Follow Your Nose When it Sounds Right:

How Brand Names Influence Consumer Responses to Product Scents

Product scents exert a considerable influence on managerial outcomes. However, little research has examined the contextual circumstances that facilitate or hinder consumer responses to product scents. Across three studies, we address this gap by exploring how one important product element –brand name congruence – moderates the influence of product scent valence on consumer responses. Specifically, we find that brand names that are phonetically incongruent with desirable product category characteristics attenuate the effect of a product scent's valence on consumers' evaluations and purchase decisions. Conversely, a product scent's valence plays a significant role in shaping consumers' responses when the product's brand name is phonetically congruent with desirable product category characteristics. This research has important implications for marketers who want to exploit favorable product scents, and for those who wish to reduce consumer attention to unappealing product odors.

Keywords: scent, brand names, sound symbolism, linguistics, multi-sensory effects, fluency

Experts estimate that over $500 million is spent on scent marketing each year (Pappas, 2017). Some of this effort is focused on ambient scent, and on product scent in categories where scent is a primary selling feature: perfumes, colognes, air fresheners, and candles (home fragrance in particular showed double-digit growth throughout the height of the COVID-19 pandemic; The NPD Group, 2020). However, a wider range of product categories, including food and beverage, automobiles, and consumer electronics, have also strategically incorporated scent into their product offerings. For example, food aromas are now integrated into the lids of coffee cups and the closures of sports drink bottles (Spence, 2015a), interiors of new Rolls-Royce automobiles are formulated to smell like a 1965 Rolls-Royce (Klara, 2014), and a signature scent is in embedded in the packaging of all Apple gadgetry (Aamoth, 2012). Interestingly, the COVID-19 pandemic seems to have increased the ubiquity of such fragrance applications, given scent's ability to convey a sense of cleanliness, protection and comfort (CEW, 2021). Inspired by such applications, the present research concentrates on product scent (rather than ambient scent) in categories where scent is not the primary attribute or reason to buy.

In general, research findings support the extensive use of scent by marketers. Studies demonstrate the ability of a product's scent to significantly improve consumers' evaluations of products (Krishna, Lwin, & Morrin, 2009), modify taste experiences (Spence, 2015b), shape tactile perceptions (Demattè et al., 2006; Krishna, Elder, & Caldara, 2010), enhance memory (Krishna et al., 2009; Lwin, Morrin, & Krishna, 2010; Morrin, Krishna, & Lwin 2011), and even increase product appeal via scented ads (Ruzeviciute, Kamleitner, & Biswas, 2020). Scholars have also devoted attention to the specific olfactory qualities that elicit optimal consumer responses, examining scent intensity (Henion, 1971), arousal potential (Di Muro & Murray, 2012), semantic associations (e.g., lemon = clean; Holland, Hendriks, & Aarts, 2005), and

product category congruence (Bosmans, 2006; Bone & Jantrania, 1992; Krishna et al., 2009; Krishna et al., 2010; Spangenberg et al., 2006).

However, in the marketplace, consumers do not experience product scents in a vacuum. Olfactory product features are often experienced amidst a number of concurrent product features. Surprisingly, very little research has examined the conditions that may facilitate or hinder consumer responses to product-based olfactory cues. We begin to address this gap in the literature by studying how one important product element – the brand name – shapes consumer responses to a product's olfactory properties. This is important both theoretically and practically. Theoretically, the phonetic characteristics of a brand name may act as an antecedent to consumers' reliance on subsequent olfactory information when making product-based judgments and choices. Indeed, olfactory cues tend to be processed with little cognitive effort (DeBono, 1992; Ehrlichman & Halpern, 1988) and, at the same time, a name's phonetic properties have been found to permit or inhibit fluency (Alter & Oppenheimer, 2006; Whittlesea & Leboe, 2000).

Practically, understanding how brand names might influence consumers' responses to a product's olfactory properties is relevant because consumers are typically exposed to a product's name (e.g., on the packaging) before its scent, and companies invest millions of dollars and strategic effort creating brand names for new products (Kohli, Harich, & Leuthesser, 2005; Tsai, Dev, & Chintagunta, 2015). Therefore, it is critical to provide theoretically driven insights into potential interactions among key product elements like brand name and scent (Brakus, Schmitt, & Zarantonello, 2009; Luffarelli, Stamatogiannakis, & Yang, 2019).

Drawing from literature on fluency and the elaboration likelihood model (ELM; Petty & Cacioppo, 1986), we argue that for products where scent is not the primary reason to buy, a

brand name that is phonetically congruent with desirable product category attributes (e.g., the brand name “Frosh” is phonetically congruent with smoothness, richness, and softness, which are desirable attributes for a lip balm) should result in greater fluency (Kitchen et al., 2014) and thus facilitate consumer reliance on peripheral cues (Schumann et al., 2011). As a result, the valence of a product’s scent, a peripheral cue, will influence overall evaluations and purchase decisions. On the other hand, when a brand name is phonetically incongruent with the desirable category attributes (e.g., “Frish”), such incongruity is likely to disrupt fluency, thus leading consumers to discount subsequent peripheral olfactory cues that are not central to the product category. We find that this interaction between product scent valence and brand name congruence shapes downstream consumer responses in two different product categories, with important implications for marketers who want to maximize the impact of strategically crafted product scents, and for those who wish to reduce consumer attention to inherently unpleasant product odors.

Our research makes two major theoretical contributions. First, we add to research in sensory marketing by showing that phonetic/linguistic information such as brand names can be a critical antecedent for the influence of olfactory cues on consumers’ judgments, choices and purchase behavior. Thus, our work provides a more nuanced exploration of how product scents influence consumer behavior. Moreover, we add to the brand naming literature by moving beyond a demonstration of the main effects of phonetic properties to show that phonetic congruence in brand names interacts with a product’s other sensorial cues.

CONCEPTUAL FRAMEWORK

Effects of Olfactory Cues on Consumer Behavior

Previous research has documented many effects of olfactory cues on consumer behavior. The majority of such research has examined consumer responses to ambient scent (e.g., atmospheric scent present in retail environments; Biswas & Szocs, 2019; Chebat & Michon, 2003; Madzharov, Block, & Morrin, 2015; Mitchell, Kahn, & Knasko, 1995; Morrin & Ratneshwar, 2000; Morrison, Gan, Dubelaar, & Oppewal, 2011; Spangenberg, Crowley, & Henderson, 1996; Spangenberg, Grohmann, & Sprott, 2005). Considerably less research has explored the effect of product-based scents on consumer responses. Nevertheless, there are a few well-documented findings on how consumers respond to scented products. For instance, scent has been found to enhance memory for product information (Krishna et al., 2009; Lwin et al., 2010; Morrin, Krishna, & Lwin, 2011). This is because scents often carry common semantic associations (learned via repeated exposure to certain smells paired with certain contexts), which can become activated and lead to increased accessibility of those concepts (Krishna et al., 2010). For example, participants given pine-scented (as compared to unscented) pencils were able to recall more product-related information at a later time (Krishna et al., 2009). Scent has also been shown to shape haptic perceptions (Demattè et al., 2006; Krishna et al., 2010), so that participants rated a fabric as feeling significantly softer when it had a lemon odor (as opposed to an animal-like odor; Demattè et al., 2006). Importantly, the effects of product scent on consumer responses are not limited to situations in which scent is a central product attribute, as might be the case in product categories such as perfume or air fresheners, but also manifest when scent serves as a peripheral product attribute; that is, when scent is not the primary function of the product (Morrin, 2010).

