RUNNING HEAD: BRANDING THE IN-OUT EFFECT

Branding with the In-out effect: The impact of consonantal articulation on brand evaluation

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Abstract

Recent research has shown that mouth movements, produced even during silent reading, can affect stimulus evaluation. Words featuring systematic wanderings of consonantal stricture spots ranging from the front to the rear of the mouth (inward) are preferred to words with wanderings in the opposite direction (outward). In four experiments, the authors extended this in-out effect from a basic laboratory setting to a more ecologically relevant domain and examined the boundary conditions of possible applications to marketing. In this research, the inward/outward-words presented were embedded in common brand imagery such as labels, logos and product packages. Either with plain graphic information or with more visually informative packaging, inward names were always preferred (all *p-values* < .001). These results indicate that concurrent information that competitively feeds into the preference judgment, did not have diagnostic value when compared to the articulation direction. Such prevalence of the effect even when embedded in more complex stimulus, emphasizes the relevance of investigating oral kinematics effects and the need to further research other sensorimotor phenomena in consumer behavior.

Keywords: approach-avoidance; branding; oral articulation; embodiment

Approach actions towards positive stimuli, and more importantly avoidance from negative stimuli seem to constitute survival mechanisms that facilitate the detection and reaction to sensory inputs. Several studies have been priming approach and avoidance motivational states showing that specific movements, concordant with either approach or avoidance, affect the evaluation of neutral stimuli (e.g., Cacioppo, Priester, & Berntson, 1993; Centerbar & Clore, 2006). For example, when participants perform (e.g., arm-flexion) or experience (e.g., viewing a target moving closer) approach behavior, they react faster to positive and slower to negative stimuli. In the same way, if asked to engage in avoidance behavior, such as arm-extension or viewing the target moving away, participants react faster to negative and slower to positive stimuli (Chen & Bargh, 1999; Neumann & Strack, 2000). Since most of the previous evidence was not conclusive regarding the nature of the link between affect and approach-avoidance motivational states or behavior, some debate about the automaticity of the phenomena remains (Bargh & Chartrand, 1999; for a review and meta-analysis see Phaf, Mohr, Rotteveel, & Wicherts, 2104). In other words, whether valenced stimuli prime approach-avoidance directly and automatically or indirectly after conscious assessment of the particular situation is yet to be fully known.

Recent research has, however, been successful manipulating approach-avoidance motivational states outside participant's awareness (Topolinski, Maschmann, Pecher, & Winkielman, 2014). This innovative approach known as the in-out effect, uses a simple oral approach-avoidance mechanism mimicking either ingestion or expectoration movements, allowing the examination of sensorimotor experiences' impact in cognition without the influence of affective or motivational expectations. Biomechanically, beyond the speech function, the mouth entails two determinant food-related functions: intake of foods and liquids, performed by swallowing or licking; and expectoration of inedible substances, performed by vomiting or spitting. These movements present a clear evolutionary function:

the incorporation of aliments (swallowing) and the expulsion of potentially harmful substances (spitting). The muscular activity necessary to complete both actions involves two distinct sequences of muscle tensions starting either in lips, over the middle and to the rear of the mouth for ingestion (Goyal & Mashimo, 2006) or wandering in the opposite direction for expectoration. As Topolinski et al. (2014) suggested, in the same way as flexor and extensor movements ease concordant motivational states, muscular contractions mimicking either in-going or out-going oral actions trigger, respectively, positive affect/approach or negative affect/avoidance motivational states.

Research conducted with this paradigm has already demonstrated that even in silent reading conditions, participants prefer words whose consonantal articulation wanders inward (from the front to the back of the mouth, as in the word BATECO) to words with opposite wandering (outward, from the back to the front of the mouth, e.g., CATEBO). Since the impact of consonantal articulation direction of words has been demonstrated in several experiments, conducted by Topolinski and colleagues (Topolinski et al., 2014; Topolinski & Boecker, 2016; Topolinski, Boecker, Erle, Bakhtiari, & Pecher, 2015; Topolinski, Zürn, & Schneider, 2015), and extended in a set of replications, by other independent research labs (Godinho & Garrido, 2015; Kronrod, Lowrey, & Ackerman, 2015), it seems safe to assume that inward (outward) words induce approach (avoidance) states and, accordingly, more positive (negative) attitudes.

