The Logo “Visual Thickness Effect”: When and Why It Boosts Brand Evaluation. Does It Relax the Logo Visual Asymmetry Side-effect?

Ardalan Eyni, MSc., MSc., BSc., BSc.

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Goodman School of Business, Brock University

St. Catharines, Ontario

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DEDICATION

Dedicated to father ...
ABSTRACT

Logos are one of the first elements of brands with which new consumers interact. Thus, the symbolic meanings that a logo implies by its visual characteristics, e.g., circularity vs angularity, symmetry vs asymmetry, etc., can form consumers’ early perception of personality of the associated brand. A considerable body of research studies the key visual elements of logos that influence consumers’ perceptions about the associated brands. The primary aim of this research is to contribute to this body of literature by documenting the logo “Visual Thickness Effect” (VTE) as an understudied but influential visual phenomenon. Using 4685 MTurk participants and 34 fictitious logos, across two pre-studies and five main studies, we find support for the logo Visual Thickness Effect, in that thick logo boosts perception of brand personality, as a result of boosting perception of brand power. Also, the perception of brand power induced by logo thickness is moderated by consumer’s level of perceived power of the self, in that consumers with higher sense of power are less influenced by thickness of logo, as a sign of brand power, when evaluating a brand. Further, the perception of brand power induced by logo thickness is moderated by consumer’s level of visuospatial capacity, meaning that people with higher visuospatial sketchpad are less influenced by thickness of logo, as an extraneous visual stimulus, while evaluating a brand. Also, results suggest that the logo Visual Thickness Effect is at play as long as consumers do not already possess complementary information about the associated brand. Furthermore, we try to contribute to the findings of prior research by suggesting perception of logo familiarity as the underlying mechanism why asymmetric logo attenuates the perception of brands sincerity, competence, and ruggedness. Results show that symmetrical logos can be perceived as more familiar than asymmetrical logos. Findings of this research imply that brands, especially new-to-market brands, might exploit thick logos. This research contributes to the literature for perception of visual elements, logo design, brand evaluation, perception of power, and sensory marketing.
Keywords: Logo Visual Thickness Effect, line, brand power, brand personality, Logo Visual Asymmetry Effect, familiarity, cognitive memory, visuospatial memory, power of the self, perceptual fluency
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Chapter I: Introduction

Figure 1. A thin vs a thick sword

Imagine, only by looking at the two swords above (Figure 1), you were to choose the more reliable, sincere, competent, rugged, and stronger sword for your battle. Which sword would you choose: the one with a wider blade or the one with a narrower blade? According to a small full-factorial survey\(^1\) in a social networking platform (N = 23, Mean\(_{\text{age}}\) = 33.13, 44% male); regardless of various measurement noises such as difference in shape, colour, design, handle, etc.; 35% of participants (13% female + 22% male) chose the wider sword, as they believed it is more sincere, competent, and rugged. Also, 39% (26% female + 13% male) chose the thinner one while they admitted that the thicker (wider) one is stronger, tougher, or more rugged; but, they believe it was too much for them\(^2\). Overall, 74% of the subjects (35% male) believed that the wider sword is the stronger one, while they probably did not know that the strength of a sword is not determined by thickness but by “velocity, sectional density, Momentum at the

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\(^1\) A 2(adjective used in the question: powerful sword vs sincere, competent, and rugged sword) \(\times\) 2(order: thick sword at the left vs thick sword at the right) between-subject design; N=28 (5 missing). We did not use terms “wide vs narrow” or any other equivalent in the question in order not to make the focused visual attribute (i.e., thickness) salient to the participants.

\(^2\) For instance, they said “it is beyond my stamina to maneuver” or “is a better fit to carry by a girl”, etc.
Point of Impact (MPOI,) edge geometry, cross section, and sharpness’ (“How does a sword’s width affect its cutting?”, 2009), as well as the metalogical/metallurgical characteristics. Only two (female) participants said that the wider sword cannot necessarily be the stronger one. In any event, this survey implies that one is highly likely to perceive the wider sword as stronger.

To cancel out the possible noises caused by visual differences other than width that the two swords has, we ran a second pre-study where participants (N = 57, 58% Male) were asked to assign a dollar sign to US dollar and a dollar sign to Namibian Dollar (a scenario with salient difference in currency power). We provided participants with six identical dollar signs with three different thickness levels, meaning that for each thickness, participants had two identical dollar signs among the choices, so that if they preferred to assign dollar signs with equal thickness to both currencies, they could (Figure 2). Even though they had the option to assign dollar signs with equal thickness to both US and Namibian dollars or assign a thicker dollar sign to Namibian dollar, the majority of participants (N = 35) assigned a thicker dollar sign to the US dollar. We observed a similar behaviour in another independent group of participants (N = 67, 57% Male) where they were asked to assign dollar signs to US dollar vs Canadian dollar (a scenario with non-salient difference in currency power). Thirty-eight subjects chose a thicker dollar sign for the US dollar. In addition, a textual analysis and a 9-point semantic differential item both reveal that the majority of the participants also believed that the US dollar is more powerful than Canadian and Namibian dollars. Appendix A elaborates on the results of this pre-study.

And the other 4 subjects who chose the thin sword, they were interested in delicacy, design, style, colour, and sharpness of the tip, weight, etc.
Why would one do that? More clearly, why would one associate thickness to power? Perhaps a psychological effect is at play. Herein, we theorize this psychological phenomenon as the “Visual Thickness Effect” and extend it to logo studies, where we derive actionable implications for logo design and consumer behaviour.

Logos are among the first elements of brands with which new consumers interact (Cian, Krishna, & Elder, 2014), and they are influenced by the symbolic meanings that logos carry (Hagtvedt, 2011). Hence, in order to produce positive affect (e.g., Cohen, 1986; Henderson & Cote, 1998; Peter, 1989; Robertson, 1989; Vartorella, 1990) and boost consumer attitude toward brands, firms and logo designers try to exploit the influential attributes associated with various visual elements of logos, such as dynamic imagery (Cian, Krishna, & Elder, 2014), movement trajectory (Guido, Pichierri, Natarajan, & Pino, 2016), descriptiveness (Luffarelli, Mukesh, & Mahmood, 2019), completeness vs incompleteness (Hagtvedt, 2011), boundaries (Cutright, 2012), circularity vs angularity (Jiang, Gorn, Galli, & Chattopadhyay, 2015), high vs low logo location on the package (Sundar & Noseworthy, 2014), framed vs frameless (Fajardo, Zhang, & Tsiros, 2016), complexity, repetition, and spacing (Janiszewski & Meyvis, 2001), upward vs downward (Schlosser, Rikhi, & Dagogo-Jack, 2016), stability vs instability (Rahinel & Nelson, 2016), symmetry vs asymmetry (Bettels & Wiedmann, 2019; Luffarelli, Stamatogiannakis, & Yang, 2019), cuteness (Septianto & Paramita, 2021), uppercase vs lowercase typeface (Teng, Xie, Liu, Wang, & Foti, 2021), and interstitial space in typeface logos (Gupta and Hagtvedt, 2021). Contributing
to this body of literature, we propose ‘thickness’ (or ‘heaviness’, ‘weight’, ‘width’, ‘density’, ‘boldness’, etc., according to the various literature) of lines in logos as a major but overlooked visual element, with the effect that we term as the “visual thickness effect”.

In Doyle and Bottomley’s (2009) study, consumers expected a proportionately thicker chocolate bar branded by a thick typeface logo than the one with a thin typeface logo. This finding is evidence the thickness of lines is a visual element that may have considerable theoretical and managerial implications for consumer psychology and industry. Nonetheless, the background knowledge about the psychology of thickness is considerably rare. To the best of our knowledge, this study is the first one examining the Visual Thickness Effect, defined as the influence of thickness vs thinness of logo lines on perception of brand personality and its five established constructs: sincerity, competence, ruggedness, excitement, and sophistication (Aaker, 1997). As a second concern, Luffarelli, Stamatogiannakis, and Yang (2019) found that although brands with asymmetric logos are perceived as exciting, they are perceived as less sincere, competent, and rugged than brands with symmetric logos (which we refer to as the ‘visual asymmetry side-effect’). However, the authors remained silent about the underlying mechanism, which we are inclined to address in this research as well in order to be able to study symmetry-thickness interplay in logo, if possible.

In short, this research attempts to address these questions: Does the logo “Visual Thickness Effect” significantly hold? If yes, does perception of brand power mediate the visual thickness effect? Do personal sense of power and visuospatial capacity moderate the effect? Do asymmetrical logos stifle the perception of brand sincerity, competence, and ruggedness (Luffarelli, Stamatogiannakis, & Yang, 2019) because asymmetrical logos look less familiar? Does the visual thickness effect alleviate the visual asymmetry side-effect?

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4 Symmetry means mirroring along a vertical, horizontal, or diagonal axis (Figure 3; Luffarelli, Stamatogiannakis, & Yang, 2019).
Drawing on the processing fluency theory (Chae & Hoegg, 2013; Labroo & Lee, 2006; Lee & Aaker, 2004; Landwehr & Eckmann, 2020; Lee & Labroo, 2004; Reber, Winkielman, & Schwarz, 1998), we first extend the Luffarelli, and colleagues’ study (2019) by positing that the logo asymmetry-induced subjective perception of unfamiliarity (see, Henderson & Cote, 1998) evokes unconscious logo dislike - as a result of prolonged processing time - which attenuates brand perceived sincerity, competence, and ruggedness (Study 1). We also argue that the visual thickness effect may largely alleviate the visual asymmetry side-effect in logos (Study 1). Further, building upon the literature of art, culture, and psychology, we suggest that thickness translates into concepts representing strength, firmness, impermeability, power, etc. (e.g., thick trunk of columns used in historical monuments to imply eternal, solid, and tremendous power). Accordingly, we suggest that thick logo lines may shape the perception of brand personality (Study 1, 2, & 3), and that the perception of brand power (i.e., Sundar & Noseworthy, 2014) induced by thickness of logo lines is the underlying mechanism for the mentioned main effect (Study 1, 2, & 3). In addition, we demonstrate that the effect of logo thickness on the thickness-induced perception of brand power is negatively moderated by the level of perceived power of the self (Anderson, John, & Keltner, 2005 - Study 4). Also, the effect of logo thickness on the thickness-induced perception of brand power is moderated by the person’s level of disposable visuospatial capacity but not phonological sketchpad (Baddeley, 1992; Jiang, Gorn, Galli, & Chattopadhyay, 2016), so that the magnitude of the perceived brand power induced by logo thickness follows a concave versus an upward linear pattern for consumers with high versus low visuospatial capacity (Study 4). Finally, we explore whether or not a poorly-imaged brand can elevate its brand evaluation by only making its logo lines thicker, all else being equal (Study 5).
Results do not find a significant relationship between logo symmetry and perception of brand personality and its components, as well as brand likeability. Regardless of this, there is a significant relationship between logo symmetry and perceived familiarity of logo, as suggested. Further, as hypothesized, logo thickness significantly determines perception of brand personality constructs (Visual Thickness Effect), and perception of brand power mediates (either fully or partially) these constructs. Logo thickness also determines brand liking mediated by perceived brand power. Perceived power of the self and visuospatial capacity each moderates the influence of logo thickness on perception of brand power, in that consumers with high sense of power (and/or high vacant visuospatial capacity) are less influenced by logo thickness when approximating brand power than consumers with low sense of power (and/or low vacant visuospatial capacity). Finally, the logo Visual Thickness effect holds only when consumers do not have any complementary information about the associated brand.

Overall, our findings would extend the existing knowledge about logo and its potential influence on shaping consumers’ perception of brands. The Visual Thickness Effect suggests that logo designers need to be recognizant about this important visual effect and its potential benefits, so that they wisely exploit it in their designs. This is specifically crucial when it comes to designing logos for innovative brands, emerging/young brands, and small businesses which are inherently known as risky firms in financial markets, as a result of higher rates of failure (see e.g., Pisano, 2015; Roll, 1981). As well, brands need to be conscious about the boundary conditions under which the visual thickness effect may be hampered, such as customers’ perceived power of the self and the capacity to process the external visual stimulus and isolate its extraneous influence.

In the following sections, we will first elaborate on the relevant literature leading to the research hypotheses. Next, we will explain the method and the five complementary
experiments in this study. Afterward, we address the research discussion, theoretical contributions, managerial implications, research limitations, and suggestions for future studies.
Chapter II: Literature

2.1 Symmetry and the Subjective Familiarity

Though not equivalent, in the context of aesthetics and design, symmetry and balance are the two concepts usually go together – to form a broader notion called harmony (e.g., Henderson, Cote, Leong, & Schmitt, 2003). Balance refers to the proportion of positive and negative energies (Henderson, Cote, Leong, & Schmitt, 2003), while symmetry (Figure 3) means mirroring along a vertical, horizontal, or diagonal axis (Luffarelli, Stamatogiannakis, & Yang, 2019).

Figure 3. Symmetry - From left to right, mirroring around vertical, diagonal, or horizontal axes.

Naturally, human prefers balance and symmetry; i.e., harmony (e.g., Bauerly and Liu, 2008; Garner and Clement, 1963; Henderson, Cote, Leong, & Schmitt, 2003; Jacobsen and Höfel, 2002; Matz, et al., 2019; Reber, Schwarz, & Winkielman, 2004). From the point of view of automatic aesthetic responses, Veryzer (1999) posits that processing designs follows nonconscious algorithms, and these algorithms govern human’s responses to stimuli and their preferences (Henderson, Cote, Leong, & Schmitt, 2003). For example, it is suggested that the pleasantness\(^5\) of symmetry to humans is governed by their lifelong exposure to the symmetry inherent in their body (Zajonc, 1968; Bornstein & Dagostino, 1992; Klinger & Greenwald,

\(^5\) Such pleasantness, according to the Gestalt psychology (Clement, 1964; Koffka, 1935; Köhler, 1929), is controlled by the factors (here, lifelong exposure to symmetry) that shape our perceptions over time.
1994; Henderson, Cote, Leong, & Schmitt, 2003). This is because such lifelong and repeated exposure to symmetry helps human recognize and process symmetric designs easier and faster than asymmetric ones, which produces a positive affect towards the stimuli - or a judgment in line with the established judgment around symmetrical objects (Landwehr & Eckmann, 2020). This phenomenon is referred to as “processing fluency” (Chae & Hoegg, 2013; Labroo & Lee, 2006; Lee & Aaker, 2004; Lee & Labroo, 2004). Also, as a result of repeated exposure to symmetry, viewers subjectively perceive symmetrical objects as more familiar than asymmetric ones even if the viewers have never seen the focal symmetrical objects before (Henderson & Cote, 1998). Consequently, the perceived familiarity of symmetrical objects leads viewers to judge them as more favourable (Henderson, Cote, Leong, & Schmitt, 2003) that is referred to as “the mere exposure effect” (Bornstein & Dagostino, 1992; Klinger & Greenwald, 1994; Mrkva & Boven, 2020; Zajonc, 1968). Hence, in this study, the mere exposure to symmetry facilitates and accelerates information processing, thereby driving a more familiar, and more favourable outcome. Therefore, as a result of feeling more subjective familiarity with symmetrical logos, one may judge these logos and the associated brands as more favourable, which, in the Aaker’s (1997) brand personality framework, may potentially translate into being more sincere, competent, and perhaps rugged than the brands with asymmetric logos. Therefore, formally speaking,

**H1. The effect of symmetricity of logos on the perceived brand sincerity, competence, and ruggedness is mediated by symmetry-induced perception of familiarity of the logos.**

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6 The magnitude of this positive affect also depends on the visual characteristics like complexity and spacing of the stimulus (Janiszewski & Meyvis, 2001).