Product scent can also influence consumers' evaluations of products (Bone & Jantrania, 1992; Bosmans, 2006; Krishna et al., 2009; Krishna et al., 2010). Specifically, scent has been found to exert a positive effect on evaluations when it is either pleasant in nature or fitting of a product category (Bone & Jantrania, 1992; Krishna et al., 2009; Krishna et al., 2010). In one of the first studies investigating the effect of product scent on consumer evaluations, Laird (1932) showed that stockings infused with a pleasant scent were preferred over six times more than the same unscented stockings, despite only a few mentions of the product scent in participants' decision-making process. Considerable research has since then further supported the impact of product scent on evaluations, pointing to scent valence as one of the most important attributes of scents (e.g., Bone & Ellen, 1999; Engen, 1982; Ehrlichman & Halpern, 1988; Krishna et al., 2010), mainly because of its hedonic nature (e.g., Hirsch, 1990; Mitchell, Kahn, & Knasko, 1995; Miller, 1991). Particularly, these studies suggest that because pleasant scents produce pleasant experiences, this creates an overall affective response which, in turn, may transfer to the product being evaluated (see also Baron, 1990; Baron & Bronfen, 1994; Baron & Thomley 1994; Bosmans, 2006; Knasko, 1995).

One reason product scent valence consistently provokes such evaluative responses is that olfactory stimuli are directly linked to the experience of emotions (Bosmans, 2006; Herz & Engen, 1996). That is, unlike sensations from other sensory modalities (e.g., haptics, audition, or vision), olfactory information is not mediated through the thalamus (a principal integration locus for sensory information), and instead travels immediately and directly from the nasal cavity to the amygdala-hippocampal complex (Herz & Engen, 1996; Herz, 2010). As a consequence, olfactory cues tend to be processed in a manner that requires minimal cognitive effort to be experienced, leading to behavioral responses with very little conscious attention (DeBono, 1992;

Ehrlichman & Halpern, 1988; Moore, 2014). None of the other senses have such a direct and intimate connection with the areas in the brain responsible for associative learning, emotion, and memory (Herz, 2010). Because olfactory information is typically integrated with little cognitive effort, the effect of product scent on product evaluations and preferences may depend on contextual variables that permit or disrupt reliance on peripheral cues. We investigate this possibility by examining a theoretically and practically relevant contextual factor: brand names.

Brand Names and Phonetic Symbolism

Consumer researchers have dedicated considerable attention to the effects of brand names on consumer preferences (Luna, Carnevale, & Lerman, 2013; Lowrey & Shrum, 2007; Sood & Keller, 2012; Wu et al., 2018). These effects mostly stem from associations evoked by brand names (Carnevale, Luna, & Lerman, 2017), such as specific desirable product attributes (e.g., "Beautyrest" mattresses; Keller, Heckler & Houston, 1998). In addition to such explicit signals, research suggests that subtler cues, such as the sounds of brand names, also convey specific associations. One way to classify sounds is based on distinctions within vowels (i.e., front vs. back) and within consonants (i.e., fricatives vs. stops). Klink (2000) shows that brand names containing front (back) vowels, such as the English sound "ee" ("o"), may elicit perceptions related to smallness (largeness), lightness (heaviness), fastness (slowness), coldness (warmth), and brightness (darkness). Similarly, fricative (versus stop) consonants, such as *f, s, v,* and *z* (versus *p, t, b, d, g,* and *k)* tend to elicit the notion of small (rather than big) sizes, as well as feminine (rather than masculine) features (Klink, 2000). As a result, even non-word brand names, that is, brands that do not correspond to previously existing words, may signal specific meanings (e.g., Bose; Luna et al., 2013).

Phonetic symbolism research suggests that, absent other cues, consumer responses are generally more positive when the phonetically produced meaning in brand names is congruent with typically desirable product attributes in that product category (Klink, 2000; Yorkston & Menon, 2004; Lowrey & Shrum, 2007). For instance, if fast speed is a typical and desirable feature in a product category (e.g., internet service), a front vowel (e.g., the brand name "Nellar") would be considered phonetically congruent with this desirable attribute, whereas a back vowel (e.g., "Nullar") would be phonetically incongruent, and the former brand name should be preferred to the latter (Klink, 2000; Yorkston & Menon, 2004; Lowrey & Shrum, 2007). It is worth emphasizing that as described, our focus in this research is on brand name congruence with desirable product category attributes. Thus, we are not exploring a brand name's congruence or incongruence with a product scent (previous literature has explored such crossmodal correspondences, which we elaborate on in the general discussion).

We theorize that phonetic brand name congruence (versus incongruence) will also affect the way consumers process subsequent product-related information (including olfactory information). We find support for this notion in the literature on fluency.

Fluency and Reliance on Peripheral Cues

Fluency refers to the metacognitive ease or speed of interpreting an external stimulus (Schwarz, 2004; Jacoby & Dallas, 1981). Fluency is commonly influenced by the intrinsic characteristics of a perceptual stimulus, which may include its visual (Reber, Schwarz, & Winkielman, 2004), auditory (Repp, 1997), and phonetic (Alter & Oppenheimer, 2006; Whittlesea & Leboe, 2000) properties. Notably, stimuli tend to promote fluency when they are congruent with category schema (Labroo, Dhar & Schwarz 2008; Mandler, 1982; Meyers-Levy

& Tybout, 1989), which often means the stimuli are congruent with desirable attributes of the product category (Sheinin & Schmitt, 1994). Stimuli that are more congruent with their category tend to promote fluency effects since they carry a knowledge structure that is already stored in memory and do not require significant cognitive resources to process (Mandler, 1982; Meyers-Levy & Tybout, 1989; Peracchio & Tybout, 1996). Conversely, stimuli that are incongruent with their category tend to increase cognitive resource requirements due to a lack of pre-existing cognitive schema, and may therefore disrupt fluency. Applying this logic to brand names, it is reasonable to expect that category-congruent brand names would promote fluency, while category-incongruent brand names would generate disfluency.

We turn to the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) to help predict how such fluency might ultimately influence consumers' product-related judgements. Namely, the ELM suggests that while consumers do sometimes process information in a deliberative, comprehensive, and analytic manner, this route requires consumers to have both the cognitive capacity and motivation to allocate necessary resources (Petty & Cacioppo, 1984), and is accordingly more of an exception than the rule (Maheswaran, Mackie, & Chaiken, 1992). Instead, the default is for consumers to apply judgment rules that are learned and stored in memory (Evans, 2006). Doing so makes minimal cognitive demands and individuals are more likely to use peripheral cues (i.e., non-product-related information, like the attractiveness of the model in an advertisement or the ad’s design; Petty, Cacioppo, & Goldman, 1981) when making their judgements.

Importantly, extant literature has shown that fluency encourages consumers to rely on peripheral cues when making judgements and disfluency reduces such reliance. For example, Alter et al. (2007) demonstrated that when participants read product reviews for an MP3 player

in a visually fluent font they were more likely to rely on peripheral cues (e.g., the picture of the person leaving the review) than those who read the product reviews in a visually disfluent font. Applying these findings to the current research context, we would expect that phonetically congruent brand names should promote fluency and allow consumers' default reliance on peripheral cues, while phonetically incongruent brand names should generate disfluency and discourage consumer reliance on peripheral cues.