The motivational explanation proposed, in which inward wandering words are preferred due to their resemblance to the oral-action of ingestion, is theoretically dependent of some sort of sub vocalization process that seems to occur even in silent reading conditions. Such assumption was corroborated by the absence of the in-out effect in aphasia patients, whose impairment is suggested to block or distort pronunciation simulations (Topolinski et al., 2014). Other authors suggest though, that the positive affect evoked by inward wandering

words is due to a natural fluency of such phonetic strings. Probably because inward words are easier to read and more frequent in natural language (Bakhtiari, Körner, & Topolinski, 2016).

Regardless of whether the affect is due to more fluency or to a direct motor-affect link, the research conducted on the in-out effect provides significant input to the debate about the automaticity of the link between affect and approach-avoidance. Importantly, it constitutes a promising research avenue to manipulate approach-avoidance without asking participants to engage in conscious and voluntary motor actions. Thus, despite the in-out effect has predominantly been tested in controlled lab settings, it may hold promising outcomes, not only for experimental endeavors in the broader embodiment field, but also in more applied research domains such as consumer behavior.

Naming Brands: From Semantics to Oral Kinematics

Branding has become a hot topic. Evidence about the impact of brands' names in consumers' evaluation of both products and brands is robust (e.g., Yorkston & Menon, 2004) and effective brand naming is already considered a crucial way to build brand equity (Roche, Shrum, & Lowrey, 2015).

After establishing that particular features of the brand name may affect consumers' attitudes, several researchers have attempted to define guiding principles for brand name design, and to isolate the factors that could foster brand memorability and preference (Lerman & Garbarino, 2002; Lowrey & Shrum, 2007; Maheswaran, Mackie, & Chaiken, 1992; Meyers-Levy, 1989). In the last two decades, several researchers from social psychology, linguistics and marketing have examined the impact of suggestive and meaningful names (Keller, Heckler, & Houston, 1998); whether such names should be similar to familiar ones already existing in the market (Bellman, 2005; Kronrod & Lowrey, 2016) or unique (Samu & Krishnan, 2010); if conceptual and perceptual fluency would

increase brand evaluation (Lee & Labroo, 2004); if consumers prefer brands whose names include sounds conveying product attributes (Lowrey & Shrum, 2007) or even sounds that present a multimodal correspondence to products' taste, label and package shape (see Spence, 2012, for a review).

In recent contributions to this body of knowledge, oral kinematics researchers have already rehearsed the applications of the in-out effect to brand names. While the in-out effect was initially established by presenting participants with nonsense words, out of any meaningful context, currently the effect is being tested in more applied settings. For example, matching the features of denoted objects, that is, matching the preference for inward or outward-words with oral actions related products that are ingestive - lemonade, mouthwash - or expectorative - chemicals, bubble gum (Topolinski et al., 2015).

In a very recent set of experiments, the in-out manipulation was also tested while additional visual information about products was presented (Topolinski & Boecker, 2016). Participants were asked to rate pictures of very attractive food dishes, as well as less appealing or differentiating images (e.g., wine bottle, juice glass, cheese). These images were labeled either with inward or outward names. Results indicated that, when dealing with vivid and suggestive visual information of food dishes, participants did not reproduce the preference for inward names. It seems that, the palatability cues of the pictorial information provided faded the in-out effect, leading the authors to conclude that such strong visual information on palatability is a boundary condition for the emergence of the effect.