7 As an example of processing fluency is the study conducted by Schwarz (2004), where the speed of processing an object was positively associated with the favourability of the object.

8 This phenomenon may coincide with the anomaly referred to as “familiarity heuristic” suggested by Tversky and Kahneman (1973) which for example leads the average individual investor to have preference for investment in stock of firms that they are familiar with, or they are just aware of (see e.g., Døskeland & Hvide, 2011; Lee, Liu, & Zhu, 2008).
This hypothesis attempts to answer why brands with asymmetrical logos are perceived as less sincere, competent, and rugged than brands with symmetrical logos (Luffarelli, Stamatogiannakis, & Yang, 2019).

2.2 Visual Thickness Effect - Thickness of Lines and Perception of Power

Although a line is an abstract one-dimensional concept in geometry, we need to grant it some thickness (2nd dimension) in order to visualize it (Ching, 2015). Over the history of visual art, we can see that even though many artists like Altan and Schulz used flat lines (i.e., the lines with only two characteristics; direction and trace), many others, such as Baudoin, hired lines with a variety of thickness (Lefévre, 2016). Hence, in addition to other possible qualities of lines, including jaggedness, dryness and more, thickness, as a pronounced visual salience (Hudson & Farran, 2011), may provide the opportunity to convey certain additional meanings. Nonetheless, the literature on the psychology of the thickness of lines in graphical works is considerably scarce.

According to an artistic conceptualization of lines, “thin lines are fragile. They appear easy to break or knock over. They suggest frailty and convey an elegant quality. They are delicate and give off an ephemeral air. Thick lines on the other hand appear difficult to break. They suggest strength and give emphasis to nearby elements. Thick lines are bold and make a statement” ("The Meaning of Lines: Developing a Visual Grammar", 2010).

As for psychopathology, in a study where participants were to express the meaning of the given words, such as ‘angry’, ‘furious’, and ‘cruel’, by only drawing a single line, Peters and Merrifield (1958) realized that the intensity of lines drawn by participants was significantly associated with the intensity, persistence, and severity of the emotions invoked by the given words. This finding hints two important points: not only can a piece of line be a medium to
convey a certain feeling or meaning, but also the intensity of a line may represent the ‘magnitude’ of the focal feeling or meaning.

In architecture, a visual function of the thickness of columns is sometimes to convey stability and power. Granger (1931) posits that some columns, which Ogden (1937) later calls “angle-columns”, were preferably erected thicker than technically required just to prevent them from looking slender through a spectator’s outlook. It can be seen that, in some cases, architects dared erecting columns thicker than technically required just to accommodate the desired visual/psychological effect. These findings suggest that, by itself and apart from the physical functions, thickness can be applied to induce mental effects in the viewer.

Moreover, in some languages and cultures, for instance, in my country, Iran, “thick” (كائرف /k часов/) implies power and strength. Accordingly, slang words such as “thick-necked”, “thick-tailed”, and simply “thick”, are the metaphors to describe a person with physical, personal, or social power. Likewise, “thick-skinned” refers to a person whose back is not easily bent under hardship, who does not easily give up, or is not easily humiliated, whereas “thin-skinned” and “thin-hearted” are those who are easily broken physically and/or emotionally. Even in the English language, according to the Longman Dictionary of Contemporary English, 5th edition, the seventh meaning for the term “thick” (or thick-headed) is “stupid” (Mayor, 2009). Interestingly, in this study, thick refers to the thickness of the “stupid” person’s skull which, in the street culture, is assumed to prevent advice or information from effortlessly penetrating into the gray area of brain and remaining there (Barthmaier, 2015). Hence, also in this study, the “stupid” person’s skull is tough and impenetrable because it is thick. Apparently, the word “thick” in these examples has a root in concepts that represent power, strength, stamina, etc.
Indeed, associating a physical characteristic to the concept of power is not a surprising phenomenon to psychologists. For instance, Schubert (2005) introduces vertical positions (or height) as symbols to perceptualize power. However, Schubert (2005, p. 17) asserts that “vertical difference is certainly not the only experience that can become part of the concept of power via schematization. There are probably a number of additional experiences that play a role.” These “additional experiences” suggested by Schubert (2005) may include experiences such as horizontal position (i.e., being in front or back), magnitude (i.e., being or having more), being earlier, etc. suggested by Fiske (2004). Drawing on the notion of “being more” suggested by Fiske (2004), we argue that being thicker (or wider) is associated with being more powerful. Thickness as a spatial feature and its potential to convey power is also supported by Argyle (1988) and Mehrabian (1972), who claim that spatial positions signal power.

Furthermore, on the one hand, in most cultures, bigness - i.e., tallness, boniness, muscularity, and fattiness - symbolizes the skill for survival, which is assumed for the ultimate form of power (Cassidy, 1991). Apparently, except for ‘tallness’, which is not always associated with thickness (as sometimes tall is not proportionately thick), ‘boniness’, ‘muscularity’, and ‘fattiness’ have direct associations with thickness. Therefore, it makes sense if we posit that bigness is equivalent to thickness, thus, by the same token, thickness is the sign for the possession of power too. On the other hand, powerful brands are also authentic (Kifer, Heller, Perunovic, & Galinsky, 2013), dominant, influential, consistent, acceptable (Peter, 1989), resilient, long-lasting, competitive, and can successfully survive hardships and rival attacks (Peter, 1989; Sundar & Noseworthy, 2014), privileged, and superior (Sundar & Noseworthy, 2014), tough, intelligent, hard-working, confident, up-to-date, sophisticated, etc. Comparing the characteristics of strong brands with the components of brand personality (Aaker, 1997), it seems that powerful brands are high at all five components of brand personality. Coupled with the social psychology of thickness (as a form of bigness which is the
ultimate form of power; Cassidy, 1991), one can sensibly associate logo thickness to brand power, and thus to brand sincerity, competence, excitement, sophistication, and ruggedness, or simply put, brand personality.

All in all, building upon the relatively uniform implications of thickness-power perceptualizing across diverse contexts, on the one hand, and the correlation between notion of power and sincerity, competence, excitement, sophistication, and ruggedness, on the other hand, we may formally hypothesize that,

\[
H2. \text{There is a positive relationship between the logo thickness and the perceived level of brand sincerity, competence, excitement, sophistication, and ruggedness.}
\]

and

\[
H3. \text{The relationship between the thickness of the logo lines and the perceived brand sincerity, competence, excitement, sophistication, and ruggedness is mediated by the logo thickness-induced perception of power.}
\]

Theoretically speaking, apart from the above sketched underlying process through which the mind links visual thickness to the concept of power, this process is suggested to be a shortcut according to the notion of ‘processing fluency’ (Chae & Hoegg 2013; Labroo & Lee 2006; Lee & Aaker 2004; Lee & Labroo 2004). Therefore, one’s mind subjectively skips the resource-demanding, cognitive process of linking the concept of power with thickness over and over (see e.g., Sundar & Noseworthy, 2014); instead, it almost automatically interprets thick as strong – by retrieving a pre-produced thick-as-strong code stored in mind’s database. As a result, the accelerated pace of information-processing governs a more favourable outcome. Hence, we may see that the influence of symmetricity and thickness on judgement follow similar processes. Therefore, we can argue that, in a symmetric and thick logo, the two separate senses of favourability induced by each visual stimulus (i.e., symmetry
and thickness) synergize the favourability of the outcome. In addition to this line of reasoning, a study shows that power itself positively governs the sense of authenticity, and thereby the sense of subjective wellbeing and satisfaction (Kifer, Heller, Perunovic, & Galinsky, 2013). In this sense, we may argue that not only is the proposed synergized favourability induced by the amplified feeling of familiarity, but it is also induced by the perception of power, here induced by thickness. Applying this argument to the finding of Luffarelli, Stamatogiannakis, and Yang (2019), we may propose that in the case of using asymmetric logos, the induced unfavourable outcome in terms of sincerity, competence, and ruggedness of the brands (i.e., the visual asymmetry side-effect) may be healed by the sense of favourability induced by the thickness. Therefore, stated formally,

**H4.** Presence of thick lines in a logo positively moderates the relationship between symmetricity and the perceived sincerity, competence, and ruggedness of the respective brand, in that logo thickness accentuates (vs. heals) the positive (vs. negative) effect of logo symmetricity (vs. asymmetricity) on the perceived sincerity, competence, and ruggedness of a brand.

### 2.3 Perceived Power of the Self

In short, “Power⁹ is the asymmetric control over valued resources in social relations” (Rucker, Galinsky, & Dubois, 2012, p. 254). It is the capacity to act autonomously and freely from external constraints (Bakan, 1966; Christofides, Muise, & Desmarais, 2012; Wang and Zhang, 2020; Wiggins, Grove, & Cicchetti, 1991) and to realize personal goals through controlling other people (Ellyson & Dovidio, 1985; Keltner, Gruenfeld, & Anderson, 2003; McClelland, 1975) and resources (Fiske, 1993; Keltner, Gruenfeld, & Anderson, 2003).

Apart from the possession of power, even experiencing state of power influences behaviour.

---

⁹ It is worth noting that power is a different concept from status, though they are related. As said, power pertains to controlling others as well as acting autonomously, while status, as a prerequisite for power (Rucker & Galinsky, 2008), grants a person respect and rank (Anderson, Willer, Kilduff, & Brown, 2012).
(Jia, Wyer Jr, & Shen, 2021; Rucker, Galinsky, & Dubois, 2012), in that it improves one’s ability to set plans more subjectively and less constrained by external forces (Weick & Guinote, 2008; Hollander, 1958; Lewin, 1941), to make moral and lawful decisions (Chen, Lee-Chai, & Bargh, 2001; Lammers & Stapel, 2009), to decipher nuance global patterns (Smith, & Trope, 2006), and to creatively address challenges (Galinsky et al., 2008).

Further, compared to the powerless, the powerful are less inclined to extend self via products they buy (see Dubois, Rucker, & Galinsky, 2012). Rather, they pay close attention to the functionality and utility of their purchases in order to satisfy their own wishes rather than satisfying others’ judgements (Snyder & DeBono, 1985). Simply put, the powerful are less sensitive to external stimuli while deciding on a purchase compared to the powerless (Rucker & Galinsky, 2008; 2009). More particularly, the powerful are less influenced by stimuli which signal top-dog appeals (Jin and Huang, 2019).

Applying the above key points regarding the sense of power and the ability to exert own wills uninfluenced by the external forces, we argue that even though both might equally notice the external stimuli (thickness), those with a high sense of power may be less influenced by them than those with a low sense of power. Hence, those with a high sense of power shape weaker to no perception of power associated with logo thickness compared to those with a low sense of power. Therefore,

**H5. The perceived power of the self weakens the positive relationship between logo thickness and the perceived brand power.**

---

10 While they may have problem figuring out the delicate details (Smith, & Trope, 2006).

11 However, when the powerful decision-maker feel instability in their positions due to instability in the hierarchy, the avoidance-based approach will be induced, which decreases the creativity to avoid failure (Sligte, De Dreu, & Nijstad, 2011). Hence, creativity holds as long as the hierarchy looks strong and stable.
2.4 Cognitive Load vs Visuospatial Load

The ‘need for cognition (NFC)’ refers to “the tendency for an individual to engage in and enjoy thinking” (Cacioppo & Petty, 1982; p. 1). Compared to individuals with a low need for cognition, those with a high need for cognition are more inclined to structuralize, ponder, and examine the information they receive (Cohen, 1957), which helps understand and experience the world more reasonably compared to those with a low need for cognition (Cohen, Stotland, & Wolfe, 1955). In the domain of sensory marketing, extant research shows that the effects of external stimuli (e.g., scent, music, etc.) on brand/product perception are plausible as long as the magnitude of the external stimuli does not violate the salience threshold, otherwise consumers with a high cognitive capacity will notice the stimuli and try to cancel out the extraneous influences on their judgment (e.g., Bosmans, 2006; Zhu & Meyers-Levy, 2005). In contrast, consumers with low cognitive capacity are more likely to fail to correct out the extraneous influence, because such mental process is demanding, in the sense that the person needs to differentiate their attitudes towards the extraneous stimuli from their attitudes towards the brand/product (Martin, 1986; Martin, Seta, & Crelia, 1990).

Drawing on this psychological phenomenon, one might suggest that although logo thickness plausibly pronounces the perceived brand power, thus brand personality, this effect is diminishing or smaller for consumers with a high (vs low) cognitive capacity, because consumers with a high cognitive capacity will rule out the influence of extraneous stimuli on their decisions, while consumers with low cognitive capacity are linearly influenced by the logo thickness, as they may not process, identify, and rule out the influence of the extraneous stimulus. However, cognitive memory relates to the part of working memory referred to as phonological system (Baddeley, 1992) which is responsible for processing verbal/numerical information. Aside from this part of working memory, there is the visuospatial sketchpad.
(Baddeley, 1992) that is responsible for processing visuospatial information. Supporting Baddeley’s (1992) delineation, Jiang and colleagues (2016) found that what moderates the magnitude at which consumers associate concept of brand softness (vs hardness) with circular (vs angular) logo is their visuospatial capacity but not phonological capacity. Accordingly, and given the fact that logo thickness is a visuospatial information, we hypothesize that visuospatial capacity, but not phonological capacity, moderates logo visual thickness effect, in that consumers with a high visuospatial capacity translate logo thickness into brand power, but as long as the thickness of logo is not salient, otherwise they start to cancel out its extraneous influence on their judgement about the associated brand. As a result, their behaviour would follow a concave pattern. In contrast, consumers with low visuospatial capacity do not cancel out the extraneous influence once the external stimulus is salient. Therefore,

**H6. For consumers with a high visuospatial (but not phonological) capacity, the effect of the logo thickness on the perceived brand power follows a concave pattern,**

while,

**H7. For consumers with low visuospatial capacity, the effect of the logo thickness on the perceived brand power follows a positively sloped linear pattern.**

As another important point, motivated by the literature (e.g., Meyers-Levy & Sternthal, 1993), one might note that congruency between the brand characteristics and logo characteristics can be another relevant boundary condition for our research model. We would respond that it is possible that some brands care less about some aspects of brand personality like brand excitement or sophistication (H. B. Kappes, personal communication, May 20, 2020), but few to no brands want to be seen as insincere, incompetent, or fragile. Hence, we posit that when it comes to brand personality, in particular sincerity, competence, and ruggedness, logo-brand congruence in terms of the aforementioned brand characteristics
might not be the case, because most brands are inclined to exhibit themselves at least as sincere, competent, and probably rugged. In other words, even if a brand lacks sincerity, competence, and ruggedness, it may not try to emphasize them. Rather, it may try to, at least, artificially signal sincerity, competence, ruggedness, etc. via various accessible means, for example using a thick logo.

