesthetic designs that conform to their own standards. Compared to the more common "method of choice," in which respondents choose between experimenter-provided stimuli, the primary advantage of the method of production is that it is less susceptible to experimental preconceptions or pre-existing cultural norms (Mather, 2014; McManus, et al., 2011).

Participants in the study were asked to construct their own logos for two hypothetical brands, based on the positioning of each brand. The primary dependent measure was the level of symmetry exhibited in the participant-created logos. In keeping

with my theory and the results of Studies 1-4, I predicted that the logos would exhibit more asymmetry when they were designed for a brand whose positioning emphasized excitement.

Method

Participants

One-hundred and ninety-four undergraduates participated in the study in exchange for course credit.

Design and Procedure

The design consisted of one within-subjects factor, brand positioning, which was manipulated at two levels (exciting and sophisticated). Participants were seated in front of a computer at individual tables that also contained a clipboard, letter-size sheets of paper, a pencil, and an eraser. The cover story was similar to that of studies 3-4: participants were told that a hypothetical firm was planning to launch two new brands of sunglasses: one positioned as 'exciting,' and the other positioned as 'sophisticated.' Next, participants learned that their task was to design logos that would represent each of the two new brands, using the sheets of paper provided. Participants were given descriptions and positioning statements for each brand similar to those in the previous studies.

After viewing the positioning statements, participants received a set of general guidelines for drawing logos (see Appendix H). The guidelines provided a broad description of what constitutes a logo, along with different logo 'types' (font-based,

shape-based etc.), a set of desirable characteristics for logos (should be memorable, should not evoke negative associations etc.), and a set of suggested steps for designing logos. The suggestions specifically noted the importance of understanding "the personality of the brand and how it is intended to be perceived".

Participants were instructed to draw their logos on the paper provided, using only the pencils and erasers on the table. The paper included a scratch area that could be used to sketch different options. Order was counterbalanced so that half of participants began with the logo for the exciting brand (Audax), and half of participants began with the logo for the sophisticated brand (Elegans). Participants were given ten minutes to draw both logos, and they received an onscreen warning when five minutes had elapsed.

Following completion of the drawing task, participants completed a follow-up survey on the computer. In the survey, they were asked to indicate the extent to which they considered symmetry to be an important consideration their construction task, using a seven-point scale anchored by 1 (*not important in my design*) and 7 (*very important in my design*). Next, participants completed an open-ended item asking them to explain why they drew the logos in the manner that they did; this item served as both an exploratory measure and suspicion probe. Finally, participant completed an attention check similar to that of Study 3, in which they were asked to identify the positioning of the two brands.

Results

Seven participants were excluded from the analyses due to missing data, leaving a usable sample of 187 participants. Analysis of the attention check revealed only two

participants who failed to identify the positioning of both brands correctly; therefore, the entire sample was retained for analysis.

Examples of the participant-created logos are presented in figure 2.5. An initial visual examination revealed a wide array of styles, complexity, and content: logos ranged from simple line drawings to detailed illustrations. Some logos were highly representative and/or realistic (e.g. a snow-covered peak or a lightning bolt for the exciting brand; a diamond or crown for the sophisticated brand), while others were highly abstract, offering no obvious symbolic meaning.

Exciting Positioning

Sophisticated Positioning

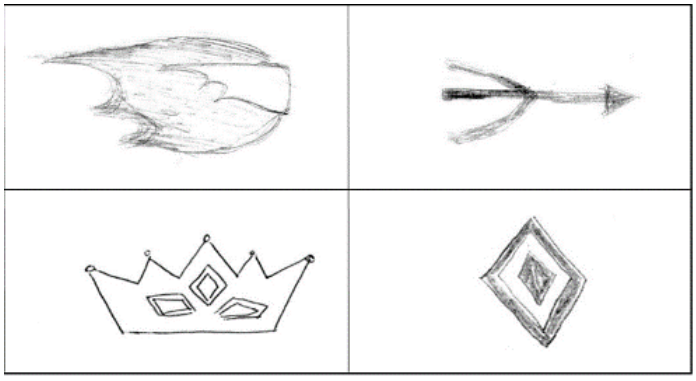


Figure 2.5: Some Examples of Participant-Created Logos (Study 5)

Prior to data analysis, three independent coders with experience in graphic design were asked to assess the level of bilateral symmetry exhibited in each of the participant-created logos. The coders assigned ratings on a four-point scale, anchored by 1 (*perfectly asymmetric*) and 4 (*perfectly symmetric*). A logo was classified as "perfectly symmetric" if one half was a near-exact reflection of the other, and a logo was categorized as "perfectly asymmetric" if there was little or no correspondence between the two halves.

Disagreement was resolved through discussion, and the resulting set of ratings formed the dependent variable for the main analysis.

In the main analysis, a paired *t*-test was conducted to compare the level of symmetry exhibited in the logos designed for each brand. Consistent with my framework, results indicated that logos designed for the exciting brand exhibited significantly less symmetry than logos designed for the sophisticated brand (M = 2.10 vs. 2.54, $t(186) = -3.81$, $p < 0.01$). In a subsequent, exploratory analysis, I incorporated the extent to which participants rated symmetry as an important consideration in their design process. When responses to this item were entered alongside brand positioning in a mixed ANOVA, results revealed a marginally significant interaction ($F(1, 179) = 3.20$, $p < .07$). The pattern of the interaction indicated that the tendency to design more asymmetric logos for the exciting brand was greater for participants reporting that symmetry was more important to their design process.

Discussion

Study 5 provided methodological triangulation with studies 1-4, through a procedure in which participants designed their own visual brand elements rather than choosing between pre-existing alternatives. Consistent with the findings of the previous studies, participants produced more asymmetric designs for a brand whose positioning emphasized excitement, and follow-up analyses suggested that the effect was strongest for those participants who actively contemplated the role of symmetry in their designs. The unconstrained nature of the study permits a variety of alternative explanations. Together with the results of studies 1-4, however, these results provide convergent

evidence that consumers associate asymmetry in visual brand elements with higher levels of brand excitement.

Study 6: Symmetry and Product Choice

Study 6 involved two primary objectives. First, I explored whether "fit" between the imagery utilized by a brand and its intended personality will generate a favorable behavioral response. Given that exciting imagery makes the excitement positioning claim more credible, I predicted that participants would be more likely to choose a brand whose imagery (asymmetric or symmetric) matches its positioning (exciting or not-exciting) than an alternative brand for which this is not the case.

Second, I investigated the presence of text as a theoretically relevant moderator. Consumers are typically not exposed to brand imagery in isolation, but rather in contexts where other, text containing, brand or product information is present (advertising copy, packaging information, etc.). Thus, it is important to consider how this other information might impact the effects of visual brand imagery on perceptions and choice. Often, the other information reinforces the intended brand positioning. When this is true, it provides a cue that is simple and easy to process. For example, "Provocatively crafted, Sikar's floral notes bring to mind the excitement of new blooms".

Given that it is easier to process brand information when such direct positioning cues are present, the utility of brand imagery for making positioning-related inferences will be reduced. Specifically, I expect that the presence of relevant text will attenuate the effect of "fit" between the visual brand imagery and brand personality on consumer choice. Stating this formally:

H_3: Consumers will be more likely to choose a brand with asymmetric imagery when the brand is positioned as exciting. However, this effect will be weakened in the presence of text.

Method

Participants

One hundred and ninety-three undergraduates (49% female) participated in the study in exchange for course credit.

Design and Procedure

I used a 2 (positioning: exciting vs. no-positioning) X 2 (text: present vs. absent) between-subjects design. Participants in the study were asked to choose between seven pairs of perfume (see Appendix I). I selected the perfume category for two related reasons. First, performance-related attributes of perfumes are difficult to evaluate before purchase, and packaging is a prominent component of visual branding in the category; second, consumers often buy multiple products in the category, making a repeated-measures design reasonable. The initial portion of the cover story varied according to the gender of the participant: female participants were told that they were buying a perfume for themselves, whereas male participants were told that they were buying the perfume "as a gift for a woman in your life" (the rest of the cover story was identical for both genders). In the no-positioning condition, participants read the following:

"Please imagine the following: One afternoon you are shopping in a local department store, and find yourself in the cosmetics section. You have been planning to buy a new perfume for some time, so you visit the fragrance counter to examine the selection. You spend a few minutes at the counter, talking with the salesperson and trying out a number of different perfumes".

Participants in the exciting positioning condition read the same cover story but, in addition, were told that the perfumes were playful and exciting. Playful and exciting perfumes were described as follows: "These perfumes are designed to give an instant impression of vitality from the very first scent. They do not attempt to be calm or boring, but rather to be surprising and exciting".

Next, participants were told that they had screened various options and narrowed their choice down to 14 brands. Participants were informed that they would be shown seven different pairs of perfume brands and asked to select one brand from each pair. To ensure consistency and mitigate potential confounds, participants were told that the brands that they were considering had somewhat different scents, but were equally appealing and similarly priced.

The following screens presented the choice pairs, one at a time. Choice pairs contained pictures of two perfume bottles, along with their brand names and size. As in the prior studies, I utilized unfamiliar brand names to avoid any pre-existing associations. Symmetry was manipulated by varying the artwork depicted on the bottles and packages (Due to an error, images of packages were left out from three of the choice pairs). Artwork for four of the choice pairs was selected from the stimulus presented in Study 2b. Artwork for the remaining three pairs was selected using the same process described

in Study 2b; as a result, items in each pair were similar in color, content, etc., but differed in bilateral symmetry.

In the text-present conditions, choice pairs also presented text. Text in the exciting conditions consisted of adjectives such "adventurous," "vibrant," "spirited," "daring," "different," "unique," and "provocative" (see Appendix I.1). Text in the no-positioning condition consisted of generic descriptors highlighting the sensory nature of perfumes (see Appendix I.2). In the text-absent conditions, no verbal description was provided. Two versions of each trial pair were created and participants were randomly assigned to one of the two versions. In one version, the symmetric artwork was presented on the left of the trial pair. In the other version, the symmetric artwork was presented on the right of the trail pair. The order of trials was also randomized.

After completion of the choice task, all participants provided follow-up ratings of each piece of artwork utilized in the study. As in Study 2, the follow-up ratings included liking on a seven-point scale anchored by 1 *(not at all likable)* and 7 *(extremely likable)* and prior familiarity with the artwork on a seven-point scale anchored by *1 (not at all familiar)* and 7 *(extremely familiar).* After providing their ratings, participants completed two attention checks, in which they were asked to recognize one of the choice-pairs and the positioning of the perfumes in the study ("playful and exciting", "peaceful and calm", "no specific category given").

Results

Analysis of the attention checks indicated that seven percent of the participants failed both checks; as before, I retained the full sample for analysis. Examination of

familiarity ratings verified that participants were unfamiliar with all 14 samples of artwork in the study (max = 1.96 / 7). Comparison of liking for symmetric and asymmetric artwork revealed no significant difference ($M_{symmetric}$ = 3.87 versus $M_{asymmetric}$ = 3.75, p = .150.). None of the results reported below interacted with gender, so data was pooled across this factor.

As the dependent variable for the main analysis, I computed the number of symmetric brands that each participant chose. The pattern of results is depicted in figure 2.6. An analysis-of-variance (ANOVA) was conducted with positioning, text and their interaction as predictors of the number of symmetric brands chosen. Results showed a significant effect of positioning (F(1, 189) = 10.90, p <.01) and a marginally significant effect of text (F(1, 189) = 2.92, p < .1). However, these effects were qualified by a significant interaction (F(2, 189) = 8.88 p < 0.01).

Consistent with predictions, planned comparisons revealed that when text was absent, participants chose fewer brands with symmetric imagery in the exciting condition than the no-positioning condition (M_{exciting} = 2.71 vs. $M_{\text{no-positioning}}$ = 4.00; F(1, 189) = 19.85, p < .01). When text was present, however, no difference in symmetric choices was observed (M_{exciting} = 3.67 vs. $M_{\text{no-positioning}}$ = 3.74; F(1, 189) = .05, p > .83).