Product expectations are formed upon various elements besides name or actual image. Indeed, since design features composing a brands' visual identity are known to influence consumers' responses and increase purchase intentions, product design has been recognized as a crucial advantage for positioning brands in the market. A large amount of evidence emphasizes the relevance of features such as the color of a logo (Bottomley & Doyle, 2006),

the font type used (Doyle & Bottomley, 2004), the shape of a package (Becker, van Rompay, Schifferstein, & Galetzka, 2011; Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014) or its "actionability" cues (Eelen, Dewitte, & Warlop, 2013), just to name a few.

Therefore, when aiming to apply the in-out effect to actual marketing practice, it becomes vital to understand if: the preference for inward wandering names elicited by an approach motivation extends to brand evaluation. Moreover, whether inward wandering brand names generate favorable responses from consumers, even when brands present simultaneously other design features that are known to have a large impact in consumer responses. To examine further applications as well as possible boundary conditions for the emergence of the in-out effect, specifically those that may be relevant for marketing purposes, four experiments examining the in-out effect with varying degrees of brand imagery were conducted.

Overview of the Experiments

Across four experiments, a stimulus pool of 15 inward and 15 outward-words was used to examine the impact of the consonantal articulation direction (inward vs. outward) and visual information on the evaluation of mock brands. In these experiments, participants were asked to evaluate brands presented as simple labels (Experiment 1), logos (Experiment 2), product-packages (Experiment 3) and in a last experiment, the paradigm was extended to the evaluation of products (Experiment 4).

Across all four experiments both consonantal wandering direction and brand imagery were manipulated as within-subjects factors. Inward and outward-words were randomly selected from a stimulus pool of nonsense words (e.g., Inward – VATECO, IPONECA, PANEGU; Outward – CATEVO, IGONEPA, GANEPU), specifically adapted for Portuguese phonation and validated in a set of two high-powered replications (see Godinho & Garrido,

2015, for detailed information). The authors also tested all possible combinations between the 15 inward and 15 outward-words and the four types of labels (Experiment 1), 15 different logos (Experiment 2), and 15 different packages (Experiments 3-4), which resulted in a total of 120 stimuli in the first experiment and 450 in each of the subsequent experiments.

Using a conservative large power estimate (.95) and based on the average effect size (Cohen's d_z = 0.33; Cohen, 1988) obtained in Topolinski & Boecker (2016; Experiments 1 and 3), a priori power analysis (G*Power; Faul, Erdfelder, Lang, & Buchner, 2007) would indicate that the sample size required to detect the effect would be N = 90. Nevertheless, in order to provide solid evidence for the robustness of the effect, and due to the extensive amount of stimuli being used (each participant only rated 30 stimuli), the experiments were slightly over-powered. A minimum of 90 participants for Experiment 1 and 150 participants for Experiments 2-4 was defined, and data collection was set to stop at the end of the day that each sample reached the defined size. By doing so, some samples became slightly larger.

Data were collected online using Qualtrics platform. Email contacts were randomly collected online and participants received a message inviting them to join a survey about brand evaluation (Experiment 1-3) or about product evaluation (Experiment 4). Each email only received a single invitation to avoid having the same person participating in more than one experiment.

Experiments 1 and 2

The main goal of the first two experiments was to demonstrate that brands presented as inward-words would be preferred over brands presented as outward-words, even when embedded in brand imagery. The first, more conservative experiment, used basic geometric figures, while the second experiment included more detailed logos.

Method

Participants

From the total of participants that agreed to complete both online surveys about brands, three (3%) were excluded from Experiment 1 and two (1.3%) from Experiment 2. In both cases, excluded participants were either non-native speakers of European Portuguese or bilinguals. Since none of the remaining participants reported a valid suspicion of the word manipulation in the final control questions, a total of 97 participants (61 female; *Mean age* = 37.4, *SD* = 12.61) and 151 participants (89 female; *Mean age* = 41.5, *SD* = 13.00) from very diverse professional backgrounds were included in Experiments 1 and 2, respectively.