Overall, it would be interesting to see that if a poorly-imaged brand has a thick logo, it can improve its brand evaluation compared to when the same brand has a thin logo, all else being equal. The last study of this research explores this question.

Figure 4 visualizes the research conceptual framework and the hypothesized relationships.

Figure 4. Research Conceptual Diagram

In the next section, we elaborate on the method and the experimental design of the studies in this research.
Chapter III: Method

As discussed, this study focuses on the immediate influence of the weight of lines in logos on the brand perceived personality. For this, we need to rule out the competing effect of consumers’ current knowledge of the brand/logo, which may significantly moderate the effect. Hence, following an established method, we employ fictitious logos for this research (see e.g., Cian, Krishna, & Elder, 2014; Jiang, Gorn, Galli, & Chattopadhyay, 2016; Luffarelli, Mukesh, & Mahmood, 2019; Luffarelli, Stamatogiannakis, & Yang, 2019).

We have five experimental studies in this research. The first experiment studies the logo Visual Thickness Effect and the thickness-induced perception of brand power as the mediator. It also replicates the visual asymmetry effect (Luffarelli, Stamatogiannakis, & Yang, 2019) to evaluate the hypothesized mediation effect, that is symmetricity-induced subjective feeling of familiarity. It also examines symmetry-thickness interaction effect on brand personality, if any. The second experiment examines robustness of the logo Visual Thickness Effect and the thickness-induced perception of brand power as the underlying mechanism. The third study examines if the main effect of logo thickness on the thickness-induced perception of brand power is negatively moderated by the level of perceived power of the self. Study 4 tests whether the magnitude of the main effect of logo thickness on the thickness-induced perception of brand power varies over the level of visuospatial capacity. In the last experiment, we explore whether a poorly-imaged brand is able to boost its perceived personality by only using a thick logo (compared to a thin logo), all else being equal.

Regarding distinguishing a thick object (e.g., a line) from a thin one, we have not found solid, convergent definitions based on which thick-lined vs thin-lined logos could be designed for our experiments. According to an online dictionary, thickness is defined as “the measure of the smallest dimension of a solid figure” (www.dictionary.com), which means
that in a given rectangle, as long as the width is considerably smaller than the
length, the rectangle is perceived as thin. However, in the same dictionary, another definition of
thickness is “the thick part or body of something” (www.dictionary.com), meaning that
regardless of the difference between the width and the length of the focal rectangle, as long as
it is wide enough, it is perceived as thick. It can be seen that there are scattered, qualitative,
definitions for the term ‘thickness’. As well, logos may contain both thick and thin parts.
Moreover, thickness of an object (or a part of an object) might be determined in comparison
with the other accompanying objects or parts (Figure 5A). This means that although we can
intuitively judge whether, for example, a metal rod is thick or thin, this judgment may be
more precise if we see the focal rod among a bundle of rods, so that we have the chance to
compare the focal rod with a population of rods. Having said that, some logos may contain
uniform parts. In this case, thickness of each part may be evaluated by the ratio of a
dimension of a part to another dimension of the same part (Figure 5B). This enables us to
judge if a given 2D or 3D item looks thick or thin. It is also possible that a logo comprises of
only thin parts, but the distance between thin parts is small enough to look like an overall
thick object as a whole (Thick Synonyms, Thick Antonyms, 2020; Figure 5C). As a result, in
this research, using a 9-point semantic differential items (“Overall, this logo looks 1 = very
thin, 9 = very thick”), we will make sure that the two versions of logos are significantly
perceived as different in terms of thickness.

Figure 5. Different examples an object that can be perceived as thick

A  B  C
As well, to ensure the captured effect is induced by the variation in thickness but not dynamism, fluency, complexity, likeability, informativeness, familiarity, and novelty, we control for the mentioned factors where necessary. Two 9-point semantic differential scales measure dynamism (“How much movement do you see in the logo?” where 1 = “no movement at all,” and 9 = “a lot of movement”, and “How dynamic is the logo?” where 1 = “not at all dynamic,” and 9 = “extremely dynamic”; Cian, Krishna, & Elder, 2014). Three 9-point Likert items measure likeability (“The logo is attractive,” “I like the way the logo looks,” and “The logo is aesthetically appealing”, 1 = “strongly disagree,” and 9 = “strongly agree”; Mathwick, Malhotra, & Rigdon, 2001). Two 9-point semantic differential items measure the logo visual complexity (“The logo is” 1 = “very simple,” and 9 = “very complex”; “How would you evaluate this logo?” 1 = “not complicated,” and 9 = “very complicated”; Cian, Krishna, & Elder, 2014; Cox and Cox, 1988). A 9-point semantic differential item captures informativeness (“How informative is the logo?” where 1 = “not informative at all,” and 9 = “very informative”; Mogilner, Rudnick, & Iyengar, 2008). Two 9-point semantic differential items evaluate fluency (“This logo is” 1 = “not fluent at all/very difficult to view,” and 9 = “very fluent/very easy to view”; Luffarelli, Stamatogiannakis, & Yang, 2019). Three 9-point semantic differential items measure logo familiarity (1 = “unfamiliar” and 9 = “familiar”; Hyland and Birrell, 1979, inexperienced/experienced, and not knowledgeable/knowledgeable; Kent and Allen, 1994). A 9-point semantic differential measures perceived previous exposure to logos (“Have you ever seen this logo before? definitely no/definitely yes; Kent and Allen, 1994). Three 9-point Likert items evaluate novelty (“This logo looks unusual/original/new” 1 = “strongly disagree”, 9 = “strongly agree”; Cox and Cox, 1988). A 9-point semantic differential item measures symmetry (“This logo is” 1 = “not symmetrical at all”, 9 = “very symmetrical”; Luffarelli, Stamatogiannakis, & Yang, 2019). We also ask participants to report their perception of logo power, if any, on
two 9-point semantic differential items (“This logo looks” 1 = “very weak/powerless”, 9 = “very strong/powerful”). These two items had been formerly used by Schubert (2005) to measure perceived power of groups of people, and by Sundar and Noseworthy (2014) to measure perceived power of brand. Please note that we ask logo-power items after the participant has answered the other logo-related questions, such that answering to logo-power questions does not influence the perception of any other attributes of the designed logos.

Please also note that in all studies in this research, the brand-related questions come prior to all logo-related and person-related items, to prevent any possible bias as a result of first answering logo-related or person-related scales. In appendix B, the full scale for brand personality offered by Aaker (1997) is reprinted. It is worth noting that Aaker’s (1997) scale for brand personality suggests 42 traits. Even though some scholars used the full list of traits in their studies (e.g., Park & John, 2010), others used some but not all of the traits (e.g., Aaker, Fournier, & Brasel, 2004; Brakus, Schmitt, & Zarantonello, 2009; Luffarelli, Stamatogiannakis, & Yang, 2019; Sundar & Noseworthy, 2016; Wentzel, 2009). J. Luffarelli (personal communication, April 03, 2020) discusses that one reason is that the full inventory is quite long and may cause unwanted effects; e.g., participants fail to answer the full scale with decent attention. Most importantly, using part but not all of the traits should not alter the meaning of the brand personality dimensions because the brand personality traits are best conceptualized as reflective indicators of the brand personality dimensions (for a discussion, see Jarvis, MacKenzie, & Podsakoff, 2003). Furthermore, a limitation of Aaker’s (1997) scale for brand personality is that the meaning of items may vary over context, product category, respondents, etc. (Avis, Forbes, & Ferguson, 2014; Oklevik, Supphellen, & Maehle, 2019; Radler, 2018; Romaniuk & Ehrenberg, 2012). For instance, it might make sense if one says “Cinema X is family-oriented”, while saying “Ping-Pong Racket Y is family-oriented” might sound irrelevant. Hence, the best approach is to use the most relevant traits to the stimuli,
experimental design, etc. However, in order to demonstrate that the results are not caused by the choice of traits, we will use different traits across studies. Luffarelli, Stamatogiannakis, and Yang (2019) tried the same approach. Yet, we employ Aaker’s (1997) full scale in one of our studies.

Last but not least, as an attempt to tackle the stimulus-as-fixed-effect fallacy (Clark, 1973; Westfall, Nichols, & Yarkoni, 2016) and the associated risk of inflated Type I error while generalizing the results (Donnet, Lavielle, & Poline, 2006; Westfall, Nichols, & Yarkoni, 2016), we employ partly to entirely different sets of fictitious logos between studies and within studies, across groups of participants, where methodologically feasible.
Chapter IV: Studies and Results

4.1 Study 1 (The Visual Thickness Effect, Perception of Brand Power, and Feeling of Familiarity)

In this study, we examine the logo visual thickness effect (H2) and the mediation effect of the thickness-induced perception brand power (H3). We also replicate the logo visual asymmetry effect (Luffarelli, Stamatogiannakis, & Yang, 2019) to, then, examine the symmetry-induced feeling of logo familiarity as the mediator (H1). We also study the log thickness-symmetry interaction on perception of brand personality (H4).

4.1.1 Participants and design

For a factorial between-subject experiment, 2 logo symmetry (symmetrical vs asymmetrical) × 2 logo thickness (thin vs thick) × 4 logo quartets, we recruited 1835 participants (Mage = 36.3 years; 46.2% male) using Amazon Mechanical Turk (MTurk) to be randomly assigned to sixteen independent groups that each randomly viewed one out of sixteen fictitious logos (Figure 6). The general idea of the logo designs has been taken from those used in Luffarelli, Stamatogiannakis, and Yang’s study (2019). This helps rule out possible noises caused by latent differences in logos used in their study and ours, as the mentioned researchers designed their logos in a way that the symmetric and asymmetric versions of logos in each pair do not significantly differ in terms of any property other than symmetry - such as the amount of visual information, perceived complexity, likability, fluency, and dynamism (Luffarelli, Stamatogiannakis, & Yang, 2019).
### 4.1.2 Procedure

In sum, there are sixteen logos (i.e., four logo quartets). Participants were randomly assigned to one out of sixteen independent study groups where they view only one logo out of the sixteen logos. Subjects then expressed their brand evaluations using twenty 9-point Likert items (1 = “not at all”, 9 = “extremely”) loading onto the five components of brand personality proposed by Aaker (1997); i.e., “excitement: cool, unique, up-to-date, exciting; sincerity: original, down-to-earth, honest, friendly; competence: intelligent, confident, reliable, corporate; sophistication: smooth, good-looking, charming, upper class; ruggedness: masculine, outdoorsy, tough, rugged” (Luffarelli, Stamatogiannis, & Yang, 2019; p. 92). Participants will express their feeling of logo familiarity on a 9-point semantic differential scale (1 = “unfamiliar”, 9 = “familiar”; see e.g., Miron, 1961). In addition, we measured brand liking on two 9-point semantic differential items; 1 = “do not like at all/very unfavorable”, 9 = “like a lot/very favorable”; (Luffarelli, Stamatogiannis, & Yang, 2019; p. 94). We also
control for participants’ perception of brand power induced by logo shape using two 9-point semantic differential items; 1 = “powerful/strong”, 9 = “powerless/weak”; (Sundar & Noseworthy, 2014). We will then examine the main effects, mediation effects, and interaction effects.

4.1.3 Results

Participants reported their perception of brand personality dimensions (Aaker, 10997), brand power, and brand liking on 9-point Likert scales (1 = “not at all”, 9 = extremely). Then, we averaged the raw scores of the traits for each dimension into the measure of that brand dimension (Table 1).

Table 1. Cronbach's Alpha reliability statistics (α) for brand constructs across sixteen study groups

<table>
<thead>
<tr>
<th>Brand</th>
<th>Cronbach's Alpha</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
<th>Group 7</th>
<th>Group 8</th>
<th>Group 9</th>
<th>Group 10</th>
<th>Group 11</th>
<th>Group 12</th>
<th>Group 13</th>
<th>Group 14</th>
<th>Group 15</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>.84</td>
<td>.83</td>
<td>.92</td>
<td>.86</td>
<td>.93</td>
<td>.94</td>
<td>.91</td>
<td>.87</td>
<td>.91</td>
<td>.89</td>
<td>.90</td>
<td>.81</td>
<td>.91</td>
<td>.87</td>
<td>.91</td>
<td>.88</td>
<td></td>
</tr>
<tr>
<td>Sincerity</td>
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<td>.91</td>
<td>.88</td>
<td>.92</td>
<td>.90</td>
<td>.91</td>
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<td>.88</td>
<td>.87</td>
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<td>.83</td>
<td>.87</td>
<td>.85</td>
<td>.86</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
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<td>.90</td>
<td>.89</td>
<td>.93</td>
<td>.90</td>
<td>.93</td>
<td>.90</td>
<td>.89</td>
<td>.87</td>
<td>.87</td>
<td>.85</td>
<td>.86</td>
<td>.84</td>
<td>.87</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>Ruggedness</td>
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<td>.84</td>
<td>.91</td>
<td>.80</td>
<td>.92</td>
<td>.93</td>
<td>.91</td>
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<td>.88</td>
<td>.83</td>
<td>.92</td>
<td>.91</td>
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<tr>
<td>Excitement</td>
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<td>.93</td>
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<tr>
<td>Sophistication</td>
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<td>.95</td>
<td>.92</td>
<td>.95</td>
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<td></td>
</tr>
<tr>
<td>Likeability</td>
<td>.93</td>
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<td>.97</td>
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</table>

4.1.3.1 Logo-symmetry-induced perception of brand personality through perceived logo familiarity
The results of manipulation-check indicate that, across all eight logo pairs, the asymmetrical version is perceived significantly less symmetrical than the symmetrical counterpart (Table 2).