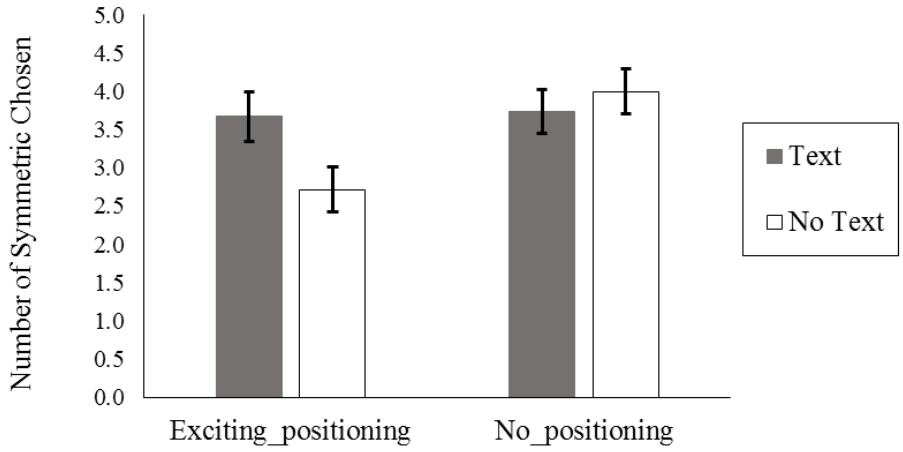


Figure 2.6: Effect of Positioning and Text on Choice of Brands with Symmetric Artwork (Study 6)

Discussion

Study 6 demonstrated downstream consequences of the relationship between symmetry and brand personality inferences that were revealed in the first five studies. When choosing between brands positioned as exciting, participants were more likely to choose a brand with asymmetrical visual imagery. However, the beneficial effect of symmetry-personality "fit" on choices was greatest in the absence of text. In keeping with arguments above, the latter finding suggests that participants were more likely to form inferences based on visual properties when relevant textual cues were unavailable.

General Discussion

It is widely acknowledged that logos, packaging, and other visual brand elements can serve an important representational function, helping brands to communicate the benefits of their offerings (Loken, Joiner, & Peck, 2002; Park, Eisingerich, Pol, & Park, 2013). For example, the Red Bull logo contains two charging bulls in front of a bright

sun, reminding customers of the brand's promise to "vitalize body and mind" (Park, et al., 2013). Extending this notion, I suggest that visual elements serve an additional, broader function, by influencing consumer perceptions regarding the personality of the brand itself. My research develops this idea by providing a theory-based account for an important but unexplored influence of visual design on brand perceptions. Building on diverse prior literature, I argue that asymmetry in brand elements evokes arousal in observers, and that this arousal spills over to impressions of the brand itself. My six studies supported these assertions using different stimuli, methodologies, and response tasks. Symmetry in visual brand elements was negatively associated with perceptions of brand excitement (Studies 1 and 2), and this influence was traced to self-reported subjective arousal (Study 2). Individuals were more likely to associate asymmetric imagery with brands positioned as exciting, whether they were choosing between alternative images for the brand (Studies 3 and 4) or designing brand imagery autonomously (Study 5). Moreover, the influence of symmetry extended to downstream product choices (Study 6).

Theoretical Contributions

Among the limited academic research on visual design in consumer settings, the vast majority has focused on aesthetic response, and specifically on characteristics that lead marketing stimuli to be more subjectively pleasing. One common finding of that research has been a broad and beneficial role for symmetry in enhancing perceptions of beauty, perfection, etc. However, my work is among the first to move beyond aesthetic beauty and towards a more nuanced understanding of specific meanings conveyed by

specific design properties. An important implication is that properties which influence consumer aesthetic response will often also influence consumer impressions of the brand, and these influences may affect attitudes in opposing ways. In particular, my findings show that although consumers do in general 'like' symmetric imagery more than asymmetric imagery, preference for symmetry in visual branding depends on the nature of the brands involved. For a brand whose positioning relies on excitement, the direct, positive effect of symmetry through aesthetic pleasure may be outweighed by its indirect, negative effect through inference of a less exciting brand personality.

My findings also contribute to a growing body of work addressing ways in which consumer response to design influences subsequent judgments. Relevant research on spillover effects has demonstrated that perceptions evoked by visual marketing elements (e.g., the presence of 'high' or 'low' art on product packaging) can be assimilated into perceptions of product attributes (e.g., luxury; Hagtvedt & Patrick, 2008). Extending this line of reasoning, I suggest that salient aspects of visual design induce specific and predictable perceptions, which then spill over to perceptions of the associated product. These spillovers are not limited to general connotations such as luxury, but also include more specific assessments like the brand personality traits examined in my studies.

Lastly, my final study points to the unique benefits of the "method of production" for studying the systematic effects of visual elements on consumer response in an open-ended manner. Although relatively common in the investigation of aesthetics in other disciplines, the method of production has rarely been used in consumer research. Based on my findings, I suggest utilizing this tool to provide methodological triangulation with other approaches in consumer research, such as the "method of choice".

Practical Implications

For marketers, the most noteworthy implication of my findings is that the "power of good design" can be used to imbue brands with specifically targeted consumer associations. The importance of discrete design characteristics such as symmetry is already recognized by those engaged in visual communications, product design, etc., but best-practice 'guidelines' for their use are generally lacking. I propose that in developing such guidelines, a key consideration should be the personality of the brand involved (both as it currently exists and as it is intended). Importantly, my findings do not suggest that brands with symmetric visual elements cannot be perceived as exciting. Rather, I acknowledge that numerous factors (both related and unrelated to design) are involved in shaping the personality of a brand; my findings indicate that one such factor is visual symmetry, and its effects occur in part through its influence on subjective arousal.

At a broader level, it is widely acknowledged that designers should possess deep intuitive understanding of their field, and should utilize this understanding to carefully select design elements that elicit desired consumer responses. However, it remains a common belief among laypersons and practitioners alike that design is an inherently subjective process with limited underlying frameworks or evidence-based principles. I view my research as one example of a broader opportunity to improve the connection between designers and their clients, by offering rigorous empirical evidence that can be drawn upon to explain design choices. In addition to symmetry, visual branding incorporates a number of other design characteristics (complexity, realism, etc.) that are capable of objective assessment and application, and for which additional theory and evidence would be valuable.

Finally, my findings have implications for the integration of different brand imagery in marketing communications. Broad research indicates that consumers respond favorably to congruence rather than incongruence in the symbolic meanings of different marketing activities (Park, Milberg & Lawson, 1991; Keller, 1999). To this end, I speculate that symmetry may be useful as a common denominator in maintaining congruence among different visual brand elements. For example, a brand using an asymmetric logo to communicate excitement would be well advised to supplement their effort with additional instances of asymmetry (package design, promotional material, etc.)

Limitations and Future Research

Various limitations of my research merit attention. As pointed out by Birkhoff (1933), the mathematical concept of symmetry is applicable to one-, two-, and three-dimensional space. However, my studies utilized exclusively two-dimensional patterns. Although my choice was consistent with prior work in the field, future research should explore the influence of symmetry in one- and three-dimensional contexts.

The scope of my research precluded examination of design characteristics other than symmetry (elaborateness, parallelism, etc.). Future work might consider not only how other characteristics affect brand perceptions, but also the potential interaction of these effects with symmetry. Given the wide array of tools for conveying a brand's visual identity, future research might examine the consequences of symmetry in packaging, product design, etc. In the same vein, it would be interesting and useful to examine the influence of design variables on other brand personality perceptions (e.g., sincerity,

competence). Finally, theory development in this area would benefit greatly from research on the influence of individual difference variables that may relate to consumer inference-making in response to visual design. For example, an intriguing line of research has suggested that high-self monitors react more favorably to image-oriented appeals (Snyder & DeBono, 1985). If so, then it is reasonable to expect that the effects observed in my research will be magnified among consumers high in self-monitoring. Secondly, given prior evidence of individual differences in preference for symmetry (Jacobson & Hofel, 2002; Palmer & Griscom, 2012), future work might examine whether the influence of "fit" between visually symmetry and brand positioning is affected by differences in preference for symmetry. A third variable worthy of consideration is chronic processing style; i.e., the extent to which consumers utilize an abstract mindset, characterized by schematic and conceptual processing, or a concrete mindset, characterized by detail- or attribute-oriented processing (Peterman, 1997; Trope, Liberman & Wakslak, 2007). As symmetry is determined by the relative position of components in a composition, it is an essential holistic property (Pomerantz & Kubovy, 1986). Researchers in the gestalt tradition have argued that holistic visual properties are more influential under a conceptual processing style (Lockhead, Gruenewald, & King, 1978); if so, then I would expect the influence of symmetry on brand inference to be strongest among individuals with an abstract mindset.

In an era of declining product differentiation, design has become an ever more important source of brand development and competitive strategy. Therefore, it is increasingly vital to understand the complex influence of design characteristics on brand

perceptions. My research on symmetry represents one step towards such understanding, and I encourage additional exploration.

CHAPTER 3

GENDER DIFFERENCES IN RESPONSES TO FACIAL IMAGERY IN ADVERTISING: WHY FACES MAKE WOMEN FEEL LESS CONNECTED TO THE BRAND

Introduction

The use of realistic human faces is prevalent in contemporary advertising, and this is especially the case in advertisements targeting women. In an examination of recent print magazine advertisements, I asked a coder (blind to the purpose of the present research) to inspect every advertisement in 15 different magazines (e.g., Vogue, GQ) for the gender of the target of the advertisement and the presence (or absence) or a face. After removing product categories that target only one gender (e.g., cosmetics), advertisements that targeted both genders, and advertisements that contained faces of the opposite sex, I found that 66.38% (233/351) of the advertisements targeting women included a female face. This was significantly greater than the advertisements targeting men, for which only 51.06% (120/235) contained a male face ($\chi^2 = 13.79$, $p < .001$).

The use of facial imagery in advertising may not be a poor strategy, given that faces can preferentially engage, recruit, and capture attentional resources (Palermo & Rhodes, 2007). The present research, however, demonstrates that using faces to capture attention comes at a price. I argue that the presence of an own-gender face in an advertisement may actually impair consumption imagery (CI) and self-brand connections (SBC) among women, who allocate more attention to faces than men (Heisz, Pottruff, & Shore, 2013). Specifically, I argue that women's focus of attentional resources towards faces occurs at the expense of other advertisement elements, such as verbal or pictorial material that are meant to facilitate consumption imagery. That is, women may find it

more difficult to visualize the self in product purchase, trial, or usage situations (Bone & Ellen, 1992; Elder & Krishna, 2012), upon viewing an advertisement with a face as opposed to an advertisement without a face, and this subsequently lowers their self-brand connections.

My work builds upon existing perspectives in the face processing literature, which argue for the specialized processing of facial information. Faces are very meaningful sources of social and biological information, and receive preferential processing by attracting attention to themselves (Ro, Russell, & Lavie, 2001; Vuilleumier, 2000). Further, there are stark differences in men's and women's processing of own-gender faces. Females allocate more attention to faces when encoding faces, and extract more information and produce a richer memory representation (Heisz, et al., 2013). This preferential recruitment of selective attention mechanisms by a face (Palermo & Rhodes, 2007) may reduce processing of other objects that share visual space with a face (Lavie, 1995; Simons & Levin, 1997; Joseph, Chun & Nakayama, 1997). Specifically, in the context of an advertisement containing facial imagery, even moderately complex visualization aids such as product usage examples (Zhao, Dahl, & Hoeffler, 2015) will lose their advantage since they will essentially be outside the consumer's focus of attention.

The results of the present research make important contributions to the advertising literature on gender differences, facial imagery, consumption imagery, and attention. First, prior work on gender differences in advertising has focused on subtle moderators such as the emotions conveyed by the advertisement (Fisher & Dube, 2005), the type of detail contained in the advertisement (Berney-Reddish & Areni, 2006), the formats of

advertisements (Chang, 2007), the amount of visual incongruity in advertisement arrays (Noseworthy, Cotte, & Lee, 2011), and background aesthetic elements (Meyers-Levy & Zhu, 2010). The present research is the first to draw upon the visual information processing domain to understand gender differences in response to facial imagery in advertisements.