Materials and Procedures

In the first experiment, inward and outward-words were paired in all possible combinations with four distinct geometrical figures (oval, rectangle, hexagon or triangle) resulting in 120 different stimuli. In the second experiment, the same words were embedded in 15 distinct mock logotypes resulting in 450 different stimuli. The geometric figures used were selected from Microsoft Office basic shapes. Mock logotypes were designed online using an open source software (Figure 1).

[INSERT FIGURE 1 HERE]

Participants in Experiment 1 rated a random set of 30 stimuli from the 120 pairs of words and geometric figures. Participants in Experiment 2 rated a random set of 30 stimuli from the 450 combinations of words and logotypes. The presentation of each stimulus (word-image either geometric shape or logo) was completely randomized for each participant anew.

After entering the survey platform, participants were asked to read and agree with the informed consent. Then, they were informed that their task would be to silently read brands'

names, and to rate each brand in a 10-point scale, ranging from 1 (Don't like it at all) to 10 (Like it very much). Each word, embedded in the respective imagery, was presented (one per page) along with the rating scale. Answers were not time-limited and the stimuli were visible until the rating was provided. This was the only task requested from the participants. After rating the 30 brands (15 inward and 15 outward), participants were asked to complete socio-demographic questions such as gender, age, professional occupation and native language. At the end, two control questions were added do detect possible awareness of word manipulation (Godinho & Garrido, 2015).

Results and discussion

Experiment 1

The in-out effect was replicated even in the presence of additional visual information. A one-way within-subjects ANOVA indicated that brands with inward-words (M = 3.61, SE = .15) were preferred over those with outward-words (M = 3.27, SE = .14), $F(1, 96) = 32.89$, $\eta_p^2 = .255$, $p < .001$, $d_z = .59$, mean difference 95% CI [3.15, 3.72]. No other statistically significant main (geometric shape, $p = .300$), or interaction effects ($p = .144$) were observed. Because participants saw each geometric figure twice, either with an inward or outward brand name, mere exposure effects (Zajonc, 1968) were also ruled out, $t(150) = 1.643$, $p = .103$.

Experiment 2

The results of a one-way within-subjects ANOVA with inward vs. outward-words embedded in more complex visual contexts (logotypes) revealed that, logotypes including inward-words (M = 3.78, SE = .12) were rated more positively than those with outward-words (M = 3.59, SE = .12), $F(1, 149) = 23.47$, $\eta_p^2 = .136$, $p < .001$, $d_z = .40$, mean difference 95% CI [3.45, 3.91]. A main logotype effect was also observed $F(14, 2086) = 6.81$, $\eta_p^2 = .315$, $p < .001$. However, despite a natural preference for some of the random logotypes used,

there was no interaction between logo and consonantal articulation direction (p = .577). Logotypes received equivalent ratings when presented for the first or the second time, $t(150)$= 1.643, p = .103.

Overall, Experiments 1 and 2 replicated the in-out effect in an evaluative task of brand names. Brands with inward names (vs. outward) were preferred, independently of being embedded in more angular or round shapes, or in multi-shaped mock logotypes. No main effects were observed regarding the order of stimuli presentation, suggesting that a second exposure to a particular shape or logotype (albeit combined with different words) did not produce more positive evaluations. The replication of the in-out effect in this new enriched scenario, with stimuli that present concurrent visual information, substantiates the robustness and generalizability of the effect.

Experiments 3 and 4

Experiments 3 and 4 were designed to further establish the in-out effect in the context of a visually complex and ecologically valid scenario, with relevant applications to branding. In these two experiments, product packages similar to those found in consumers' daily lives were used. This type of stimuli constitutes a more severe test of the boundary conditions of the in-out effect. Packages convey concurrent visual information with expected higher diagnosticity. The affordances suggested by different package types (e.g., Lin & Lo, 2015) and other particular design features of each package, are more likely to interfere with the in-out effect (Reimann, Zaichkowsky, Neuhaus, Bender, & Weber, 2010).

