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The effect of brand names and logos' figurativeness on memory: An experimental approach

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ABSTRACT

This paper explores the opposition between abstract and figurative names and logos, considered together in a single stimulus. We created three experimental scenarios of fictitious names and logos, ranging from very abstract to very figurative stimuli. Findings show that figurativeness, and organicity as its extreme form, are key determinants of cognitive responses to names and logos. However, our most relevant finding is the crucial importance of the interaction between the figurativeness of the name and the logo. Results show that semantic repetition is beneficial for creating recall and generating associations, and semantic dispersion is advantageous for ensuring recognition. Nevertheless, there are exceptions. The originality of this paper lies in the fact that it allows to say that figurativeness is not a sacrosanct solution to good name and logo performance, it largely depends on the type of interaction between these two central brand identity signs.

1. Introduction

"A picture is worth a thousand words." (Chinese proverb attributed to Confucius).

This paper explores the opposition between abstract and figurative names and logos. Our purpose is to overcome the lack of integrated consumer research on these two core elements of the brand identity mix, which have been deeply studied separately but rarely considered in terms of their interaction.

To brand is "to give a name or image" to something (Oxford Advanced Learner's Dictionary, 2021) to facilitate its recall when someone wants to ask for it, or its recognition when someone is exposed to a reference about it. Therefore, memory is a key selection criterion (Sen, 1999). Hence, the first question that arises is how does the chosen name fulfill its first function; that is, is it easy to memorize, or will significant communication efforts be needed to achieve this goal? Secondly, how will the supporting logo facilitate brand name recall and recognition?

We know that figurativeness is key to memorization (Lerman & Garbarino, 2002). Indeed, we tend to better memorize commonly experienced objects from our real world – things we see, hear, smell, taste, or touch – and, among these, things that come straight from nature as opposed to those that have been created by humans (Hartmann et al., 2013). Brand identity signs depicting abstract objects, which do not actually exist in a way our senses can recognize, are harder to memorize. Thus, we can hypothesize that, *ceteris paribus*, an apple is better memorized than a key, and a key is better memorized than a square.

There is an established body of research and formalized managerial guidelines on how to create good brand names (Klink, 2001) and logos (Henderson & Cote, 1998). However, most of this research has been conducted separately for names and logos, while examinations of the combined effect of key name and logo dimensions, such as figurativeness, are missing (Zaichkowsky, 2010).

The objectives of this research are therefore to establish the relationship between the nature of the name and logo selected and to develop a practical taxonomy of names and logos organized together around the concept of figurativeness. The added value of this taxonomy will depend on its correlation with the target audience's response to the stimuli analyzed, whether cognitive, affective, or behavioral. In this paper, we focus on assessing name and logo effects on cognitive response; namely, on memory. Based on traditional marketing and consumer behavior literature, we distinguish between the three main forms of memory that build brand equity (Keller, 1993; Leigh et al., 2006): spontaneous awareness or recall, assisted awareness or

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recognition, and mental associations, which can be merely cognitive responses, but can also be a pathway to affect, and behavior.

In this paper, we empirically examine the combined effects of name and logo figurativeness on recall, recognition, and associations, and develop a decision tree to assist managers in selecting or modifying brand names and logos to achieve these three key corporate goals.

2. Theoretical background

2.1. Brand names and logos

As the name is often the first touchpoint between the brand and its public (Klink & Athaide, 2011; Pathak et al., 2020), some authors argue that this is the most important marketing decision a company can make (Hillenbrand et al., 2013; Kohli et al., 2005). However, when managers or identity consultants need to make this vital decision, they generally rely on their creative intuition rather than on a robust theory about the optimal identity characteristics of brand names (Pathak et al., 2020; Pogacar et al., 2015; Robertson, 1987). While creativity may be the first path to differentiation, and differentiation from similar entities is one of the main reasons why we give a name and possibly a logo to our company, activity, website, cause, group of friends, or simply to our new baby or pet (Stoner et al., 2017), a sound theoretical framework is needed to assess the outputs of creativity and select the most effective name and logo to build a differentiated identity (Ward et al., 2020; Zaichkowsky, 2010).

The logo is the primary visual representation of the brand (Rahinel & Nelson, 2016; van der Lans et al., 2009). It can induce positive affective responses (Henderson & Cote, 1998) and shape brand image and reputation (Foroudi et al., 2014). Logos may have an important positive effect on the target publics' commitment to the brand and on company performance (Park et al., 2013; Sääksjärvi et al., 2015). Hence, companies invest significant resources in creating, updating, and changing their logos (Baxter & Ilicic, 2018).

Regarding names, we can distinguish between words (i.e., personal names, words belonging to the vocabulary) and initials (Arora et al., 2015; Pavia & Costa, 1993). Initials tend to be more difficult to pronounce and harder to memorize (Bao et al., 2008). As they are not inherently meaningful (Keller et al., 1998; Kohli et al., 2005), initials demand extra effort to be processed and retrieved (Luna et al., 2013), leading people to ignore them (Lowrey & Shrum, 2007; Lowrey et al., 2003; Samu & Krishnan, 2010; Shrum et al., 2013). Moreover, prior studies have shown that initials make it more difficult for the name to differentiate the brand (del Río et al., 2001; Petty, 2008). However, initials make it easier for people to read and pronounce a long name, but they need more time and support to create brand memory and associations (Coane et al., 2015; Keller et al., 1998).

With respect to logos, previous studies have analyzed elements, such as typefaces (Childers & Jass, 2002; Doyle & Bottomley, 2006; Henderson et al., 2004; Teng et al., 2021), frames (Fajardo et al., 2016), shapes (Bajaj & Bond, 2017; Chen et al., 2021; Jiang et al., 2016), motions (Baxter & Ilicic, 2018; Cian et al., 2014), and colors (Labrecque et al., 2013). All these logo elements can be analyzed under different criteria, such as the seven main logo design characteristics identified by Henderson and Cote (1998), which are, in order of statistical significance in their study: naturalness, harmony, elaboration, parallelism, roundness, proportion, and repetition. These criteria can produce typical responses, such as Aaker's (1997) five brand personality traits: sincerity, competence, excitement, ruggedness, and sophistication. For example, Bajaj and Bond (2017) concluded that consumers associate asymmetric logos, more than symmetric ones, with brand excitement. Bettels and Wiedmann (2019) also contributed to the research on logo symmetry, by linking symmetry to more positive inferences on product design. Additionally, Jiang et al. (2016) found that consumers associate circular logos with softness, comfortable products, and customer-sensitive brands, while associating angular logos with hardness, durable products, and less sensitive brands.

In the present paper, we expand the scope of prior research, revisiting a major art and design criterion (figurativeness) and an essential response (memorization) to classify names and logos, considered together in a single stimulus. We resort to structural semiotics to organize meaning, using "semantic categories" where the understanding of one pole presupposes an understanding of the opposite pole (e.g., figurative vs. abstract, organic vs. cultural, see Greimas & Courtés, 1993), allowing integrated and meaningful comparisons (e.g., APPLE vs. IBM, in Floch, 2001). Considering Batra's (2019) grid to classify research on brand meaning, as far as we know, this is the first study that considers name and logo together to analyze the effect of figurativeness (independent variable) on memorization (dependent variable) using semiotics to organize meaning (meaning transfer). Hence, we focus on studying the most significant independent variable of Henderson and Cote's (1998) research ("naturalness" according to Henderson and Cote's definition is synonymous with "figurativeness"), and we complement their research by: (1) organizing the meaning of the variable into semantic categories; (2) choosing cognition instead of affect as the dependent variable; and (3) studying the interaction between name and logo in order to discuss relevant theoretical and practical conclusions that would not be possible based on separate analyses.

2.2. Memory: recall, recognition, and associations

When companies create a brand name, their first concern is that it will be stored in the minds of the target audience as a new memory node, which is connected to a set of other nodes that we want to associate with it: people, products, ideas, experiences (Keller, 1993; Sen, 1999). This network of associations generates cognitive, affective, and behavioral responses to the brand, defining its mind share, esteem share, and market share, and, consequently, its equity or value (Noel, 2006; Samu & Krishnan, 2010).

This is why memorization of the name, and of other identity signs that may be associated with it, has been a fundamental selection criterion since the first scientific research on brand name (Kohli & LaBahn, 1997; Robertson, 1987) and customer-based brand equity (Keller, 1993), influenced by psychological models on imagery (Alesandrini, 1983; Paivio, 1978) and memory functioning (Collins & Loftus, 1975; Srull & Wyer, 1989). Indeed, the "associative network memory model" (Keller, 1993) has been adopted by branding scholars as a predictor of perceived quality (Quintal & Phau, 2013), purchase intention, and choice (Hutchinson et al., 1994; Macdonald & Sharp, 2000).

Two main measures of the strength of memory nodes that spread associations are commonly considered: recall and recognition (Leigh et al., 2006; Lerman & Garbarino, 2002; Singh et al., 1988). Recall refers to a person's ability to reproduce a previously presented name or logo (Ahn & La Ferle, 2008), and it demands processing and rehearsal at a deep, elaborative level (Shiffrin & Schneider, 1977). Recognition, which is usually easier to achieve, is a person's ability to confirm prior exposure to the name or logo (Wixted & Squire, 2004). It is a more robust and insensitive measure than recall, and it tends to show less decay over time (du Plessis, 1994). In low-involvement situations, recognition is a sufficient memory indicator; recall is more relevant in high-involvement situations (Greenwald & Leavitt, 1984).

2.3. Figurativeness: figurative vs. abstract and organic vs. cultural

Figurativeness and abstractness reflect the degree to which a sign depicts objects from the real world: a sign is abstract when there is no link to the real world (at its extreme, total abstraction does not provide any cue about what is intended to be represented) and in the opposite situation we would say the sign is figurative (Greimas & Courtés, 1993). Thus, the more figurative a sign is, the more likely we are to be familiar with it in our human perceptual experience – both phylogenetic and ontogenetic (Hodgson, 2007) – and the more likely we are to recognize,

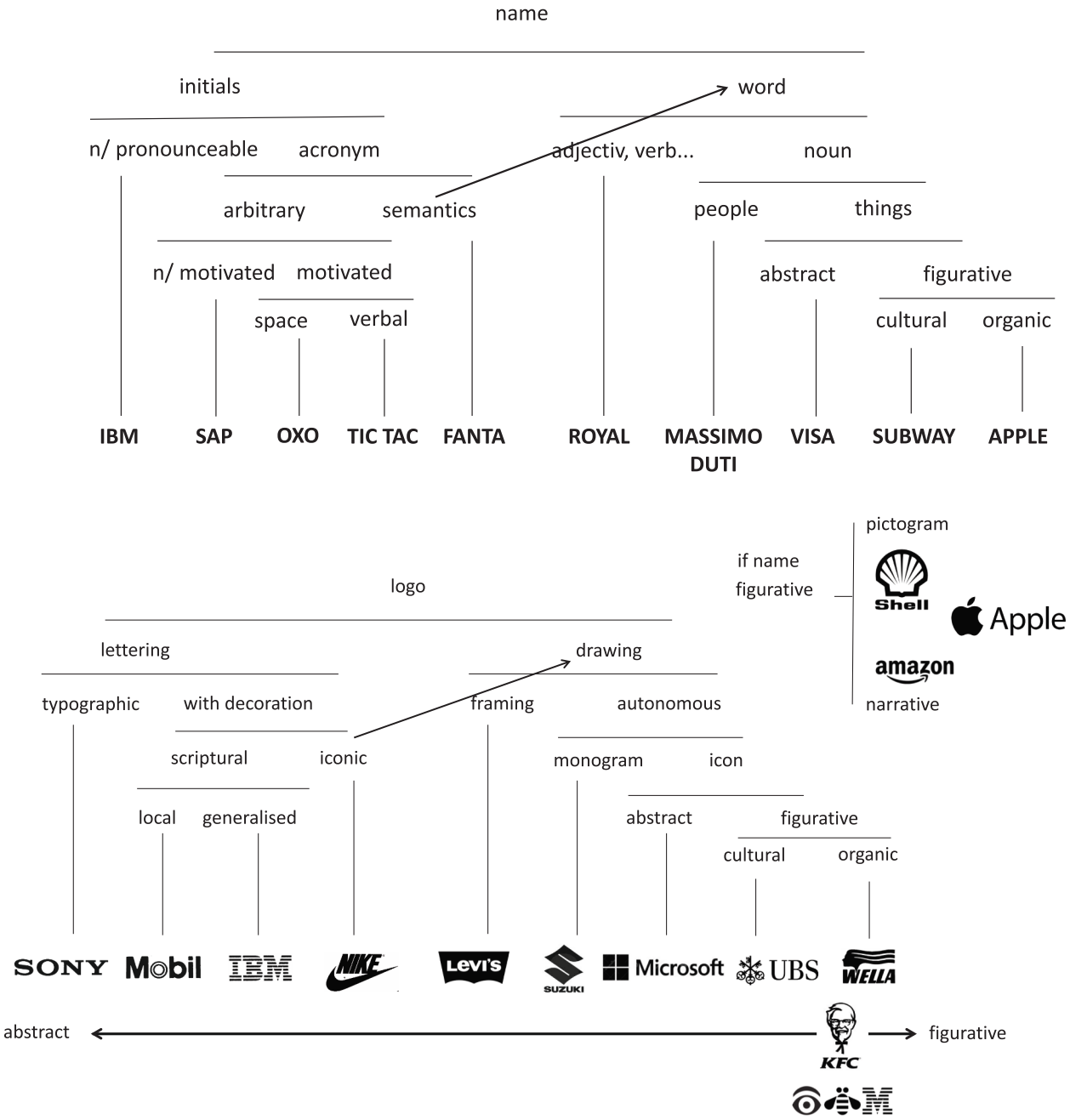


Fig. 1. Decision trees for brand names and logos.

remember, and create associations with it.