The Interaction of Brand Name Congruency and Scent

The link between stimuli congruence, fluency, and peripheral cues is important for our research, as olfactory cues tend to be processed with little cognitive effort (DeBono, 1992; Ehrlichman & Halpern, 1988). As mentioned previously, this is because unlike all other sensory modalities, the olfactory system has a direct connection with the limbic system (a more primitive part of the brain; Herz & Engen, 1996; Herz, 2010). Thus, scent is not indirectly processed through higher-level centers (as is the case with all other sensory cues), and requires minimal, if any, cognitive effort to be experienced (Ehrlichman & Halpern, 1988; Herz & Engen, 1996). For product scents, this is especially likely if scent is considered a secondary or peripheral product attribute as opposed to when it is the primary function of the product (e.g., hand sanitizer versus perfume; Morrin, 2010). Thus, the congruence between a product's brand name and desirable characteristics of its category is likely to result in fluency, which will lead to reliance on peripheral cues (i.e., non-salient, or peripheral, olfactory information) when making judgments and choices about the product. Conversely, if a product's category-incongruent brand name generates disfluency, it should disrupt consumers' default reliance on peripheral cues, thus reducing the influence of any subsequent (peripheral) olfactory information.

In sum, drawing from the literatures on olfactory cues and phonetic symbolism, and consistent with research on fluency, we propose that phonetically incongruent brand names will lead consumers to discount the valence of subsequent olfactory (peripheral) cues whereas phonetically congruent brand names will promote fluency and allow for consumer reliance on a product's olfactory cues. Such reliance on, or disregard of, olfactory information should accordingly influence consumer judgments and choices.

It should be noted that we follow Krishna and colleagues (2010) and do not focus our empirical examination on products where scent is the primary product attribute (e.g., perfumes and air fresheners; though we discuss implications for such products in the general discussion). Instead, we examine product categories for which scent is a secondary or optional product feature, and where the primary attribute is something other than scent (e.g., the disinfecting capability of a hand sanitizer or moisturizing function of a lip balm). We do so for two main reasons. First, the broader focus allows us to extend the generalizability of our findings to a much wider range of consumer products. Second, according to our theorizing, a brand name's phonetic congruence (incongruence) should only influence the role of olfactory features if such features are a peripheral attribute. In other words, while scent will always play a role in product categories where it is the central attribute (e.g., perfumes and air fresheners), this is not the case in categories where it is a peripheral attribute.

We tested our theorizing in two studies conducted in the field and one laboratory experiment. Study 1 provides initial evidence that brand name congruence influences consumer reliance on the valence of olfactory cues by demonstrating that a phonetically incongruent (versus congruent) brand name decreases the likelihood of purchasing a pleasantly-scented (versus unscented) lip balm. Study 2 replicates this interactive effect in a more controlled

laboratory setting, with a different product category (hand sanitizer). It also extends the substantive implications of our work by suggesting that incongruent brand names might attenuate the negative effects of mildly aversive peripheral scents, and provides indirect support for the proposed mechanism. Finally, study 3 lends additional support for the underlying process by demonstrating that if a product scent is made salient (hence making it a judgment-relevant and non-peripheral cue), it accordingly exerts an effect on consumer responses regardless of whether the brand name is congruent or not. Thus, the negative effect of an incongruent brand name can be remedied by drawing explicit attention to a product scent. Our theorizing and conceptual model is illustrated in figure 1.

Insert Figure 1 about here

For all studies, an a priori power analysis (included in Appendix A) determined the minimum sample size and then we maximized the number of participants based on constraints on time and monetary resources. Anticipated effect sizes were calculated using unreported pilot studies.

STUDY 1

Study 1 was a 2 (Brand Name: Congruent vs. Incongruent) x 2 (Scent Valence: Unscented vs. Pleasant Scent) between-subjects experiment conducted in a field setting that

sought to provide evidence that brand names moderate the extent to which product scent valence influences consumer responses. Specifically, we examined the conditions under which a pleasant peripheral scent positively influences consumer purchase likelihood. We expected that a phonetically incongruent (versus congruent) brand name would decrease the likelihood of purchasing a pleasantly-scented (versus unscented) lip balm. As a result, pleasantly scented products should be preferred over unscented products, but only when their brand name was phonetically congruent with desirable category attributes.

Stimuli Selection

In selecting stimuli for this study, we ran a series of pretests to select a suitable product category and correspondingly appropriate product scents and brand names. First, given that this study would measure actual purchase behavior, we selected a product readily available in the marketplace (a lip balm) and ensured that scent was not considered the primary selling attribute for the category. Second, it was important to choose two brand names that were perceived to be phonetically congruent and incongruent with desirable category attributes. Third, because prior research suggests that pleasant scents significantly improve product evaluations (Bone & Ellen, 1999), we wished to select a product scent that would be considered pleasant within the product category, compared to its unscented (control) version. Details of these pretests are described next.

Product Category. As previously mentioned, we deliberately chose a product category where scent does not represent the primary selling point or reason for purchase. For this study, we selected a colorless lip balm available in the marketplace. To assess whether or not scent was considered the primary selling point for this product category, we ran an online pretest (N = 31)

on MTurk in which participants were asked (in exchange for monetary compensation) "What is the main reason you would buy a lip balm?" The vast majority of responses were related to preventing or healing dry or chapped lips (81% of responses, e.g., "to protect against chapped lips"). No respondent mentioned scent as a reason to purchase lip balm, confirming that scent does not represent the primary selling point for this product[1].

Brand Names. To select brand names that were phonetically congruent or incongruent with desirable category attributes, we ran two separate pretests. First, given that previous research suggests that brand names with back vowels are more associated with smoothness, richness, and softness than names with front vowels (Yorkston & Menon, 2004), we asked seventy-five participants from Mturk (53% female, M_{age}= 36) to assess the extent to which a series of name pairs (that varied only in terms of a front versus back vowels; i.e., Frish versus Frosh) were phonetically congruent with the lip balm category (measured via three items; "How much does this name sound like a brand name for a lip balm?" "How well does this name fit for a lip balm?" and "How likely is this name to be a brand name for a lip balm?", all measured on six-point scales anchored by 1= Not at All and 6= Very Much/Very Well/Very Likely; α_{Frish} = .95; α_{Frosh} = .95)[2]. We selected the brand name pair Frish and Frosh (previously used by Yorkston & Menon, 2004), given that the latter was rated as significantly more congruent with the lip balm category than the former (M_{Frish} = 2.720, SD = 1.366 versus M_{Frosh} =3.427, SD = 1.457; t(74) = 3.321, p = .001; please see Appendix A for a complete report).

[1] Participants were also asked to elaborate on the main product attribute they would consider when buying a lip balm. The primary attributes that emerged for 58% of participants related to the product's ability to moisturize, as well as the way it felt (e.g., its smoothness, creaminess, and richness). Other attributes mentioned included the presence of natural ingredients, brand name, size of the product, and country of origin. Participants were then asked the same set of questions for other product categories as well (i.e., hand lotion and hand sanitizer) and we discuss the "hand sanitizer" portion of the pretest in the stimuli selection section of study 2.

[2] Participants repeated this task for other product categories, including hand lotion and hand sanitizer, and we discuss the "hand sanitizer" portion of the pretest in the stimuli selection section of study 2.

Second, while the product category pretest and anecdotal evidence suggest that smoothness, richness, and softness are all desirable characteristics for a lip balm, we asked forty-nine undergraduate students (51% female, M_{age}= 20) in exchange for course credit to confirm the desirability of each of these attributes in a lip balm (all on seven-point Likert scales). As predicted, participants rated all three characteristics as being desirable in a lip balm, with means significantly above the midpoint ($M_{Smoothness}$ = 6.510, SD = 0.681; $M_{Richness}$ = 4.959, SD = 1.581; $M_{Softness}$ = 5.612, SD = 1.367; all *p*'s < .001, see Appendix A for a complete report). The same group of participants was then asked to rate a number of scented lip balms, detailed as follows.