In Experiment 3, the stimuli set was designed to include images of products with inward and outward-words printed in the package surface, while keeping the instructions of the previous experiments (rate brand preference). In Experiment 4, participants were asked to rate the product itself, instead of the brand. This last instruction introduced an important

twist. Instead of studying the emergence of the in-out effect in the evaluation of brands, and whether the effect was shadowed by other concurrent visual cues, the focus was in examining if the affective states produced by in-out articulations could be extended to the evaluation of a product.

Method

Participants

From the total of participants that agreed to join both online surveys, five were excluded from the final data analysis: one participant (0.6%) from Experiment 3, and four (2.7%) from Experiment 4, reported being non-native European Portuguese speakers. None of the remaining participants reported a valid suspicion of the word manipulation in the final control questions, thus, a total of 155 participants (94 female; *Mean age* = 38.0, *SD* =13.07) and 146 participants (105 female; *Mean age* = 40.8, *SD* = 12.97) were included in the present samples. As in the first two experiments, participants were from diverse professional backgrounds.

Materials and Procedures

In Experiments 3 and 4 participants were presented with all the words in the stimuli pool (15 inward and 15 outward-words), framed in all possible combinations with 15 distinct product packages randomly selected from online open source databases. There is a fair amount of empirical evidence built upon ecologically valid material for product packaging extrapolations, such as realistic images of packages (Ares & Deliza, 2010) or even pictures of actual products (Koo & Suk, 2016; Westerman, et al., 2013). However, aiming to refrain participants from associating the packages used to specific products or brands in the market, in the present set of experiments mock packages (Velasco, et al. in 2014) were used. Packages included featured, bottles for drinkables, tetrapack, plastic bottles for toiletries, card

boxes of different sizes and shapes, and foldable packages. A total of 450 different stimuli resulted from the combination of each package and both the inward and outward names (Figure 2).

[INSERT FIGURE 2 HERE]

While in Experiment 3 participants were asked to report their preferences about each brand, in Experiment 4 participants were asked to rate their preference for each product. The order of presentation of inward and outward-words was completely randomized for each participant anew.

Across the two experiments, both consonantal word wandering as well as the brand visual imagery (presented as a package) were manipulated within participants. Thus, each participant always received 30 words embedded in a random subset of 15 packages, viewing a total of 30 stimulus (15 inward and 15 outward).

Results and discussion

Experiment 3.

A one-way within-subjects ANOVA revealed the expected main effect of consonantal stricture direction, $F(1, 144) = 22.64$, $\eta_p^2 = .136$, $p < .001$, $d_z = .40$, mean difference 95% CI [3.05, 3.60]. Brands with inward-words ($M = 3.43$, $SE = .14$) were preferred over the ones with outward-words ($M = 3.22$, $SE = .14$). A main effect of package was also found, $F(14, 2016) = 2.55$, $\eta_p^2 = .208$, $p = .001$, mean difference 95% CI [3.05, 3.60], indicating that some packages were preferred over others but no interaction effects ($p = .249$) were observed. Again, the order by which stimuli were presented was not significant, $t(153) = 1.767$, $p = .079$.

Experiment 4.

The results of a one-way within-subjects ANOVA showed a main in-out effect, this time regarding the evaluation of products. Products with inward-words (M = 3.45, SE = .15) were rated higher than those with outward-words (M = 3.32, SE = .15), $F(1, 141) = 12.10$, $\eta_p^2 = .079$, $p = .001$, $d_z = .29$, mean difference 95% CI [3.10, 3.67]. Again a package main effect was observed $F(14, 1974) = 4.83$, $\eta_p^2 = .242$, $p < .001$, indicating that some packages were preferred over others. However, these preferences did not interact with the in-out effect (p = .200). Stimuli presentation order did not affect evaluations, $t(145) = .828$, $p = .409$.

Results from Experiment 4 indicate that the in-out effect is not only robust, prevailing even in the presence of concurrent information, but more importantly that the affective judgments triggered by the word articulation extend to product evaluation.