Second, prior work on facial imagery in consumer research has tended to focus either on consumers' affective reactions to attractive model faces in advertising (Aydinoglu & Cian, 2014; Martin & Gentry, 1997; Richins, 1991) or on trait judgments arising from the processing of facial cues (Gorn, Jiang & Johar, 2008; Tanner & Maeng, 2012). Taking a different perspective, I highlight the role played by attentional bias for faces among women, and in doing so help to refine understanding of the negative responses evoked by advertisements with facial imagery.

Third, contrary to conventional wisdom that more information or more detailed information is always better for consumption imagery (Keller & McGill, 1994; Kisielius & Sternthal, 1984), my results show that this is not the case with faces. Because facial imagery attracts attentional resources, it may draw attentional resources away from other informational cues meant to facilitate consumption imagery. Thus, I demonstrate that more information (e.g., faces) can actually prohibit consumption imagery among those who pay more attention to faces.

Finally, my work contributes to a relatively sparse stream of research in advertising literature on the carryover effects of attention (Pieters & Wedel, 2004). Advertising elements, such as the brand name, pictorial, and text, have been shown to lead to both positive and negative attention effects (Pieters & Wedel, 2004). That is,

attention devoted to a particular advertisement element may promote attention to, or detract attention from, other advertisement elements. For example, eye tracking studies by Pieters & Wedel (2004) investigating the simultaneous effects of the size of the brand, pictorial, and text elements on consumers' attention patterns suggest that unlike other elements, the pictorial is superior in capturing attention independent of its size. The increase in attention to the pictorial, however, may be at the expense of other advertisement elements, because consumers' total attentional resources are limited. Building on this research, I argue that this greater attention can result in impairments to consumption imagery and negative downstream effects on self-brand connections.

In the following sections, I give a brief overview of the diverse literature on facial processing and attention. I then develop a framework to explain the effect of facial imagery in advertisements on self-brand connections for male and female consumers before reporting four studies that examine the key hypotheses emerging from my framework. I conclude by discussing implications of my findings and avenues for future research.

Theoretical Background

The perception of human faces have generated a great deal of interest among academics, and has been studied by scholars in such diverse areas as evolutionary psychology, cognitive neuroscience, visual perception, and social psychology. In an advertising context, research on facial imagery has primarily focused on the use of attractive or idealized model faces in advertising images and its interplay with consumers' self-esteem (Aydinoglu & Cian, 2014; Bower, 2001; Martin & Gentry, 1997;

Martin, Veer, & Pervan, 2007). In a recent example, Aydinoglu and Cian (2014) examined the effect of picture type (product versus model) in an advertisement, and found that for consumers with low (high) appearance self-esteem, depicting a product (model) enhances attitudes toward the advertisement more than depicting a model (product), because doing so allows for greater self-referencing.

Outside of an advertising context, there is also a second stream of consumer research on facial imagery that has explored specific trait inferences that are spontaneously evoked in response to facial stimuli. For example, Gorn, Jiang, and Johar (2008) found that certain facial characteristics (e.g., the babyfaceness of a CEO), affect perceptions of honesty and trustworthiness, but these trait inferences are corrected in the presence of situational evidence (e.g., a severe crisis) if cognitive resources are available. Tanner and Maeng (2012) demonstrated that when facial cues of a known individual (e.g. a celebrity like Tiger Woods) are incorporated into the face of an unknown target individual, perceptions of target trustworthiness increase. The common denominator in these two streams of research is that faces serve as information. The premise that attractive faces produce negative reactions among those with low self-esteem presupposes that a face can provide self-referencing information which helps viewers relate to the people they observe. Similarly, the premise that reactions to faces are based on automatic inferences drawn from certain facial cues presupposes that faces provide information that guide expectations.

Faces in advertisements give context to readers by providing them information regarding who uses the brand or the product. Such contextual detail, including information about what, who, when, and where, can be beneficial as it likely enables

consumption imagery, defined as the visualization of the self in product purchase, trial, or usage situations (Bone & Ellen, 1992; Elder & Krishna, 2012; Krishnamurthy & Sujan, 1999). In other words, more contextual information in an advertisement (such as facial imagery) gives consumers more from which to imagine their own consumption of the product. Consumption imagery has also been labeled "anticipatory self-referencing" (Krishnamurthy & Sujan, 1999) or “consumption-visions,” (Phillips, Olson, & Baumgartner, 1995).

Inducing consumption imagery is a widespread practice among marketers. Television and radio commercials ask viewers to immerse themselves in imagined product experiences, using phrases such as “imagine yourself,” “visualize yourself here,” and “picture how it would be” (Petrova & Cialdini, 2005). Existing research indicates that such interventions may not be a bad strategy, given that reenactment of perceptual experiences can have powerful effects on product preferences (Escalas, 2004; MacInnis & Price, 1987). Consumption imagery evokes strong affective responses, perhaps because of the sensitivity of emotional brain regions to imagery, and the similarity of imagery to both perception and autobiographical episodes. For example, a consumer may evaluate an apartment by “envisioning romantic evenings by the fireplace” and assessing the positive emotions associated with that fantasy (Keller & McGill, 1994).

As a result, marketers have sought to identify visualization aids that promote elaboration and facilitate consumption imagery (Zhao, Dahl, & Hoeffler, 2015). This greater visualization can lead consumers to feel more connected to the brand. According to the self-brand connection (SBC) construct, brand associations are used to construct one's self or to communicate one's self to others (Escalas & Bettman, 2003). Previous

research suggests that SBCs are formed and strengthened when consumers envision their experiences with brands through a process of mental simulation (Escalas, 2004).

Taken together, literature on facial imagery and visualization suggests that facial imagery in advertisements should strengthen consumption imagery and subsequently consumer-brand connections. This assumption, however, ignores the role of attention in facial imagery processing. As pointed out by Palermo and Rhodes (2007), some aspects of facial identity are encoded without conscious awareness, without intention, and even without focused attention. For unfamiliar faces, however, focused attention appears to be necessary for complete activation of the FFA (fusiform face area), a region of the human brain that plays a key role in face perception (Kanwisher, et al., 1997). Focused attention is also needed to encode the configural or holistic representations generally used to recognize individuals. Therefore, attentional resources are needed to both detect a facial configuration, and to encode facial identity (Palermo & Rhodes, 2007; Reinitz, Morrissey, & Demb, 1994).

Literature on face processing has also shown that people are biased to attend to faces. For example, newborns visually track a normal face farther into the periphery than a scrambled face (Goren, Sarty, & Wu, 1975; Johnson, et al., 1991) and prefer to look at upright rather than inverted faces (Mondloch, et al., 1999). Further, faces have an advantage in capturing attention when they are competing with other objects. For example, Ro, Russell and Lavie (2001) presented flickering displays (making changes difficult to detect, Rensink, O'Regan, & Clark, 1997) consisting of one unfamiliar face and five different common objects, and found that changes to faces (e.g., a female face changing to another female face) were detected both more rapidly and more accurately

than changes to objects (e.g., an apple changing to a broccoli). The probability of detecting a change is increased by directing attention to the object or location of the change (see Simons, 2000), so these results suggest that faces may have a special capacity to recruit attention when competing for attentional resources.

Given that processing of faces consumes attention, the presence of a face in an advertisement may leave little or no attentional resources to process other perceptual material in the advertisement. Advertisers often include other perceptual material, including contextual details such as depictions of the objects and activities (Zhao, Dahl, & Hoeffler, 2015; Kleine & Kernan, 1991), to invite imagination of future scenarios involving one's self (Krishnamurthy & Sujan, 1999). Assuming that a substantial quantity of such material is present, faces may interfere with the encoding of information meant to play a facilitating role in evoking consumption imagery. Prior research has demonstrated the presence of attention competition among advertisement elements, whereby attention devoted to a one particular element may detract attention from other elements (Pieters & Wedel, 2004). These studies build upon existing perspectives in visual processing, which argue for a limited-capacity human visual system that cannot fully analyze all stimuli simultaneously. Indeed, research suggests that visual attention selects some stimuli for further processing and allows others to be ignored (Desimone & Duncan, 1995; Kastner & Ungerleider, 2001).

Research in face recognition posits an important difference between genders toward memory for faces, such that females show superior recognition memory compared with males (Herlitz, Nilsson, & Backman, 1997; Herlitz & Rehnman, 2008). Eye-tracking studies have further revealed that women make more fixations to faces than men during

initial encoding, and therefore are able to extract more information from faces, which helps in producing a richer memory representation (Heisz, et al., 2013). Women's greater attention to faces is in line with the selectivity hypothesis, which posits that men and women employ different strategies, and have different thresholds, for processing information (Meyers-Levy & Maheswaran, 1991; Meyers-Levy & Sternthal, 1991; Meyers-Levy & Loken, 2015). Compared to men, women tend to process incoming data more comprehensively, and possess a lower threshold at which they comprehend information. In contrast, men are more selective data processors and, relative to females, rely on a style that is automatic, effortless, and relatively fast. Consistent with existing findings which show that elaborate processing among females can produce a resource constraint that impairs advertisement claim recognition (Noseworthy, et al., 2011), I argue that because women allocate a lot more attention to faces than men, their consumption imagery and subsequent self-brand connections will be more constrained by the presence of facial imagery.

It is less clear what sort of effect facial imagery in advertisements will have on men. On one hand, because men pay less attention to faces, their attentional resources should be less constrained, and by providing contextual information, faces may increase their consumption imagery and subsequent SBC. On the other hand, men process information less elaborately and more quickly (Meyers-Levy & Loken, 2015). This lack of attention and selective processing may result in facial imagery having little impact on their consumption imagery and SBC. Therefore, I predict that the negative effect of faces for women will be attenuated for men.

In sum, I argue that because faces preferentially engage women's attentional resources, the presence of a face inhibits attention to other perceptual objects that are meant to facilitate consumption imagery in the advertisement. Furthermore, by prohibiting women from constructing their own mental images of purchasing an advertised product, using the product, etc., advertisements with facial imagery will lower self-brand connections among women more than men. Formally, I predict the following:

H_1: Facial imagery and gender will interact to predict self-brand connections. Specifically, advertisements with facial imagery will result in lower self-brand connections for women, but the effect will be attenuated for men.

H_2: Reduction in consumption imagery will mediate the effect of facial imagery on self-brand connections for women.

Overview of Studies

I conducted four experiments to examine gender differences in self-brand connections and consumption imagery evoked as a result of exposure to facial imagery in advertising. Previous research has pointed to the role of product familiarity and prior knowledge in people's ability to visualize how one interacts with a product (Debevec & Romeo, 1992). Therefore, I decided to choose a familiar product category, watches, so that participants could generate mental images of product usage. Previous research has also suggested that brand familiarity may influence attention to the advertisement (Rayner, et al., 2001; Rosbergen, Pieters, & Wedel, 1997). Therefore, I created a

fictitious watch brand (Ajmer). In all studies, participants viewed advertisements for this fictitious brand that either did or did not contain facial imagery.

In Study 1, I examined the effect of facial imagery and gender on SBC (H_1). In Study 2, I explored my attention-based explanation by investigating whether women allocate more attention to facial imagery in advertisements than men. In Study 3, I tested consumption imagery as a mediator (H_2). Finally, in Study 4, I attempted to rule out alternative explanations and provide support for my "faces as information" conceptualization.

Study 1: Facial Imagery and Self-Brand Connections

Study 1 was an experimental investigation of my hypothesis that the presence of a model's face in an advertisement has a negative influence on female, but not male, consumers' self-brand connections (H_1). Participants saw an advertisement for a fictitious watch brand which either did or did not contain a model's face. My prediction was that women who saw an advertisement with the model's face would report lower self-brand connections than women who saw an advertisement without a model's face, but the same would not be true for men

Method

Participants

One-hundred and fifty respondents on Mechanical Turk (54% female) participated in the study in exchange for payment.