Product Scent Valence. To identify a pleasant product scent, we pretested four scented and one unscented version of the same lip balm. To isolate the manipulation of product scent valence, all lip balms were packaged in identical, unmarked tubes. Participants were asked to rate the scent of each of the five lip balms in terms of pleasantness ("The scent of this lip balm is pleasant,") and likability ("I like how this lip balm smells"), both on seven-point Likert scales; the order of scents was counterbalanced, no order effects were observed. To minimize carryover effects across scents, participants were asked to smell coffee beans after smelling each lip balm, consistent with prior research protocols (Krishna et al., 2010). Analysis results confirmed that a vanilla scent was the highest rated, scoring significantly above the midpoint on pleasantness ($M_{VPleasantness}$ = 5.877, SD = 1.333; t(48) = 9.861, *p* < .001) and likability ($M_{VLikeability}$ = 5.857, SD = 1.242; t(48) = 10.470, *p* < .001). Importantly, these scores were also significantly higher than the unscented lip balm (our control condition; $M_{CPleasantness}$ = 3.224, SD = 1.531; $M_{CLikeability}$ = 3.040, SD = 1.499; both *p*'s < .001; see Appendix A for the average scores of all scents). Hence, we selected vanilla lip balm to represent the pleasant scent condition.

Design and Procedure

For the main study, we set up a table next to a busy plaza in a major U.S. city. Passersby were verbally offered $5 to sample a "new product" (i.e., a lip balm). One-hundred and eighty-six participants (69% female, M_{age}= 22) were randomly given an unscented or vanilla-scented lip-balm, packaged with either the brand name "Frosh" or "Frish" on the front (based on pretests reported above). The lip balms were colorless, and visually identical in all aspects except the brand name. After trying the lip balm, participants were given the opportunity to purchase it for $1 of their compensation. Thus, the main dependent variable of interest was purchase, coded as 1 if participants decided to purchase the lip balm, and 0 if they did not.

Results

Purchase likelihood. Logistic regression results revealed a significant main effect of scent valence on product purchase: participants were more likely to purchase the product if it had a pleasant scent (43% scented vs. 15% unscented; $\beta = 1.558$, $z = 4.024$, $p < .001$). The main effect of brand name congruence on purchase likelihood was not significant (31% congruent vs. 26% incongruent; $\beta = -.026$, $z = -.068$, $p = .946$). Importantly, the interaction of Brand Name x Scent on Purchase Likelihood was significant ($\beta = 2.171$, $z = 2.805$, $p= .005$), consistent with our predictions. Specifically, when the brand name was phonetically congruent ("Frosh"), participants were significantly more likely to purchase the pleasantly scented (versus unscented) lip balm (56% scented vs. 8% unscented; $\beta = 2.644$, $z = 4.392$, $p < .001$). However, when the brand name was phonetically incongruent ("Frish"), there was no significant difference in purchase likelihood between the two scent conditions (30% scented vs. 21% unscented; $\beta = .472$, $z = .969$, $p > .300$).

A post-hoc analysis also showed that when products were pleasantly scented, phonetically congruent brand names led to significantly higher purchase likelihood than phonetically incongruent brand names (56% congruent vs. 30% incongruent; β =1.059, z = 2.367, p = .018). However, when products were unscented, brand name did not make a significant difference in purchase likelihood (8% congruent vs. 21% incongruent; β = -1.112, z = -1.760, p = .078; see Figure 2).

Discussion

Taken together, these findings provide initial evidence for the interaction of brand name congruence and product scent valence on real purchase behavior, in that participants were more likely to purchase a pleasantly scented (versus unscented) lip balm only if the brand name was phonetically congruent with desirable category attributes. When the brand name was phonetically incongruent, scent did not make a difference in participants' purchase behavior.

The lack of an effect of phonetic congruence in the unscented condition is likely due to our experimental paradigm, based on having respondents handle real products with multiple sensory cues (haptic, visual, etc.). Previous research on phonetic symbolism (Yorkston & Menon, 2004; Lowrey & Shrum, 2007) typically presents the brand names in isolation, without other sensory information present (i.e., in a survey format). The direct effect of phonetic symbolism on brand evaluations tends to be subtle, and it may wash away in real shopping/sampling contexts, as observed in this experiment. Our study does reveal, however, that phonetic congruence can moderate the effect of product scent valence on consumer choice—as we hypothesized. To ensure that our stimuli could lead to the typical main effect of phonetic

symbolism, Appendix B reports an online panel experiment that found a superiority of congruent brand names over incongruent brand names when presented in isolation, in a survey format.

Insert Figure 2 about here

STUDY 2

Study 2 served several purposes. First, we replicated study 1 in a more controlled laboratory setting, with a different product category (hand sanitizer) and an alternative dependent variable (product evaluation) to increase the generalizability of our results. Second, we wished to extend the implications of our work by investigating whether an incongruent brand name might attenuate the negative effects of mildly aversive peripheral product scents by disrupting fluency. Namely, if incongruent names indeed disrupt fluency, consumers should be less likely to be influenced by unpleasant peripheral scents. Lastly, we sought to provide indirect support for the underlying mechanism by analyzing response times to the product evaluation task, since shorter response times are indicative of fluency (Reber, Pascal, & Zimmerman, 2004; Winkielman et al., 2003). We once again refined our stimulus choice based on multiple pretests.

Stimuli Selection

Product Category. As in the previous study, we selected a product category for which scent did not represent the primary reason for purchase. For this study, we selected a

commercially available hand sanitizer, which we could then imbue with designated scents according to our manipulations. As mentioned, participants from Mturk (N=31) were recruited for monetary compensation and asked to record the main reason for purchasing such a product ("What is the main reason you would buy a hand sanitizer?"). The most common response was related to cleaning or disinfecting hands (84% of responses, e.g., "to clean germs without needing to wash hands"). No respondent mentioned scent as a reason to purchase hand sanitizer, confirming that scent does not represent the primary selling point for this product[3].

Brand Names. As mentioned in study 1, to select brand names that would be perceived as phonetically congruent or incongruent with the product category (this time, hand sanitizer), we ran a pretest on seventy-five participants from MTurk (53% female, M_{age}= 36) in exchange for monetary compensation. First, while anecdotal evidence would suggest that people prefer hand sanitizers that are lightweight, cool, and thin (all attributes typically conveyed with front vowels; Yorkston & Menon, 2004), we verified the desirability of these attributes by asking participants to rate the desirability of each of these attributes in a hand sanitizer (via seven-point semantic differential scale; i.e.., heavy/light; dark/bright; warm/cool; thick/thin). As predicted, participants rated attributes typical of those conveyed by front vowels – light, bright, cool, and thin – as being desirable in a hand sanitizer, with means significantly above the midpoint (M_{Light} = 6.000, SD = 1.284; M_{Bright} = 5.733, SD = 1.223; M_{Cool} = 5.880 SD = 1.252; M_{Thin} = 5.640, SD = 1.467; all p's < .001).

Second, given that previous research suggests that brand names with front vowels are more associated with lightness, brightness, coolness, and thinness than names with back vowels

[3] As with the lip balm, participants were also asked to elaborate on the main product attribute they would consider when buying hand sanitizer. The primary attributes that emerged for 52% of participants related to the product's ability to disinfect (e.g., ability to kill germs, alcohol content). Other attributes mentioned included price (16%), and, for the rest of the participants, size, brand name, and the way it felt to the touch.