The semantic category abstract vs. figurative has been explored in marketing research concerning the typology and efficiency of names and logos. Lencastre (1997) developed two decision trees that synthesize the main options of names and logos considered together under the key dimension of figurativeness. Built with semantic categories, these decision trees propose a continuum ranging from extremely abstract options to extremely figurative options. They are very useful for guiding the name and logo choice (Zaichkowsky, 2010). In the following paragraphs, we use this framework to integrate and summarize research on figurativeness related to names and logos (Fig. 1).

A figurative name is a verbal sign that refers to things in the real world (e.g., APPLE, SUBWAY). This reference can vary, from a biological reference that we have always known as a human species (APPLE), to a tangible reference created by humans (SUBWAY), an intangible reference resulting from human thinking (ROYAL), an onomatopoeic sound (TIC TAC), or sounds that are completely disconnected from the real world (e.g., IBM, KFC). The latter are examples of fully abstract names.

Like so many other names created using initials, IBM and KFC are cases of regression from the figurative pole to the abstract pole. In these two cases, the brands deliberately avoided the original meaning of the initials, either because the words in the full term were considered obsolete (International Business Machines) or because they had unhealthy connotations (Kentucky Fried Chicken). The original meaning was then forgotten by new generations.

As figurative names represent familiar words, they tend to enhance memory (Luna et al., 2013) and elicit a richer and stronger set of associations (Giese et al., 2014; Lerman & Garbarino, 2002), especially by females (Moss et al., 2007). They are part of the lexicon and have a diversity of meaningful concepts (Meyers-Levy, 1989). According to the memory network theory, since figurative names have stronger and more stable nodes, they should automatically activate an association set

(Nelson et al., 1985) and facilitate the building of stronger associations with the brand (Baker, 2003). The figurativeness of the name depends on the language or languages understood by the target audience (Spence, 2012). This limitation of lexical words can be overcome by mitigated forms of name figurativeness, such as universal onomatopoeia and sound symbolisms (e.g., TIC TAC) or the use of a pictographic logo (e.g., SHELL), or even a translation (e.g., LA VACHE QUI RIT translated to THE LAUGHING COW).

A figurative logo is a visual sign that refers to things from the real world. Like names, the connection of logos to the real world can also vary: an icon of an object (the keys used by UBS), or its stylization (the arrow used by AMAZON), an abstract geometric shape related to concepts (the squares used by MICROSOFT), or simply more or less stylized letter decorations (from IBM's stripes to SONY's standard lettering).

Logos depicting characters, places, animals, fruit, or any other object from the real world, demand lower learning effort, enhance memorization, contribute to the formation of associations, and encourage positive affective reactions (Henderson & Cote, 1998). The choice of a figurative logo is even more important when the brand uses a non-meaningful name. A separate visual logo may compensate the adoption of a more abstract name, and it can play a critical role in transmitting the brand's symbolic and functional benefits and in strengthening people's commitment to the brand (Park et al., 2013). In the same sense, "no name" private-label products tend to use figurative packaging design to create differentiation and choice (Reimann et al., 2010).

Following the terminology of previous logo strategy research (Machado et al., 2015), within figurative signs we can distinguish between organic and cultural. Organic signs represent objects from the natural world (e.g., flowers, fruit, animals, places, or people). Cultural signs represent commonly experienced manufactured objects from our cultural environment (e.g., furniture, vehicles, buildings, or everyday objects) or other cultural symbols (e.g., religious, or linguistic symbols).

Ethological research has suggested that humans have an innate preference for forms that embody organic principles (Papanek, 1984). These findings have been confirmed by studies on product and packaging design, which have shown that organic designs convey more positive brand impressions (Orth & Malkewitz, 2008; Veryzer, 1999). Research on logo design has suggested that logos generate more positive affective responses with organic designs than with cultural designs (Machado et al., 2015; Torres et al., 2019).

Research on advertising has further shown that advertisements featuring pleasant images of nature tend to enhance direct attention and mental elaboration, leading to an increase in recognition and recall of these messages (Hartmann et al., 2013). These findings are based both on attention restoration theory (Kaplan, 1995), according to which exposure to nature enhances recovery from mental fatigue, restores mental resources involved in attention, and improves memory, and on stress reduction theory (Ulrich, 1981; 1983), according to which exposure to natural environments evokes a state of sustained, wakefully relaxed attention.

Therefore, the findings of previous studies suggest that organicity is the supreme level of figurativeness, in the sense that, as unmanufactured natural objects (e.g., birds, fruit, wild landscapes) were never abstract, they have been familiar to humankind since the first glance, sound, touch, smell, or taste, across ages and cultures. They are thus phylogenetically figurative – i.e., figurative for all humankind. On the contrary, when manufactured objects are shown to civilizations that do not use them, before any explanation is provided, they are abstract objects; for example, if keys are shown to individuals that do not need to lock doors, those objects are abstract. They are thus phylogenetically abstract but can become ontogenetically figurative because of the individual experience of human beings.

Considering the theoretical formulations previously discussed, we posit that brand name and logo figurativeness enhances memorization, by increasing recall, recognition, and associations. Thus, we propose the following hypotheses:

(H1) Brand name and logo figurativeness enhances (H1.1) recall, (H1.2) recognition, and (H1.3) associations.

2.4. Interaction between brand name and logo

Although names and logos are the two central brand identity signs and the most common means to create brand memory and convey desired associations, there is a surprising scarcity of empirical studies focusing on their combined effect (Zaichkowsky, 2010).

In pioneering research by Alesandrini (1983), names and logos were used to test the advantages of pictograms for recall. Lutz and Lutz (1977) had previously suggested that names interactively associated with corresponding images are more memorable, due to the strong and unique bonds generated between the names and the images. These findings were complemented by Biron and McKelvie (1984), who found that recall for names is enhanced when subjects are shown pictures and words rather than when they are shown words alone, even when there is no interaction between the words and the pictures. Schmitt et al. (1993) also showed that the memorability of the brand name, copy, and picture is enhanced by the interrelations between these different advertising elements.

According to research in cognitive psychology (e.g., Alesandrini, 1983; Buttle & Westoby, 2006), the ideal trademark is one like SHELL, which creates a semantic repetition between the name and the logo (we read "shell" and see a shell), which is preferable to a trademark like AMAZON that creates a semantic dispersion between the name ("amazon") and the logo (the amazon arrow). Following the theories of repetition blindness (Kanwisher & Potter, 1990) and brain specialization (du Plessis, 1994), repetition should be better for recall (verbal memory for digital language), whereas dispersion should be better for associations (visual memory for analogue language).

The marketing literature has generally underlined the advantages of the coherent combination of textual and visual information (Luna & Peracchio, 2001; MacInnis & Price, 1987; Rossiter & Percy, 1980; Schmitt et al., 1993; Tavassoli & Lee, 2003; Townsend & Kahn, 2014). In a study focusing specifically on names and logos, Kocher, Czellar, and Usunier (2006) found that coherence between the associations with an existing brand name and a new brand logo tends to positively impact attitude toward the new logo. Klink (2003), who previously studied the sound symbolism of names (Klink, 2001), confirmed that coherence between the sound symbolism of names and the shape and color symbolism of logos contributes to more effective communication of the intended brand meaning. Janiszewski and Meyvis (2001) found that coherence between name and logo is not necessarily a predictor of preference, depending on the memory of previous exposures. In their research, they compared two experimental groups of individuals repeatedly exposed, one to a logo coherent with the brand name, and the other to a logo not coherent with the brand name. As awareness of the name and logo increased through repeated exposure, preference for coherence between the name and logo tended to decrease. The hypothesis that moderate incoherence is ideal can also be supported by optimal arousal theory (Hanoch & Vitouch, 2004) applied to marketing communication efficiency (Aaker et al., 1986). The efficiency of the response to pairs of less or more coherent stimuli would follow the shape of an inverted U curve, with the maximum level of response situated at an intermediate point between total dispersion and total coherence.

Despite the acknowledged advantages of name and logo coherence, specific empirical research is needed to establish the relevance of name and logo interaction for enhancing cognitive responses. The studies mentioned above focused essentially on the affective response; namely, on the preference for logos based on associations with an existing brand name (Machado et al., 2012). In this paper, we aim to develop a joint taxonomy of names and logos that focuses on cognition, regarding the ease with which a new stimulus can be memorized and generate associations. This is the first practical condition for choosing a trademark for

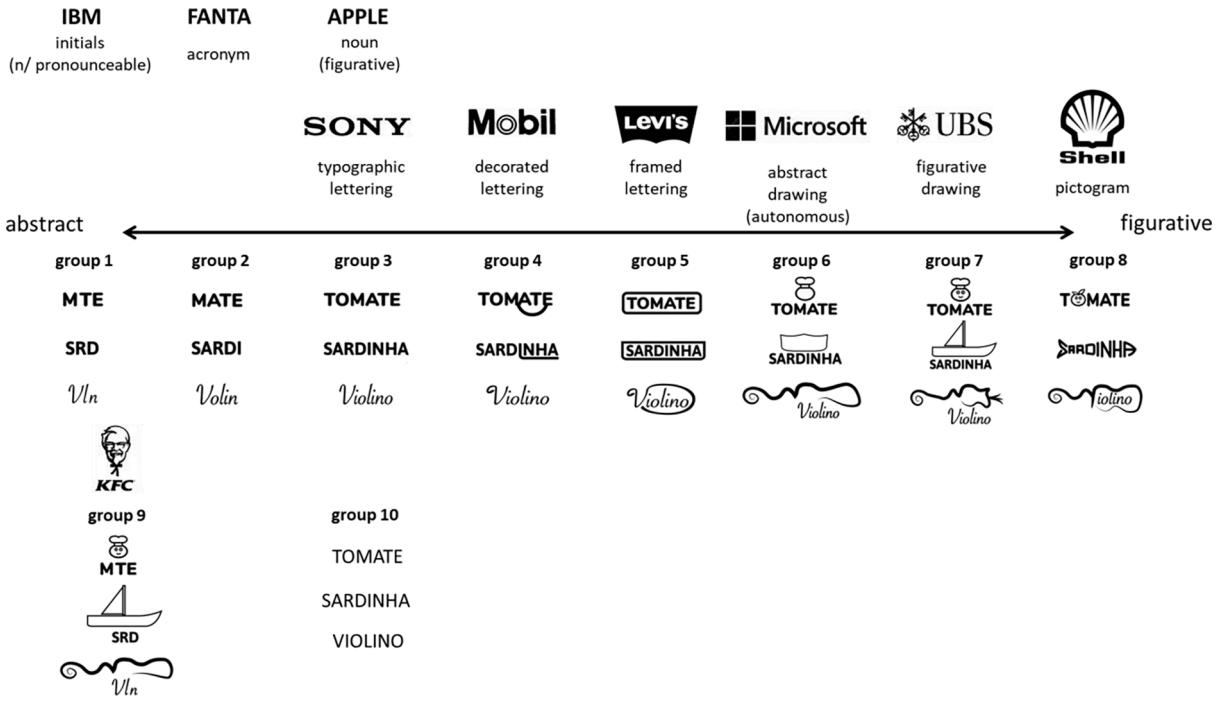


Fig. 2. Fictitious brand names and logos used in the experimental groups. Note. The experimental groups consisted of variants of three scenarios of fictitious brand names and logos. The first scenario had as its matrix the name TOMATE (noun meaning "tomato" in Portuguese – the survey was conducted in Portugal), and the sequence MTE/ MATE/TOMATE (MTE is a set of meaningless unpronounceable initials; MATE is an acronym that can have several meanings: an adjective that means "lack of brightness" or a tense of the verb *matar* ["to kill"]). The second scenario had as its matrix the name SARDINHA ("sardine", which corresponds to a semantic universe relatively close to TOMATE, since both are elements of the organic world), and the sequence SRD/SARDI/SARDINHA (SRD is a set of meaningless initials; SARDI is an acronym close to Portuguese words like *sarda* [a "freckle" on the skin] or *sardo* [someone or something from Sardinia]). The third scenario had as its matrix the name VIOLINO ("violin", which is linked to a different semantic universe of a cultural object manufactured by humans), with the sequence VLN/VOLIN/ VIOLINO (VLN is a set of meaningless characters; VOLIN is an acronym with potential for meaning due to its proximity to lexical words [such as *volei*, the Portuguese abbreviation for "volleyball"]).

a brand.