Table 2. Pairwise mean-differences in symmetry across eight logo pairs

<table>
<thead>
<tr>
<th>Mean Symmetry</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Pair 6</th>
<th>Pair 7</th>
<th>Pair 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symmetrical logo</td>
<td>7.76</td>
<td>7.42</td>
<td>7.34</td>
<td>7.44</td>
<td>7.72</td>
<td>7.63</td>
<td>7.58</td>
<td>7.97</td>
</tr>
<tr>
<td>Asymmetrical logo</td>
<td>5.49</td>
<td>5.57</td>
<td>5.00</td>
<td>4.89</td>
<td>5.30</td>
<td>5.43</td>
<td>5.47</td>
<td>5.15</td>
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<td>t</td>
<td>8.12</td>
<td>5.85</td>
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<td>9.81</td>
<td>7.50</td>
<td>7.65</td>
<td>10.1</td>
</tr>
<tr>
<td>p-value</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

Having conducted a 2 logo symmetry (symmetrical vs asymmetrical) × 8 logo pairs between-subject ANOVA’s with logo symmetry and logo pair as fixed factors, and perception of brand personality dimensions as dependent variables, as opposed to what Luffarelli, Stamatogiannakis, and Yang (2019) reported, we found no significant main effect (visual asymmetry effect) of logo symmetry on perception of brand sincerity (F(1, 1819) = .06; p > .80), brand competence (F(1, 1819) = .50; p > .47), brand ruggedness (F(1, 1819) = .06; p > .80), brand excitement (F(1, 1819) = .74; p > .39), brand sophistication (F(1, 1819) = .68; p > .41), brand personality (F(1, 1819) = .28; p > .59), and brand liking (F(1, 1819) = 1.20; p > .27). However, supporting our proposition, results show that, except for logo pair 6, participants who viewed symmetrical logos perceived the logo as significantly (F(1, 1819) = 4.14; p < .05) more familiar (M\_logo\_1 = 4.76, M\_logo\_2 = 4.92, M\_logo\_3 = 4.38, M\_logo\_4 = 4.88, M\_logo\_5 = 4.56, M\_logo\_6 = 4.31, M\_logo\_7 = 5.03, M\_logo\_8 = 5.10, M\_all\_logos = 4.73) than did (M\_logo\_1 = 4.49, M\_logo\_2 = 4.73, M\_logo\_3 = 4.28, M\_logo\_4 = 4.27, M\_logo\_5 = 4.26, M\_logo\_6 = 4.41, M\_logo\_7 = 4.49, M\_logo\_8 = 4.72, M\_all\_logos = 4.46) those who viewed the asymmetrical counterparts. We
observed no significant effect for logo pair replicate (F(7, 1819) = 1.25; p > .27) and for logo shape × logo pair replicate interaction (F(7, 1819) = .35; p > .93) as well.

Interestingly, results also show that brands with symmetrical logo are perceived as more powerful (F(1, 1819) = 4.07; p < .05; M_{logo\ 1} = 5.83, M_{logo\ 2} = 5.98, M_{logo\ 3} = 4.69, M_{logo\ 4} = 5.81, M_{logo\ 5} = 5.72, M_{logo\ 6} = 5.42, M_{logo\ 7} = 5.94, M_{logo\ 8} = 6.43, M_{all \ logos} = 5.61) than those with asymmetrical logo (M_{logo\ 1} = 5.64, M_{logo\ 2} = 5.92, M_{logo\ 3} = 4.40, M_{logo\ 4} = 4.66, M_{logo\ 5} = 5.43, M_{logo\ 6} = 5.40, M_{logo\ 7} = 5.56, M_{logo\ 8} = 6.11, M_{all \ logos} = 5.40). The effect of logo pair replicate was also significant (F(7, 1819) = 15.36; p < .001), but the logo shape × logo pair replicate interaction did not have a significant effect on perception of brand power (F(7, 1819) = .19; p > .98).

Having repeated the above ANOVA tests, but this time with the logo pair replicate as a random factor, the robustness-check analyses confirmed the absence of significant logo visual asymmetry effects on brand personality, its constructs (Aaker, 1997), and brand liking. Furthermore, we did not observe significant logo symmetry main effects on feeling of logo familiarity (F(1, 1819) = 11.88; p < .02) and perceived brand power (F(1, 1819) = 21.80; p < .003). Therefore, we did not proceed with mediation analysis of feeling of logo familiarity (H1) and symmetry-thickness interaction effect on brand personality (H4).

4.1.3.2 Logo-thickness-induced perception of brand personality (Logo Visual Thickness Effect)

The results of manipulation-check indicate that, except logo pair 5 (belonging to logo quartet 3), across the remaining logo pairs, the thick version is perceived significantly thicker than the thin counterpart (Table 3). Therefore, for this part of study, we excluded the data for the third logo quartet from analysis. Data for 1374 participants (M_{age} = 36.3 years; 46.5% male) remained in the analysis.
Table 3. Pairwise mean-differences in thickness across eight logo pairs

<table>
<thead>
<tr>
<th>Mean Thickness</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Pair 6</th>
<th>Pair 7</th>
<th>Pair 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick logo</td>
<td>6.47</td>
<td>6.81</td>
<td>6.09</td>
<td>5.64</td>
<td>5.92</td>
<td>6.23</td>
<td>6.36</td>
<td>6.42</td>
</tr>
<tr>
<td>Thin logo</td>
<td>5.65</td>
<td>5.65</td>
<td>4.86</td>
<td>4.97</td>
<td>5.54</td>
<td>5.49</td>
<td>5.40</td>
<td>5.09</td>
</tr>
<tr>
<td>t</td>
<td>3.19</td>
<td>4.35</td>
<td>4.00</td>
<td>2.11</td>
<td>1.41</td>
<td>2.80</td>
<td>3.65</td>
<td>4.65</td>
</tr>
<tr>
<td>p-value</td>
<td>.002</td>
<td>.000</td>
<td>.000</td>
<td>.036</td>
<td>.159</td>
<td>.006</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

We conducted a 2-logo thickness (thin vs thick) × 6 (logo pair) between-subject ANOVA’s with logo thickness as a fixed factor, logo pair replicates as a random factor, and perception of brand personality, its dimensions, brand power, and brand likeability as dependent variables. Almost fully supporting H2, with very large effect sizes ($\eta^2$) compared to brands with thin logo, brands with thick logos were perceived as significantly more powerful (F(1, 1362) = 18.99; $p < .008$; $\eta^2 = .79$), competent (F(1, 1362) = 29.90; $p < .004$; $\eta^2 = .86$), rugged (F(1, 1362) = 104.97; $p < .001$; $\eta^2 = .95$), exciting (F(1, 1362) = 11.27; $p < .025$; $\eta^2 = .69$), sophisticated (F(1, 1362) = 20.65; $p < .007$; $\eta^2 = .80$), and likeable (F(1, 1362) = 12.63; $p < .017$; $\eta^2 = .72$), but not more sincere (F(1, 1362) = 5.44; $p > .19$; Table 4). Therefore, overall, personality of brands with thick logos were evaluated as significantly more plausible than were the brands with thin logo (F(1, 1362) = 59.68; $p < .002$; $\eta^2 = .92$). Uniformly, for all studied brand characteristics, the main effect of logo pair replicates was significant, while the effect of logo shape × logo pair interactions was not significant.
Table 4. Pairwise mean brand characteristics induced by logo thickness across six logo pairs

<table>
<thead>
<tr>
<th>Mean Brand</th>
<th>Logo shape</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Pair 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power**</td>
<td>Thick</td>
<td>5.98</td>
<td>5.92</td>
<td>4.81</td>
<td>4.66</td>
<td>6.43</td>
<td>6.11</td>
<td>5.66</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.83</td>
<td>5.64</td>
<td>4.69</td>
<td>4.40</td>
<td>5.94</td>
<td>5.56</td>
<td>5.35</td>
</tr>
<tr>
<td>Sincerity</td>
<td>Thick</td>
<td>5.56</td>
<td>5.81</td>
<td>4.82</td>
<td>4.92</td>
<td>5.48</td>
<td>5.82</td>
<td>5.41</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.48</td>
<td>5.41</td>
<td>4.85</td>
<td>4.60</td>
<td>5.62</td>
<td>5.70</td>
<td>5.28</td>
</tr>
<tr>
<td>Competence**</td>
<td>Thick</td>
<td>5.75</td>
<td>6.01</td>
<td>5.09</td>
<td>4.81</td>
<td>6.31</td>
<td>6.05</td>
<td>5.69</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.57</td>
<td>5.49</td>
<td>4.58</td>
<td>4.57</td>
<td>5.73</td>
<td>5.77</td>
<td>5.29</td>
</tr>
<tr>
<td>Ruggedness***</td>
<td>Thick</td>
<td>5.57</td>
<td>5.84</td>
<td>4.88</td>
<td>4.76</td>
<td>5.35</td>
<td>5.31</td>
<td>5.29</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.24</td>
<td>5.22</td>
<td>4.52</td>
<td>4.38</td>
<td>4.92</td>
<td>4.89</td>
<td>4.86</td>
</tr>
<tr>
<td>Excitement*</td>
<td>Thick</td>
<td>5.49</td>
<td>5.41</td>
<td>4.52</td>
<td>4.22</td>
<td>5.73</td>
<td>5.96</td>
<td>5.23</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.20</td>
<td>5.18</td>
<td>4.45</td>
<td>4.26</td>
<td>5.46</td>
<td>5.64</td>
<td>5.03</td>
</tr>
<tr>
<td>Sophistication**</td>
<td>Thick</td>
<td>5.55</td>
<td>5.51</td>
<td>4.41</td>
<td>4.31</td>
<td>5.76</td>
<td>5.67</td>
<td>5.21</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.47</td>
<td>5.19</td>
<td>4.21</td>
<td>4.17</td>
<td>5.48</td>
<td>5.57</td>
<td>5.02</td>
</tr>
<tr>
<td>Personality**</td>
<td>Thick</td>
<td>5.58</td>
<td>5.72</td>
<td>4.75</td>
<td>4.60</td>
<td>5.73</td>
<td>5.76</td>
<td>5.36</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.39</td>
<td>5.30</td>
<td>4.52</td>
<td>4.39</td>
<td>5.44</td>
<td>5.51</td>
<td>5.10</td>
</tr>
<tr>
<td>Likeability*</td>
<td>Thick</td>
<td>5.77</td>
<td>5.65</td>
<td>4.73</td>
<td>4.32</td>
<td>5.96</td>
<td>5.80</td>
<td>5.38</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.53</td>
<td>5.44</td>
<td>4.44</td>
<td>4.37</td>
<td>5.83</td>
<td>5.54</td>
<td>5.20</td>
</tr>
</tbody>
</table>

Note: *, **, and *** denote statistical significance at 95%, 99%, and 99.9% confidence level, respectively.

Figure 7. Mean logo thickness-induced perception of brand power across six logo pairs

![Bar chart showing mean logo thickness-induced perception of brand power](image)
Figure 8. Mean logo thickness-induced perception of brand excitement across six logo pairs

Figure 9. Mean logo thickness-induced perception of brand ruggedness across six logo pairs
Figure 10. Mean logo thickness-induced perception of brand sincerity across six logo pairs

Figure 11. Mean logo thickness-induced perception of brand competence across six logo pairs
Figure 12. Mean logo thickness-induced perception of brand sophistication across six logo pairs

Figure 13. Mean logo thickness-induced perception of brand personality across six logo pairs
It is seen that, in some cases, the effects associated to pair 4 does not behave similar to those of the rest of logo pairs in the study. We strongly speculate that this is because in logo pair 4, the thick version is not perceived sufficiently thicker than the thin counterpart ($p$-value = .036; Table 3).

4.1.3.3 Logo Visual Thickness Effect – Robustness Check

I randomly retried half of the observations and replicated the analyses to see if the results support the initial findings pertaining to the logo VTE. The results of manipulation-check indicate that, except logo pair 4, across the remaining logo pairs, the thick version is perceived significantly thicker than the thin counterpart (Table 5). In the initial results also, this difference was weakly significant ($p$-value = .036; Table 3). Therefore, for this part of study, we excluded the data for the 4th logo pair from analysis. Data for 584 participants ($M_{age} = 36.5$ years; 45.9% male) remained in the analysis.
Table 5. Pairwise mean-differences in thickness across six logo pairs (split sample)

<table>
<thead>
<tr>
<th>Mean Thickness</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 7</th>
<th>Pair 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick logo</td>
<td>6.53</td>
<td>7.04</td>
<td>6.13</td>
<td>5.52</td>
<td>6.60</td>
<td>6.26</td>
</tr>
<tr>
<td>Thin logo</td>
<td>5.31</td>
<td>5.31</td>
<td>4.89</td>
<td>5.00</td>
<td>5.36</td>
<td>5.19</td>
</tr>
<tr>
<td>T</td>
<td>2.95</td>
<td>4.87</td>
<td>2.86</td>
<td>1.03</td>
<td>3.35</td>
<td>2.77</td>
</tr>
<tr>
<td>p-value</td>
<td>.004</td>
<td>.000</td>
<td>.005</td>
<td>.305</td>
<td>.001</td>
<td>.007</td>
</tr>
</tbody>
</table>

We conducted a 2-logo thickness (thin vs thick) × 5 logo pair) between-subject ANOVA’s with logo thickness as a fixed factor, logo pair replicates as a random factor, and perception of brand personality, its dimensions, brand power, and brand likeability as dependent variables. Fully confirming, and even boosting, the initial results, with larger effect sizes ($\eta^2$), compared to brands with thin logo, brands with thick logos were perceived as significantly more powerful (F(1, 574) = 26.73; $p < .007$; $\eta^2 = .87$), competent (F(1, 574) = 38.01; $p < .003$; $\eta^2 = .90$), rugged (F(1, 574) = 70.39; $p < .001$; $\eta^2 = .94$), exciting (F(1, 574) = 52.82; $p < .002$; $\eta^2 = .92$), sophisticated (F(1, 574) = 8.97; $p < .040$; $\eta^2 = .69$), and likeable (F(1, 574) = 27.81; $p < .006$; $\eta^2 = .87$), but not more sincere (F(1, 574) = 5.00; $p > .08$; Table 6). Therefore, overall, personality of brands with thick logos were evaluated as significantly more plausible than were the brands with thin logo (F(1, 574) = 48.08; $p < .003$; $\eta^2 = .92$). Just like the initial results, uniformly, for all studied brand characteristics, the main effect of logo pair replicates was significant, while the effect of logo shape × logo pair interactions was not significant.
Table 6. Pairwise mean brand characteristics induced by logo thickness across five logo pairs (split sample)

<table>
<thead>
<tr>
<th>Mean Brand</th>
<th>Logo shape</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power**</td>
<td>Thick</td>
<td>5.93</td>
<td>5.96</td>
<td>4.90</td>
<td>6.65</td>
<td>6.06</td>
<td>5.93</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.48</td>
<td>5.16</td>
<td>4.64</td>
<td>5.75</td>
<td>5.21</td>
<td>5.22</td>
</tr>
<tr>
<td>Sincerity</td>
<td>Thick</td>
<td>5.49</td>
<td>5.84</td>
<td>5.11</td>
<td>5.52</td>
<td>5.64</td>
<td>5.54</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.25</td>
<td>5.15</td>
<td>4.73</td>
<td>5.58</td>
<td>5.44</td>
<td>5.22</td>
</tr>
<tr>
<td>Competence**</td>
<td>Thick</td>
<td>5.66</td>
<td>6.22</td>
<td>5.17</td>
<td>6.50</td>
<td>5.91</td>
<td>5.93</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.21</td>
<td>5.27</td>
<td>4.54</td>
<td>5.75</td>
<td>5.50</td>
<td>5.25</td>
</tr>
<tr>
<td>Ruggedness***</td>
<td>Thick</td>
<td>5.58</td>
<td>5.81</td>
<td>4.98</td>
<td>5.36</td>
<td>5.18</td>
<td>5.39</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>4.87</td>
<td>4.94</td>
<td>4.47</td>
<td>4.63</td>
<td>4.69</td>
<td>4.71</td>
</tr>
<tr>
<td>Excitement**</td>
<td>Thick</td>
<td>5.48</td>
<td>5.34</td>
<td>4.68</td>
<td>5.95</td>
<td>5.72</td>
<td>5.46</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>4.76</td>
<td>4.91</td>
<td>4.33</td>
<td>5.31</td>
<td>5.31</td>
<td>4.92</td>
</tr>
<tr>
<td>Sophistication*</td>
<td>Thick</td>
<td>5.42</td>
<td>5.54</td>
<td>4.60</td>
<td>6.10</td>
<td>5.41</td>
<td>5.43</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.12</td>
<td>4.91</td>
<td>4.18</td>
<td>5.27</td>
<td>5.43</td>
<td>4.96</td>
</tr>
<tr>
<td>Personality**</td>
<td>Thick</td>
<td>5.52</td>
<td>5.75</td>
<td>4.90</td>
<td>5.87</td>
<td>5.57</td>
<td>5.55</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.04</td>
<td>5.04</td>
<td>4.45</td>
<td>5.31</td>
<td>5.27</td>
<td>5.01</td>
</tr>
<tr>
<td>Likeability**</td>
<td>Thick</td>
<td>5.60</td>
<td>5.67</td>
<td>4.83</td>
<td>6.32</td>
<td>5.69</td>
<td>5.65</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>5.39</td>
<td>5.07</td>
<td>4.31</td>
<td>5.60</td>
<td>5.36</td>
<td>5.12</td>
</tr>
</tbody>
</table>

Note: *, **, and *** denote statistical significance at 95%, 99%, and 99.9% confidence level, respectively.