General Discussion

Research on the effect of oral muscles wanderings caused by consonantal subvocal pronunciation, also known as the in-out effect, has uncovered the impact of certain phonetic characteristics of words in their evaluation (Topolinski et al., 2014). Words with articulatory patterns resembling ingestion are associated with positive affect, and those resembling expectoration muscular dynamics are associated with negative affect. In the current set of studies, the in-out effect, typically observed in research laboratory settings, was extended to a more ecologically relevant domain of consumer behavior, and the boundary conditions to its possible applications to current marketing practice were examined. For that purpose, the authors tested the effect of presenting inward and outward-words (as brands) embedded in varying degrees of brand imagery (labels, logotypes, and mock product packages) in the evaluation of brands and products. Results have consistently shown the robustness of the in-

out effect, even in the presence of competitive visual information. These results encourage the effort in bridging oral kinematics research and branding practice.

In a previous set of experiments with pictures of food dishes, the in-out effect was shown to fade away in the presence of pictures high in palatability cues (Topolinski & Boecker, 2016). In the present work, the visual information provided, that also competitively feed into participants' information processing, did not block the effect of consonantal wanderings in affective judgments. Indeed, more abstract visual information or even haptic cues such as shapes of product packages did not interfere with the effect, emphasizing its relevance and potential for branding. Further research is required to examine the concurrent role of specific visual information (e.g., aesthetic appeal, familiarity, complexity, Prada, Rodrigues, Silva, & Garrido, 2016) in the emergence of the in-out effect namely in the consumer behavior domain.

Current marketing practice has been favoring meaningful names for branding since they are easier to remember and seem to induce more positive affect than non-meaningful names (Klink, 2001). Nevertheless, since companies' portfolios are growing, brand names are required to become more permeable and adaptable to several products (see Chun, Park, Eisingerich, & MacInnis, 2015, for a discussion of the variables affecting successful brand extensions). In other words, establishing a particular connection between the name and the product is increasingly difficult. Moreover, since brand names assume different meanings in different languages, marketing professionals managing international brands are currently facing growing challenges.

A phonetic toolkit to develop new brand names is likely to constitute a possible solution for such a challenge. Sound symbolism seems to have been so far the only phonetical approach tested by academics and used by marketing practitioners to develop brand names for new products. Sound symbolism or phonetic symbolism (e.g., Sapir, 1929) postulates that

the phonological characteristics of the speech may function as a map for semantic meaning. When facing nonsense or unfamiliar words, sound symbolism is used to extract meaning from the name and couple it with the referenced object. For example, voiced consonants are associated with heavy or strong products (Klink, 2001), while silent consonants seem more connected to faster or smaller products (Yorkston & Menon, 2004). Indeed, in the marketing domain there is already a considerable amount of evidence about the influence of certain sounds in consumers' product evaluations (Lowrey & Shrum, 2007; Yorkston & Menon, 2004), price perception (Coulter & Coulter, 2010) and decision–making, that is, the final choices made (Argo, Popa, & Smith, 2010). Thus, the in-out effect may constitute an interesting tool to use in conjunction or as an alternative to sound symbolism.

Despite the absence of a strong body of research comparing both alternatives it can be argued that: (a) Names created within the sound symbolism approach may hold some cross-languages differences, but are more likely to be perceived as similar by consumers worldwide than names built upon the in-out effect. The perceptions of brand names based on inward or outward sub vocalizations may be more heterogeneous, because the letter to phoneme translation varies significantly across languages, changing the precise location of the articulation of the consonant in the mouth, and therefore threatening the effectiveness of the in-out effect; (b) On the other hand, the in-out effect seems to be more adaptable to different product types. It does not convey any particular meaning or link to any product type, but an overall positive (negative) affect and approach (avoidance) motivation; (c) Finally, research has shown that the mere exposure effect constitutes a greater advantage for brands with nonsense names than for brands with meaningful names (Kohli, Harich, & Leuthesser, 2005). Since brand equity is built over long periods of time, using nonsense names is likely to be the best option in the long run. Yet, it remains to be known whether a brand would benefit even more if the name featured both approaches - wandering inward and simultaneously conveying

phonetic meaning. Further research about the impact of oral kinematics will surely find a fruitful ground in the marketing domain.