With this theoretical framework in mind, we assume that if the name in question is figurative, a figurative logo that represents the name (i.e., a pictogram) enhances memorization, and that it does so by increasing recall, recognition, and associations. Thus, we propose the following hypotheses:

(H2) If the name is figurative, a figurative logo that represents the name (pictogram) enhances (H2.1) recall, (H2.2) recognition, and (H2.3) associations.

3. Methodology

3.1. Experimental device

For the purpose of this research, we created three experimental scenarios – TOMATO, SARDINE, and VIOLIN – of fictitious names and logos that explore the abstract vs. figurative continuum shown in Fig. 1 (see Fig. 2).

The TOMATO scenario comprised our first study. It was semantically motivated by the universality of knowledge of the fruit, and graphically motivated by the presence of the letter "O" in many languages, which can also function as a pictogram of the fruit due to its shape. The SARDINE scenario comprised our second study. It was chosen due to the high recall obtained by the SARDINE pictogram used in the first study as an auxiliary stimulus (see Fig. 4), in order to explore the nuances of its manipulation. The VIOLIN scenario comprised our third study. It was chosen due to the low recall obtained by the VIOLIN auxiliary stimulus (see Fig. 4) used in the first and second studies, to explore cultural figurativeness, as opposed to the organic figurativeness of the TOMATO and SARDINE scenarios.

The three scenarios were organized into 10 experimental groups selected from the set of semantic categories that build the two decision trees, and correspond to obvious options that name and logo creators can choose from.

The 10 experimental groups represent a progression from extremely abstract to extremely figurative combinations of names and logos: from a baseline group of meaningless unpronounceable initials, written in typographic lettering (group 1: initials, such as MTE, SRD, VLN), to nouns with a meaning linked to the real world, written in decorative lettering, and integrating a drawing representing the name, resulting in the so-called pictogram (group 8: pictograms, such as reading TOMATO and seeing a tomato, reading SARDINE and seeing a sardine, reading VIOLIN and seeing a violin).

An additional group (group 9: initials plus a figurative drawing, such as reading MTE and seeing a cook, reading SRD and seeing a boat, reading VLN and seeing a violin) was included in the three scenarios to analyze the combination of an abstract name and a figurative logo on cognitive responses. Group 10 (names only) was considered a second baseline for creating the logo when a figurative name was the starting point.

The decision to use fictitious names and logos was made to avoid experience effects due to previous exposures, and, hence, minimize the effects of brand awareness and brand attitude. Indeed, previous research has shown that familiarity with the brand influences holistic impressions of the brand identity signs (Janiszewski & Meyvis, 2001; Orth & Malkewitz, 2008). Furthermore, the use of unknown names and logos should magnify the effects of figurativeness on cognitive responses, as the impact of peripheral and extrinsic cues on consumer responses tends to be stronger when those individuals are not familiar with the brand or product (Giese et al., 2014). Our aim is to detect the first cognitive response that a newly created stimulus can produce, to the greatest extent possible regardless of other circumstances; namely, knowledge

Table 1
Sample distribution by experimental groups and sociodemographic variables.

Experimental Groups	Sex		Age			Education		Total
	Male	Female	16–25	26–35	36–50	Primary/ High School	University	
Group 1	45 (49%)	46 (51%)	16 (18%)	29 (32%)	46 (51%)	68 (75%)	23 (25%)	91
Group 2	46 (51%)	44 (49%)	19 (21%)	29 (32%)	42 (47%)	53 (59%)	37 (41%)	90
Group 3	41 (46%)	49 (54%)	15 (17%)	28 (31%)	47 (52%)	41 (46%)	49 (54%)	90
Group 4	45 (50%)	45 (50%)	23 (26%)	31 (34%)	36 (40%)	60 (67%)	30 (33%)	90
Group 5	45 (50%)	45 (50%)	19 (21%)	27 (30%)	44 (49%)	60 (67%)	30 (33%)	90
Group 6	46 (51%)	44 (49%)	17 (19%)	33 (37%)	40 (44%)	56 (62%)	34 (38%)	90
Group 7	44 (49%)	46 (51%)	25 (28%)	25 (28%)	40 (44%)	56 (62%)	34 (38%)	90
Group 8	47 (52%)	43 (48%)	24 (27%)	23 (26%)	43 (48%)	56 (62%)	34 (38%)	90
Group 9	45 (50%)	45 (50%)	29 (32%)	30 (33%)	31 (34%)	62 (69%)	28 (31%)	90
Group 10	19 (63%)	11 (37%)	6 (20%)	11 (37%)	13 (43%)	23 (77%)	7 (23%)	30
Total	423 (50%)	418 (50%)	193 (23%)	266 (32%)	382 (45%)	535 (64%)	306 (36%)	**841**

Note. Groups 1 to 9 each comprised three experimental stimuli, with each stimulus being exposed to 30 different respondents, representing a sample of $9 \times 3 \times 30 = 810$ respondents. If we add group 10 (names only), which also had 30 respondents, the total sample size in this research totals 840 respondents. The first scenario of group 1 (initials MTE) exceptionally consisted of 31 respondents; hence, the total sample consists of 841 respondents.

about the brand.

3.2. Survey

Each experimental group was composed of different respondents to avoid experience effects. Respondents were recruited outside a supermarket or convenience store after shopping. They were invited to collaborate in market research for a new brand by answering a very brief questionnaire (no more than five minutes).

First, each respondent was exposed to a plaque with 10 stimuli – the experimental stimulus was included among nine other unknown auxiliary names and logos – for 15 s (see plaque 1 in the Appendix, Fig. A1). The plaque was removed, and the respondent was asked which brands they remembered (recall). Next, the respondents who did not remember the experimental stimulus were exposed to a second plaque (see plaque 2 in the Appendix, Fig. A1) with 10 stimuli – the same experimental stimulus from the first plaque plus nine other unknown auxiliary names and logos, different from those included in the first plaque – and asked if they recognized one or more of the brands shown in the first plaque (recognition). Next, each respondent was again exposed to the first plaque and asked which brands they already knew before the interview. In a final open question, we asked with which product categories they would associate these brands (associations).

All respondents were exposed to the same auxiliary stimuli. The only difference between each sample was the experimental stimulus inserted in the two plaques. Group 10 (names only) was an exception in this procedure: 30 respondents were exposed to a plaque with only the names of the stimuli included in the first plaque but written in a common sans serif typeface to avoid any lettering design interference (see Appendix, Fig. A1). The aim was precisely to compare the recall and associations for the first plaque's 10 stimuli with the recall and associations with their correspondent names without any lettering or logo interference. We present this comparison at the end of our results section.

3.3. Sample

The population under study included participants aged between 16 and 50 years old. For each experimental group, we used three independent quota sampling variables: sex, age, and education. We considered the "rule of thumb" of 30 respondents per experimental condition (based on the central limit theorem, despite a non-random sample being considered), which, except for group 10 (names only), results in 90 or 91 respondents per group. In addition, for the logistic regression models, the criterion of a minimum of 10 events per variable included in the three models (recall, recognition, and associations) is satisfied (Peduzzi et al., 1996).

Each stimulus was exposed to 30 respondents, except for group 1 (initials), which had one stimulus exposed to 31 respondents. The sample comprised 841 respondents (Table 1).

3.4. Statistical analysis

Independent square tests were performed to explore possible differences in sociodemographic variables. The three dependent variables (recall, recognition, and associations) were dichotomized (0 = No and 1 = Yes). Three binary logistic regression models were performed to test differences between the experimental groups, including sex, age, and education as covariates, considering group 1 (composed of abstract unpronounceable initials) as the reference category. In a complementary analysis, McNemar's test was used to determine if the same differences were obtained for the auxiliary stimuli used in the research.

4. Results and discussion

First, groups were compared regarding their sociodemographic characteristics. As expected, considering the sampling method, the groups were not significantly different regarding sex ($\chi^2(7) = 1.02$; p =.994) and age group ($\chi^2(14) = 9.8$; p =.779). However, they were significantly different regarding education ($\chi^2(1) = 18.6$; p =.009). Given the groups' significant differences in education, we decided to include sociodemographic variables in each of the three regression models. In this approach, the groups' comparisons were adjusted for the three sociodemographic variables.

The binary responses (0 = No, 1 = Yes) to the three dependent variables (recall, recognition, and associations) were calculated as percentages (%) and are shown in Table 2. They are accompanied by the odds ratios (ORs) of the three binary logistic regressions performed for these variables to test the differences.

The regression models were significant for recall ($\chi^2(12) = 106$; p <.001; Nagelkerke $R^2 = 0.182$), for recognition ($\chi^2(12) = 145$; p <.001; Nagelkerke $R^2 = 0.231$), and for associations ($\chi^2(12) = 127$; p <.001; Nagelkerke $R^2 = 0.200$). The ORs obtained for each group correspond to the chance of recall, recognition, and associations compared with reference group 1. They show that the effect of figurativeness was more prominent in recall and associations. Group 2 (acronyms) did not differ from the reference group in terms of recall (OR = 2.94; p =.121), recognition (OR = 0.87; p =.669), and associations (OR = 1.36; p =.584). These overall results confirm our first research hypotheses (H1) that brand name and logo figurativeness enhances recall (H1.1), recognition (H1.2), and associations (H1.3).

Furthermore, groups 3 to 8 (figurative nouns, with less or more figurative decoration) were significantly different from reference group 1 (abstract initials), having higher odds of recall, recognition, and

Table 2
Recall, recognition, and associations of the experimental names and logos: binary response (%), and odds ratio (OR).