4.1.3.4 Mediation through perceived brand power

For the mediation analysis of logo-thickness-induced perception of brand power, we used PROCESS Model 4 (Hayes, 2017) with logo thickness (thin vs thick) as the independent variable, perception of brand power as the mediator, and brand likeability, brand personality and its constructs (Aaker, 1997) - except brand sincerity for which we did not find a significant main effect in the analysis of variance - as dependent variables. As the logo thickness × logo pair replicate interaction did not have significant influences on the dependent variables of our interest, following an established procedure, we collapsed data
across the six logo pairs (Cheema and Patrick, 2008; and Cryder, Botti, & Simonyan, 2017). Results of the mediation analyses are as follows supporting H3:

**Brand competence:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{\text{power}} = 5.66$; $\beta = .32$, $t(1372) = 2.49$, $p < .013$) than the brands with thin logo ($M_{\text{power}} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived competence of the brand ($\beta = .72$, $t(1371) = 51.35$, $p < .0001$; $R^2 = .66$). The confidence interval (CI) of the indirect effect of logo thickness excluded zero (95% CI = [.03, .30]) and the residual direct effect of logo thickness on perception of brand competence was positive and significant ($\beta = .16$, $t(1371) = 2.50$, $p < .013$), indicating complementary (partial) mediation (Zhao, Lynch, & Chen, 2010).

In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand competence as the dependent variable (AVE = .76) were both greater than the squared correlation between these two variables ($r^2 = .66$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand ruggedness:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{\text{power}} = 5.66$; $\beta = .32$, $t(1372) = 2.49$, $p < .013$) than the brands with thin logo ($M_{\text{power}} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived ruggedness of the brand ($\beta = .71$, $t(1371) = 44.24$, $p < .0001$; $R^2 = .59$). The confidence interval (CI) of the indirect effect of logo thickness excluded zero (95% CI = [.06, .36]) and the residual direct effect of logo thickness on perception of brand ruggedness was positive and significant ($\beta = .21$, $t(1371) = 2.77$, $p < .006$), indicating complementary (partial) mediation (Zhao, Lynch, & Chen, 2010).

In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand ruggedness as the dependent variable (AVE = .76) were both greater than the squared correlation between these two variables ($r^2 = .66$), indicating discriminant validity (Fornell and Larcker, 1981).
.76) were both greater than the squared correlation between these two variables ($r^2 = .59$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand excitement:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{\text{power}} = 5.66$; $\beta = .32$, $t(1372) = 2.49$, $p < .013$) than the brands with thin logo ($M_{\text{power}} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived excitement of the brand ($\beta = .82$, $t(1371) = 55.57$, $p < .0001$; $R^2 = .69$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.19, .07]) and the residual direct effect of logo thickness on perception of brand excitement was negative but insignificant ($\beta = -.06$, $t(1371) = -.89$, $p > .37$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand excitement as the dependent variable (AVE = .82) were both greater than the squared correlation between these two variables ($r^2 = .69$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand sophistication:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{\text{power}} = 5.66$; $\beta = .32$, $t(1372) = 2.49$, $p < .013$) than the brands with thin logos ($M_{\text{power}} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived sophistication of the brand ($\beta = .82$, $t(1371) = 58.23$, $p < .0001$; $R^2 = .71$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.20, .06]) and the residual direct effect of logo thickness on perception of brand sophistication was negative but insignificant ($\beta = -.07$, $t(1371) = -1.06$, $p > .29$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand sophistication as the dependent variable.
(AVE = .82) were both greater than the squared correlation between these two variables ($r^2 = .71$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand personality:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{power} = 5.66; \beta = .32, t(1372) = 2.49, p < .013$) than the brands with thin logo ($M_{power} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived personality of the brand ($\beta = .75, t(1371) = 63.45, p < .0001; R^2 = .75$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.08, .14]) and the residual direct effect of logo thickness on perception of brand personality was positive but insignificant ($\beta = .03, t(1371) = .54, p > .58$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand personality as the dependent variable (AVE = .87) were both greater than the squared correlation between these two variables ($r^2 = .75$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand likeability:** Results of a bootstrap analysis showed that brands with thick logos were perceived as significantly more powerful ($M_{power} = 5.66; \beta = .32, t(1372) = 2.49, p < .013$) than the brands with thin logo ($M_{power} = 5.35$). Consequently, higher levels of perceived power of brand pronounced the perceived likeability of the brand ($\beta = .96, t(1371) = 76.79, p < .0001; R^2 = .81$). The confidence interval (CI) of the indirect effect of logo thickness excluded zero (95% CI = [-.24, -.01]) and the residual direct effect of logo thickness on perception of brand likeability was negative and significant ($\beta = -.12, t(1371) = -2.08, p < .038$), indicating competitive mediation (Zhao, Lynch, & Chen, 2010). In addition, the average variance extracted (AVE) for the perceived brand power as the mediator (AVE = .91) and perceived brand likeability as the dependent variable (AVE = .95) were both greater
than the squared correlation between these two variables ($r^2 = .81$), indicating discriminant validity (Fornell and Larcker, 1981).

### 4.1.4 Discussion

Study 1 confirms the logo Visual Thickness Effect, that is logo thickness positively influences consumer’s perception of brand power, thus brand competence, ruggedness, excitement, and sophistication, thereby brand personality. Logo thickness also positively influences brand likeability. Study 1 also shows that the above main effects are mediated (partially for brand competence and ruggedness, and fully for brand excitement, sophistication, personality, likeability) by the logo-thickness-induced perception of brand power. However, we did not find a significant main effect for logo thickness on brand sincerity. The split-sample robustness check analyses as well as the large effect sizes further confirm the reliability, validity, and generalizability of the logo VTE.

As well, even though we used the same statistical population (US), means of collecting data (MTurk), and participant selection criteria (HIT approval rate > 95%) as did J. Luffarelli (personal communication, November 20, 2020), results of this study did not support their proposed visual asymmetry effect proposed (Luffarelli, Stamatogiannakis, & Yang, 2019), which suggests that logo asymmetry increases perception of brand excitement while decreasing brand sincerity, competence, and ruggedness. Also, our proposed logo-symmetry-induced feeling of familiarity found tentative support in this study. In the next study, we examine the robustness of the logo Visual Thickness Effect and the mediating role of thickness-induced perception of brand power.

### 4.2 Study 2 (Visual Thickness Effect and Thickness-induced Perception of Brand Power – Robustness Check)
Study 1 shows that perception of brand power mediates the relationship between logo thickness and perception of brand personality. Study 2 attempts to verify if the perception of brand power causes improvement in perception of brand personality and likeability. We also test the consumer’s inclination to personify power using visual thickness. Hence, in this study, instead of using logo thickness as independent factor, we try to induce the perception of brand strength vs weakness using priming scenarios about a powerful vs a powerless brand.

4.2.1 Participants and design

We will have 2 (brand priming scenario: strong vs weak) × 2 (logo pairs: each pair consists of thin and thick versions of a logo) full-factorial between-subject design. Four hundred three participants (M_age = 39.9 years; 53.8% male) were recruited via MTurk to be randomly assigned to the four study scenarios.

4.2.2 Procedure

Given the group to which they are assigned, each participant reads a short passage about a fictitious brand, either a strong brand or a weak brand. Keeping fixed the non-key terminologies across the two stories, we only change the keywords associated with weakness vs. strength of brands.

In the high brand power priming scenario, participants will read:

“As of this month, the company with the stock symbol RLH01 has not only maintained its dominance over the market in North America but also it has expanded its market to Asia and Europe. This has led local businesses to shrink down or close. It is believed that with the current high rate of customer satisfaction, profitability, and the diverse
market that the focal company has, it will continue outperforming the rivals and growing with the same rate for the coming months.”

In the low brand power priming scenario, participants will read:

“As of this month, the company with the stock symbol RLH01 has not only been struggling to maintain its share in the market in North America but also its market share has shrunk in Asia and Europe. This has led local businesses to expand or emerge. It is believed that with the current low rate of customer satisfaction, profitability, and the slim market that the focal company has, it will continue underperforming the rivals and shrinking with the same rate for the coming months.”

Next, participants will express their brand evaluations using a list of the twenty five 9-point Likert items (1 = “not at all”, 9 = “extremely”) averaged into the five components of brand personality proposed by Aaker (1997); i.e., sincerity (α = .84): *down-to-earth, honest, real, sentimental, original*; competence (α = .94): *successful, hard-working, intelligent, leader, reliable*; ruggedness (α = .82): *outdoorsy, masculine, Western, tough, rugged*; excitement (α = .92): *daring, cool, unique, up-to-date, trendy*; sophistication (α = .91): *upper class, glamorous, good looking, charming, smooth*. Participants’ perception of brand power (α = .91) will be measured using two 9-point semantic differential items (1 = “powerful/strong”, 9 = “powerless/weak”; Sundar & Noseworthy, 2014). As well, we will measure brand liking (α = .95) on two 9-point semantic differential items; 1 = “do not like at all/very unfavorable”, 9 = “like a lot/very favorable”; (Luffarelli, Stamatogiannakis, & Yang, 2019; p. 94). At the end, participants will randomly view one of the two logo pairs (Figure 15) and we will explore which one they prefer to assign to the brand described in the priming passage, the thick version or the thin version. Here, participants will have the opportunity to optionally write a few words explaining the reason for their choice of logo.
Finally, we will analyze the data using independent-samples t-test. We expect that the perceived brand power, thereby the perceived personality of brands, is significantly higher for the brand described as strong compared to those for the brand described as weak. Also, we expect that the frequency of assigning thick logo for the strong brand is significantly higher than for the weak brand.

4.2.3 Results

4.2.3.1 Exclusions

Ninety-one participants failed to correctly answer the instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009), which verifies whether participants have attentively read through the researcher’s instruction. In addition, thirty-six automated form fillers were identified (Buchanan and Scofield, 2018). Two hundred eighty-eight participants remained in the analyses (M<sub>age</sub> = 41.2 years; 49.7% male). This exclusion did not yield different results.

4.2.3.2 Manipulation Check

Manipulation check for the two priming scenarios shows that priming scenarios plausibly induces significantly different levels of perceived brand power (M<sub>strong brand</sub> = 7.85 vs M<sub>weak brand</sub> = 4.46, Mann-Whitney U = 2345.5, z = -11.40, p < .001). As per logo thickness, each participant compared thickness of the logo pair they viewed simultaneously by scoring which one logo is thicker on a 9-point scale (“the left logo is thicker 4, 3, 2, 1, 0, 1, 2, 3, 4

Figure 15. Logo pairs used in Study 2
the right logo is thicker”). Note that for one pair, the thicker one was positioned to the left of the thin version, and for the other pair, we positioned the thicker version to the right. Within each logo pair, the thick version was perceived as significantly thicker than the thin counterpart. Meaning that, for each logo pair, one-sample t-test with test value of zero (i.e., the midpoint denoting both logos have equal thickness) confirm that the mean comparison is significantly larger than zero and towards the thicker version ($M_{\text{pair 1}} = 3.24, t(144) = 25.84, p < .001; M_{\text{pair 2}} = 2.74, t(142) = 14.19, p < .001$).

4.2.3.3 Priming scenario-evoked perception of brand personality

As participants first read the priming passage and evaluated the described brand prior to viewing a logo pair, we collapsed the data across the two logo pairs. Results showed that participants who read the priming passage describing a powerful brand reported a significantly higher level of perceived brand sincerity ($M_{\text{sincerity}} = 5.83, t(286) = -16.16, p < .001$), brand competence ($M_{\text{competence}} = 7.30, U = 2640.5, z = -10.94, p < .001$), brand ruggedness ($M_{\text{ruggedness}} = 5.85, U = 5499.5, z = -6.90, p < .001$), brand excitement ($M_{\text{excitement}} = 6.58, U = 3484.5, z = -9.75, p < .001$), brand sophistication ($M_{\text{sophistication}} = 5.94, U = 5297, z = -7.18, p < .001$), and brand personality ($M_{\text{personality}} = 6.30, U = 4135, z = -8.82, p < .001$), as well as brand liking ($M_{\text{liking}} = 6.54, t(286) = -7.61, p < .001$) than participants who were exposed to the priming passage describing a powerless brand ($M_{\text{power}} = 4.46, M_{\text{sincerity}} = 4.98, M_{\text{competence}} = 4.51, M_{\text{ruggedness}} = 4.68, M_{\text{excitement}} = 4.26, M_{\text{sophistication}} = 4.39, M_{\text{personality}} = 4.56, M_{\text{liking}} = 4.73$), confirming that perception of brand power induces perception of brand personality.

4.2.3.4 Mediation through perception of brand power

For this analysis, we use PROCESS Model 4 (Hayes, 2017). Here, brand power-priming passage (powerful vs. powerless) is the independent variable, perception of brand power is
the mediator, and perceptions of five constructs of brand personality (Aaker, 1997) as well as brand likeability are the dependent variables.