Design and Procedure

The study included one between-subjects factor (advertisement visual: face vs. no face) and two measured variables (gender and race). In this and all remaining studies, I control for participants' race in my analyses, because previous research suggests that race is a highly influential variable affecting responses to faces (Meissner & Brigham, 2001; Slone, Brigham, & Meissner, 2000).

I developed four different advertisements for Study 1. The advertisements included imagery from existing advertisements of the Piaget and Burberry watch brand, but I removed all mentions of Piaget and Burberry and replaced these with a fictitious brand name (Ajmer). In all of the advertisements, the left side of the advertisement included a picture of the watch and the brand name. In the face advertisements, a picture of a model wearing a watch occupied the right side of the advertisement, whereas in the no face advertisement, I cropped the picture of the model so that only the model's wrist was visible. Thus, the only difference between the face and no face advertisements was whether or not the model's face was in the focal visual. I created male and female versions of both the face and no face advertisements (see Appendix J for the advertising stimuli).

Participants were told that the study was about brands in the marketplace. On the following screen, they were asked to provide demographic information including gender and race. Next, they read the following cover story: "Assume that you are in the market for a new watch, and you come across an advertisement for Ajmer watches. The following screens show the advertisement for Ajmer watches. Your task is to look at the advertisement for Ajmer watches carefully, and then answer questions based on the

advertisement." Following this, I randomly assigned participants to either the face or no face condition and presented them with the gender-appropriate version of the advertisement.

After viewing the advertisement, participants completed Escalas and Bettman's (2003) measures of self-brand connections (e.g., "This brand reflects who I am"; "I can identify with this brand") anchored by 1 *(strongly disagree)* and 7 *(strongly agree)*. I averaged the measures to form an overall self-brand connection score (α = .97). Finally, because I used advertising imagery from a real brand, I asked participants whether the advertisement or the model in the advertisement was familiar to them (1 = not at all familiar; 7 = very familiar).

Results

Prior to the analysis, I removed 11 respondents (seven females and four males) who indicated that the advertisement or the model was familiar to them (i.e., 5, 6, or 7 on the familiarity scale). This resulted in a final sample of 158 respondents.

An analysis-of-variance (ANCOVA) with advertisement visual, gender, and their interaction predicting self-brand connections, and race as a control variable, showed a significant interaction of advertisement visual with gender ($F(2, 149) = 5.25$ $p < 0.03$). None of the other effects were significant (advertisement visual: $F(1, 149) = .49$, $p > .49$; gender: $F(1, 149) = .25$, $p > .61$; race: $F(1, 149) = .40$, $p > .53$).

Planned comparisons, as depicted in figure 3.1, revealed that women reported lower self-brand connections to the brand after viewing the face advertisement compared to the no-face advertisement ($M_{face} = 2.51$ vs. $M_{no\text{-}face} = 3.37$; $F(1, 149) = 6.38$, $p < .02$).

The presence of a face had no reliable effect on men's self-brand connections (M_{face} = 3.21 vs. $M_{no\text{-}face}$ = 2.93; $F(1, 149) = .59$, $p > .44$).

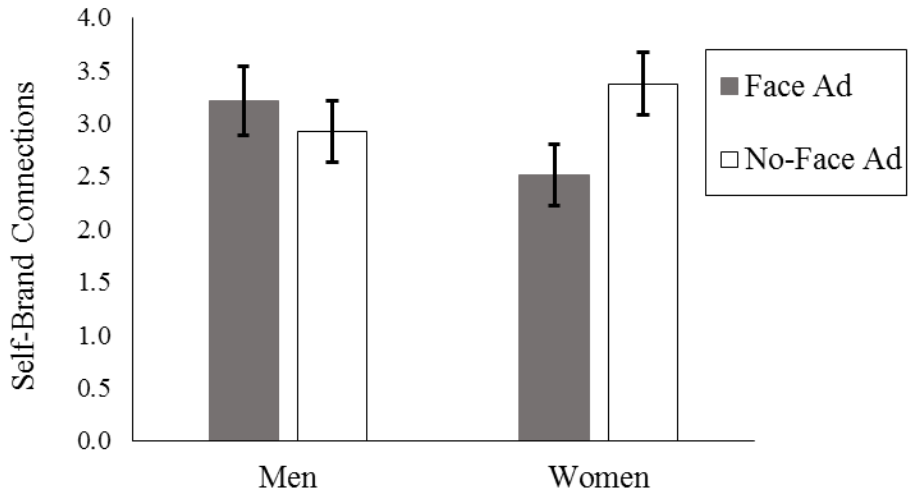


Figure 3.1: Effect of Facial Imagery on SBC across Gender (Study 1)

The results of Study 1 support H_1. Consistent with my prediction, facial imagery in an advertisement reduced SBC for women. However, this was not the case for men, suggesting that their lack of attention and selective processing may result in facial imagery having little to no impact.

To rule out the possibility that my results were due to the specific advertising imagery chosen, I replicated Study 1 using models and watches from different Burberry advertisements (see Appendix K for the advertisements). Again, I removed all mention of Burberry and replaced it with a fictitious brand, Ajmer. Aside from the change in the advertisements, the study was identical to Study 1. I again found a significant interaction of advertisement visual and gender on participants' SBC ($F(2, 184) = 5.41$, $p < 0.02$). Women reported lower self-brand connections to the brand after viewing the face

advertisement compared to the no-face advertisement (M_{face} = 2.66 vs. $M_{no\text{-}face}$ = 3.16; $F(1, 184) = 3.66$, $p < .06$). However, the presence of a face had no reliable effect on men's self-brand connections (M_{face} = 3.65 vs. $M_{no\text{-}face}$ = 3.19; $F(1, 183) = 2.12$, $p > .14$), thus replicating the results of Study 1.

Discussion

Study 1 revealed that facial imagery in an advertisement reduced SBC for women, but not for men. There are, however, other possible explanations for the lower SBC among women. To rule out the alternative explanations aside from facial imagery, I reran the study with a variety of additional measures. One-hundred respondents on Mechanical Turk participated in the study in exchange for payment. I present below a summary of the measures and results.

Aesthetic or stylish perceptions

Peracchio and Meyers-Levy (2010) have shown that the way in which an image in an advertisement is depicted affects perceptions of the product. Thus, it is possible that the presence of facial imagery influences consumers' perception of the aesthetics or stylishness of the product, which in turn interact with gender to influence self-brand connections. To rule out this account, I asked respondents to evaluate the design of the advertisement on the following items, adopted from Lavie and Tractinsky (2004): "aesthetic," "pleasant," "clear," "clean," "creative," "fascinating," "original," and "sophisticated". All scale items were measured on seven-point scales anchored at 1 *(none)* and 7 *(substantial).* I combined these measures (α = .92) to form a composite

measure of aesthetic perceptions. An ANCOVA with advertisement visual, gender, and their interaction predicting aesthetic perceptions, controlling for race, revealed a non-significant interaction effect ($p > .49$).

Model Identification

It is possible that male participants identified more with the model in the face advertisement, and that this greater identification led to a stronger self-brand connection with the brand. To show that the face advertisements were equivalent in terms of model identification, I asked the male and female respondents exposed to the face versions of the advertisements (N = 49) to indicate their agreement with the following three statements: "I strongly identify with the model in the advertisement," "I relate to the model in the advertisement," and "The model in the advertisement reminds me of myself". All items were measured on seven-point scales anchored at 1 *(not at all)* and 7 *(very much)*. I combined these measures ($\alpha = .94$) to form a composite measure of model identification. An independent-sample *t*-test comparing average scores on model identification for male and female participants revealed a non-significant difference in identification. ($M = 2.79$ vs. 3.00, $t(48) = -.43$, $p > .68$).

Model Relevance

It is possible that female participants found the model in the face advertisement to be less appropriate for a watch brand, and that this lower model relevance led to a weaker self-brand connection with the brand. To test this, I asked the respondents exposed to the face versions of the advertisements (N = 49) to rate the model in the advertisement on the

following two statements, adopted from Aydinoglu and Cian (2014): "The model used in the advertisement is relevant for the product category" and "The model in the advertisement is appropriately chosen". All items were measured on seven-point scales anchored at 1 *(not at all)* and 7 *(very much)*. I combined these measures (α = .83) to form a composite measure of model relevance. An independent-sample *t*-test comparing average scores on model relevance for male and female participants revealed a non-significant difference in relevance (M = 4.33 vs. 4.69, $t(48) = -.84$, $p > .42$).

Advertisement Credibility

Another alternative explanation is based on the credibility of the advertisements. To assess credibility, I asked participants to rate their agreement with the following three statements, adopted from Williams and Drolet (2005): "This advertisement is believable," "This advertisement is realistic," and "This advertisement is credible". All scale items were measured on seven-point scales anchored at 1 *(not at all)* and 7 *(very much)*. I combined these measures (α = .92) to form a composite measure of advertisement credibility. An ANCOVA with advertisement visual, gender, and their interaction predicting advertisement credibility, controlling for race, revealed a non-significant interaction effect ($p > .36$).

Perceived Information Content

To ascertain whether the advertisements were equivalent in terms of the amount of information they contained, participants rated the advertisements on the following three items, adopted from Meyers-Levy and Peracchio (1992): "The amount of relevant product information provided," "The amount of product knowledge communicated,"

"The amount of aid offered in making valid judgments". All scale items were measured on seven-point scales anchored at 1 *(none)* and 7 *(substantial)*. I combined these measures (α = .89) to form a composite measure of perceived information content. An ANCOVA with advertisement visual, gender, and their interaction predicting information content, controlling for race, revealed a non-significant interaction effect (p > .23).

Advertisement Attractiveness

Advertisement attractiveness was measured using four seven-point semantic differential scales (*good/ bad; like/dislike; pleasant/unpleasant; awful/nice*; α = .94). An ANCOVA with advertisement visual, gender, and their interaction predicting perceived advertisement attractiveness, controlling for race, revealed a non-significant interaction effect (p > .35).

Overall, these supplementary analyses provide support for Study 1 results that facial imagery in an advertisement reduced SBC for women, but not for men. My theorizing suggests that women tend to pay more attention to female faces than men pay to male faces, constraining their ability to connect with the brand. In Study 2, I investigated this claim directly, by examining gender differences in attention to faces in advertising.

Study 2: Attention to Faces

The primary objective of Study 2 was to examine the role of gender differences in attention to facial imagery in advertisements. Participants were presented with advertisements that were embedded with heat maps, along with a series of survey

questions relating to attention. Participants were asked to respond to the survey questions by clicking on the advertisement itself, which provided a means of estimating attention during the advertisement exposure. My expectation was that female participants would click on female faces in the advertisements more often than male participants on male faces in the advertisement, indicating a greater allocation of attention to faces among women.

Method

Participants

One-hundred and six participants (62% female) completed the study on Mechanical Turk in exchange for payment.

Design and Procedure

Participants first read the same cover story used in Study 1, and then saw the same face advertisement (Burberry - see Appendix K). Afterwards, however, participants were not asked to report their SBC. Instead, they were presented with three self-report measures of attentional allocation. The first two measures were intended to capture attention selection, defined as the process of bringing an ad object into the focus of attention (Pieters & Wedel, 2007). The first measure asked participants to "click on the area of the advertisement where your eye went first when you looked at the advertisement." On the next screen, the advertisement was presented again exactly in the same way as it was presented during the prior question. However, participants were asked to "click on the area of the advertisement that attracted your eye the most." The last

measure was aimed at capturing attention engagement, defined as the process of sustaining attention to an already selected object (Pieters & Wedel, 2007). Participants were shown the same advertisement a third time, and asked to "click on the area of the advertisement that held your attention the most." After completing these measures, participants indicated their familiarity with the advertisement using the same measure as Study 1.