(Yorkston & Menon, 2004), participants were then asked to assess the extent to which a series of name pairs (that varied only in terms of a front versus back vowels; i.e., Pinner and Ponner, Sittal and Sottal, Gimmel and Gommel) were phonetically congruent with the hand sanitizer category (measured via three items; "How much does this name sound like a brand name for a hand sanitizer?" "How well does this name fit for a hand sanitizer?" and "How likely is this name to be a brand name for a hand sanitizer?" all measured on six-point scales anchored by 1= Not at All and 6= Very Much/Very Well/ Very Likely; $\alpha_{Gimmel} = .980$; $\alpha_{Gommel} = .970$). We selected the brand name pair Gimmel and Gommel (previously suggested by Klink, 2000; Lowrey & Shrum, 2007), given that the former was rated as significantly more congruent with the hand sanitizer category than the latter ($M_{Gimmel} = 3.160$, SD = 1.399 versus $M_{Gommel} = 2.524$, SD = 1.380; $t(74) = 3.612$, $p < .001$; please see appendix A for average congruency scores for all pairs of brand names and corresponding paired sample t-tests).

Product Scent Valence. We conducted a pretest to select two scents that would differ in terms of valence. To do so, we selected a variety of different scented essential oils, put one drop of each oil onto cotton balls, and asked twenty-eight participants (undergraduate students participating for course credit) to rate the scents on pleasantness ("This scent is pleasant") on a seven-point Likert scale. The order of scents was counterbalanced, and no order effects were observed. Based on an analysis of paired comparisons, we selected orange as the pleasant scent and musty pine as the unpleasant scent. Specifically, the orange scent was perceived to be significantly more pleasant than the musty pine ($M_{Orange} = 5.500$, SD = 1.552 versus $M_{MustyPine} = 3.250$, SD = 1.669; $t(27) = 5.098$, $p < .001$). Importantly, the orange scent scored significantly above the midpoint in pleasantness ($t(27) = 5.116$, $p < .001$) while the musty pine scent was significantly below the midpoint in pleasantness ($t(27) = -2.377$, $p = .025$; see Appendix A for

the average scores of all scents). Accordingly, we added the orange essential oil to the hand sanitizer in the pleasant-scent condition and added the musty pine essential oil to the hand sanitizer in the unpleasant-scent condition.

Design and Procedure

The main study was a laboratory experiment with a 2 (Brand Name: Congruent vs. Incongruent) x 2 (Scent valence: Pleasant vs. Unpleasant) between-subjects design. One-hundred and eighteen members of a community-based subject pool (52% female, M_{age} = 31, SD= 13.176) participated in a series of studies in exchange for monetary compensation. Each participant sampled a hand sanitizer that had either a pleasant (orange) or unpleasant (musty pine) scent (based on pretest results reported above). The stimuli were created by adding three drops of an essential oil (orange or musty pine, according to condition) to an alcohol-free and fragrance-free hand sanitizer. The hand sanitizers were packaged in identical plastic bottles with labels that varied only in terms of the brand name that was either phonetically congruent ("Gimmel") or incongruent ("Gommel"; see Appendix C for a picture of the stimuli). Participants were first asked to examine the packaging of the product and then to sample the hand sanitizer. Afterwards, they evaluated it on three 7-point semantic differential items (like-dislike, favorable-unfavorable, good-bad; α = .930) where higher values represent more favorable evaluations.

Following previous research, participants' time spent evaluating the product was recorded via automatic feature on Qualtrics. This measurement was inspired by previous literature describing evaluation time as an objective measure for fluency (in that shorter evaluation times are indicative of greater fluency; Reber et al. 2004; Winkielman et al. 2003). According to our theorizing, we expected that the effect of scent valence on product evaluations

would be stronger when the brand name was phonetically congruent (versus incongruent) with the product category.

Results

Product Evaluations. Five participants did not follow the instructions properly, leaving 113 observations for analysis. ANOVA results revealed a significant main effect of scent valence on product evaluation: participants liked the pleasantly scented product better than the unpleasantly scented one ($M_{Pleasant}$ = 4.424 vs. $M_{Unpleasant}$ = 4.040; F (1,111) = 3.825; p =.053). The main effect of brand name congruence was not significant ($M_{Congruent}$ = 4.193 vs. $M_{Incongurent}$ = 4.254; F(1,111) < 1; p =.991). Importantly, these results were qualified by a significant interaction of Brand Name x Scent Valence on Product Evaluation (F(1,109) = 8.197, p = .005), consistent with our theorizing and the results in study 1. Specifically, when the brand name was phonetically congruent with the category (Gimmel), participants evaluated the pleasant-scented (vs. unpleasant-scented) hand sanitizer more favorably ($M_{Pleasant}$ = 4.833, SD = 1.139 vs. $M_{Unpleasant}$ = 3.690, SD = 1.046; F(1,109) = 10.356; p = .002). However, when the brand name was phonetically incongruent (Gommel), there was no significant difference in evaluation between scent valence conditions ($M_{Pleasant}$ = 4.151, SD = 1.331; vs. $M_{Unpleasant}$ = 4.37, SD = 1.388; F(109) <1, p > .400).

Further probing of the interaction provided valuable insights. Particularly, when product scents were unpleasant, phonetically incongruent brand names led to significantly higher evaluations than phonetically congruent brand names ($M_{Congruent}$ = 3.690, SD=1.046 vs. $M_{Incongruent}$ = 4.367, SD= 1.388; F(1,109) = 4.262, p = .041). Conversely, pleasant scents showed significantly improved evaluations in response to phonetically congruent (versus incongruent)

brand names ($M_{Congruent}$ = 4.833, SD=1.140 vs. $M_{Incongruent}$ = 4.151, SD= 1.331; F(109) = 3.949, *p* =.049), in line with study 1. Results are depicted in Figure 3.

Insert Figure 3 about here

Evaluation Time. We conducted an ANOVA with evaluation time as the dependent variable. Neither brand name congruence (M_{Cong} = 28.975 seconds, SD = 15.704; versus M_{Inc} = 28.165 seconds, SD = 12.302; F(109) < 1, *p* >.100) nor scent valence ($M_{Pleasant}$ =27.832 seconds, SD =12.325 versus $M_{Unpleasant}$ = 29.178 seconds, SD =15.236 ; F(109) < 1, *p* >.100) had a significant main effect on evaluation time. The lack of main effects is not surprising given that fluency was measured after subjects had been exposed to both factors, and since both incongruent brand names (based on our theorizing) and negatively valenced stimuli (e.g., Lee & Labroo, 2004) should lower fluency (thus increasing processing time), we only expected high fluency (i.e., low processing time) in the one condition in which both the brand name was congruent and the product scent was pleasant. Indeed, consistent with our predictions, results showed a significant interaction of Brand Name x Scent Valence on Evaluation Time (*F*(109) = 8.247, *p* = .005), with a pattern similar to product evaluation. Specifically, when the brand name was phonetically congruent, participants evaluated the pleasant scented (versus unpleasant scented) hand sanitizer more quickly ($M_{Pleasant}$ = 23.617 seconds, SD = 10.791 versus $M_{Unpleasant}$ = 33.185 seconds, SD = 17.754; *F*(109) = 6.173; *p* = .014), consistent with greater fluency (shorter evaluation times are indicative of greater fluency; Petty, Heesacker, & Hughes, 1997). However,

when the brand name was phonetically incongruent, there was no significant difference in evaluation time between scent valence conditions ($M_{Pleasant}$ = 30.643 seconds, SD = 12.631; versus $M_{Unpleasant}$ = 25.439 seconds, SD = 11.525; F(109) = 2.329, p >.100).