Experimental Stimuli	Recall					Recognition					Associations				
	%	B	SE	OR	95% CI	%	B	SE	OR	95% CI	%	B	SE	OR	95% CI
Group 1: Initials (reference category)	**3%**			-		**36%**			-		**7%**			-	
Group 9: Initials + Figurative Drawing	**5%**	0.52	0.75	**1.67**	0.39– 7.25	**55%**	0.62	0.31	**1.85***	1.01– 3.40	**33%**	1.98	0.48	**7.25*****	2.83–18.60
Group 2: Acronym	**9%**	1.08	0.70	**2.94**	0.75–11.49	**34%**	−0.14	0.32	**0.87**	0.47– 1.63	**9%**	0.31	0.56	**1.36**	0.45– 4.11
Group 3: Figurative Noun	**32%**	2.09	0.63	**14.69*****	4.26–50.74	**66%**	1.21	0.32	**3.36*****	1.80– 6.29	**37%**	2.07	0.48	**7.92*****	3.09–20.25
Group 4: Decorated Lettering	**29%**	2.49	0.63	**12.00*****	3.47–41.52	**76%**	1.65	0.33	**5.23*****	2.72–10.05	**30%**	1.82	0.48	**6.18*****	2.40–15.93
Group 5: Framed Lettering	**31%**	2.61	0.63	**13.64*****	3.95–47.01	**79%**	1.90	0.34	**6.68*****	3.41–13.08	**50%**	2.66	0.47	**14.33*****	5.66–36.31
Group 6: Abstract Drawing	**36%**	2.82	0.63	**16.81*****	4.90–57.65	**81%**	2.03	0.35	**7.62*****	3.83–15.17	**50%**	2.69	0.48	**14.76*****	5.82–37.42
Group 7: Figurative Drawing	**36%**	2.81	0.63	**16.55*****	4.82–56.79	**86%**	2.31	0.38	**10.07*****	4.83–21.02	**48%**	2.55	0.48	**12.85*****	5.07–32.59
Group 8: Pictogram	**40%**	3.02	0.63	**20.49*****	5.99–70.12	**83%**	2.16	0.36	**8.62*****	4.24–17.56	**55%**	2.87	0.48	**17.70*****	6.98–44.89
Sex: Male (reference category)				-					-					-	
Female		0.45	0.18	**1.56***	1.11– 2.20		0.09	0.17	**1.09**	0.79– 1.50		0.36	0.16	**1.44***	1.05– 1.96
Age: 36–50 (reference category)				-					-					-	
26–35		0.19	0.20	**1.21**	0.81– 1.80		0.28	0.19	**1.32**	0.91– 1.90		−0.46	0.19	**0.63***	0.44– 0.91
16–25		0.25	0.22	**1.28**	0.83– 1.98		0.96	0.23	**2.61*****	1.67– 4.07		−0.02	0.20	**0.98**	0.66– 1.45
Education: Primary/High (reference category)				-					-					-	
University		−0.16	0.18	**0.85**	0.59– 1.21		0.13	0.17	**1.13**	0.81– 1.59		0.12	0.17	**1.13**	0.82– 1.56

n = 811; *p <.05; **p <.01; ***p <.001; Dependent variables coding: 0-No; 1-Yes

associations. If the name was figurative, the effect of a figurative logo representing the name (pictogram) was more prominent in recall (OR = 20.49; p <.001) and associations (OR = 17.7; p <.001) and the effect of a figurative logo not representing the name (narrative) was more prominent in recognition (OR = 10.07; p <.001). These results partially confirm our second research hypotheses (H2) that if the name is figurative, a figurative logo representing the name enhances recall (H2.1) and associations (H2.3) but does not enhance recognition (H2.2).

Regarding group 9 (abstract initials plus figurative drawing), the results vary according to the dependent variable. For recall, no significant differences were found compared with the reference group (OR = 1.67; p =.491). Significant differences were obtained for recognition, but with small magnitude (OR = 1.85; p =.048), and for associations, with large magnitude (OR = 7.25; p <.001). These results show that if the name is not figurative, a figurative logo highly enhances associations, moderately enhances recognition, and does not enhance recall.

There was a significant effect of sex on recall and associations, with females presenting significantly higher odds of recalling the stimuli under study (OR = 1.56; p =.011) and establishing associations (OR = 1.44; p =.023). Moreover, there were also significant differences between age groups, with respondents younger than 26 years presenting significantly higher odds of recognizing the stimuli (OR = 2.61; p <.001). Those aged between 26 and 35 years showed smaller odds of establishing associations (OR = 0.63; p =.015) than the reference category respondents (with more than 35 years).

Fig. 3 compares graphically the results of the three models: recall, recognition, and associations. It indicates the response for each experimental stimulus and the average response of each experimental group. In the next three sections, we discuss these results in detail.

4.1. Recall

The findings show that recall depends much more on the name than on the logo associated with the name. Hence, the results partially support our research hypothesis that figurativeness enhances recall (H1.1): name figurativeness is confirmed as a key factor for recall, but we could not find support for the positive influence of logo figurativeness on recall. A figurative name, especially if it is organic like APPLE (TOMATO or SARDINE in our experiment), guarantees a higher level of recall than an abstract name, particularly if it is composed of unpronounceable initials like IBM (MTE, SRD, or VLN in our experiment). Among abstract names, acronyms like FANTA (for “fantasy”; MATE, SARDI, or VOLIN in our experiment) should induce a higher recall than unpronounceable initials, although the results were not statistically significant.

Our most unexpected results in terms of recall were linked to the combination of a highly figurative drawing, such as a boat or a cook, with an abstract name like SRD or MTE. We performed this additional experiment to understand if a very figurative logo could add recall value to a very abstract name (e.g., the KFC name combined with a drawing of the brand founder’s face). Our findings suggest that a figurative logo is not able to bring recall to an abstract name.

Furthermore, the findings show that, among figurative names, cultural names like SUBWAY (VIOLIN in our experiment) induce a lower recall than organic names. These results confirmed organic figurativeness as a positive factor for the recall of brand names.

The findings also indicate that if brands want to ensure the recall of a figurative and organic name, they should present it in easily readable typographic lettering. A lettering frame offers better results in terms of recall than lettering decorations. Interferences in the lettering, which may decrease the readability of the name, such as the transformation of letters into drawings (as suggested by studies in cognitive psychology), may sometimes enhance recall (as confirmed in the case of SARDINE). Still, they can also decrease it (as happened in the case of TOMATO).

When the brand has a figurative name and wants to associate it with an autonomous drawing, it can choose between the following options: an abstract drawing (including the monogram solution); a pictogram, (i.

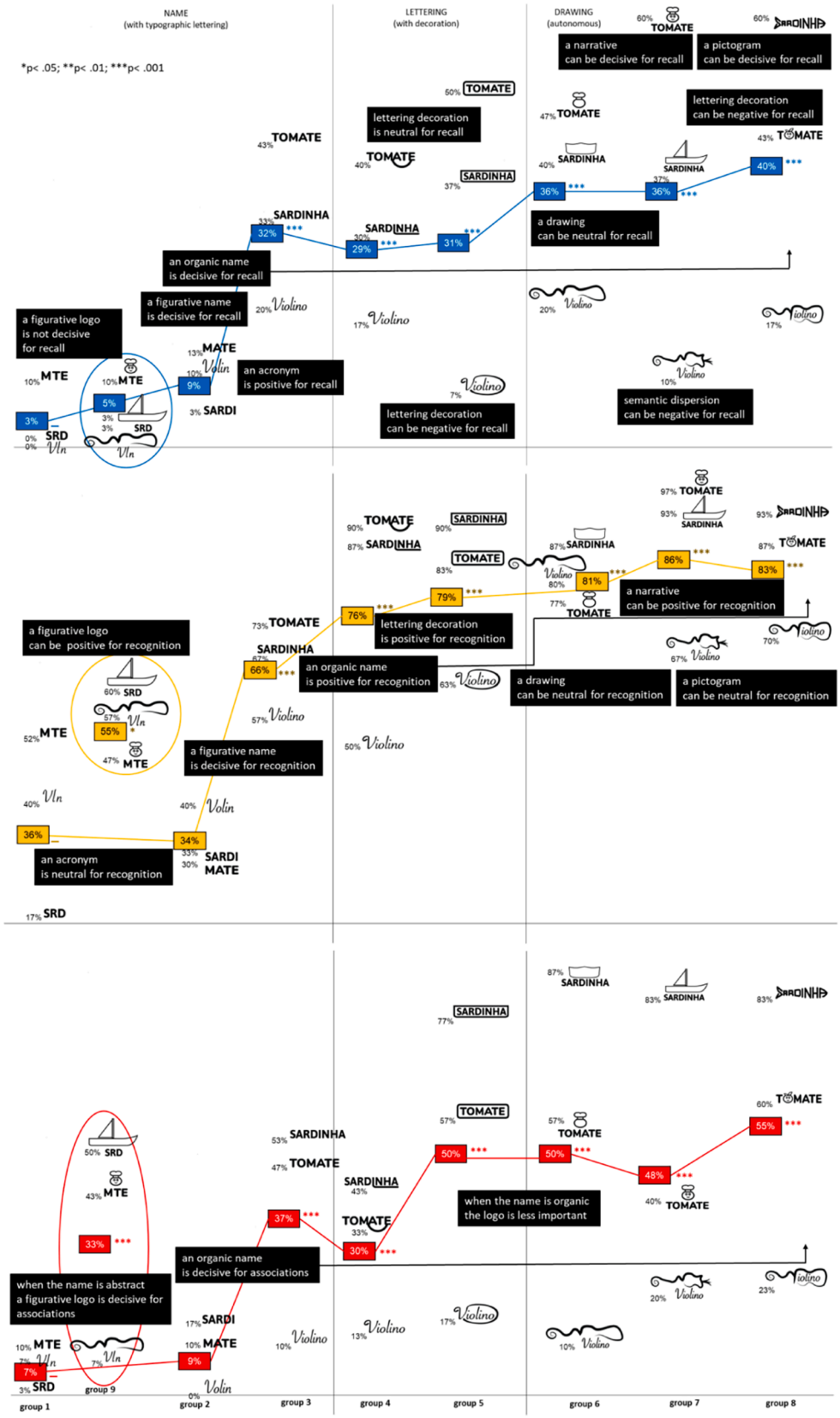


Fig. 3. Recall, recognition, and associations of the experimental names and logos (% and p-values).

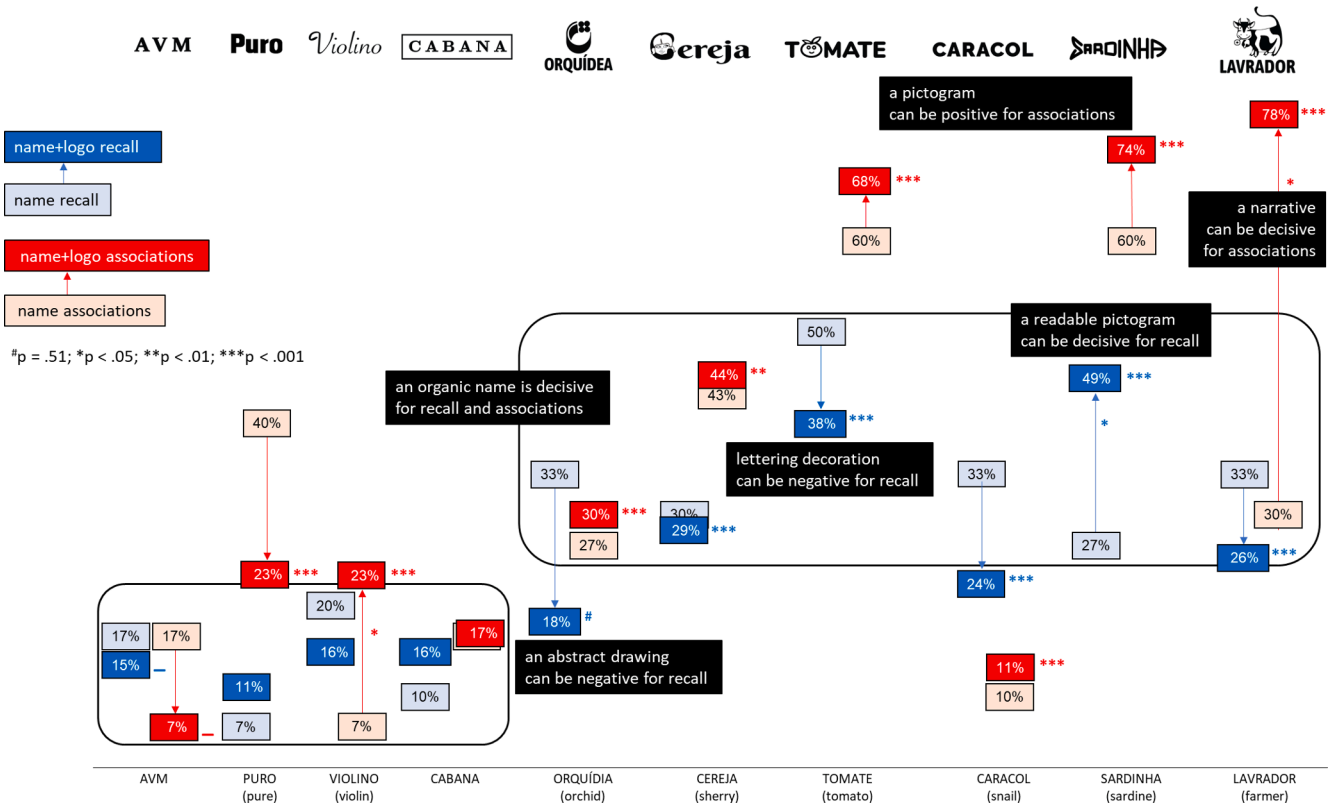


Fig. 4. Recall and associations of the auxiliary names and logos (% and p-values). Note. We can exemplify the reading of Fig. 4 with the results of SARDINE in terms of recall (blue cells): the name SARDINE obtained 27% recall (pale blue cells) when exposed to the 30 respondents in group 10 (names only); the name and logo SARDINE obtained 49% recall (bright blue cells) when exposed to the 540 respondents in groups 1 to 9 (TOMATO and VIOLIN scenarios). If we compare the recall of SARDINE (49%) with the recall of AVM, which we consider to be the baseline (15%), the difference is significant (***$p < 0.001$). If we compare the recall of the name and logo (49%) with the recall of the name only (27%), the difference is also significant (*$p < 0.05$). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

e., a figurative drawing that represents the name, such as reading SARDINE and seeing a fish); a figurative drawing that does not represent the name (e.g., reading VIOLIN and seeing a flower); and including drawings that are related to the name's meaning (e.g., reading TOMATO and seeing a cook, or reading SARDINE and seeing a boat).