Results

None of the participants indicated that the advertisement was familiar to them, so the entire sample was retained for analyses. Figure 3.2 provides illustrative heat maps generated by aggregating participant responses. The dependent variable was the percentage of subjects in each condition who clicked on the face. Analysis of heat map patterns revealed that revealed a stronger tendency of facial imagery to capture (and hold) attention among women than men. In response to the two attention selection questions, 56% (37/66) and 36% (24/66) of women clicked on the model's face, as compared to 25% (10/40) and 23% (9/40) of men (question 1: $\chi^2 = 3.12$, $p < .01$; question 2: $\chi^2 = 1.5$, $p < .15$). In response to the attention engagement question, 40% (27/66) of clicked on the model's face, as compared to 23% (9/40) of men ($\chi^2 = 1.94$, $p < .06$).

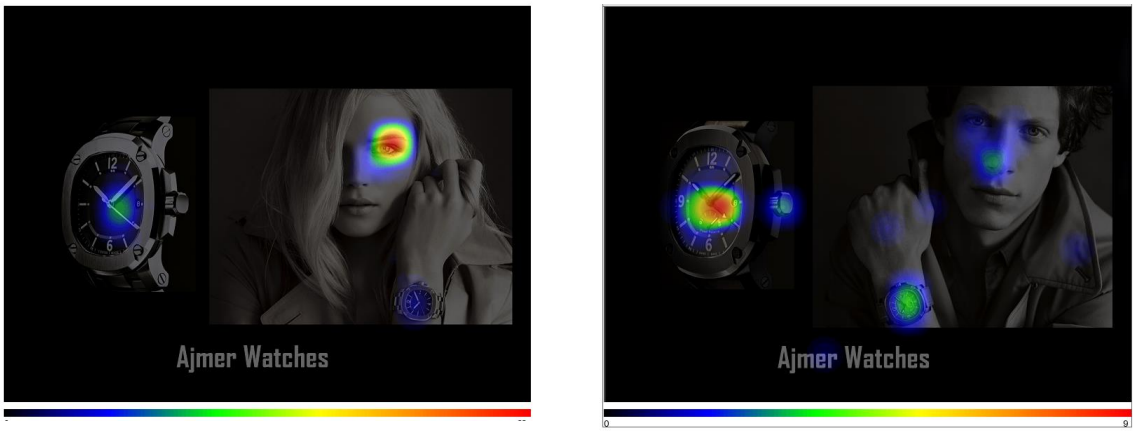


Figure 3.2: Heat Maps Showing Attention Engagement (Study 2)

Overall, the pattern of results obtained in Study 2 supports my process explanation for the SBC differences observed in Study 1. Specifically, the findings suggest that women reported lower SBC than men in response to face advertisements because they were allocating more attention to the faces themselves.

My theorizing suggests that the lower SBC among women following focused attention to facial imagery in an advertisement is the result of a decline in attentional resources available for other advertisement objects designed to evoke high consumption imagery (e.g., product depictions). For example, without imagining using and wearing the watch, women are less to connect with the brand. In Study 3, I directly investigate consumption imagery as the process underlying the effect of facial imagery on SBC among women.

Study 3: Role of Consumption Imagery

Study 3 was an experimental investigation of H_2, that the effect of facial imagery on self-brand connections is mediated by consumption imagery for women. I used the same advertisements and a similar procedure as Study 1, but also included measures of consumption imagery (Bone & Ellen, 1992; Elder & Krishna, 2012).

Method

Participants

Two-hundred and three respondents on Mechanical Turk (50% female) participated in the study in exchange for payment.

Design and Procedure

The study included one between-subjects factor (advertisement visual: face vs. no face) and two measured variables (gender and race). The procedure was similar to Study 1. Participants were asked to imagine that they were in the market for a new watch and would be examining an advertisement for Ajmer watches. I randomly assigned them to one of two advertisement conditions (face vs. no-face), and the advertisements were the same as those used in Study 1.

Participants completed the same measures of SBC from Study 1 (α = .95). I also measured consumption imagery using three items (Bone & Ellen, 1992; Elder & Krishna, 2012). Specifically, participants were asked to rate the extent to which images of wearing the watch came to mind (1 = not at all; 9 = to a great extent), the number of images that came to mind (1 = few or no images; 9 = lots of images), and to what extent they could imagine wearing the watch (1 = not at all; 9 = to a great extent). The mean of these three

items was used to form an overall consumption imagery score (α = .85). The order of presentation of SBC and consumption imagery measures was randomized across participants. Finally, I measured participants' familiarity with both the advertisement and the model in the advertisement.

Results

Prior to the analysis, I removed eight respondents (seven females and one male) who indicated that the advertisement or the model was familiar (i.e., 5, 6, or 7 on the familiarity scale). This resulted in a final sample of 195 respondents.

An ANCOVA with advertisement visual, gender, and their interaction predicting self-brand connections, and race as a control variable, showed a significant interaction of advertisement visual with gender ($F(2, 186) = 4.39$, $p < 0.05$). The main effect of advertisement visual was not significant ($F(1, 186) = 1.17$, $p > .28$). The main effect of gender, on the other hand, was significant ($F(1, 186) = 8.79$, $p < .01$). The main effect of race was marginally significant ($F(1, 186) = 2.10$, $p = .07$).

As depicted in figure 3.3, planned comparisons revealed that women reported lower SBC after viewing the face advertisement compared to the no-face advertisement ($M_{face} = 2.32$ vs. $M_{no\ face} = 3.05$; $F(1, 186) = 4.76$, $p < .04$). The presence of a face had no reliable effect on men's SBC ($M_{face} = 3.46$ vs. $M_{no\ face} = 3.23$; $F(1, 186) = .54$, $p > .46$). Moreover, while there was no reliable gender difference in the no-face condition ($M_{women} = 3.05$ vs. $M_{men} = 3.23$; $F(1, 186) = .33$, $p > .57$), women reported lower SBC than men in the face advertisement condition ($M_{women} = 2.32$ vs. $M_{men} = 3.46$; $F(1, 186) = 12.38$, $p < .01$). This pattern replicates the findings of Study 1 and supports H_1.

An analysis-of-variance (ANCOVA) with advertisement visual, gender, and their interaction predicting consumption imagery, and race as a control variable, showed a marginally significant interaction of advertisement visual with gender ($F(2, 186) = 3.01$, $p = 0.08$). The main effect of advertisement visual was not significant ($F(1, 186) = 1.53$, $p > .22$). The main effect of gender, on the other hand, was significant ($F(1, 186) = 6.87$, $p < .02$). The main effect of race was marginally significant ($F(1, 186) = 1.96$, $p = .09$).

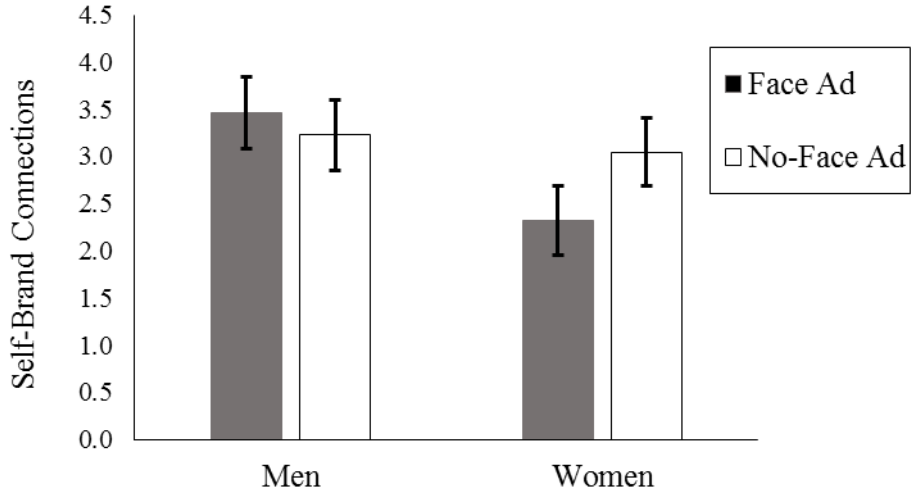


Figure 3.3: Effect of Facial Imagery on SBC across Gender (Study 3)

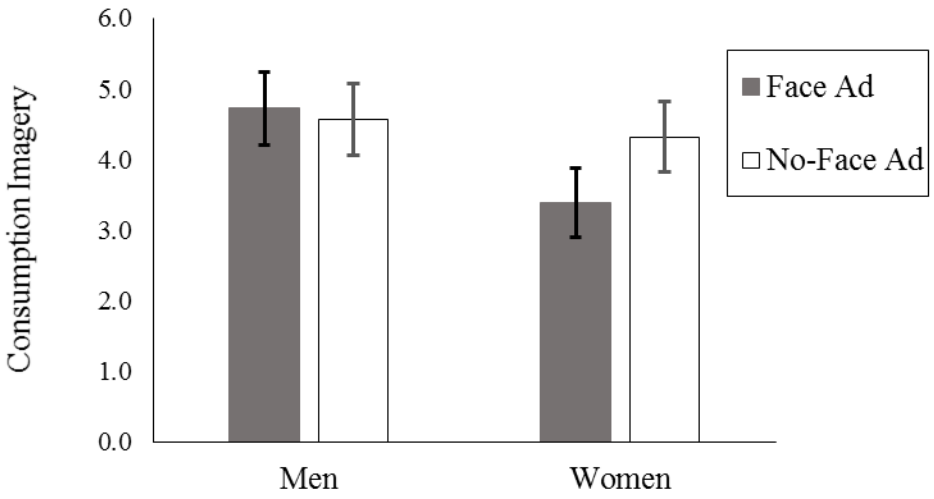


Figure 3.4: Effect of Facial Imagery on CI across Gender (Study 3)

Consumption imagery demonstrated a similar pattern as SBC, as depicted in figure 3.4, with women reporting less consumption imagery to the brand after viewing the face advertisement compared to the no-face advertisement (M_{face} = 3.39 vs. $M_{no\ face}$ = 4.32; $F(1, 186) = 4.17$, $p < .05$). The presence of a face had no effect on men's consumption imagery (M_{face} = 4.73 vs. $M_{no\ face}$ = 4.57; $F(1, 186) = .13$, $p > .72$). Moreover, while there was no gender difference in the no-face condition (M_{women} = 4.32 vs. M_{men} = 4.57; $F(1, 186) = .35$, $p > .55$), women reported less consumption imagery than men in the face advertisement condition (M_{women} = 3.39 vs. M_{men} = 4.73; $F(1, 186) = 9.16$, $p < .01$).

Next, I tested whether consumption imagery mediated the effect of facial imagery on SBC among women. Restricting the sample to female participants, a mediation test (Preacher & Hayes, 2004; Model 4) using 5,000 boot-strapped samples with advertisement visual condition as the independent variable, consumption imagery as the mediator, race as a covariate, and SBC as the dependent variable revealed that when

controlling for consumption imagery, the direct effect of advertisement visual was not significant (β = -.21, p > .14) and the indirect path did not include zero (β = - .22, 95% CI: -.42 to -.06), thus confirming my mediational hypothesis (H_2).

Discussion

The results of Study 3 provide support for both of my hypotheses. Women who view an advertisement with facial imagery engaged in less consumption imagery than women who viewed an advertisement without facial imagery, and subsequently reported lower SBC. Combining these results with the results of my previous studies, it appears that women devote more attentional resources than men to processing facial imagery, which in turn prohibits their consumption imagery. Because they engage in less visualization of themselves using the product, they feel less connected to it and the brand.

While results of these studies support a detrimental effect of advertisements with facial imagery on women's SBC as a result of reduced consumption imagery, they leave open an alternative explanation based on self-esteem. In particular, it is possible that women respond less positively than men to facial imagery in advertisements due to their lower appearance self-esteem (Aydinoglu & Cian, 2014).