**Brand Sincerity:** Results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{power} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{power} = 4.46$; $\beta = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand sincerity ($\beta = .43$, $t(285) = 9.57$, $p < .0001$; $R^2 = .30$). The confidence interval (CI) of the indirect effect of priming passage excluded zero (95% CI = [-1.02, -.17]) and the residual direct effect of priming passage on perception of brand sincerity was negative and significant ($\beta = -.60$, $t(285) = -2.74$, $p < .01$), indicating competitive mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived sincerity of the brand as dependent variable (AVE = .62) were both larger than the squared correlation between the two mentioned variables ($r^2 = .28$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand Competence:** Regarding the perceived competence of brand as the dependent variable, results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{power} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{power} = 4.46$; $\beta = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand competence ($\beta = .68$, $t(285) = 17.89$, $p < .0001$; $R^2 = .73$). The confidence interval (CI) of the indirect effect of priming passage excluded zero (95% CI = [.10, .89]) and the residual direct effect of priming passage on perception of brand competence was positive and significant ($\beta = .49$, $t(285) = 2.65$, $p < .01$), indicating complementary (partial) mediation.
Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived competence of the brand as dependent variable (AVE = .81) were both larger than the squared correlation between the two mentioned variables ($r^2 = .72$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand Ruggedness:** Regarding the perceived ruggedness of brand as the dependent variable, results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{power} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{power} = 4.46$; $β = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand ruggedness ($β = .42$, $t(285) = 10.33$, $p < .0001$; $R^2 = .37$). The confidence interval (CI) of the indirect effect of priming passage included zero (95% CI = [-.68, .12]) and the residual direct effect of priming passage on perception of brand ruggedness was negative but insignificant ($β = -.28$, $t(285) = -1.37$, $p > .10$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived ruggedness of the brand as dependent variable (AVE = .58) were both larger than the squared correlation between the two mentioned variables ($r^2 = .37$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand Excitement:** Regarding the perceived excitement of brand as the dependent variable, results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{power} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{power} = 4.46$; $β = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand
excitement ($\beta = .65$, $t(285) = 17.12$, $p < .0001$; $R^2 = .67$). The confidence interval (CI) of the indirect effect of priming passage included zero (95% CI = [-.31, .50]) and the residual direct effect of priming passage on perception of brand excitement was positive but insignificant ($\beta = .10$, $t(285) = .51$, $p > .60$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived excitement of the brand as dependent variable (AVE = .75) were both larger than the squared correlation between the two mentioned variables ($r^2 = .67$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand Sophistication:** Regarding the perceived sophistication of brand as the dependent variable, results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{power} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{power} = 4.46$; $\beta = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand sophistication ($\beta = .60$, $t(285) = 13.67$, $p < .0001$; $R^2 = .50$). The confidence interval (CI) of the indirect effect of priming passage excluded zero (95% CI = [-.93, -.04]) and the residual direct effect of priming passage on perception of brand sophistication was negative and significant ($\beta = -.50$, $t(285) = -2.29$, $p < .05$), indicating competitive mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived sophistication of the brand as dependent variable (AVE = .75) were both larger than the squared correlation between the two mentioned variables ($r^2 = .49$), indicating discriminant validity (Fornell and Larcker, 1981).
**Brand Personality:** Regarding the perceived personality of brand as the dependent variable, we averaged the five components suggested by Aaker (1997) into brand personality ($\alpha = .95$). Results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{\text{power}} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{\text{power}} = 4.46$; $\beta = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the perceived level of brand personality ($\beta = .56$, $t(285) = 15.93$, $p < .0001$; $R^2 = .61$). The confidence interval (CI) of the indirect effect of priming passage included zero (95% CI = [-.51, .23]) and the residual direct effect of priming passage on perception of brand personality was negative but insignificant ($\beta = -.16$, $t(285) = -.92$, $p > .30$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the perceived personality of the brand as dependent variable (AVE = .83) were both larger than the squared correlation between the two mentioned variables ($r^2 = .61$), indicating discriminant validity (Fornell and Larcker, 1981).

**Brand Liking:** Regarding the brand liking as the dependent variable, results of bootstrap analysis showed that the brand described in priming passage as powerful ($M_{\text{power}} = 7.85$) was perceived as significantly more powerful than the one described as powerless ($M_{\text{power}} = 4.46$; $\beta = 3.40$, $t(286) = 16.16$, $p < .0001$). Consequently, higher levels of perceived power of brand pronounces the brand liking ($\beta = .75$, $t(285) = 15.08$, $p < .0001$; $R^2 = .54$). The confidence interval (CI) of the indirect effect of priming passage excluded zero (95% CI = [-1.13, -.35]) and the residual direct effect of priming passage on brand liking was negative and significant ($\beta = -.75$, $t(285) = -3.05$, $p < .01$), indicating competitive mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .92) and the brand liking as
dependent variable (AVE = .95) were both larger than the squared correlation between the
two mentioned variables ($r^2 = .52$), indicating discriminant validity (Fornell and Larcker,

4.2.3.5 Priming passage-evoked selection of thick logo

We performed a $2 \times 2$ between-subject ANOVA with brand power priming passage (strong
vs. weak) and two logo pair replicates as fixed factors, and selection of thick logo as the
dependent variable. Results show that among participants who have read the priming
passage describing a strong brand, a significantly larger number of them ($M_{\text{logo pair 1}} = 79\%$;
$M_{\text{logo pair 2}} = 57\%$) chose to assign the thick version of logo pairs viewed than the number of
participants in the groups who have read the priming passage describing a weak brand ($M_{\text{logo}
pair 1} = 56\%$; $M_{\text{logo pair 2}} = 39\%$), resulting in a significant main effect of power-priming
scenario ($F(1, 284) = 12.86, p < .001; \eta^2 = .04$). Furthermore, the main effect of logo pair
replicate was significant ($F(1, 284) = 11.85, p < .01$), meaning that the two logo pairs varied
at the perceptions they induced. The priming passage $\times$ logo pair replicate interaction effect
was not significant ($F(1, 284) = .25, p > .60$).

4.2.3.6 Mediation of logo choice through perception of brand power

For this analysis, we use PROCESS Model 4 (Hayes, 2017). Here, brand power-priming
passage (powerful vs. powerless) is the independent variable, perception of brand power is
the mediator, and subjective association of thick vs. thin logo is the dependent variable. As
logo pair replicates did not interact with priming passage type, we follow a dominated
method (Cheema and Patrick, 2008; and Cryder, Botti, & Simonyan, 2017) and pooled data
across the two logo pair replicates. Results of bootstrap analysis showed that the brand
described in priming passage as powerful ($M_{\text{power}} = 7.85$) was perceived as significantly
more powerful than the one described as powerless ($M_{\text{power}} = 4.46; \beta = 3.40, t(286) = 16.16,$
Consequently, higher levels of perceived power of brand increases the viewer’s tendency to associate the thick logo (vs. the thin version) to the described brand ($\beta = .22$, $z = 3.16$, $p < .002$). The confidence interval (CI) of the indirect effect of priming passage included zero (95% CI = [-.56, .83]) and the residual direct effect of priming passage on the thick-logo-selection tendency was positive but insignificant ($\beta = .13$, $z = .38$, $p > .71$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010).

As a robustness-check, in order to make sure the captured effect is not as a result of design-related attributes of the logos (Cian, Krishna, & Elder, 2014, 2015; Reber, Schwarz, & Winkielman, 2004), we controlled for perceived logo likeability ($\alpha = .94$), logo dynamism ($\alpha = .74$), logo fluency12, logo complexity ($\alpha = .68$), logo familiarity ($\alpha = .80$), logo novelty ($\alpha = .64$), logo informativeness, logo previous exposure, and logo power ($\alpha = .94$) by including them in the PROCESS Model 4 as covariates. The updated model yielded consistent results: perceived power of brand fully mediated the effect of priming passage on consumer’s association of thick logo to the powerful brand ($\beta = .30$, $z = 3.34$, $p < .0009$). In this analysis, the effects of perceived logo likeability ($\beta = .51$, $z = 4.25$, $p < .0001$), logo dynamism ($\beta = -.45$, $z = -2.76$, $p < .006$), and logo power ($\beta = .28$, $z = 3.08$, $p < .003$) on logo choice were also significant. At presence of these covariates, the confidence interval (CI) of the indirect effect of priming passage included zero (95% CI = [-.64, 1.05]), and the residual direct effect of priming passage on the thick-logo-selection tendency was similarly

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12 Logo fluency is measured by two 9-point semantic differential items (“This logo is” 1 = “not fluent at all/very difficult to view,” and 9 = “very fluent/very easy to view”; Luffarelli, Stamatiogiannakis, & Yang, 2019). For this specific study, comparing two logos, we customized the two 9-point items (+4, +3, ..., 0, ..., +3, +4; +4 = “the left logo is more fluent/difficult to view” and +4 = “the right logo is more fluent/difficult to view”). However, the construct reliability turned out to be low ($\alpha = .27$). Therefore, in this study, perception of logo fluency is reported using only one item (+4 = “the left logo is more fluent” and +4 = “the right logo is more fluent”). We speculate that the problem was caused by erroneously rewording the item using the phrase “difficult to view” instead of “easy to view”.

positive and insignificant ($\beta = .21$, $z = .49$, $p > .60$), indicating indirect-only (full) mediation (Zhao, Lynch, & Chen, 2010).

Further, we explored the reason participants verbally provided for their choice of logo. Figure 16 visualizes the frequency of keywords participants used to explain their reasons to choose the thick logo for the brand described as powerful. As it can be seen, the most frequent terms ($n \approx 114$) are either derivatives, or synonyms and equivalents of ‘power’ or ‘strength’. Also, more than 40 adjectives described suitability of the thick logo to the strong brand. Figure 17 exhibits the exhaustive list of the adjectives used by participants along with their frequencies.

Figure 16. Tree map of the key adjectives which participants used to elaborate the reason why they chose the thick logo for the strong brand.
Figure 17. Breakdown of the key adjectives, and their frequencies, participants used to explain why they assigned the thick logo to the strong brand
4.2.4 Discussion

To summarize, study 2 confirms that the perception of brand power pronounces the perception of brand sincerity, competence, ruggedness, excitement, sophistication, personality, and likeability. More importantly, this study shows that there is a significant tendency to subjectively visualize concepts of strength and power using visual thickness, as participants perceptualized strong brands with thick logos rather than a thin logo.

In study 3, we examine the moderating role of perceived power of the self in the relationship between logo thickness and perception of brand power.

4.3 Study 3 (Perceived Power of Brand and Perceived Power of the Self – Moderated Mediation)

This study aims to examine if the perceived power of the self significantly moderates the magnitude of the perception of brand power induced by thickness of logo (H5). In this study, we subjectively prime participants to induce significantly different levels of sense of power.

4.3.1 Participants and design

Six hundred fifty-three participants (M_{age} = 40.2 years; 45.5% male) recruited via MTurk were randomly assigned to a 2 primed perceived power of the self (low vs high) × 2 logo thickness (thin vs thick) between-subject design.

4.3.2 Procedure

We used a new pair of fictitious logos: thin vs thick. Using an episodic prime adapted from Galinsky, Gruenfeld, and Magee (2003), participants will first complete the power manipulation task followed by a survey to express their perception of brand power, personality, and likeability induced by logo thickness.
In the high-power condition instruction, participants will read:

“Please recall a particular incident in which you had power over another individual or individuals. By power, we mean a situation in which you controlled the ability of another person or persons to get something they wanted, or were in a position to evaluate those individuals. Please describe this situation in which you had power—what happened, how you felt, etc.” (Galinsky, Gruenfeld, & Magee, 2003, p. 458).

In the low-power condition instruction, participants will read:

“Please recall a particular incident in which someone else had power over you. By power, we mean a situation in which someone had control over your ability to get something you wanted, or was in a position to evaluate you. Please describe this situation in which you did not have power—what happened, how you felt, etc.” (Galinsky, Gruenfeld, & Magee, 2003, p. 458).

The above episodic prime was also adapted by Rucker and Galinsky (2009). Participants will then have a space to write about their experience for up to 19 lines (Galinsky, Gruenfeld, & Magee, 2003).

Afterward, each participant randomly views a logo, either thin or thick (Figure 18). Then, similar to the previous experiments, we measured brand liking and perception of brand power and personality. We expect that the thick vs thin logo induces a larger mean difference in the perception of brand power in participants with low sense of power than they do in participants with a high sense of power.
4.3.3 Results

4.3.3.1 Exclusions

Two hundred thirty-one participants failed attention-check verification such as instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009), which verifies whether participants have attentively read through the researcher’s instruction. In addition, thirty-one more automated form fillers were identified (Buchanan and Scofield, 2018). Three hundred ninety-one participants (M<sub>age</sub> = 42.17 years; 40.4% male) remained in the analysis.

4.3.3.2 Logo thickness manipulation check

Mann-Whitney U test showed that the thick version of logo used in this study (M<sub>thickness</sub> = 5.99) was judged to be significantly thicker than the thin version (M<sub>thickness</sub> = 4.03, U = 9624.5, z = -8.56, p < .001).

4.3.3.3 Moderation of logo thickness-induced perception of brand power

Results of a 2 × 2 between-subject ANOVA with logo thickness (thin vs thick) and general sense of power (low vs high) as fixed factors, and perception of brand power as dependent variable found significant main effects of logo thickness (F(1, 249) = 11.06, p < .002; η² = .04) on perceived brand power, but the main effect of general sense of power on perceived brand power was not significant (F(1, 249) = 1.90, p > .16). However, and more importantly, logo thickness × general sense of power interaction had significant effect on perceived brand

Figure 18. Logo pair used in Study 3
power (F(1, 249) = 4.20, p < .05), in that, supporting H5, participants with high sense of personal power were significantly less influenced by logo thickness (as an extraneous sign of power) when evaluating power of the brand associated with thin logo vs thick logo, so that the mean perceived brand power by participants who viewed a thick logo (M_{brand power} = 5.21) was not significantly higher than the mean perceived brand power by participants who viewed a thin logo (M_{brand power} = 4.87; t(122) = -.90, p > .36), whereas in participants with low sense of personal power, the mean perceived brand power by participants who viewed a thick logo (M_{brand power} = 5.38) was significantly higher than the mean perceived brand power by participants who viewed a thin logo (M_{brand power} = 3.97; t(127) = -3.81, p < .001).

Figure 19. Mean differences in logo thickness-induced perception of brand power across two levels of sense of power of the self (low vs high)

4.3.3.4 Mediation of logo thickness-induced perception of brand power moderated by general sense of power

For this analysis, we use PROCESS Model 59 (Hayes, 2017). Model 59 helps observe if the hypothesized mediator (perception of brand power; α = .93) is a full or partial mediator, and if it is a partial mediator, then whether or not the hypothesized moderator (general sense of
power: low vs baseline vs high) also moderates the direct effect of logo thickness on dependent variables, i.e., brand personality ($\alpha=.95$), sincerity ($\alpha=.86$), competence ($\alpha=.95$), ruggedness ($\alpha=.87$), excitement ($\alpha=.91$), sophistication ($\alpha=.92$), and likeability ($\alpha=.95$). PROCESS Model 59 also examines whether or not the moderator influences the effect of mediator on dependent variable. Herein, the results of moderated mediation analyses for each dependent variable are presented.