According to our findings, the pictogram seems to be the safest among the figurative solutions in terms of recall. This is confirmed by the results obtained for the SARDINE study, which consisted of a calligram (a special type of pictogram that results from the lettering wrapping with a drawing of the name). Therefore, in this case, we found support for H2.1, as recall is enhanced when the name's figurativeness is repeated in the logo. However, the results were also very good for a non-pictographic solution, namely TOMATO being associated with a drawing of a cook. In this case, the figurative drawing with narrative effects seems to reinforce the recall of the name. However, we could not find the same results for SARDINE's association with a boat or VIOLIN's with a flower. These findings seem to indicate that the combination of a name with a non-pictographic solution may lead to a dispersion of the meaning, thereby negatively affecting the recall of the name.

4.2. Recognition

The results show that, unlike recall, recognition can be influenced not only by the name's figurativeness but also by the logo's figurativeness. Hence, the findings support our research hypothesis and underline the relevance of name and logo figurativeness in terms of recognition (H1.2). Additionally, a more detailed analysis of the results shows that, in contrast to what happens with recall, name recognition is not influenced by minor increases in name figurativeness, such as when abstract and unpronounceable initials are transformed into pronounceable and more meaningful acronyms (e.g., MTE, SRD, VLN vs. MATE, SARDI, VOLIN).

Unlike recall, logo recognition is positively influenced by the decoration of the lettering (e.g., transforming standardized lettering into designed lettering or a framed logo) and, thus, by minor increases in the figurativeness of the logo. Hence, even if the lettering decoration affects its readability and decreases recall, it enhances recognition. Indeed, any intervention in terms of drawing in standardized typographical lettering seems to generate additional recognition.

Furthermore, the results show that, among figurative names, organic names (TOMATO and SARDINE) have greater recognition than cultural ones (VIOLIN). However, this is not the case for logos. No evidence was found that, by adding an organic logo to an abstract name (e.g., a drawing of a cook to MTE), we will achieve greater recognition than when we add a cultural logo (e.g., a drawing of a boat to SRD). Therefore, adding an organic drawing instead of a cultural one seems to be neutral for recognition. Thus, it seems that organic names generate better results in terms of recognition, but organic logos do not induce a higher recognition than cultural ones.

Finally, our research hypothesis that the repetition of the name's figurativeness in the logo enhances recognition (H2.2) was not confirmed. The highest recognition results were obtained not for pictograms (e.g., reading SARDINE and seeing a fish, or reading TOMATO and seeing a fruit), but by narratives between the name and the logo (e.g., reading SARDINE and seeing a boat, or reading TOMATO and seeing a cook). Unlike recall, even strong semantic dispersion (e.g., reading VIOLIN and seeing a flower) does not seem to penalize recognition.

Table 3
Recall and associations of the auxiliary names and logos: binary response (%), McNemar's test, and odds ratio (OR).

Auxiliary Stimuli	Recall					Associations				
	Groups 1 to 9[(1)]	**Group 10** (ref. category 2) (n = 30)	Groups 1 to 9 random sample (n = 30)	OR	95% CI	**Groups 1 to 9**[(1)]	**Group 10** (n = 30) (ref. category 2)	Groups 1 to 9 random sample (n = 30)	OR	95% CI
AVM (ref. category 1)	**15%**	**17%**	17%	1.00	0.26– 3.89	**7%**	**17%**	7%	0.46	0.08– 2.75
PURO (pure)	**11%**	**7%**	3%	0.48	0.04– 5.63	**23%*****	**40%**	33%	0.65	0.23– 1.86
VIOLINO (violin)	**16%**	**20%**	23%	1.22	0.36– 4.17	**23%*****	**7%**	37%	8.11*	1.61–40.77
CABANA	**16%**	**10%**	27%	3.27	0.77–13.83	**17%**	**17%**	20%	1.25	0.34– 4.64
ORQUÍDEA (orchid)	**18%**[#]	**33%**	17%	0.47	0.14– 1.61	**30%*****	**27%**	30%	1.18	0.38– 3.63
CEREJA (sherry)	**29%*****	**30%**	27%	0.85	0.28– 2.61	**44%****	**43%**	63%	2.26	0.80– 6.36
TOMATE (tomato)	**38%*****	**50%**	43%	0.77	0.28– 2.11	**68%*****	**60%**	70%	1.56	0.53– 4.53
CARACOL (snail)	**24%*****	**33%**	13%	0.31	0.08– 1.13	**11%*****	**10%**	0%	–	–
SARDINHA (sardine)	**49%*****	**27%**	53%	3.14*	1.07– 9.27	**74%*****	**60%**	77%	2.51	0.83– 7.64
LAVRADOR (farmer)	**26%*****	**33%**	17%	0.40	0.12– 1.36	**78%*****	**30%**	73%	6.42*	2.08–19.76

[(1)] n = 811 (AVM, PURO, CABANA, ORQUÍDEA, CEREJA, CARACOL LAVRADOR); n = 541 (TOMATE, SARDINHA, VIOLINO); McNemar's test: [#]p =.051; *p <.05; **p <.01; ***p <.001; Dependent variables coding: 0-No; 1-Yes

Note. These auxiliary stimuli were exposed to 811 respondents, except for TOMATO, SARDINE, and VIOLIN, which were exposed to only 541 respondents (the remaining 270 respondents were exposed to different versions of the experimental stimuli). The group 1 to 9 columns show the binary responses (as percentages) of recall and associations for these samples. A McNemar's test was used to calculate the differences' statistical significance, considering the AVM response as the baseline (reference category 1). We also compared these results with the responses of the 30 individuals exposed to group 10 (only to the names). In this case, we considered group 10 as the baseline (reference category 2) and compared it with a random sample of 30 respondents taken from the samples of 811 or 540 respondents. The OR of each comparison calculates the statistical significance of the differences. In this analysis, the reduced sample size of 30 respondents is responsible for the low frequency of statistical significance.

4.3. Associations

In contrast to recall and recognition, a figurative name may not be decisive for generating associations, particularly if it is not an organic name. Thus, we could not confirm our hypothesis that name and logo figurativeness generate more brand associations (H1.3).

Indeed, cultural names (VIOLIN) generate almost the same level of associations as abstract names, whether these are unpronounceable initials (VLN, SRD, and MTE) or acronyms (VOLIN, SARDI, and MATE), and they generate fewer associations than organic names (SARDINE and TOMATO). As data were collected at the exits of supermarkets and convenience stores, where respondents tend to buy food, including tomatoes and sardines, but not violins, this may have caused some bias in the comparison between organic and cultural names (TOMATO and SARDINE vs. VIOLIN).

The findings indicate that, among figurative names, organic names generate more associations than cultural ones. For the same name, an organic logo does not generate more associations than a cultural one (e.g., reading SARDINE and seeing a fish, or reading SARDINE and seeing a boat).

We could not find support for our hypothesis that the repetition of the name's figurativeness in the logo is a positive factor for stimulating associations (H2.3). The results show that when different types of drawings are added to organic names (SARDINE or TOMATO), the number of associations generated increases only in exceptional cases (this is the case for SARDINE with a creative pictographic solution of a fish calligram, or with a figurative drawing of a boat). However, the findings suggest that adding a figurative logo to a non-figurative name significantly increases its ability to generate associations. These are relevant results, as organic names are decisive for generating associations. Therefore, if the brand name is not organic, the addition of a figurative drawing should be much more pertinent (e.g., the crossed keys for UBS would be much more relevant then the drawing of a shell for SHELL). Indeed, the addition of an abstract arabesque to a name that generates almost no associations (VLN) has almost no impact on its ability to generate associations. However, by adding, for example, a highly figurative boat to another name that generates almost no associations (SRD), the level of associations is increased by 50%. When we added a figurative violin to a cultural name with a deficient number of associations (VIOLIN), associations also increased significantly.

4.4. Complementary results

It is interesting to confirm whether the auxiliary names and logos used in this research deliver the same results. Fig. 4 shows the recall and associations binary responses (as percentages) for the 10 names with logos stimuli used in all experiments. It also compares the differences in responses obtained by names with logos (groups 1 to 9) and only by names (group 10). Table 3 shows the McNemar's test and ORs applied to these results, to evaluate their statistical significance.

Our first and most unexpected result is that the main cleavage is not between abstract and figurative names, but between abstract and cultural names, on the one hand, and organic names, on the other. This is especially true for recall. We did not notice relevant differences between an abstract unpronounceable name like AVM, an adjective like PURE, or cultural nouns like VIOLIN or CABANA. None of them crossed the 20% recall barrier. The five organic names used in this research (ORCHID, SHERRY, TOMATO, SNAIL, and SARDINE) had, without exception, higher recall results. The name of a human character (FARMER), which is at the frontier between organic and cultural names, has the same recall level as organic names.

When we combine these recall results with those presented in Fig. 3, we can conclude that what really matters is the cleavage produced by organic names (TOMATO and SARDINE) compared to all other types of names, whether unpronounceable initials (VLN, SRD, MTE), acronyms (SARDI, VOLIN, MATE), or cultural names (VIOLIN), with or without a logo in the sense of lettering decoration or an autonomous drawing.

A second result, also unexpected, is that a logo can be useless, and in many cases negative, for recall. These negative results may be explained by the semantic dispersion the logo may create (e.g., reading ORCHID and seeing an abstract geometric design, reading SHERRY and seeing a girl), or by the decrease in the name readability that the logo may induce (e.g., turning the O in TOMATO into a smiling tomato). These solutions can be beneficial for generating associations, but they are dangerous for recall. The best example in this respect is the name FARMER accompanied by a drawing of a cow. This dispersion penalizes recall but introduces a narrative that generates new associations (the farmer without the cow produces "agricultural products," and with the cow produces "milk," "butter," "cheese," "yogurt," and even "chocolate").

Can we conclude that if we have an organic name and want to focus on recall, it is preferable not to use a figurative logo? Not really. The results for SNAIL suggest that, compared to figurative logos, typographic

lettering induces lower recall and associations. And the results obtained for SARDINE provide an appropriate answer to this question, as this was the only option in terms of name and logo that combined successful recall and association results. Semantically, this solution is a pictogram (we read SARDINE and we see a fish). Graphically, it is a calligram (the letters are deformed so that they transform into a drawing). There is neither semantic nor graphic dispersion. Although risky, especially in terms of readability, this may be the ideal solution.

Comparing our research hypotheses with this ideal solution confirms the following: the figurativeness of the name and logo can be positive for recall (H1.1) and associations (H1.3); and the repetition of the figurativeness of the name in the logo can also be positive for recall (H2.1) and associations (H2.3). However, we must be aware that this combination of name and logo is an ideal exception. Hence, it is worth discussing the other situations in which these hypotheses could not be confirmed.

5. Conclusions

This study investigated the effects of name and logo characteristics, particularly of figurativeness, on cognitive responses, in terms of recall, recognition, and associations.

A fundamental research contribution relates to the combined study of the two central brand identity signs (name and logo). This allowed us to question some of the theoretical conclusions and practical rules regarding their characteristics when they are considered separately.

5.1. Theoretical implications

Our first conclusion is that name and logo figurativeness (as opposed to abstractness) is not a sacrosanct solution to achieving superior cognitive responses, as is usually suggested in the literature (Henderson & Cote, 1998; Klink, 2001) and proposed in our hypotheses.

Our results support the idea that figurativeness is a crucial requirement for the choice of the brand name. Names such as TOMATO, SARDINE, or VIOLIN had significantly higher recall, recognition, and associations than initials such as MTE, SRD, or VLN. These findings complement the claims of prior studies that suggestive or meaningful names enhance memorability (Baker, 2003; Bao et al., 2008; Kohli et al., 2005), and underline the advantages of selecting a brand name conveying familiar real-word meanings that do not necessarily imply specific product attributes or benefits.