To determine whether an information-processing approach adds explanatory power beyond that of appearance self-esteem, I re-ran study 3 with the same advertisements and a similar procedure. The only difference was that before being exposed to the watch advertisement, participants were asked to complete measures of appearance self-esteem (Heatherton & Polivy, 1991). Analysis was performed via two-way ANCOVA with self-esteem as a covariate. Results indicated that self-esteem did not

reliably affect the condition by gender interaction on consumption imagery. Thus, my results do not contradict the notion that people with lower appearance self-esteem react negatively to advertisements with attractive models. Indeed, I do find that the response to advertisements with facial imagery is associated with self-esteem. My contribution lies in deepening the current understanding of the attention-based mechanism that underlies these genders' responses.

Study 4: Store Information

If faces represent an information cue that constrains women's ability to engage in brand visualization and form SBCs, then the same result should be expected with alternative information cues. Therefore, Study 4 was similar to study 3 with one change: I included a condition where the advertisement did not contain a face, but did contain store information. The store where a brand is sold acts as information by reflecting attributes of the brand, and a store is also a sensorial environment, with many aspects that may affect consumer judgments. Given that visualizing and constructing imagined experiences from store information should be an attention-consuming task, I predicted that adding store information to the no-face advertisement would lower SBC among women, but any such effect would be reduced among men.

Method

Participants

Three-hundred and fifty-four respondents on Mechanical Turk (50% female) participated in the study in exchange for payment.

Design and Procedure

This study included one between-subjects factors (advertisement visual: face vs. store vs. no-face) and two measured variables (gender and race)). I developed eight different advertisements for Study 4. The face advertisement and the no-face advertisement were very similar to the advertisements used in Study 2 (see Appendix K). I also added a store advertisement, which was similar to the no-face as but also include a store name, indicating where the watch could be purchased (Target or Saks Fifth Avenue; see Appendix L for the advertisements). I included both Target and Saks Fifth Avenue conditions to investigate whether the type of store (luxury vs. non-luxury) would affect consumption imagery and self-brand connections. I created male and female versions of each of these advertisements (Target, Saks).

Participants read the same cover story from the previous studies regarding shopping for a new watch brand. Next, they were randomly assigned to one of the advertisements (face vs. Target vs. Saks vs. no-face), and they were presented with a gender-appropriate version of the advertisement for a watch brand.

After viewing the advertisement, participants completed the same measures of self-brand connection ($\alpha = .95$) and consumption imagery ($\alpha = .85$) used in the prior studies. As in the prior studies, participants then indicated whether the advertisement or the model in the advertisement was familiar.

Results

Prior to the analysis, four respondents (all males) who indicated they had seen the

advertisement before were removed, resulting in an effective sample size of 350. An ANOVA indicated that the store replicates (Target vs. Saks) did not interact with gender to predict either the dependent variable or proposed mediator. Thus, I collapsed across the store replicates to create the store condition.

An analysis-of-variance (ANCOVA) with advertisement visual, gender, and their interaction predicting self-brand connection, and race as a control variable, showed a significant interaction of advertisement visual with gender ($F(2, 339) = 5.90$, $p < 0.01$). The main effect of advertisement visual was not significant ($F(1, 339) = 1.68$, $p > .18$). The main effect of gender, on the other hand, was significant ($F(1, 339) = 24.91$, $p < .01$). The main effect of race was also significant ($F(1, 339) = 3.83$, $p < .01$).

As depicted in figure 3.5, planned comparisons revealed that women reported marginally lower SBC to the brand after viewing the face advertisement compared to the no-face advertisement ($M_{face} = 2.63$ vs. $M_{no\text{-}face} = 3.20$; $F(1, 339) = 3.92$, $p < .06$). Women also reported lower self-brand connection to the brand after viewing the store advertisement compared to the no-face advertisement ($M_{store} = 2.27$ vs. $M_{no\text{-}face} = 3.20$; $F(1, 339) = 12.54$, $p < .01$). The presence of a face had no reliable effect on men's self-brand connection ($M_{face} = 3.71$ vs. $M_{no\text{-}face} = 3.23$; $F(1, 339) = 2.63$, $p > .11$). The presence of store information had no reliable effect on men's self-brand connection ($M_{store} = 3.55$ vs. $M_{no\text{-}face} = 3.23$; $F(1, 339) = 1.39$, $p > .23$). Moreover, while there was no reliable gender difference in the no-face condition ($M_{women} = 3.20$ vs. $M_{men} = 3.23$; $F(1, 339) = .01$, $p > .90$), women reported lower self-brand connection than men both in the face condition ($M_{women} = 2.63$ vs. $M_{men} = 3.71$; $F(1, 339) = 13.43$, $p < .01$), and in the store information condition ($M_{women} = 2.27$ vs. $M_{men} = 3.55$; $F(1, 339) = 28.86$, $p < .0001$)

An ANCOVA with advertisement visual, gender, and their interaction predicting consumption imagery, and race as a control variable, showed a significant interaction of advertisement visual with gender ($F(2, 339) = 5.87$, $p < 0.01$). The main effect of advertisement visual was not significant ($F(1, 339) = .19$, $p > .80$). The main effect of gender, on the other hand, was significant ($F(1, 339) = 8.37$, $p < .01$). The main effect of race was not significant ($F(1, 339) = 1.33$, $p > .20$).

As depicted in figure 3.6, planned comparisons revealed that women reported less consumption imagery after viewing the face advertisement compared to the no-face advertisement ($M_{face} = 3.79$ vs. $M_{no\text{-}face} = 4.82$; $F(1, 339) = 6.26$, $p < .02$). Women also reported less consumption imagery after viewing the store advertisement compared to the no-face advertisement ($M_{store} = 3.88$ vs. $M_{no\text{-}face} = 4.82$; $F(1, 186) = 6.41$, $p < .02$). The presence of a face had no reliable effect on men's consumption imagery ($M_{face} = 5.02$ vs. $M_{no\text{-}face} = 4.35$; $F(1, 339) = 2.63$, $p > .11$), but the presence of store information marginally increased men's consumption imagery ($M_{store} = 5.05$ vs. $M_{no\text{-}face} = 4.35$; $F(1, 339) = 3.50$, $p < .07$).

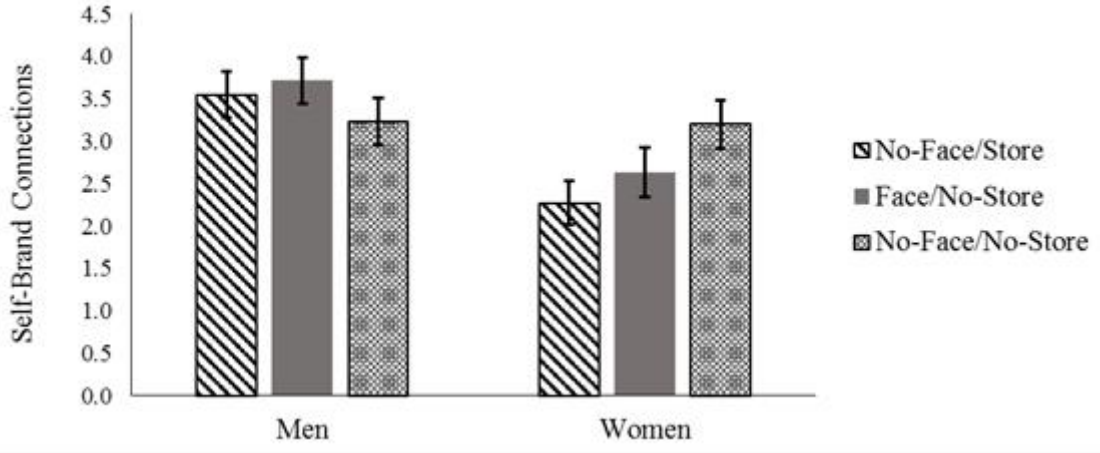


Figure 3.5: Effect of Store Information on SBC across Gender (Study 4)

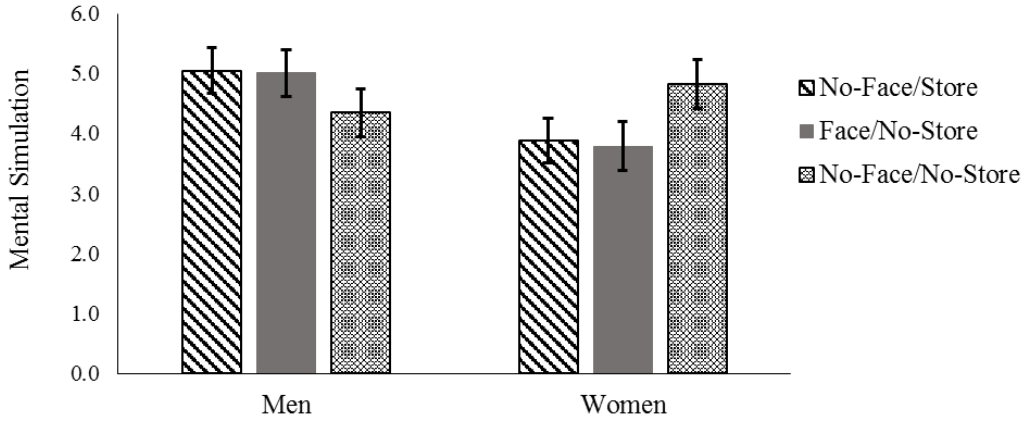


Figure 3.6: Effect of Store Information on CI across Gender (Study 4)

Next, I tested consumption imagery as a mediator of the effect of advertisement on SBC among women. Restricting the sample to female participants, a mediation test (Preacher & Hayes, 2007; Model 4) using 5,000 boot-strapped samples with advertisement visual condition as the independent variable, consumption imagery as the mediator, race as a covariate, and self-brand connection as the dependent variable revealed that when controlling for consumption imagery, the direct effect of advertisement visual was non-significant (β = .04, p > .65) and the indirect path did not include zero (β = .25, 95% CI: .06 to .48), thus confirming my mediational hypothesis.

Discussion

Results from Study 4 provide strong support for an information-processing based account of response to facial imagery in advertisements. In particular, lower SBC among women was obtained in response to both advertisements containing facial imagery and

advertisements containing store information, as compared to no-face advertisements. As in Study 3, differences in SBC were mediated by consumption imagery. Together, these findings lend credence to my conceptualization of faces as information, whose differential effects on the processing patterns of men and women cannot be explained by gender differences in self-esteem.

General Discussion

Facial imagery is an ever-present cue in advertisements, often used by marketers to capture attention. The current research provides insights into gender differences in reactions to the use of own-gender facial imagery in advertisements. Drawing upon theoretical accounts of facial processing and attention, I argued that because women pay more attention to faces than men, the presence of facial imagery in advertisements constrains their attentional resources, which prohibits their consumption imagery and subsequently leads to lower self-brand connections.

Across four studies, I found a consistent pattern in which facial imagery in an advertisement negatively affected female consumers', but not male consumers', self-brand connections. In Study 2, I found evidence for my theorizing by demonstrating that women pay more attention to facial imagery in an advertisement. In Study 3, I established that facial imagery within an advertisement reduces SBC among women because its presence inhibits their consumption imagery. In Study 4, I utilized an entirely different information cue (store names) and observed similar gender effects on consumption imagery and SBC, further supporting my information-processing based account.

Theoretical Contributions

The contributions made by the current research can be partitioned into three major areas: furthering knowledge of consumer reactions to advertisements containing facial imagery, informing the literature on consumption imagery, and advancing theoretical knowledge of gender differences in information processing. Regarding the first area, not only do I replicate recent findings showing that women have a negative response to own-gender face advertisements, I provide a deeper understanding of that effect. Extant research has demonstrated that women respond negatively to advertisements containing pictures of other attractive women, primarily due to negative social comparisons arising from low self-esteem (e.g., Aydinoglu & Cian, 2014). My data suggest that an attention-based account may have more potential to explain reactions for both genders. In fact, attractive faces have been shown to capture greater spatial attention than unattractive faces, even if appraisal of facial attractiveness is task-irrelevant (Sui & Liu, 2009; Liu & Chen, 2012). Based on this, my account would predict that the attentional deficit resulting from attractive faces would perhaps be even greater than the deficit resulting from unattractive faces. Thus, my findings add to the consumer literature on reactions to faces that has previously focused primarily on the domain of self-esteem (Aydinoglu & Cian, 2014; Martin & Gentry, 1997). It is also noteworthy that unlike previous research on consumer reactions to advertisements with facial imagery, my stimuli contain very little textual information, and keep product imagery constant across the advertisement conditions.