From a theoretical standpoint, the successful replication of the in-out effect renews the strength of the embodiment perspective and of the overall social situated cognition framework (see Semin & Garrido, 2015; Semin, Garrido, & Palma, 2012, 2013) by providing evidence that perception and action are shaped by aspects of the physical body and of the contextual setting. The importance of sensorimotor activity in shaping cognition was (again) demonstrated by the effect of specific (oral) muscular patterns in decision-making and preference. With the several replications of the in-out effect across different experiments and settings, it also becomes evident that this manipulation is a reliable alternative to the most commonly used primes for approach-avoidance motivations. Importantly, this manipulation removes the "awareness" confound that may arise from asking participants to perform conscious and voluntary actions or by forcing them to consciously adopt particular body postures or muscle restrains. Moreover, due to the simplicity of the procedure, the in-out effect may assume special relevance in future experimental manipulations of approach-avoidance.

Overall, the robustness and generalizability of the in-out effect revealed across four experiments with increasingly complex and ecologically valid stimuli, clearly supports the application of oral kinematics to branding, and encourages further research on other sensorimotor phenomena in consumer behavior and overall consumer decision-making.

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Figure 1. Examples of materials used in Experiments 1 and 2.

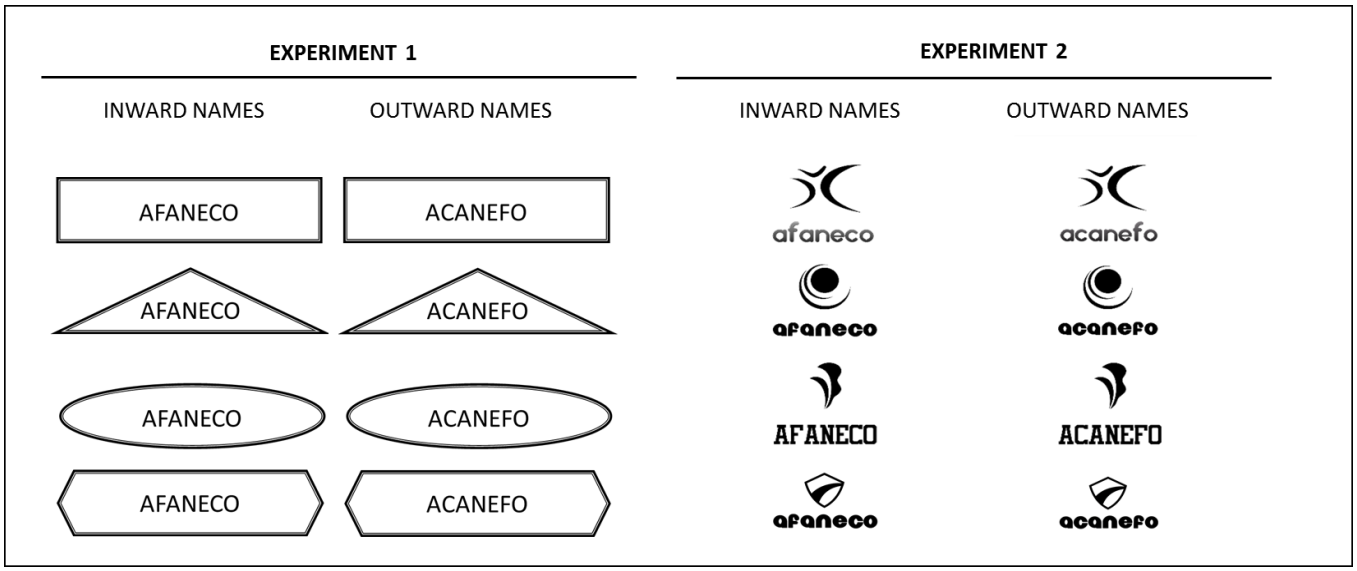

Figure 2. Examples of materials used in Experiments 3 and 4