Mediation Analysis. We tested whether evaluation time (as a proxy for fluency) mediated the effect of the Brand Name x Scent Valence interaction on Product Evaluation. For that purpose, we conducted a mediated moderation analysis (model 8; Hayes, 2013) with scent valence as the independent variable, brand name congruence as the moderator, evaluation time as the mediator, and product evaluation as the dependent variable. The index of mediated moderation confirmed that evaluation time mediates the interactive effect of brand name congruence x product scent valence on product evaluations, as indicated by a confidence interval excluding zero (β = .-276, 95% CI: [-.643, -.016] see Table A for a complete report). In particular, only when the brand name was phonetically congruent, a pleasant (versus unpleasant) scent allowed for faster evaluation and more positive product evaluation.

Insert Table A about here

Discussion

In line with study 1, study 2 results show that phonetic congruency of brand names moderates the effects of product scent valence such that only for brand names that are phonetically congruent with desirable product category attributes, participants evaluated the pleasant-scented (vs. unpleasant-scented) hand sanitizer more favorably. Interestingly, contrast

analyses also demonstrated that for an unpleasant scent, evaluations suffered less when the product had an incongruent (vs. congruent) brand name. While this reversal was not explicitly hypothesized a priori and is somewhat speculative (due to the absence of a control condition), it is consistent with our theorizing. Specifically, our theorizing suggests that incongruent brand names disrupt fluency, thus discounting the influence of scent valence on evaluations. Hence, the negative effect of an aversive scent on evaluations should be attenuated when products are not evaluated based on peripheral cues (which is the case for products with incongruent brand names). Applying this logic to the current study suggests that when the hand sanitizer scent was unpleasant, disrupting fluency (via a category-incongruent brand name, "Gommel") is more beneficial than permitting fluency (via a category-congruent brand name, Gimmel), as the former relatively reduced individuals' tendency to rely on the unpleasant scent (a detrimental peripheral cue) when forming their product evaluation. We expand on the potential managerial implications of this finding in the general discussion.

Moreover, as in study 1, in this experiment, which also involved physical product interaction and was highly experiential, the main effect of brand name congruence did not emerge. This suggests that the direct evaluative impact of phonetic congruence might be most relevant in more remote scenarios (e.g., when consumers are viewing advertisements or shopping online), when many other sensorial cues (e.g., olfactory, auditory, and haptic properties) are likely to be relatively muted. However, in experiential settings – i.e., when consumers are examining or actually consuming products – it appears that brand name congruence serves a more nuanced role, by influencing how consumers integrate other coexisting product cues (e.g., a product scent). Consistently, and as mentioned, we replicated a positive main effect of brand name congruence on participants' evaluations of products with similar experimental conditions

to those typically adopted in research on phonetic symbolism (i.e., in which members of an online panel assessed hypothetical products without any physical interaction, see appendix B for details), with a robust main effect across three product categories (i.e., lip balm, hand sanitizer, and hand lotion).

Finally, findings of this study are also consistent with a fluency explanation, given the interactive effect of brand name congruence and product scent valence was mediated by evaluation time (a proxy for fluency). Our next study sought to provide additional support for the proposed mechanism via moderation.

STUDY 3

According to our theorizing, the reason phonetically congruent brand names enable a product scent's valence to exert an effect is because they promote fluency, thus encouraging consumers' reliance on peripheral cues. In studies 1 and 2, pretest results confirmed that by default, scent is not considered to be a primary attribute in the product categories we tested (e.g., lip balm and hand sanitizer), thus making it a peripheral (as opposed to a primary) cue. However, according to the ELM, a product attribute may be processed differently, depending on its perceived relevance to the evaluation task. For example, the same product attribute may be considered relevant when salient but irrelevant when not salient (Maheswaran et al., 1992; Petty & Cacioppo, 1984).

Consistently, in study 3 we sought further evidence of the proposed mechanism underlying the interactive effect of scent valence and brand names by manipulating the salience of a product's scent. While incongruent brand names disrupt fluency, this should attenuate the

value of a pleasant scent only if it remains a peripheral cue. However, because consumers typically rely on judgment-relevant (vs. peripheral) cues when fluency is disrupted, we anticipated that if a product scent was made salient (hence making it a judgment-relevant and non-peripheral cue), it should accordingly exert an effect on consumer responses regardless of whether the brand name is congruent or not. Thus, the negative effect of an incongruent brand name can be remedied by drawing explicit attention to a product scent.

To test these predictions, in addition to manipulating the brand name of the product (a lip balm), we also manipulated whether the product's scent was salient or not. All the lip balms were pleasantly scented (using the pretested vanilla scent from study 1) and we again assessed consequential purchase behavior.

Design and Procedure

As in study 1, we set up a table next to a busy plaza in a major U.S. city. One hundred and forty one passersby (72% female; M_{age} = 22, SD= 5.498) were verbally offered $5 to sample a "new product" (i.e., a lip balm) and were randomly assigned to one of four conditions in the 2 (Brand Name: Congruent vs. Incongruent) x 2 (Scent Salience: Low vs. High) between-subjects design. Brand name was manipulated using the pretested names from study 1 ("Frosh" in the congruent condition and "Frish" in the incongruent condition). To manipulate scent salience, we added product descriptors to the packaging of the lip balms (procedure adapted from Ruzeviciute et al., 2020). Specifically, in the high scent salience conditions, we added a descriptor below the brand name that read, "Scented Lip Balm" whereas in the low scent salience conditions, the descriptor read, "Moisturizing Lip Balm" (see Appendix D for pictures of the stimuli). The dependent variable of interest was whether or not participants chose to purchase the sampled lip

balm in exchange for $1 of their compensation. As before, the main dependent variable of interest was coded as 1 if participants decided to purchase the lip balm, and 0 if they did not.

Results

Purchase Likelihood. Binary logistic regression revealed a significant main effect of brand name congruence on purchase likelihood: participants were more likely to purchase the lip balm if it had a congruent brand name (44% congruent vs. 20% incongruent; $\beta = 1.334$, $z = 3.127$, $p = .002$). The main effect of salience on purchase likelihood was not significant (36% high salience vs. 27% low salience, $\beta = -.638$, $z = -1.496$, $p > .100$). Most importantly, there was a significant interaction of Brand Name x Scent salience on Purchase Likelihood ($\beta = 1.752$, $z = 2.054$, $p = .040$). Supporting our predictions, results demonstrated that in the low scent salience condition, participants were significantly more likely to purchase the pleasantly scented lip balm when it had a phonetically congruent (versus incongruent) brand name (47% congruent vs. 9% incongruent; $\beta = 2.210$, $z = 3.154$, $p = .002$), replicating the results of studies 1 and 2. However, as anticipated, in the high scent salience condition, brand name congruence did not have an effect on purchase likelihood (41% congruent vs. 31% incongruent; $\beta = .458$, $z = .941$, $p > .300$).

An analysis of the contrasts within each brand name condition revealed that when the brand name was phonetically congruent with desirable category attributes, scent salience did not significantly influence purchase likelihood (47% low scent salience vs. 41% high scent salience; $\beta = .238$, $z = .494$, $p = .621$). However, when the brand name was phonetically incongruent with desirable category attributes, purchase was significantly higher when scent was a salient attribute (9% low scent salience vs. 31% high scent salience; $\beta = -1.514$, $z = -2.149$, $p = .032$). An illustration of the results is presented in Figure 4).