Regarding the logo, the effects of figurativeness on cognitive responses depend greatly on the figurativeness of the name with which the logo is associated and on the type of response analyzed. When the logo is associated with an abstract brand name (e.g., MTE, SRD, or VLN), we cannot rely on logo figurativeness to increase recall. Furthermore, even when the logo is combined with a figurative name, logo figurativeness can be negative for recall, if it creates a semantic dispersion with the name (e.g., reading VIOLIN and seeing a flower) or renders name readability more difficult (i.e., interferences in the lettering, such as the transformation of the letter “O” of TOMATO into a smiling face). However, in line with earlier studies (e.g., Henderson & Cote, 1998; Park et al., 2013), our findings suggest that the figurativeness of the logo is critical for increasing recognition and for generating associations, and these are the most relevant cognitive responses for logos given their critical role in accelerating brand recognition and influencing brand perceptions (Cian et al., 2014; Fajardo et al., 2016).

Furthermore, it should be noted that the semantic dispersion and reading difficulties introduced by some figurative logos might hinder their ability to convey associations. Care should be taken to choose a logo that facilitates readability and is coherent with the name (Kocher et al., 2006).

Our second conclusion is that organicity, more than figurativeness, is what really makes a difference in terms of cognitive responses. Regarding cognitive responses to names, cultural names (e.g., VIOLIN) are closer to abstract names, including unpronounceable initials (VLN), acronyms (VOLIN), and adjectives (PURE), than to organic names (e.g., TOMATO or SARDINE). This was particularly observed for recall and associations. Nevertheless, the results for recognition also indicate the benefits of selecting an organic name. Hence, our results empirically demonstrate the universal appeal of stimuli representing the real and organic world, across ages and cultures (Torres et al., 2019).

Our third conclusion is that the semantic interaction between the name and the logo seems much more relevant than whether the logo is cultural or organic. For example, if the brand has a name such as VIOLIN, it is more advantageous in terms of cognitive response to add a drawing of a violin than one of a flower. These findings demonstrate once more the advantages of repeating textual and visual information to enhance cognitive responses to the name and logo (Buttle & Westoby, 2006).

However, name and logo semantic interaction does not necessarily increase recognition. Our findings show that repeating textual and visual information is beneficial for creating higher recall and generating associations (e.g., the semantic repetition created by reading SARDINE and seeing a fish), but that narrative interactions (e.g., reading SARDINE and seeing a boat) are better for ensuring recognition. A possible explanation could be the fact that recognition is a visual cue for memory, while recall and associations are verbal cues (du Plessis, 1994). When we are exposed to a stimulus, we store it in our brain as a visual memory. When we try to recognize the stimulus, we use the same visual mode. The more a specific narrative differentiates the stimulus, the more we can be sure that this is the stimulus we saw and not another similar one (Yes, I didn’t see a sardine, I saw this boat called sardine!). When we try to recall the stimulus, or generate associations, we must convert a visual cue into a verbal cue. The task is more complex; we have to name the stimulus and verbalize the visual memory, so the more we simplify the easier it will be (Did I see a sardine or a boat?). The fact that recognition is a less complex task makes it more likely to follow the shape of an inverted U curve, with the maximum response level situated at an intermediate point between total dispersion and total stimulus coherence. The inverted U curve proposed by the optimal arousal theory is generally considered more adapted to less complex tasks (Hanoch & Vitouch, 2004). As recall and associations are more complex tasks, we should observe a linear response: the more the stimulus, composed by the name and logo, is coherent, the higher the response level.

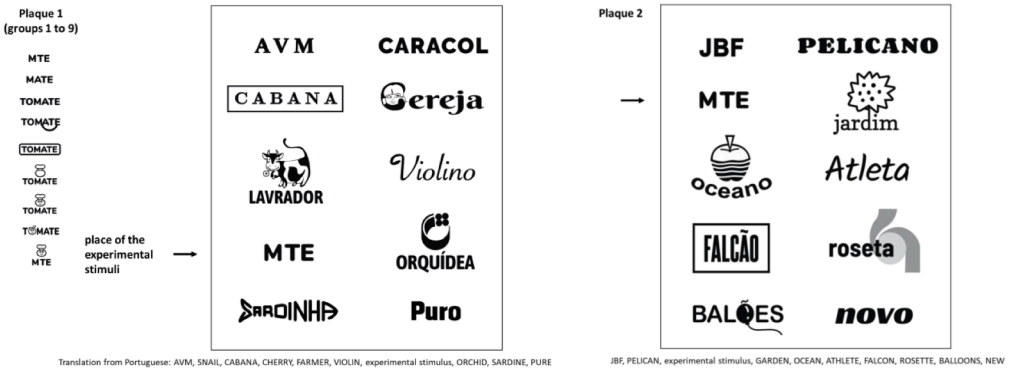
Nevertheless, there are exceptions, especially in terms of recall, as non-interactive figurative logos that do not represent the name (e.g., reading TOMATO and seeing a cook) may also increase recall. Therefore, we cannot say that semantic repetition between the name and the logo (i.e., a pictogram or a drawing representing the name) is always the most appropriate strategy for improving cognitive responses. The many possibilities of the semantic relationship between the name and the logo may explain this result. Indeed, from complete repetition (i.e., a pictogram) to complete dispersion (i.e., a drawing that has no relationship to the name), there are several narrative possibilities, each with a different influence on cognitive responses.

5.2. Practical implications

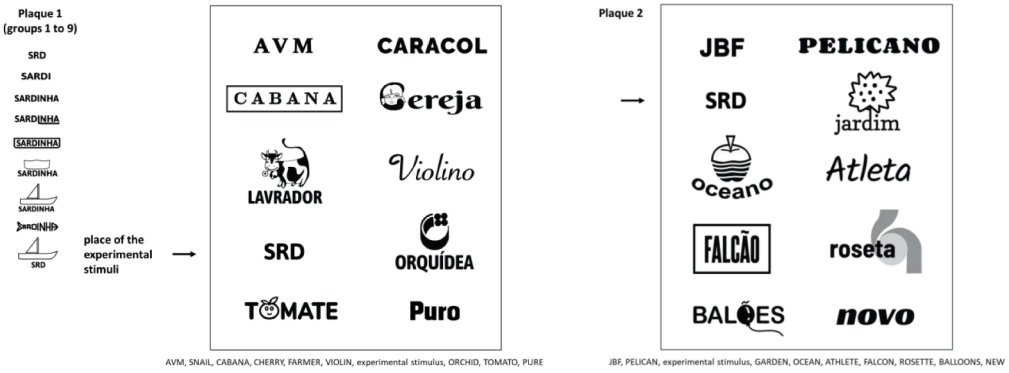
Three important practical implications follow from the theoretical conclusions explained above.

The first concerns the choice and management of names. Our study confirms that figurative names – that is, organic ones – are more easily memorized, and that meaningless initials and acronyms should be avoided, at least when the brand is created. By choosing a figurative name for their brand, marketers will automatically create positive cognitive responses, which would otherwise require significant marketing efforts. However, when brand managers inherit initials, they should try to give these initials some meaning; for example, by utilizing and, eventually, modifying the original meaning of the initials. BP, which stands for British Petroleum, cleverly became “Beyond Petroleum” in a 2002 slogan. IBM will not become TOMATO to compete with

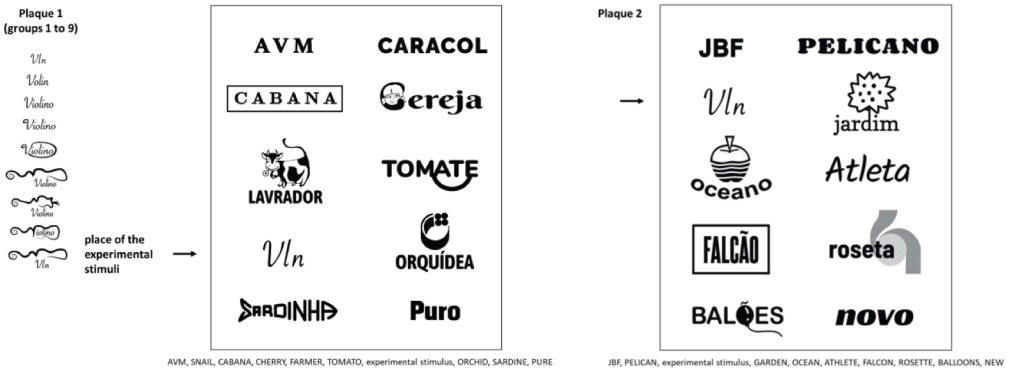
Plaque 1 (recall and associations) and plaque 2 (recognition) shown to groups 1 to 9:
First study: TOMATO experimental scenario



Second study: SARDINE experimental scenario



Third study: VIOLIN experimental scenario



Plaque 1 (recall and associations) shown to group 10 (names only):

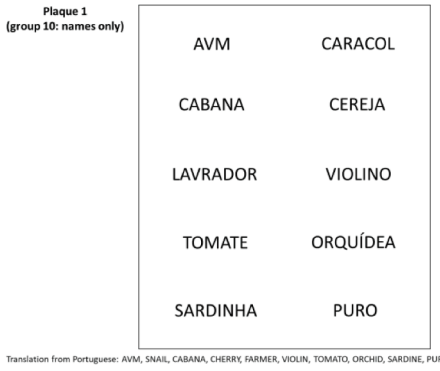


Fig. A1. Plaques shown to experimental groups. Note. The plaques were composed to ensure the diversity of the nine auxiliary stimuli presented together with each experimental stimulus. For the first study, the TOMATO experimental scenario, plaques 1 and 2 were created with nine auxiliary stimuli representing examples from each experimental group: AVM and JBF for group 1 (non-pronounceable initials); PURE and NEW for group 2 (acronyms or abstract words); SNAIL and PELICAN for group 3 (figurative nouns); VIOLIN and ATHLETE for group 4 (decorated letterings); CABANA and FALCON for group 5 (framed letterings); ORCHID and ROSETTE for group 6 (abstract drawings); FARMER and OCEAN for group 7 (figurative drawings); SARDINE and BALLOONS for group 8 (pictograms). CHERRY and GARDEN represent a variation of group 7 (figurative drawings) with spatial interaction between the lettering and the drawing, which was an experimental situation we intended to study at the beginning of the research. For the second study, the SARDINE experimental scenario, we replaced the SARDINE auxiliary stimulus with the TOMATO stimulus from the same group (group 8). For the third study, the VIOLIN experimental scenario, we replaced the VIOLIN auxiliary stimulus with the TOMATO stimulus from the same group (group 4). For group 10 (names only), plaque 1 from the first study was used, replacing the logos with the corresponding names. To counter the possible effect of the position on the plaque (Lohse, 1997), the theoretically weaker stimuli were placed in better positions on the plaque for a Western reader (e.g., AVM and JBF in the upper left corner), and stronger stimuli in worse positions on the plaque (e.g., SARDINE and BALLOONS in the lower left corner). The experimental stimulus was also placed in worse positions (fourth from the left on plaque 1 and second from the left on plaque 2).

APPLE, as brands cannot deny their identity, personality, and positioning. IBM should not even seek to restore its original and forgotten meaning as International Business Machines, as this represents a perfect example of marketing myopia. However, the brand created a highly figurative and organic logo using an eye and a bee, while bringing life to the old blue striped M (as in the 1981 poster to support the slogan "IBM Think").

The IBM case is an example of a second practical implication of our findings with regard to the selection and management of logos. The logo does not live independently of the name, its associations, and its history. Any new brand logo, or any logo rebranding, should ensure good interaction with the name; good interaction means that total semantic dispersion should be avoided, but also indicates that a narrative is sometimes more powerful than a simple pictogram. THE LAUGHING COW, the bitten APPLE, and the TOMATO cook are examples of this good practice. The semantic dispersion of the "eye bee M" logo, at least in all languages other than English, would prevent it from being the original IBM logo.

Our third practical implication is specifically linked to the boundaries between graphic creativity and the immediate legibility of the name and logo integrated stimulus. In our experiment, the results that best fit our hypotheses were obtained for a pictogram/calligram logo for the name SARDINE. However, following a similar creative approach, our worst results were obtained using a TOMATO logo with a smiling tomato in the place of the first O. Graphic creativity is useful, but designers and managers must not forget about readability. Indeed, readability is particularly relevant for recall, the first major challenge of a new identity. The "eye bee M" logo is like a visual slogan – it is good for supporting a repositioning campaign, but should not become the primary logo of IBM.