Second, my finding that more information (e.g., facial imagery) can inhibit the consumption imagery of women extends existing research on consumption imagery,

which has shown that too much guidance might constrain consumers and lead to suboptimal outcomes (Dahl & Moreau, 2007; Soman & Zhao, 2011). Thus, more information may not always be beneficial in advertisements. Also, the current research is the first (of which I am aware) to show a direct link between consumption imagery and SBC without explicitly instructing consumers to imagine consuming the product. Consumption imagery has been examined in consumer behavior contexts such as advertising effectiveness (Thompson & Hamilton, 2006), preference formation (Petrova & Cialdini, 2005), anticipatory satisfaction with an experience (MacInnis & Price, 1987, 1990), and creativity in product design (Dahl, Chattopadhyay, & Gorn, 1999). My research extends this examination to the context of self-brand connections.

My third contribution relates to perspectives on the role of attention to faces in advertisement information processing. Advertising elements such as the brand, pictorial, and text, have been shown to exert both positive and negative effects on attention (Pieters & Wedel, 2004). As far as I am aware, the current research is the first to apply this premise to understand responses to facial imagery in advertisements. It is also the first to show the link between attentional capture by an advertising element and its downstream effects on consumers.

Practical Implications

Beyond their theoretical contributions, the current findings offer practical implications for marketers and advertisers who use facial imagery in advertisements. The importance of facial imagery in attracting consumer attention is already recognized by those engaged in visual communications. Yet, my research demonstrates that the capture

of attention by facial imagery may reduce the impact of other advertisement elements and jeopardize the attainment of marketing communication goals, such as generating consumption imagery or establishing consumers' connections to brands. In light of these findings, marketers need to carefully think about their specific campaign goals (e.g., creating brand awareness versus encouraging consumption imagery) before proceeding to making a choice between using a visual consisting of a face or depicting product usage.

The second straightforward implication of my research is that marketers must be sensitive to gender differences in visual processing of faces. In the magazine survey described in the introduction, faces were contained in approximately half of magazine advertisements targeting men and two-thirds of advertisements targeting women. The present research suggests that use of faces can be problematic with regard to generating a positive response among women. Given that faces have an intrinsic tendency to capture a substantial amount of attention (Palermo & Rhodes, 2007), it is unlikely that simply reducing the size of a face in an advertisement would eliminate the problem. However, textual elements, such as visualization instructions or detailed product information, are an effective way of inducing consumption imagery (Krishnamurthy & Sujan, 1999), and there is evidence that increasing the surface size of textual elements in advertisements does increase their perceptual salience (Pieters & Wedel, 2004). Therefore, it may be advantageous to route attention from the face to the text in an advertisement, by increasing the relative amount of space devoted to the text.

Limitations and Future Research

One limitation of my research is that I only examined advertisements for a single product category (watches). Furthermore, it can be argued that my advertisements highlighted relatively more hedonic attributes (e.g. the design) of the watch than utilitarian features (e.g., water-resistance). Prior findings indicate that hedonic products can evoke powerful imagery in which consumers vicariously experience the satisfaction of consuming a product (MacInnis & Price, 1987). Future research might examine whether the current results extend to advertisements for products with more utilitarian features. Given that it is relatively more difficult to imagine or elaborate upon a utilitarian product than a utilitarian product, I expect the presence of facial imagery to lead to even lower consumption imagery, thus amplifying my findings.

A second limitation of my research is that I only examined the effects of single, same-gender, facial imagery in advertisements. Current research in neuropsychology suggests that both genders process opposite-gender faces differently than same-gender faces (Proverbio, et al., 2010). For example, there is evidence of an own-gender bias in memory for faces among women but not men, which has been replicated in several studies (McKelvie, 1987; Wright & Sladden, 2003; Loven, et al., 2011). Specifically, females have been shown to pay more attention to female faces than to male faces (Ellis, Shepherd, & Bruce, 1973; Herlitz & Rehnman, 2008). One explanation for this bias is that females are more socially interested in other females than in males (Rehnman & Herlitz, 2007). This greater interest might reflect the fact that relationships between females tend to be of longer duration (Parker & de Vries, 1993) and involve a greater degree of intimacy (Davidson & Duberman, 1982) than relationships between males (for a review, see Sherman, De Vries & Lansford, 2000). Applied to my research, an

implication of these findings is that women may not devote as much attention to an opposite-gender face in an advertisement as to an own-gender face in the same advertisement such that the negative effect faces on consumption imagery and self-brand connections would be reduced.

Future research could also examine the presence of multiple faces in advertisements. Research in cognitive neuroscience suggests that there may be face-specific resources, limiting the number of faces that can be simultaneously encoded and enabling faces to be ignored only when processing other faces (Palermo & Rhodes, 2007). Given this prior finding, I would not expect advertisements with multiple faces to evoke different reactions than advertisements with a single face.

My studies exclusively utilized facial imagery in which the model was using the product (i.e., wearing the watch). One potentially fruitful line of investigation would be to examine the role of facial imagery in contexts where a face is shown without product use. As mentioned previously, it is harder for consumers to visualize using new products without receiving external visualization aids (Zhao, Dahl, & Hoeffler, 2015). Observing another person performing an action (such as wearing a watch) helps consumers to elicit a form of internal replication involving much the same neural activity that would occur if they performed the actions themselves (Goldman, 2006; Niedenthal et al., 2005). Therefore, my theorizing would predict that advertisements showing a face without product use would evoke less consumption imagery than advertisements showing a face with product use.

My work offers a variety of future research opportunities. A potentially fruitful line of investigation would be to examine conditions under which women's reactions to

facial imagery are akin to those of men. For example, are there contingencies that would lead women to respond more positively to face versus no-face advertisements? Speculatively, I suggest that reducing the motivation to engage in face processing among women might improve their response to advertisements with facial imagery. Further investigation into this interesting possibility would be in order.

Research on consumption imagery has differentiated process-focused imagery and outcome-focused imagery. Outcome-focused messages encourage consumers to simulate favorable outcomes of product use. For example, advertisements for beauty products show beautiful people and advertisements for ovens show delicious food (Escalas & Luce, 2004). Process-focused simulation, on the other hand, involves simulating progressive steps toward a goal (Pham & Taylor, 1999). In the domain of advertising, process-focused thought has been found to enhance behavioral intentions toward advertised products. For example, participants instructed to focus on the process of using a fictitious vitamin product reported stronger intentions to engage in behavior encouraged by the advertisement. It would be an interesting future research question to examine how process- vs. outcome-focused thought interacts with processing of facial information to impact consumption imagery and SBCs. It remains an open question (albeit outside the scope of the current work) whether similar results would obtain under conditions that promote a different focus.

Faces convey many pieces of information—race, sex, attractiveness, direction of eye gaze and kinship. Examining how attention interacts with some of these face attributes is an active area of neuropsychological research (e.g., eye gaze, see Hoffman & Haxby, 2000). Future consumer research should seek to investigate how differences in

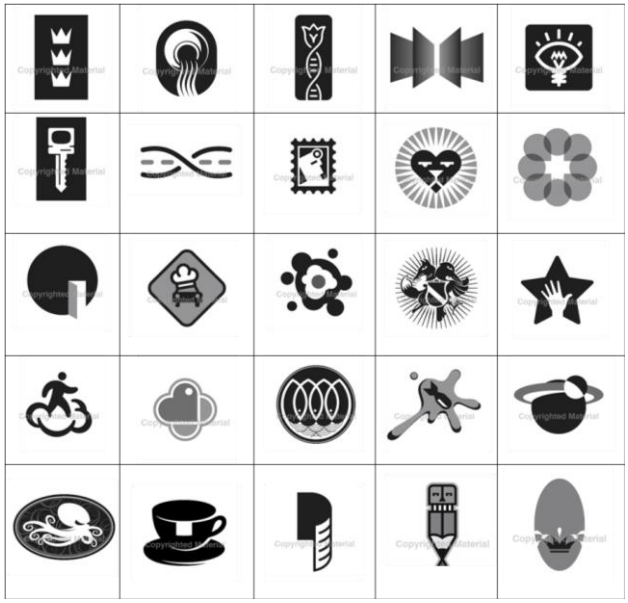
attention to faces with varied attributes affects focus on other advertisement objects and subsequent consumption imagery.

Lastly, research suggests that some individuals have a greater capacity for visual mental imagery and tend to form vivid visual images (Hatakeyama, 1997; Marks, 1973). Vividness of imagery does not appear to be correlated with gender (Sheehan, Ashton, & White, 1983). Future work in this area might investigate the influence of the trait "chronic imagery vividness" on response to facial imagery in advertisements. I speculate that those high on vividness of imagery may require fewer resources to process facial imagery. If so, then differences in chronic vividness of imagery across women should predict the extent to which the presence of facial imagery in advertisements negatively impacts SBC

My research has taken an initial step in achieving a greater understanding of how intricacies of visual information processing guide consumer reaction to advertising. However, the interplay between face perception, advertising, and attention is ripe for further discovery. It is my hope that the theory and findings presented here stimulate additional investigation into this important topic.

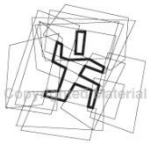
APPENDIX A

LOGO STIMULI (STUDY 1, CHAPTER 2)



APPENDIX B

DESIGN FACTORS AND EXAMPLES (STUDY 1, CHAPTER 2)

Design Factor	High	Low
Representativeness captures the degree of realism in a design.		
Organic designs are those that are made up of natural shapes such as irregular curves.		
Symmetry appears in designs as reflections along one or more axis. That is, the elements on one side of the axis are identical to the elements on the other side.		
Elaborate captures the concept of design richness and the ability of the design elements to capture the essence of something.		
Parallelism can be seen in designs contain multiple lines or elements that appear adjacent to each other.		
Repetition of elements occurs when the parts of the design are similar or identical to one another.		
Proportion/Golden Ratio captures the relationship between the horizontal and vertical dimensions.		
Roundness appears in designs that are made of primarily curved lines and circular elements.		