Insert Figure 4 about here

Discussion

The results of Study 3 carry both theoretical and practical importance. As in studies 1 and 2, when scent was not a salient product attribute, phonetically congruent brand names led to greater evaluations of a pleasantly scented product than phonetically incongruent brand names did. However, when the product's scent was made highly salient, by explicitly describing the lip balm as a "scented lip balm", the pleasantly scented product was evaluated highly irrespective of its brand name. Moreover, results are consistent with our theorizing in that when the brand name was phonetically incongruent, such incongruence likely disrupted fluency, leading consumers to value a pleasantly scented product significantly more in the high scent salience condition, that is- when scent was positioned as a judgment-relevant and non-peripheral cue.

These findings carry important managerial implications, as they suggest that explicitly drawing focus to the scented nature of a product could allow the product to benefit from a pleasant product scent even if it has an incongruent brand name. This might be particularly relevant for established brands who may seek to use an existing brand name when entering a new product category, especially if the brand name is phonetically incongruent with desirable characteristics in that new product category.

GENERAL DISCUSSION

What's in a name? That which we call a rose

By any other name would smell as sweet;

So Romeo would, were he not Romeo call'd,

Retain that dear perfection which he owes…

- *Romeo & Juliet*, by William Shakespeare

Our research would suggest that William Shakespeare's Juliet, quoted above, may have only been half right. While a name might not change a scent's properties altogether, our findings demonstrate that it can in fact influence whether or not product scents exert their oftentimes-powerful effects on consumer responses. We support this contingent effect across three studies. Specifically, we find that when a brand name is phonetically congruent with desirable category attributes, it allows a product's olfactory valence to shape consumers' product-based judgments and decisions. In addition, our study 2 findings preliminarily suggest that phonetically incongruent brand names might attenuate the role of subsequent olfactory information in products. Thus, our results suggest that while phonetically incongruent brand names might harm consumer evaluations of pleasantly scented products, such brand names might be more advantageous for products with mildly unpleasant scents. We replicate our findings across different product categories (lip balm and hand sanitizer) and demonstrate the downstream effects on both consequential purchase and product evaluations. Further, we show that the moderating effect of brand name congruence may be attenuated by increasing the salience of scent in the product.

Our research makes several theoretical contributions. First, we contribute to research in sensory marketing by demonstrating that brand names can play a pivotal role in determining the influence of olfactory cues on consumers' judgments and behaviors. While product scent has previously been shown to influence various consumer responses, it has mostly been assessed in isolation, without investigating how other product-based cues may moderate its influence. By providing a framework that considers other concurrent product cues (i.e., a product's brand name), we offer a more nuanced account of the effect of olfactory cues on consumer behavior. Moreover, we add to research on brand names by showing how phonetic symbolism does not only exert direct effects on consumer responses, but can also serve as an antecedent affecting consumer responsiveness to other sensorial cues.

Our research suggests that brand names can play a pivotal role in determining the influence of olfactory valence on consumers' judgments and behaviors, and this has important managerial implications. Given the large amount of marketing expenditure towards crafting optimal brand scents, managers have a clear incentive to ensure those scents exert their maximum effect. This is particularly true at a time when many consumers are eager to return to pre-pandemic life, and are accordingly relying on olfactory cues to regain a sense of normalcy (Klara, 2021; Repko, 2020). Our research would suggest that by avoiding giving a product a phonetically incongruent brand name, managers can enhance their return from olfactory-enhanced products, since scent will likely play a role in driving consumer purchase and choice. While this especially applies to products that can be sniffed or sampled at the point-of-purchase, we also show that the effects trickle down to influence consumer evaluations upon using the product (a critical determinant of repurchase, recommendation, and willingness to pay; Anderson & Sullivan, 1993; Homburg, Koschate, & Hoyer, 2005). Further, in cases where a company

cannot change a brand name, our research would suggest that they may need to be more heavy-handed in eliciting consumer attention to their products' olfactory properties (e.g., the brand Old Spice markets its body wash with slogans like "The Man Your Man Could Smell Like," Mills, 2012). Indeed, our study 3 results demonstrate that increasing the salience of scent in the product can attenuate the negative effect of brand name incongruence.

Notably, our findings were obtained across low involvement product categories where scent is a peripheral (as opposed to primary) selling point. We believe this extends the overall generalizability of our findings, given the wide-range of product categories in the marketplace that have incorporated scent into their consumer-facing offerings (Goldkuhl & Styvén, 2007). However, given our finding that increasing the salience of scent in the product can attenuate the moderating effect of brand names, it is likely that the interactive effect might not hold for the narrower set of product categories in which scent is indeed a primary attribute (e.g., perfume, candles, air fresheners). In such instances, scent represents the entire reason for purchasing the product, and attending to the product's scent is unlikely a mere peripheral cue. Accordingly, it is unlikely that fluency should play a substantial role in such cases. It is also worth pointing out that in our studies, we focused on product categories that are relatively low-involvement (lip balms and hand sanitizers). It is likely that for high-involvement product categories (e.g., car, and other expensive items), our interactive effect would not apply since in such instances consumers are likely to base their decisions on a relatively analytic and comprehensive treatment of product information.

Our research may also have important implications for products that suffer from inherently bad odors (e.g., nail polish, blue cheese). Oftentimes there is very little manufacturers can do to mask or eliminate these unpleasant scents, and such odors can often turn off consumers

either at the point of sale or during product usage (Bone & Ellen, 1999; Krishna, 2013). Our findings in study 2 suggest that incongruent brand names may be more advantageous for products with unpleasant scents. This is consequential for marketers who may want to minimize any adverse effects stemming from inherently negative scents their product might exhibit. Branding elements, such as a brand name's phonetic congruence, may be used to disrupt reliance on peripheral cues, thus attenuating the effect of aversive olfactory cues. Thus, our research would suggest that marketers of unpleasantly scented products may benefit from naming their products with category-incongruent words or sounds, so as to reduce consumer reliance on the product's olfactory properties when making product assessments and purchasing decisions.

Limitations & Future Research

The current work has its limitations, many of which offer opportunities for future investigation. In particular, it is worth emphasizing that the empirical evidence we document provides indirect support for the process we presume to be at work (i.e., fluency and subsequent reliance on peripheral cues). Future researchers may wish to more explicitly examine the role of these processes (for example, by manipulating fluency via an unrelated initial task). Our empirical work is also limited to products in which there is a clear primary attribute associated with the category (as per our pretest results). Thus, the product attribute the brand name was congruent with did not need to be explicit or highly salient. Future research might explore whether attribute salience is required for such effects to hold in categories with less dominant primary attributes. Another limitation of our work is that we did not control for certain individual differences across participants that might influence our effects. For example, consumers are likely to have some relatively stable preferences with regards to the importance of certain

product attributes (e.g., some people might always seek out scented lip balm), and such dispositional differences would likely moderate our findings.

Our work also paves the way for a number of new research directions. For example, the stimuli in our studies were brand names that do not correspond to previously existing words, consistent with much research on phonetic symbolism (e.g., Klink, 2000; Lowrey & Shrum, 2007; Luna et al., 2013). However, brand names might also carry desirable associations by evoking existing words (e.g., Pampers). Indeed, marketers may want to leverage the benefits of both phonetic and semantic name properties (Pogacar, Shrum, & Lowrey 2018). In these cases, it would be important to consider how phonetic and semantic meaning interact. For instance, a name like "Bubbles" might be semantically congruent with a women's shampoo, but phonetically incongruent with the desired attributes "light" and "feminine."