5.3. Limitations and future research

Our study is not without limitations, which may open interesting future research avenues. The first main limitation relates to the use of fictitious names and logos, which is essential for controlling the effect of small variations of figurative elements and avoiding experience effects. It will be interesting to replicate this experimental device with real names and logos in a future study, comparing the effects of name and logo figurativeness on people familiar with the brand with the effects on those who do not know the brand. According to previous research, unfamiliar stimuli should amplify the effects of name and logo characteristics on target publics' responses (Giese et al., 2014). Hence, it will be relevant to measure brand name and logo familiarity and understand how it affects the relationship between figurativeness and recall, recognition, or associations.

Secondly, to avoid respondent fatigue when answering the questionnaire, we studied only cognitive responses. If we also measured affective response, the influence of logo figurativeness would very likely be higher, as suggested in prior research on logo strategy (Machado et al., 2012; 2015). Thus, future studies should complement our research by investigating affective responses to the different categories of names and logos under analysis.

Third, within the numerous brand identity signs, we studied only the brand name and accompanying logo. Both were considered in a simple version (e.g., no generic term or signature was associated with the name and no color was associated with the logo). Although names and logos are the central brand identity signs, it would be interesting to apply the same experimental device to other signs, such as slogans, labels, and packaging design (Giese et al., 2014; Reimann et al., 2010).

Our experimental device focused on analyzing name and logo figurativeness, and the results reveal the utmost importance of organicity (Machado et al., 2015; Torres et al., 2019). More research is needed to systematize the different types and degrees of organicity that can be applied to names and logos (e.g., by distinguishing between animals, plants, minerals, landscapes, and humans). The reasoning that guided the development of the decision trees used for figurativeness can be extended to different types of organicity.

The main originality of this research is linked to the combined study of names and logos (Klink, 2003), which allowed us to extend our findings regarding the figurativeness and organicity of names and logos, when analyzed separately (Henderson & Cote, 1998; Klink, 2001). It also enabled us to study the effects of the semantic interaction between name and logo (Buttle & Westoby, 2006). However, there might be a continuum between total semantic repetition (the redundancy of the pictogram) and total dispersion, with many nuances of narrative effects; these could be explored in future research. Moreover, future studies might also consider other types of interaction, such as that between the name, the lettering, and the drawing (a special type of decoration of the lettering, with very good results in the case of the SARDINE calligram), or the interaction between the drawing and the observer (such as when a mascot looks at the observer, as in the case of the cook in the TOMATO logo).

Our findings provide some curious segmentation results that could be further explored. Females appear to be more sensitive than males to figurativeness and organicity, which is in line with previous literature on biological differences in design and logo preferences (Moss et al., 2007). The same happened concerning young people. Thus, it would be interesting to systematize these demographic differences and the differences linked with respondents' culture in future research.

CRediT authorship contribution statement

Paulo de Lencastre: Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Joana César Machado:** . **Patrício Costa:** Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Founding

This research did not receive any specific grant from founding agencies in the public, commercial, or not-for-profit sectors.

Appendix A

See Fig. A1.

References

Aaker, D. A., Stayman, D. M., & Hagerty, M. R. (1986). Warmth in advertising: Measurement, impact, and sequence effects. *Journal of Consumer Research, 12*(4), 365–381. https://doi.org/10.1086/208524

Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research, 34* (3), 347–356. https://doi.org/10.1177/002224379703400304

Ahn, J., & La Ferle, C. (2008). Enhancing recall and recognition for brand names and body copy. *Journal of Advertising, 17*(3), 107–117. https://doi.org/10.2753/JOA0091-3367370308

Alesandrini, K. L. (1983). Strategies that influence memory for advertising communication. In R. J. Harris (Ed.), *Information processing research in advertising* (pp. 65–82). Lawrence Erlbaum Associates.

Arora, S., Kalro, A., & Sharma, D. (2015). A comprehensive framework of brand name classification. *Journal of Brand Management, 22*(2), 79–116. https://doi.org/10.1057/bm.2015.8

Bajaj, A., & Bond, S. D. (2017). Design symmetry and brand personality. *Journal of Consumer Psychology, 28*(1), 77–98. https://doi.org/10.1002/jcpy.1009

Baker, W. E. (2003). Does brand name imprinting in memory increase brand information retention? *Psychology and Marketing, 20*(12), 1119–1135. https://doi.org/10.1002/mar.10111

Bao, Y., Shao, A. T., & Rivers, D. (2008). Creating new brand names: Effects of relevance, connotation and pronunciation. *Journal of Advertising Research, 48*(1), 148–162. https://doi.org/10.2501/S002184990808015X

Batra, R. (2019). Creating brand meaning: A review and research agenda. *Journal of Consumer Psychology, 29*(3), 535–546. https://doi.org/10.1002/jcpy.1122

Baxter, S. M., & Ilicic, J. (2018). May the force drag your dynamic logo: The brand work-energy effect. *International Journal of Research in Marketing, 35*(3), 509–523. https://doi.org/10.1016/j.ijresmar.2018.03.002

Bettels, J., & Wiedmann, K.-P. (2019). Brand logo symmetry and product design: The spillover effects on consumer inferences. *Journal of Business Research, 97*, 1–9. https://doi.org/10.1016/j.jbusres.2018.12.039

Biron, J., & McKelvie, S. J. (1984). Effects of interactive and noninteractive imagery on recall of advertisements. *Perceptual and Motor Skills, 59*(3), 799–805. https://doi.org/10.2466/pms.1984.59.3.799

Buttle, H., & Westoby, N. (2006). Brand logo and name association: It's all in the name. *Applied Cognitive Psychology, 20*(9), 1181–1194. https://doi.org/10.1002/acp.1257

Chen, N., Jiao, J., Fan, X., & Lin, S. (2021). The shape of loneliness: The relationship between loneliness and consumer preference for angular versus circular shapes. *Journal of Business Research, 136*, 612–629. https://doi.org/10.1016/j.jbusres.2021.07.046

Childers, T. L., & Jass, J. (2002). All dressed up with something to say: Effects of typeface semantic associations on brand perceptions and consumer memory. *Journal of Consumer Psychology, 12*(2), 93–106. https://doi.org/10.1207/S15327663JCP1202_03

Cian, L., Krishna, A., & Elder, R. S. (2014). This logo moves me: Dynamic imagery from static images. *Journal of Marketing Research, 51*(2), 184–197. https://doi.org/10.1509/jmr.13.0023

Coane, J. H., Monahan, K. T., & Termonen, M.-L. (2015). Hunts, Heinz, and fries priming "Ketchup": The effects of lexicality on brand name-product associations and brand memory. *Applied Cognitive Psychology, 29*(3), 455–470. https://doi.org/10.1002/acp.3124

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82*(6), 407–428. https://doi.org/10.1037/0033-295X.82.6.407

del Río, P., Vázquez, R., & Iglesias, V. (2001). The role of brand name in obtaining differential advantages. *Journal of Product and Brand Management, 10*(7), 452–465. https://doi.org/10.1108/EUM0000000006242

Doyle, J. R., & Bottomley, P. A. (2006). Dressed for the occasion: Font-product congruity in the perception of logotype. *Journal of Consumer Psychology, 16*(2), 112–123. https://doi.org/10.1207/s15327663jcp1602_2

du Plessis, E. (1994). Recognition versus recall. *Journal of Advertising Research, 34*(3), 75–91.

Fajardo, T. M., Zhang, J., & Tsiros, M. (2016). The contingent nature of the symbolic associations of visual design elements: The case of brand logo frames. *Journal of Consumer Research, 43*(4), 549–566. https://doi.org/10.1093/jcr/ucw048

Floch, J.-M. (2001). *Semiotics, marketing and communication: Beneath the signs, the strategies*. Palgrave.

Foroudi, P., Melewar, T. C., & Gupta, S. (2014). Linking corporate logo, corporate image, and reputation: An examination of consumer perceptions in the financial setting. *Journal of Business Research, 67*(11), 2269–2281. https://doi.org/10.1016/j.jbusres.2014.06.015

Giese, J. L., Malkewitz, K., Orth, U. R., & Henderson, P. W. (2014). Advancing the aesthetic middle principle: Tradeoffs in design attractiveness and strength. *Journal of Business Research, 67*(6), 1154–1161. https://doi.org/10.1016/j.jbusres.2013.05.018

Greenwald, A. G., & Leavitt, C. (1984). Audience involvement in advertising: Four levels. *Journal of Consumer Research, 11*(1), 581–592. https://doi.org/10.1086/208994

Greimas, A. J., & Courtés, J. (1993). *Sémiotique: Dictionnaire Raisonné de la Théorie de Langage*. Hachette Supérieur.

Hanoch, Y., & Vitouch, O. (2004). When less is more: Information, emotional arousal and the ecological reframing of the Yerkes-Dodson law. *Theory & Psychology, 14*(4), 427–452. https://doi.org/10.1177/0959354304044918

Hartmann, P., Apaolaza, V., & Alija, P. (2013). Nature imagery in advertising: Attention restoration and memory effects. *International Journal of Advertising, 32*(2), 183–210. https://doi.org/10.2501/IJA-32-2-183-210

Henderson, P. W., & Cote, J. A. (1998). Guidelines for selecting and modifying logos. *Journal of Marketing, 62*(2), 14–30. https://doi.org/10.1177/002224299806200202

Henderson, P. W., Giese, J. L., & Cote, J. C. (2004). Impression management using typeface design. *Journal of Marketing, 68*(4), 60–72. https://doi.org/10.1509/jmkg.68.4.60.42736

Hillenbrand, P., Alcauter, S., Cervantes, J., & Barrios, F. (2013). Better branding: Brand names can influence consumer choice. *Journal of Product and Brand Management, 22*(4), 300–308. https://doi.org/10.1108/JPBM-04-2012-0120

Hodgson, G. M. (2007). Taxonomizing the relationship between biology and economics: A very long engagement. *Journal of Bioeconomics, 9*(2), 169–185.

Hutchinson, J. W., Raman, K., & Mantrala, M. K. (1994). Finding choice alternatives in memory: Probability models of brand name recall. *Journal of Marketing Research, 31*, 441–461. https://doi.org/10.1177/002224379403100401

Janiszewski, C., & Meyvis, T. (2001). Effects of brand logo complexity, repetition and spacing on processing fluency and judgement. *Journal of Consumer Research, 28*(1), 18–32. https://doi.org/10.1086/321945

Jiang, Y., Gorn, G. J., Galli, M., & Chattopadhyay, A. (2016). Does your company have the right logo? How and why circular- and angular-logo shapes influence brand attribute judgments. *Journal of Consumer Research, 42*(5), 709–726. https://doi.org/10.1093/jcr/ucv049

Kanwisher, N., & Potter, M. C. (1990). Repetition blindness: Levels of processing. *Journal of Experimental Psychology: Human Perception and Performance, 16*(1), 30–47. https://doi.org/10.1037/0096-1523.16.1.30

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169–182. https://doi.org/10.1016/0272-4944(95)90001-2

Keller, K.-L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing, 57*(1), 1–22. https://doi.org/10.1177/002224299305700101

Keller, K.-L., Heckler, S., & Houston, M. J. (1998). The effects of brand name suggestiveness on advertising recall. *Journal of Marketing, 62*(1), 48–57. https://doi.org/10.1177/002224299806200105

Klink, R. R. (2001). Creating meaningful new brand names: A study of semantics and sound symbolism. *Journal of Marketing Theory and Practice, 9*(2), 27–34. https://doi.org/10.1080/10696679.2001.11501889

Klink, R. R. (2003). Creating meaningful new brand names: The relationship between brand name and brand mark. *Marketing Letters, 14*(3), 143–157. https://doi.org/10.1023/A:1027476132607

Klink, R. R., & Athaide, G. A. (2011). Creating brand personality with brand names. *Marketing Letters, 23*(1), 109–117. https://doi.org/10.1007/s11002-011-9140-7

Kocher, B., Czellar, S., & Usunier, J.-C. (2006). The effect of perceived brand name–logo coherence on brand attitudes. In C. Pechmann, & L. Price (Eds.), *Advances in consumer research* (vol. 33, pp. 274–275). Association for Consumer Research.

Kohli, C. S., Harich, K. R., & Leuthesser, L. (2005). Creating brand identity: A study of evaluation of new brand names. *Journal of Business Research, 58*(11), 1506–1515.