**Brand Sincerity:** Results of bootstrap analysis showed that the brand associated with the thick logo ($M_{\text{power}} = 5.29$) was perceived as significantly more powerful than the brand with thin logo ($M_{\text{power}} = 4.41; \beta = .87, t(387) = 4.09, p < .0002$). Consequently, as hypothesized but as opposed to findings in study 1 regarding brand sincerity, higher levels of perceived power of brand pronounces the perceived level of brand sincerity ($\beta = .64, t(385) = 21.67, p < .0001; R^2 = .56$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.29, .21]) and the residual direct effect of logo thickness on perception of brand sincerity was negative and insignificant ($\beta = -.04, t(385) = -.30, p > .76$), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived sincerity of the brand as dependent variable (AVE = .65) were both larger than the squared correlation between the two mentioned variables ($r^2 = .56$), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness $\times$ general sense of power interaction on perceived power of brand induced by thickness of logo ($\beta = -.54, t(387) = -2.02, p < .05$). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.04, -.02]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness.
thickness (independent variable) on perceived sincerity of brand (dependent variable - 95% CI = [-.27, .37]) and the effect of perceived brand power (mediator) on perceived brand sincerity (dependent variable - 95% CI = [-.06, .09]).

**Brand Competence:** Results of bootstrap analysis showed that the brand associated with the thick logo (M\text{power} = 5.29) was perceived as significantly more powerful than the brand with thin logo (M\text{power} = 4.41; β = .87, t(387) = 4.09, p < .0002). Consequently, as suggested, higher levels of perceived power of brand pronounces the perceived level of brand competence (β = .77, t(385) = 23.83, p < .0001; R² = .61). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.21, .32]) and the residual direct effect of logo thickness on perception of brand competence was positive and insignificant (β = .05, t(385) = .37, p > .71), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived competence of the brand as dependent variable (AVE = .85) were both larger than the squared correlation between the two mentioned variables (r² = .61), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness × general sense of power interaction on perceived power of brand induced by thickness of logo (β = -.54, t(387) = -2.02, p < .05). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.04, -.0004]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived competence of brand (dependent variable - 95% CI = [-.49, .20]) and the effect of perceived brand power (mediator) on perceived brand competence (dependent variable - 95% CI = [-.03, .13]).
**Brand Ruggedness:** Results of bootstrap analysis showed that the brand associated with the thick logo (M\text{power} = 5.29) was perceived as significantly more powerful than the brand with the thin logo (M\text{power} = 4.41; β = .87, t(387) = 4.09, p < .0002). Consequently, as suggested, higher levels of perceived power of brand pronounces the perceived level of brand ruggedness (β = .58, t(385) = 17.27, p < .0001; R² = .46). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.08, .49]) and the residual direct effect of logo thickness on perception of brand ruggedness was positive and insignificant (β = .21, t(385) = 1.42, p > .15), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived ruggedness of the brand as dependent variable (AVE = .66) were both larger than the squared correlation between the two mentioned variables (r² = .45), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness × general sense of power interaction on perceived power of brand induced by thickness of logo (β = -.54, t(387) = -2.02, p < .05). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.04, -.01]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived ruggedness of brand (dependent variable - 95% CI = [-.22, .51]) and the effect of perceived brand power (mediator) on perceived brand ruggedness (dependent variable - 95% CI = [-.06, .10]).

**Brand Excitement:** Results of bootstrap analysis showed that the brand associated with the thick logo (M\text{power} = 5.29) was perceived as significantly more powerful than the brand with the thin logo (M\text{power} = 4.41; β = .87, t(387) = 4.09, p < .0002). Consequently, as
suggested, higher levels of perceived power of brand pronounces the perceived level of brand excitement ($\beta = .71$, $t(385) = 20.16$, $p < .0001$; $R^2 = .53$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.24, .37]) and the residual direct effect of logo thickness on perception of brand excitement was positive and insignificant ($\beta = .06$, $t(385) = .43$, $p > .66$), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived excitement of the brand as dependent variable (AVE = .74) were both larger than the squared correlation between the two mentioned variables ($r^2 = .52$), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness $\times$ general sense of power interaction on perceived power of brand induced by thickness of logo ($\beta = -.54$, $t(387) = -2.02$, $p < .05$). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.06, -.03]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived excitement of brand (dependent variable - 95% CI = [-.47, .30]) and the effect of perceived brand power (mediator) on perceived brand excitement (dependent variable - 95% CI = [-.02, .15]).

**Brand Sophistication:** Results of bootstrap analysis showed that the brand associated with the thick logo ($M_{\text{power}} = 5.29$) was perceived as significantly more powerful than the brand with thin logo ($M_{\text{power}} = 4.41$; $\beta = .87$, $t(387) = 4.09$, $p < .0002$). Consequently, as suggested, higher levels of perceived power of brand pronounces the perceived level of brand sophistication ($\beta = .76$, $t(385) = 24.47$, $p < .0001$; $R^2 = .62$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.34, .18]) and the
residual direct effect of logo thickness on perception of brand sophistication was negative and insignificant ($\beta = -.08$, t(385) = -.63, $p > .52$), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived sophistication of the brand as dependent variable (AVE = .76) were both larger than the squared correlation between the two mentioned variables ($r^2 = .61$), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness $\times$ general sense of power interaction on perceived power of brand induced by thickness of logo ($\beta = - .54$, t(387) = -2.02, $p < .05$). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.05, -.01]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived sophistication of brand (dependent variable - 95% CI = [-.34, .36]) and the effect of perceived brand power (mediator) on perceived brand sophistication (dependent variable - 95% CI = [-.06, .10]).

**Brand Personality:** Results of bootstrap analysis showed that the brand associated with the thick logo ($M_{\text{power}} = 5.29$) was perceived as significantly more powerful than the brand with the thin logo ($M_{\text{power}} = 4.41$; $\beta = .87$, t(387) = 4.09, $p < .0002$). Consequently, as suggested, higher levels of perceived power of brand pronounces the perceived level of brand personality ($\beta = .69$, t(385) = 26.45, $p < .0001$; $R^2 = .66$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.18, .27]) and the residual direct effect of logo thickness on perception of brand personality was positive and insignificant ($\beta = .04$, t(385) = .36, $p > .72$), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the
brand as the mediator (AVE = .94) and the perceived personality of the brand as dependent variable (AVE = .84) were both larger than the squared correlation between the two mentioned variables ($r^2 = .65$), indicating discriminant validity (Fornell and Larcker, 1981). Further, as predicted, we found a negative and significant logo thickness × general sense of power interaction on perceived power of brand induced by thickness of logo ($\beta = -.54$, $t(387) = -2.02$, $p < .05$). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.05, -.04]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived personality of brand (dependent variable - 95% CI = [-.28, .28]) and the effect of perceived brand power (mediator) on perceived brand personality (dependent variable - 95% CI = [-.03, .10]).

**Brand Likeability:** Results of bootstrap analysis showed that the brand associated with the thick logo ($M_{power} = 5.29$) was perceived as significantly more powerful than the brand with the thin logo ($M_{power} = 4.41$; $\beta = .87$, $t(387) = 4.09$, $p < .0002$). Consequently, as suggested, higher levels of perceived power of brand pronounces the perceived level of brand likeability ($\beta = .91$, $t(385) = 34.10$, $p < .0001$; $R^2 = .76$). The confidence interval (CI) of the indirect effect of logo thickness included zero (95% CI = [-.20, .24]) and the residual direct effect of logo thickness on perception of brand personality was positive and insignificant ($\beta = .02$, $t(385) = .17$, $p > .86$), indicating a full mediation (Zhao, Lynch, & Chen, 2010). Further, the average variance extracted (AVE) for the perceived power of the brand as the mediator (AVE = .94) and the perceived likeability of the brand as dependent variable (AVE = .95) were both larger than the squared correlation between the two mentioned variables ($r^2 = .76$), indicating discriminant validity (Fornell and Larcker, 1981).
Further, as predicted, we found a negative and significant logo thickness × general sense of power interaction on perceived power of brand induced by thickness of logo (β = -.54, t(387) = -2.02, p < .05). The conditional effect of logo thickness on perceived brand power across different levels of perceived power of the self indicated that higher levels of perception of self-power significantly plummets the effect of logo thickness on perception of brand power (95% CI = [-1.04, -.03]). Results also showed that general sense of power did not significantly moderate the direct effect of logo thickness (independent variable) on perceived likeability of brand (dependent variable - 95% CI = [-.41, .17]) and the effect of perceived brand power (mediator) on perceived brand likeability (dependent variable - 95% CI = [-.06, .07]).

4.3.4 Discussion

This study again confirms the significance of the Logo Visual Thickness effect and the underlying mechanism that is the logo-thickness induced perception of brand power. More importantly, this study shows that compared to consumers with a low sense of power, consumers with a high sense of power are less affected by extraneous signs of power, therefore, their judgment about power of a brand is less influenced by the thickness of the brand’s logo as an extraneous stimulus. This study finds no evidence that the general sense of power also moderates the effect of perception of brand power on forming perceptions of brand personality, its constructs, and brand likeability.

Study 4 examines the moderation effect of visuospatial sketchpad on the influence of logo thickness on perception of brand power.

4.4 Study 4 (Perceived Power of Brand and Visuospatial Capacity – Moderated Mediation)
This study examines the moderating role of visuospatial capacity vs cognitive (phonological) capacity in forming perception of brand power evoked by logo thickness. We hypothesize that the effect of logo thickness on perception of brand power follows two different patterns, concave (H6) vs upward linear (H7), depending on high vs low customer’s accessible visuospatial capacity. That says, consumers with low visuospatial capacity respond positively to the logo thickness as a visual stimulus, thus their perception of brand power increases in line with the increase in logo thickness. However, for consumers with a high visuospatial capacity, this behaviour is diminishing (concave), so that once the thickness of logo becomes salient to such consumers, they start to cancel out the extraneous influence of logo thickness on their judgment about the associated brand. As previously explained, we also posit that, as logo thickness is a visual attribute, the above argument does not apply to phonological capacity. In this study, we subjectively manipulate the level of cognitive load vs visuospatial load in participants.

4.4.1 Participants and design

One thousand two hundred seventy-nine participants (Mage = 37.22 years; 39.8% male) were recruited via MTurk for a 12-scenario, full-factorial, between-subject design: 2 memory loads (high vs low) × 2 working memory systems (visuospatial vs phonological) × 3 logo thickness (thin, thick, too thick).

4.4.2 Procedure

To subjectively manipulate the level of visuospatial vs phonological load, we followed Jiang and colleagues’ (2016) method. For high (vs low) cognitive load conditions, we instructed participants to memorize a given 10-digit (vs 3-digit) number, which they required to recall later over the course of the experiment. This manipulation method is popular among scholars (see e.g., Petrova & Cialdini, 2005). Instead, for high (vs low) visual load conditions, participants viewed a 5 × 5 matrix where 10 (vs 3) cells contain checkmark (Appendix C). Participants were
instructed to memorize the layout of the occupied cells in the matrix as they are going to recall and reproduce it at some point during the experiment. This method was also applied by Logie, Zucco, and Baddeley (1990).

Next, participants randomly viewed either a thin, thick, or too thick version of a fictitious logo (Figure 20) and they expressed their brand evaluations using twenty-five 9-point Likert items (1 = “not at all”, 9 = “extremely”) loading onto the five components of brand personality proposed by Aaker (1997); i.e., “excitement: cool, daring, unique, up-to-date, trendy; sincerity: original, real, down-to-earth, honest, sentimental; competence: successful, hard-working, reliable, leader, intelligent; sophistication: glamorous, upper class, charming, good-looking, smooth; ruggedness: masculine, tough, rugged, Western, outdoorsy. Similar to previous studies, participants’ perception of brand power induced by thickness of logo and brand liking were also measured.

Next, participants were asked to recall and generate the number/matrix they had viewed earlier, followed by reporting how difficult was the memory task they experienced on two 9-point semantic differential items (“1 = Not difficult/effortful at all, 9 = Very difficult/effortful”; Jiang et al., 2016, p. 715). It is expected that, across participants with a high visual load, but not a high cognitive load, the perception of brand power linearly increases in line with the increase in thickness of the logo, whereas across participants with low visual load, the perception of brand power induced by logo thickness exhibits a concave (or diminishing) pattern as the logo thickness increases.

Figure 20. Logo triad used in Study 4
4.4.3 Results

4.4.3.1 Exclusions

Five hundred eighty-seven participants failed the instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009), which verifies whether participants have attentively read through the researcher’s instruction without which they did not have the chance to know how the experiment and memory task would work. In addition, fifty-five more automated form fillers were identified (Buchanan and Scofield, 2018). Six hundred fifty-five participants (M_{age} = 38.86 years; 36% male) remained in the analysis.

4.4.3.2 Logo thickness manipulation check

Kruskal-Wallis H test showed that the three versions of the logo used in this study (M_{thin} = 4.10; M_{thick} = 6.18; M_{too thick} = 7.11) were judged to be significantly different by thickness (H(2) = 213.36, p < .001).

4.4.3.3 Moderation of logo thickness-induced perception of brand power

Results of a 3 × 2 between-subject ANOVA with logo thickness (thin, thick, too thick) and visual load (low vs high) as fixed factors, and perception of brand power (α = .93) as dependent variable found significant main effects of logo thickness (F(1, 313) = 9.21, p < .001; η^2 = .06) on perceived brand power, while the main effect of visual load on perceived brand power was not significant (F(1, 313) = .05, p > .83). However, as suggested, logo thickness × visual load interaction had a significant effect on perceived brand power (F(1, 313) = 3.12, p < .05), in that, supporting H₆, participants with a high visual load (low visuospatial capacity) exhibited an increase in their perception of brand power in line with the increase in logo thickness (M_{brand power – thin logo} = 4.83; M_{brand power – thick logo} = 5.21; M_{brand power – too thick logo} = 5.90), while, supporting H₇, participants with low visual load (high
visuospatial capacity) exhibited a concave pattern in their perception of brand power ($M_{brand power \text{– thin logo}} = 4.57; M_{brand power \text{– thick logo}} = 6.00; M_{brand power \text{– too thick logo}} = 5.50$) in line with the increase in logo thickness with the greatest perception of brand power induced by the moderately thick logo (Figure 21).

In addition, supporting our position, results of a $3 \times 2$ between-subject ANOVA with logo thickness (thin, thick, too thick) and cognitive load (low vs high) as fixed factors, and perception of brand power ($\alpha = .85$) as dependent variable found no significant logo thickness $\times$ cognitive load interaction effect on perceived brand power ($F(1, 330) = .96, p > .38$). Interestingly, across both high and low cognition-treatment groups, the visual thickness effect, i.e., the mental association of thickness of logo with power of brand, turned out to be insignificant ($F(1, 330) = .87, p > .41$), implying that the logo visual thickness effect is highly sensitive to the presence of cognitive load.

Figure 21. Logo thickness-induced perception of brand power by three logo thickness levels across two levels of visual load (low, high), and their different patterns (upward-linear vs concave) relative to the levels of visual load (high vs low)
4.4.4 Discussion

Study 4 shows that, as suggested, consumers’ process of forming a perception of brand power induced by logo thickness, itself, is a function of the visuospatial capacity of consumers’ working memory, in that consumers with depleted visual capacity are linearly and positively influenced by logo thickness, while consumers with a high visual capacity are able to cancel out the influence of logo thickness once salient. It also seems that cognitive (phonological) capacity plays a noteworthy role, in the sense that it can virtually diminish consumer’s mental ability to perceptualize.