APPENDIX C

PERSONALITY AS A FUNCTION OF DESIGN (STUDY 1, CHAPTER 2)

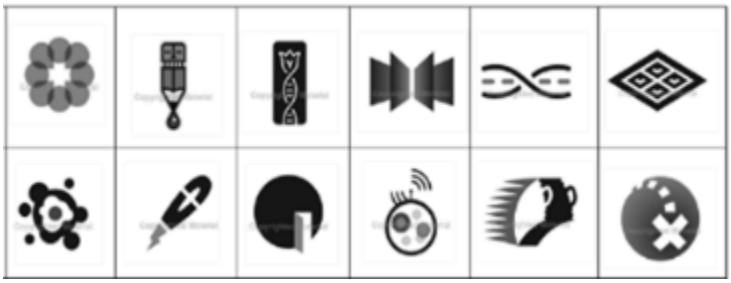
Personality	**Design Factor**	B	S.E(B)	*T*	*p value*
Sincere	Representative	0.40	0.12	3.32	0.01
	Organic	0.66	0.16	4.20	0.01
	Symmetry	0.07	0.15	0.69	0.49
	Elaborate	-0.34	0.14	-2.95	0.01
	Parallel	0.43	0.12	3.67	0.01
	Repetition	0.07	0.10	0.67	0.50
	Golden Ratio	-0.37	0.10	-3.69	0.01
	Round	-0.50	0.14	-3.60	0.01
Exciting	Representative	-0.15	0.12	-1.30	0.20
	Organic	0.08	0.16	0.53	0.60
	Symmetry	-0.32	0.11	-3.05	0.01
	Elaborate	0.73	0.13	5.46	0.01
	Parallel	-0.44	0.12	-3.81	0.01
	Repetition	-0.01	0.10	-0.10	0.92
	Golden Ratio	0.32	0.10	3.23	0.01
	Round	-0.02	0.14	-0.17	0.87
Competent	Representative	0.49	0.12	4.11	0.01
	Organic	-0.09	0.16	-0.57	0.57
	Symmetry	0.13	0.11	1.19	0.24
	Elaborate	-0.32	0.14	-2.36	0.02
	Parallel	0.44	0.12	3.75	0.01
	Repetition	-.07	0.10	-0.69	0.49
	Golden Ratio	-0.09	0.10	-0.92	0.36
	Round	0.08	0.14	0.55	0.58
Sophisticated	Representative	0.11	0.11	0.95	0.34
	Organic	0.51	0.15	3.37	0.01
	Symmetry	0.63	0.10	6.19	0.01
	Elaborate	-0.04	0.13	-0.28	0.78
	Parallel	0.26	0.11	2.32	0.02
	Repetition	0.30	0.10	3.05	0.01
	Golden Ratio	0.51	0.10	5.23	0.01
	Round	0.71	0.13	5.38	0.01
Rugged	Representative	-0.01	0.16	-0.04	0.97
	Organic	0.01	0.15	0.07	0.95
	Symmetry	0.12	0.10	1.13	0.26
	Elaborate	0.73	0.13	5.67	0.01
	Parallel	-0.32	0.11	-2.86	0.01
	Repetition	0.04	0.10	0.41	0.68
	Golden Ratio	0.43	0.10	4.39	0.01

APPENDIX D

REALISTIC LOGO PAIRS (STUDIES 2a AND 3, CHAPTER 2)

Symmetric

Asymmetric



APPENDIX E

ARTWORK (STUDY 2b, CHAPTER 2)

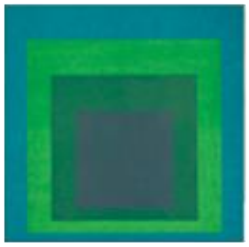


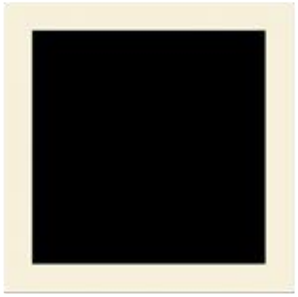










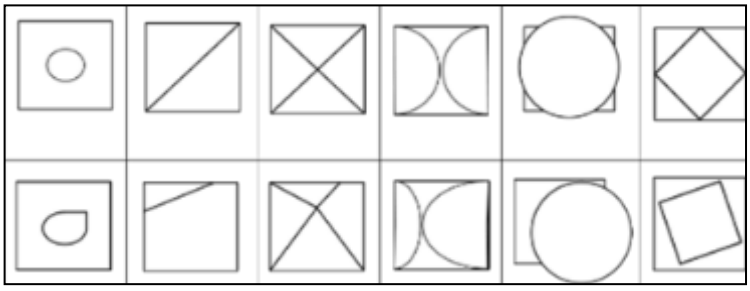



APPENDIX F

BASIC LOGO PAIRS (STUDY 3, CHAPTER 2)

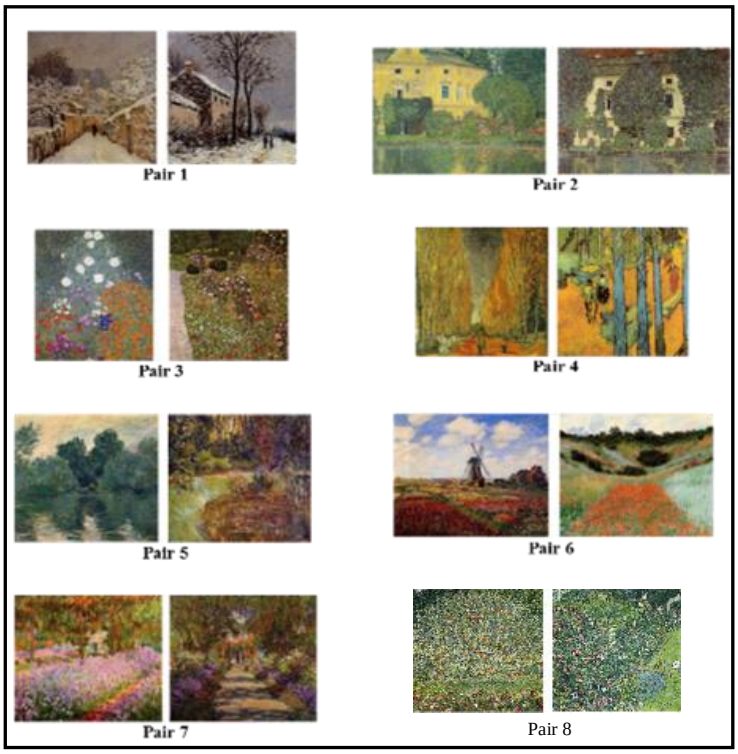
Symmetric

Asymmetric



APPENDIX G

ARTWORK STIMULI (STUDY 4, CHAPTER 2)



APPENDIX H

LOGO DESIGN GUIDELINES (STUDY 5, CHAPTER 2)

Guidelines for Creating a Logo- Part 1

What is a "logo"?
A logo is a graphic design that a company uses to identify itself or its products. As a visual representation of the company, logos can play an important part in marketing.

What are the different types of logos?
Some logos are entirely font-based, some incorporate an illustration alongside text, and others rely solely on a shape-based design. In this study, you have been asked to create a shape-based logo design (below are some examples).

What makes a "good" logo?
Below are some characteristics of a "good" logo:
- It should be memorable
- It should not evoke any negative associations
- It should look good in smaller formats as well as larger formats
- It should not need to rely on color to be effective

Guidelines for Creating a Logo- Part 2

Suggested steps for designing logos:

1. The first step to understand the personality of the brand and how it is supposed to be perceived.

- Remember: Audax is positioned as a brand that is exciting, up-to-date, daring, spirited, imaginative, youthful, trendy, and cool.

-Elegans is positioned as a brand that is sophisticated, glamorous, premium, upper-class, and prestigious.

2. As you are thinking, sketch and doodle your ideas. *You may use the "Scratch area" on the Design sheet to sketch different options.*

3. Once you have tried a few different designs, decide which one seems strongest and most appropriate. Consider the brand personality that you are trying to capture, the guidelines above, and your own personal reactions.

4. Transfer your chosen design onto the Design Sheet. Don't worry about making everything perfect! You just want to let your natural creativity flow.

Important: Your task is to use shapes to design the two logos. Also, please do not draw a picture of sunglasses as the logo.

APPENDIX I

PERFUME PAIRS (STUDY 6, CHAPTER 2)

I.1: Exciting Condition

PAIR 1

Ajmer®
3.4 oz Eau de Parfum

Ajmer perfumes: Conjure the adventure and vitality of being a woman.

Sanganer®
3.4 oz Eau de Parfum

Leave the world behind and discover your vibrant spirit with Sanganer.

PAIR 2

Barelli®
3.4 oz Eau de Parfum

A sparkling fragrance, Barelli is a contemporary blend of lively ingredients from nature.

Manali®
3.4 oz Eau de Parfum

Manali embodies exuberance and vigor with its earthly essences. An inspiring scent.

Pair 3

Campani®
3.5 oz Eau de Parfum

Composed of natural cedar notes, Campani offers a bold and invigorating scent.

Amaru®
3.5 oz Eau de Parfum

Amaru is a stimulating and woodsy fragrance, evoking the mystery of the forest.

Pair 4

Sikar®
2.5 oz Eau de Parfum

Provocatively crafted, Sikar's floral notes bring to mind the excitement of new blooms.

Boondi®
2.5 oz Eau de Parfum

Boondi evokes the playfulness and temptation of fresh flowers. A truly thrilling fragrance.

Pair 5

Amroha®

3.4 oz Eau de Parfum

Break the rules with Amroha. Enriched with amber accents for those who dare to be different.

Hapur®

3.4 oz Eau de Parfum

A distinctive scent infused by lemon and wood, Hapur leaves a trail that is unique and provocative.

Pair 6

Jansu®

3.4 oz Eau de Parfum

With equal measures of mystery, enthusiasm, and modernity, Jansu will reinvigorate your senses.

Umrau®

3.4 oz Eau de Parfum

Always contemporary, Umrau is at once lively and enigmatic. Create your own path.

Pair 7

Orai®

3.4 oz Eau de Parfum

With Orai fragrances, evoke the unbounded adventure and vitality of modern life.

Sirohi®

3.4 oz Eau de Parfum

Take a bold and exciting journey through time with Sirohi fragrances.

I.2: No-Positioning Condition

Pair1

Ajmer®

3.4 oz Eau de Parfum

Crafted by expert perfumers, Ajmer evokes the essence of a spring garden.

Sanganer®

3.4 oz Eau de Parfum

Sanganer is an aromatic bouquet, created with the vision of flowering blooms.

Pair 2

Barelli®
3.4 oz Eau de Parfum

Barelli fragrances carry you away to the aromatic riverside.

Manali®
3.4 oz Eau de Parfum

Bask in a private sanctuary on the shore with Manali perfumes.

Pair 3

Campani®
3.5 oz Eau de Parfum

Composed of natural woodsy notes, Campani lingers in the mind like a tree-lined path.

Amaru®
3.5 oz Eau de Parfum

Amauri embodies the scent of the forest, conjuring lasting images of tall cedars.

Pair 4

Sikar®

2.5 oz Eau de Parfum

Sikar is a unique olfactive experience, evoking the essence of a breeze redolent of earth and flowers.

Boondi®

2.5 oz Eau de Parfum

Boondi is sensory experience suffused with wafting fragrance of the forest and the flowers.

Pair 5

Amroha®

3.4 oz Eau de Parfum

Amroha is pure instinct; the power of an emotion that is freely expressed.

Hapur®

3.4 oz Eau de Parfum

Hapur is an experience that will envelop the senses and linger long after the moment has passed.

Pair 6

Jansu®

3.4 oz Eau de Parfum

Jansu is meant to be seen, celebrated and adored. Just like you.

Umrau®

3.4 oz Eau de Parfum

Umrau deserves to be the center of attention, just like the one who wears it.

Pair 7

Orai®

3.4 oz Eau de Parfum

Made with ingredients hand-selected and blended by expert perfumers worldwide.

Sirohi®

3.4 oz Eau de Parfum

A masterfully blended fragrance, composed of the purest essences.

APPENDIX J

ADVERTISING STIMULI (STUDY 1, CHAPTER 3)

Female Face Ad

Female No-Face Ad

Male Face Ad

Male No-Face Ad

APPENDIX K

ADVERTISING STIMULI (STUDIES 1 AND 2, CHAPTER 3)

Female Face Ad

Female No-Face Ad

Male Face Ad

Male No-Face Ad

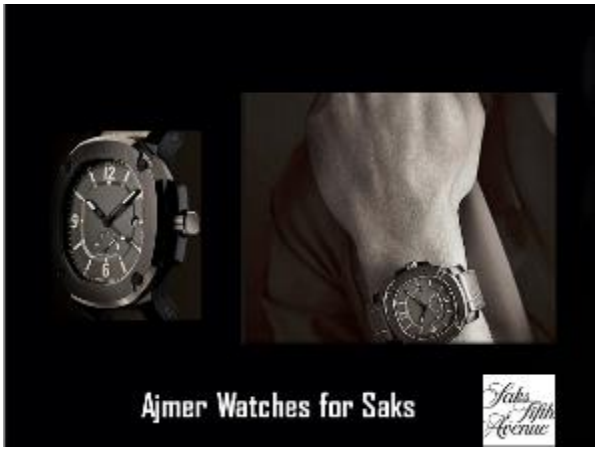
APPENDIX L
ADVERTISING STIMULI WITH STORE INFORMATION (STUDY 4, CHAPTER 3)

Female Store Ad (Target)

Female Store Ad (Saks Fifth Avenue)

Male Store Ad (Target)

Male Store Ad (Saks Fifth Avenue)



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