Kohli, C. S., & LaBahn, D. W. (1997). Creating effective brand names: A study of the naming process. *Journal of Advertising Research, 37*(1), 67–75. https://doi.org/10.1016/j.jbusres.2004.07.007

Labrecque, L. I., Patrick, V. M., & Milne, G. R. (2013). The marketers' prismatic palette: A review of color research and future directions. *Psychology and Marketing, 30*(2), 187–202. https://doi.org/10.1002/mar.20597

Leigh, J. H., Zinkhan, G. M., & Swaminathan, V. (2006). Dimensional relationships of recall and recognition measures with selected cognitive and affective aspects of print ads. *Journal of Advertising, 35*(1), 105–122. https://doi.org/10.2753/JOA0091-3367350107

Lencastre, P. (1997). *L'Identification de la Marque, un Outil de Stratégie de Marketing: Le Nom de la Marque*. le Logotype et la Mémorisation: Université Catholique de Louvain.

Lerman, D., & Garbarino, E. (2002). Recall and recognition of brand names: A comparison of word and nonword name types. *Psychology and Marketing, 19*(7–8), 621–639. https://doi.org/10.1002/mar.10028

Lohse, G. L. (1997). Consumer eye movement patterns on Yellow Pages advertising. *Journal of Advertising, 26*(1), 61–73. https://doi.org/10.1080/00913367.1997.10673518

Lowrey, T. M., & Shrum, L. J. (2007). Phonetic symbolism and brand name preference. *Journal of Consumer Research, 34*(3), 406–414. https://doi.org/10.1086/518530

Lowrey, T. M., Shrum, L. J., & Dubitsky, T. M. (2003). The relation between brand-name linguistic characteristics and brand-name memory. *Journal of Advertising, 32*(3), 7–17. https://doi.org/10.1080/00913367.2003.10639137

Luna, D., Carnevale, M., & Lerman, D. (2013). Does brand spelling influence memory? The case of auditorily presented brand names. *Journal of Consumer Psychology, 23*(1), 36–48. https://doi.org/10.1016/j.jcps.2012.02.003

Luna, D., & Peracchio, L. A. (2001). Moderators of language effects in advertising to bilinguals: A psycholinguistic approach. *Journal of Consumer Research, 28*(2), 284–295. https://doi.org/10.1086/322903

Lutz, K. A., & Lutz, R. J. (1977). The effects of interactive imagery on learning: Application to advertising. *Journal of Applied Psychology, 62*(4), 493–498. https://doi.org/10.1037/0021-9010.62.4.493

Macdonald, E. K., & Sharp, B. M. (2000). Brand awareness effects on consumer decision making for a common, repeat purchase: A replication. *Journal of Business Research, 48*(1), 5–15. https://doi.org/10.1016/S0148-2963(98)00070-8

Machado, J. C., de Carvalho, L. V., Costa, P., & Lencastre, P. (2012). Brand mergers: Examining consumers' responses to name and logo design. *Journal of Product and Brand Management, 21*(6), 418–427. https://doi.org/10.1108/10610421211264900

Machado, J. C., de Carvalho, L. V., Torres, A., & Costa, P. (2015). Brand logo design: Examining consumer response to naturalness. *Journal of Product and Brand Management, 24*(1), 78–87. https://doi.org/10.1108/JPBM-05-2014-0609

MacInnis, D. J., & Price, L. L. (1987). The role of imagery in information processing: Review and extensions. *Journal of Consumer Research, 13*(4), 473–491. https://doi.org/10.1086/209082

Meyers-Levy, J. (1989). The influence of a brand name's association set size and word frequency on brand memory. *Journal of Consumer Research, 16*(2), 197–207. https://doi.org/10.1086/209208

Moss, G., Hamilton, C., & Neave, N. (2007). Evolutionary factors in design preferences. *Journal of Brand Management, 14*(4), 313–323. https://doi.org/10.1057/palgrave.bm.2550073

Nelson, D. L., Bajo, M.-T., & Casanueva, D. (1985). Prior knowledge and memory: The influence of natural category size as function of intention and distraction. *Journal of Experimental Psychology: Learning, Memory and Cognition, 11*(1), 94–105. https://doi.org/10.1037/0278-7393.11.1.94

Noel, H. (2006). The spacing effect: Enhancing memory for repeated marketing stimuli. *Journal of Consumer Psychology, 16*(3), 46–53. https://doi.org/10.1207/s15327663jcp1603_12

Orth, U. R., & Malkewitz, K. (2008). Holistic package design and consumer brand impressions. *Journal of Marketing, 72*(3), 135–144. https://doi.org/10.1509/JMKG.72.3.064.

Oxford Advanced Learner's Dictionary (2021). Branding. *Oxford Advanced Learner's Dictionary*. Retrieved June, 15, 2021 from https://www.oxfordlearnersdictionaries.com/definition/english/branding.

Paivio, A. (1978). Mental comparisons involving abstract attributes. *Memory and Cognition, 6*(3), 199–208. https://doi.org/10.3758/BF03197447

Papanek, V. (1984). *Design for the real world.* Van Nostrand.

Park, C. W., Eisingerich, A. B., Pol, G., & Park, J. W. (2013). The role of brand logos in firm performance. *Journal of Business Research, 66*(2), 180–187. https://doi.org/10.1016/j.jbusres.2012.07.011

Pathak, A., Calvert, G. A., & Lim, L. K. S. (2020). Harsh voices, sound branding: How voiced consonants in a brand's name can alter its perceived attributes. *Psychology and Marketing, 37*(6), 837–847. https://doi.org/10.1002/mar.21346

Pavia, T., & Costa, J. A. (1993). The winning number: Consumer perceptions of alpha-numeric brand names. *Journal of Marketing, 57*(3), 85–98. https://doi.org/10.1177/002224299305700306

Peduzzi, P., Concato, J., Kemper, E., Holford, T. R., & Feinstein, A. R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology, 49*(12), 1373–1379. https://doi.org/10.1016/S0895-4356(96)00236-3

Petty, R. (2008). Naming names: Trademark strategy and beyond: Part one – Selecting a brand name. *Journal of Brand Management, 15*(3), 190–197. https://doi.org/10.1057/palgrave.bm.2550095

Pogacar, R., Plant, E., Rosulek, L. F., & Kouril, M. (2015). Sounds good: Phonetic sound patterns in top brand names. *Marketing Letters, 26*(4), 549–563. https://doi.org/10.1007/s11002-014-9288-z

Quintal, V., & Phau, I. (2013). Brand leaders and me-too alternatives: How do consumers choose? *Marketing Intelligence and Planning, 31*(4), 367–387. https://doi.org/10.1108/02634501311324852

Rahinel, R., & Nelson, N. M. (2016). When brand logos describe the environment: Design instability and the utility of safe-oriented products. *Journal of Consumer Research, 43*(3), 478–496. https://doi.org/10.1093/jcr/ucw039

Reimann, M., Zaichkowsky, J., Neuhaus, C., & Bender, T. (2010). Aesthetic package design: A behavioral, neural, and psychological investigation. *Journal of Consumer Psychology, 20*(4), 431–441. https://doi.org/10.1016/j.jcps.2010.06.009

Robertson, K. R. (1987). Recall and recognition effects of brand names strategy. *Psychology and Marketing, 4*(1), 3–15. https://doi.org/10.1002/mar.4220040103

Rossiter, J. R., & Percy, L. (1980). Attitude change through visual imagery in advertising. *Journal of Advertising, 9*(2), 10–16. https://doi.org/10.1080/00913367.1980.10673313

Sääksjärvi, M., van den Henden, E., Mugge, R., & van Peursem, N. (2015). How exposure to logos and logo varieties fosters brand prominence and freshness. *Journal of Product and Brand Management, 24*(7), 736–744. https://doi.org/10.1108/JPBM-06-2014-0648

Samu, S., & Krishnan, H. S. (2010). Brand related information as context: The impact of brand name characteristics on memory and choice. *Journal of the Academy of Marketing Science, 38*(4), 456–470. https://doi.org/10.1007/s11747-009-0175-8

Schmitt, B. H., Tavassoli, N. T., & Millard, R. T. (1993). Memory for print ads: Understanding relations among brand name, copy and picture. *Journal of Consumer Psychology, 2*(1), 55–81. https://doi.org/10.1016/S1057-7408(08)80075-7

Sen, S. (1999). The effects of brand name suggestiveness and decision goal on the development of brand knowledge. *Journal of Consumer Psychology, 8*(4), 431–455. https://doi.org/10.1207/s15327663jcp0804_04

Shrum, L. J., Lowrey, T. M., Luna, D., Lerman, D. B., & Liu, M. (2013). Sound symbolism effects across languages: Implications for global brand names. *International Journal of Research in Marketing, 29*(3), 275–279. https://doi.org/10.1016/j.ijresmar.2012.03.002

Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychology Review, 84*(2), 127–190. https://doi.org/10.1037/0033-295X.84.2.127

Singh, S. N., Rothchild, M. L., & Churchill, G. A., Jr. (1988). Recognition versus recall as measures of television commercial forgetting. *Journal of Marketing Research, 25*(1), 72–80. https://doi.org/10.1177/002224378802500107

Spence, C. (2012). Managing sensory expectations concerning products and brands: Capitalizing on the sense of sound and shape symbolism. *Journal of Consumer Psychology, 22*(1), 37–54. https://doi.org/10.1016/j.jcps.2011.09.004

Srull, T. K., & Wyer, R. S., Jr. (1989). Person memory and judgement. *Psychological Review, 96*(1), 58–83. https://doi.org/10.1037/0033-295X.96.1.58

Stoner, J. F., Loken, B., & Blank, A. S. (2017). The new game: How naming products increase psychological ownership and subsequent consumer evaluation. *Journal of Consumer Psychology, 28*(1), 130–137. https://doi.org/10.1002/jcpy.1005

Tavassoli, N. T., & Lee, Y. H. (2003). The differential interaction of auditory and visual advertising elements with Chinese and English. *Journal of Marketing Research, 40*(4), 468–480. https://doi.org/10.1509/jmkr.40.4.468.19391

Teng, L., Xie, C., Liu, F., Wang, F., & Foti, L. (2021). The effects of uppercase vs. lowercase on consumers' perceptions and brand attitudes. *Journal of Business Research, 136*, 164–175. https://doi.org/10.1016/j.jbusres.2021.07.013

Torres, A., Machado, J. C., Vacas-de-Carvalho, L., van de Velden, M., & Costa, P. (2019). Same design, same response? Investigating natural designs in international logos. *Journal of Product and Brand Management, 28*(3), 317–329. https://doi.org/10.1108/JPBM-10-2017-1632

Townsend, C., & Kahn, B. E. (2014). The visual preference heuristic: The influence of visual versus verbal depiction on assortment processing, perceived variety and choice overload. *Journal of Consumer Research, 40*(5), 993–1015. https://doi.org/10.1086/673521

Ulrich, R. S. (1981). Natural versus urban scenes. *Environment and Behavior, 13*(5), 523–556.

Ulrich, R. S. (1983). Aesthetic and affective response to natural environment. In I. Altman, & J. F. Wohlwill (Eds.), *Behavior and the Natural Environment* (pp. 83–125). Plenum Press. https://doi.org/10.1007/978-1-4613-3539-9_4.

van der Lans, R., Cote, J. A., Cole, C. A., Leong, S. M., Smidts, A., Henderson, P. W., … Schmitt, B. H. (2009). Cross-national logo evaluation analysis: An individual-level approach. *Marketing Science, 28*(5), 968–985. https://doi.org/10.1287/mksc.1080.0462

Veryzer, R. (1999). A nonconscious processing explanation of consumer response to product design. *Psychology and Marketing, 16*(6), 497–522. https://doi.org/10.1002/(SICI)1520-6793(199909)16:6<497::AID-MAR4>3.0.CO;2-Z

Ward, E., Yang, S., Romaniuk, J., & Beal, V. (2020). Building a unique brand identity: Measuring the relative ownership potential of brand identity element types. *Journal of Brand Management, 27*(4), 393–407. https://doi.org/10.1057/s41262-020-00187-6

Wixted, J. T., & Squire, L. R. (2004). Recall and recognition are equally impaired in patients with selective hippocampal damage. *Cognitive, Affective, and Behavioral Neuroscience, 4*(1), 58–66. https://doi.org/10.3758/CABN.4.1.58

Zaichkowsky, J. (2010). Strategies for distinctive brands. *Journal of Brand Management, 17*(8), 548–560. https://doi.org/10.1057/bm.2010.12

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