Study 5 explores whether in presence of complementary information about a brand (for example when a brand is known) the logo Visual Thickness Effect holds.

4.5 Study 5 (Does logo visual thickness effect hold when in presence of complementary information about the associated brand?)

This study explores a potentially counterintuitive idea. Imagine a weak brand with poor image. The question is that which situation is worse in terms of brand evaluation: if this company has a thin logo or it has a thick logo? We specifically seek a condition in which consumers are aware of the poor status of the brand based on relevant facts and we are interested in seeing whether or not consumers’ judgment is still influenced by the company’s logo thickness as an extraneous stimulus. This study helps understand whether established/known (poor) companies can exploit the boosting effect of logo thickness, or only emerging/unknown brand can best exploit this visual effect.

4.5.1 Participants and design
For a 1 (priming story: weak brand) × 2 logo shapes (thin vs thick) × 2 logo pairs (symmetrical vs asymmetrical) between-subject design, four hundred twenty-one participants (M_{age} = 39 years, 50% male) were recruited via MTurk.

4.5.2 Procedure

While viewing a logo, participants read a priming passage about a fictitious brand implying that the brand is struggling in the market, but without explicitly using adjectives related to brand power, personality, and its constructs, so that the priming passage does not directly shape participants judgments about the mentioned brand characteristics. The priming scenario reads:

“The company with the stock symbol RLH01 (with logo on the right) is not only struggling to maintain its share in the market in the North America, but also its market share is shrinking in Asia, Oceania, South America, and Europe. This has led local businesses to expand or emerge. It is believed that with the current low rate of customer satisfaction, profitability, and the slim market that the focal company has, it will continue under-performing the rivals and shrinking with the same rate for the coming months.”

This scenario accompanies the brand’s logo in the way figure 22 presents.

Figure 22. The priming passage about the fictitious weak brand along with a thick, asymmetrical logo
Then, participants were randomly assigned to one of the four independent study groups, where they randomly viewed a logo (Figure 23) for the focal firm. Next, they expressed their perception of brand personality five constructs (Aaker, 1997) on the full inventory of forty-two 9-point Likert items (1 = “not at all”, 9 = “extremely”). In addition, we measured brand liking and brand power induced by thickness of logo similar to the previous studies.

Figure 23. Logo pairs used in Study 5

4.5.3 Results

4.5.3.1 Exclusion

One-hundred and two participants failed to correctly answer the instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009), which verifies whether participants have attentively read through the researcher’s instruction. In addition, nineteen automated form fillers were identified (Buchanan and Scofield, 2018). In total, three-hundred participants (M_age = 39.2 years, 56.3% male) remained in the study. This exclusion did not yield different results.

4.5.3.2 Manipulation check

Within each logo pair (thin vs thick), results of independent-samples t-tests shows that the thick logos (M_{pair 1} = 5.36; M_{pair 2}= 6.62) were significantly (t_{pair 1}(144) = - 4.12, p < 001; t_{pair 2}(152) = - 5.16, p < 001) perceived as thicker than their thin counterparts (M_{pair 1} = 3.88;
$M_{\text{pair} 2} = 5.18).$ The two versions of logo, within each pair, did not significantly vary by likeability, dynamism, fluency and complexity. Also, as per perceived symmetry of logos (“How do you judge the geometrical symmetry of this logo? $1 = $ not symmetrical at all; $9 = $ very symmetrical), one-sample t-tests with test value of five (i.e., the midpoint denoting that the logo is neither asymmetrical nor symmetrical) confirmed that the asymmetrical logo pair is significantly perceived as asymmetrical ($M_{\text{pair} 1 \text{ (asymmetrical)}} = 3.64, t(145) = -6.77, p < .001$); and the symmetrical logo pair is significantly perceived as symmetrical ($M_{\text{pair} 2 \text{ (symmetrical)}} = 6.95, t(153) = 11.15, p < .001$).

4.5.3.3 Logo thickness boosting effect on perception of brand power in the presence of relevant information about brand

Within both logo pairs, results of independent-sample t-tests revealed that, in presence of relevant facts about weakness of a brand, the positive effect of logo thickness on perception of brand power ($p_{\text{pair} 1} > .43, p_{\text{pair} 2} > .85$), brand favourability ($p_{\text{pair} 1} > .85, p_{\text{pair} 2} > .88$), and brand personality ($p_{\text{pair} 1} > .69, p_{\text{pair} 2} > .70$) is absent. Regarding the between logo pair comparison, despite visual differences, results are similar; in that the differences did not produce any effect in favour or against perception of brand in the presence of relevant facts about the brand ($p_{\text{brand power}} > .38, p_{\text{brand favourability}} > .48, p_{\text{brand personality}} > .98$).

4.5.3.4 Robustness check

To largely make sure that the observed neutralization of the logo thickness/symmetry effect is as a result of the priming passage, that provided relevant facts about the brand, but not any other alternative, we narrowed down responses to those from participants of whom we were sure had carefully read the priming scenario. For this, we use two extra multiple-choice attention-check items located to appear after participants have read the scenario and moved on to the next page (1. “What was the brand stock symbol? RLH01, MXV54, WAG22,
ZYA63, QCV79, No idea”; 2. “What continent was NOT mentioned among the continents where the company's market share is shrinking? Africa, Asia, Europe, Oceania, North America, South America, No idea”). The order of the two items and their answer choices were displayed in a randomized order. Also, participants did not have the possibility to go back and reread the priming scenario. Even though for the initial analyses we did not screen participants using these attention-checks, for this robustness-check analysis, we keep only those who correctly answered both attention-check questions. One hundred twenty-three subjects remained (M_age = 39.6 years, 44.7% male) in the analysis.

The analysis yielded a similar result. Within both logo pairs, results of independent-sample t-tests revealed that, in presence of relevant facts about weakness of a brand, the positive effect of logo thickness on perception of brand power (p_{pair 1} > .48, p_{pair 2} > .45), brand favourability (p_{pair 1} > .79, p_{pair 2} > .49), and brand personality (p_{pair 1} > .69, p_{pair 2} > .57) is absent. Regarding the between logo pair comparison, despite visual differences, results are similar; in that the differences did not produce any effect in favour or against perception of brand in the presence of relevant facts about the brand (p_{brand power} > .90, p_{brand favourability} > .86, p_{brand personality} > .69).

4.5.4 Discussion

In this study, we explored if the logo Visual Thickness Effect still holds while relevant information about the brand is at hand. Results showed that this is not the case and the focal visual effect diminishes. Overall, as a managerial implication, results suggest that newly-established or unknown brands, about which the target market does not have a handful of relevant information, find the logo visual thickness effect more useful and exploitable than do the already-established, well-known brands.
Chapter V: General Discussion

The primary aim of this research is to theorize the logo “Visual Thickness Effect”. Drawing on the literature for art, architecture, culture, language, consumer behaviour, and psychology, we posit that thickness translates into concepts representing strength, firmness, impermeability, etc. (e.g., thick trunk of columns used in historical monuments to imply eternal, solid, and tremendous power). Consequently, we suggest that thick lines may shape the perception of brand personality and favourability, and we propose that the thickness-induced perception of brand power is the underlying mechanism for the mentioned main effect. Further, we demonstrate that the main effect of logo thickness on the thickness-induced perception of brand power is negatively moderated by the level of perceived power of the self. Moreover, the effect of logo thickness on the thickness-induced perception of brand power is also moderated by the level of accessible visuospatial capacity enabling consumers to process and cancel out extraneous visual stimulus (i.e., logo visual thickness), so that the magnitude of the perceived brand power induced by logo thickness follows a concave versus an upward linear pattern for consumers with high versus low visuospatial capacity, respectively. It also seems that phonological (cognitive) capacity plays an impairing role in thickness-power perceptualizing behaviour. Future research may investigate this phenomenon in more details. Further, this research shows that an already-known-as-powerless brand cannot improve consumer evaluation by only increasing thickness of its logo. That says, the logo Visual Thickness Effect can be best exploited by unknown brands that are either newly-established or entering new market segments.

In this research, we also tried to contribute to the research conducted by Luffarelli, Stamatogiannakis, and Yang (2019), on a phenomenon that they refer to as “visual asymmetry effect,” suggesting that asymmetrical logos increase the perception of brand
excitement. They also suggested that asymmetrical logos attenuate the perception of brand sincerity, competence, and ruggedness - which we refer to as logo visual asymmetry side-effect - while they did not offer an underlying mechanism for that. Our effort was to propose symmetry-induced feeling of logo familiarity as the mediator for this side-effect; however, we did not observe any significant logo visual asymmetry effect (as main effect), nor a robust evidence for feeling of familiarity as the mediator. Having said that, results tentatively supported that logo symmetry induces logo familiarity. Future research may investigate this phenomenon in more depth.

Regarding the robustness and reliability of the findings in this research, one might argue that a) the sample sizes per condition were surprisingly large (~100), thus, split-sample analysis (see, e.g., Fafchamps & Labonne, 2017) would be a good means to make sure about the robustness of the results, and b) reporting the effect sizes (see, e.g., Vacha-Haase & Thompson, 2004) could be the evidence for reliability and validity of findings. To best address these concerns, even though I have closely followed the methods applied in already-published papers on the similar topics in the top-three Marketing journals; i.e., JM, JMR, and JCR; I communicated the above concerns with a few authors of the focal papers. Their arguments are as follows:

“I think many people use rules of thumb, like 100 people per condition. Where there is no power analysis reported, that's often what people have done. I think most people doing the type of research you're doing simply use Cronbach's alpha (not split-sample analysis) and call it a day.” (H. B. Kappes (London School of Economics), personal communication, November 22, 2021).

“1) Regarding sample size: We do not come up with the sample sizes in a sophisticated manner. The number of participants needed depends on the actual size
of the effect (which we cannot know a priori), so, e.g., 60 cannot always be the ideal value. Some sources mention in the case of an interaction 100+ / condition. So, now, when I run studies, I aim for about 100 people per condition; still not a very sophisticated manner to come up with sample size. This is also often the sample size used in experimental studies published in JCP, JCR, JMR, etc.

2) Regarding the split-sample analysis: I am not sure this approach would make sense here. Splitting an already small sample of 100, 200, or 300 respondents or observations would lead to a sample size too small to detect an effect. Split-sample analysis makes sense when one has many more observations than that. This is perhaps why we do not embark on such an analysis. Replicating your basic, main effect across several studies is a form of test-retest, which I find equivalent to a split-sample analysis.” (J. Luffarelli (Montpellier Business School), personal communication, November 18, 2021).

“In general, we used to determine sample sizes based on the availability of participants (i.e., convenience sampling). Nowadays, we tend to use much larger sample sizes, but we still don't have specific effect sizes in mind (as for most behavioral lab studies, effect sizes are not that relevant). Split-sample analysis doesn't really make much sense with lab experiments. It makes more sense if you are estimating a model and using a large dataset.” (T. Meyvis (New York University), personal communication, December 1, 2021).

Comparable with the provided arguments above, in this research, the researcher has frequently replicated the visual thickness effect using numerous fictitious logo pairs which suggest robustness of the findings. As well, results are accompanied by the Cronbach’s Alphas reported as the evidence for reliability of the measurements and findings. Also, due
to the interactions studied throughout the experimental scenarios, and given there is no thought effect size as a priori, as a rule-of-thumb in this stream of research (i.e. behavioral experiments), the researcher hired about > 100 participants per condition, which is too small to run educative, implacable split-sample analyses. Nonetheless, despite the above strong, educative arguments, after the thesis supervisory board’s emphasis on conducting split-sample analysis - and effect size, I embarked on the analyses, which fully and strongly supported the initial results of the analyses on the original sample. This shows that the proposed logo visual thickness effect has a strong theoretical ground.

As per theoretical contribution, this research contributes to the literature for perception of visual elements, logo design, brand evaluation, perception of power, and sensory marketing. Regarding the managerial implications of the present research, findings suggest that logo designers need to be recognizant about the potential benefits of the Visual Thickness Effect. This is specifically important when it comes to designing logos for innovative brands, emerging/young brands, small businesses, and brands which are active in finance/banking industry, which are inherently known for risky firms in markets as a result of higher rates of failure (e.g., Pisano, 2015). For example, in 2021, the CIBC bank introduced its “bold new” logo which, as the CIBC president and chief executive officer, Victor G. Dodig explicates, is meant “to build a bank that’s inspired by the power of your (clients) ambitions….. and to reaffirm our commitment to you…… to realize your goals” (“A new look inspired by you”, 2021). It is seen that, thickening the bank’s logo is figuratively explained by, and linked to, the power of clients’ ambitions, and to the bank’s commitment to realize its clients’ ambitions which is nearly impossible without being strong and powerful. This case can be a decent example of applying logo visual thickness to convey brand power thereby brand competence and determination in pursuing its mission.
As well, brands and designers need to be cautious that thick logos might still help shaping plausible perception of brand power thus brand personality in consumers with low visuospatial capacity, but this is not the case when it comes to consumers with a high visuospatial capacity as they notice salient external stimuli and start cancelling out the extraneous influences. Hence, logo designers are advised that they try not to violate salience level when exploiting thickness, as a visual element, in their designs. Furthermore, the consumer’s perceived power of the self may play a crucial role in translating visual thickness of a logo into the power of the associated brand. This research finds that people who score high in power of the self do not translate logo thickness into brand power. Thus, brands may exploit this finding by demographically surveying their market if they can come up with a liable pattern which can predict perceived power of the self, such as probably age, gender, or culture. This would help brands to decide more precisely whether employing thick logo will induce the desired influence throughout their markets.
References


Appendices

Appendix A: Results of the 2nd pre-study

Figure 24. Participants assigned a thicker dollar sign to US dollar vs Canadian dollar (low salience) or Namibian dollar (high salience)

Having selected their dollar signs, participants were asked to briefly explain why they decided on the selected dollar signs. Textual analysis shows that the rationale provided by the participants who chose a thicker sign for USD mostly contained keywords like US dollars: “is worth more”, “stronger country”, “bolder country”, “stronger currency”, “I like more”, “less foreign”, “looks better”, “is thicker”, “has more depth”, “is more American”, “is more important”, “is bolder”, “is more proud”, “has more force”, and “more dominant”.

As well, participants next compared the power of USD vs either Canadian or Namibian dollar on one 9-point semantic differential item (“Are US and Namibian dollars...
different in terms of power? (0 = equal), -4 = “Namibian dollar is more powerful”, +4 = “US dollar is more powerful”).

Figure 25. Reported perceived power of USD against CAD or Namibian dollar
Appendix B: Brand Personality Scale

Table 7. Brand Personality Scale (Means and Standard Deviations)*

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<thead>
<tr>
<th>Traits</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Facet</th>
<th>Facet Name</th>
<th>Factor Name</th>
<th>Mean</th>
<th>Standard Deviation</th>
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<td>Sincerity</td>
<td>2.72</td>
<td>.99</td>
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*Based on n = 9, 910


Appendix C: Visuospatial Depletion Stimulus

Figure 26. Visual Load Manipulation Matrix