It is also worth reiterating that in our research, we focused on brand name congruence with a product category (i.e., the extent to which the brand name is phonetically congruent with desirable product attributes). However, it is also interesting to consider a brand name's congruence with the product's scent. Indeed, a body of work on crossmodal correspondences (Spence, 2011) has shown that congruence across a product's sensory attributes is generally beneficial (e.g., haptically warm thermal packs are preferred when they carry a "warm" as opposed to a "cold" scent; Krishna, Elder, & Caldara, 2010). However, we are unaware of work that has explicitly looked at the congruence of a product's name and its scent, which would likely provide distinct practical implications.

Other future research might explore different facets of the olfactory inputs. For example, we focused on scents that were both simple (e.g., unidimensional in nature, likely requiring little cognitive effort to process) and relatively low in intensity (hence likely to be processed fluently).

However, previous research (e.g., Herrmann et al., 2013) suggests that unlike simple scents, complex scents can indeed be cognitively demanding to process, suggesting the interactive effect we found in our work might not apply. Other work has shown that scent intensity can influence the perceived pleasantness of a scent, and its tendency to be noticed and attended to (e.g., Henion, 1971; Di Muro & Murray, 2012). Accordingly, future work might examine such scent characteristics as potential boundary conditions to the effects found in the current work. As a more explicit extension of our work, future research might also probe the reversal that was found for unpleasant scents in study 2, to see if the pattern holds in multiple contexts.

Moreover, while the focus of the current research was on product scents (a context in which the consumer typically sees the product's brand name before smelling the product), it might be worth exploring whether the present findings apply to broader olfactory domains such as ambiently scented spaces or scented advertisements. In such scenarios, consumers might encounter the scent before processing a brand name or other product attributes. The order in which consumers are presented with such cues is likely to matter, particularly since previous research has shown some sensory effects depend on the temporal sequence in which they are encountered (Biswas, Labrecque & Lehmann, 2021). The reverse temporal sequence is interesting from a theoretical perspective, as scent itself could potentially influence consumers' processing style and decision making.

Additional research may also investigate whether these effects can be replicated in online settings, via scent imagery (e.g., by employing product descriptions that trigger automatic olfactory imagery; Gonzalez et al., 2006) or in virtual environments (e.g., the metaverse). While technology providing olfactory stimulation in digital spaces is not currently common in the mainstream marketplace, various firms are experimenting with ways to integrate scent-delivering

capabilities into virtual reality headsets and/or accessories (Kalish, 2019; McKinnon, 2020). In fact, recent academic research suggests that pleasant and congruent scents in virtual reality can improve consumer responses in a tourism context (Flavián, Ibáñez-Sánchez, & Orús, 2021). As scent-enabling technology becomes more pervasive, future scholars may wish to explore how scents delivered in visually immersive virtual environments might be processed differently according to various precursory cues.

Future research might also examine how our current findings apply to other product categories. For example, although categories as diverse as credit cards and electronics have experimented with incorporating product scents, consumers may not necessarily anticipate this. Similarly, a number of firms have recently launched uniquely scented products, such as Miller lite's "dive bar" candle, or Powell's "Eau de Bookstore" (Klara, 2021), in the attempt to remind consumers' of their pre-pandemic lives relevant to the product category. Finding that a product is unexpectedly scented might introduce an element of surprise that itself disrupts fluency.

Finally, while the product categories we selected in our studies (lip balm and hand sanitizer) had universally desirable attributes (as demonstrated by our pretests), there are certainly product categories in which subcategories or niches may conjure different and even contrasting product attributes (e.g., consumers might prefer a small sports car or a large SUV, and the phonetically congruent brand names for such subcategories may be quite different; Lowrey & Shrum 2007). Thus, when considering brand name congruence, such categorizations should be taken into account.

Given that our research represents, to the best of our knowledge, the first exploration into the interactive effect of brand names and product scent, it is our hope that the theoretical and practical implications leave researchers sniffing out for more.

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FIGURE 1:

CONCEPTUAL MODEL

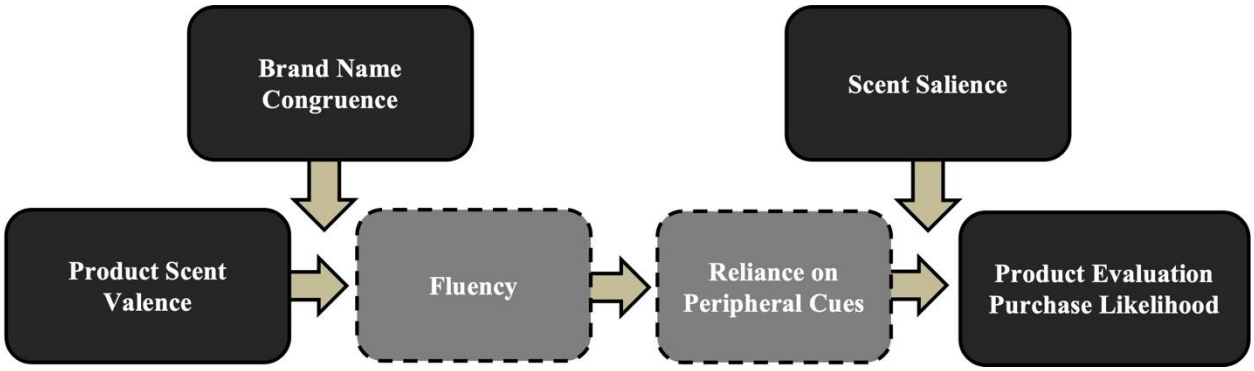


FIGURE 2:

EFFECT OF BRAND NAME CONGRUENCE AND SCENT VALENCE ON LIP BALM PURCHASE (STUDY 1)

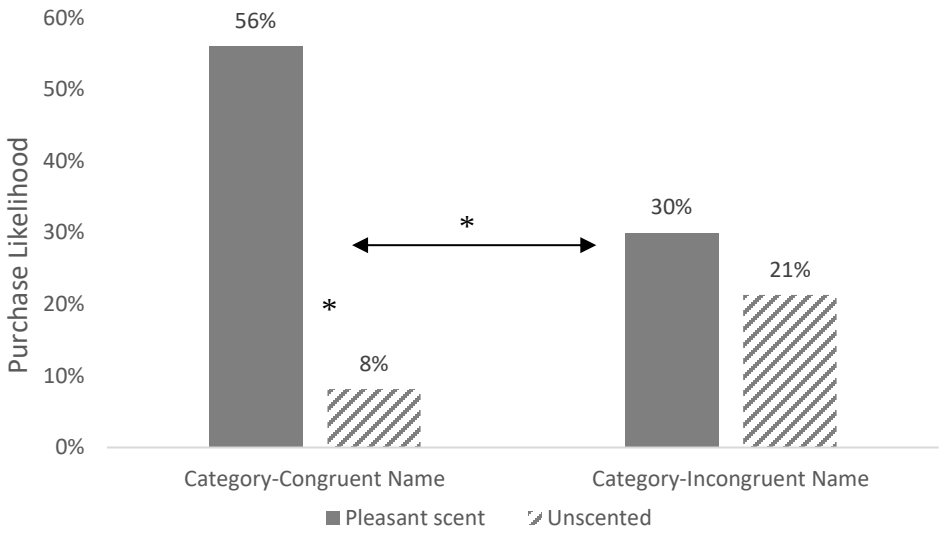


FIGURE 3

EFFECT OF BRAND NAME CONGRUENCE AND SCENT VALENCE ON HAND SANITIZER EVALUATION (STUDY 2)

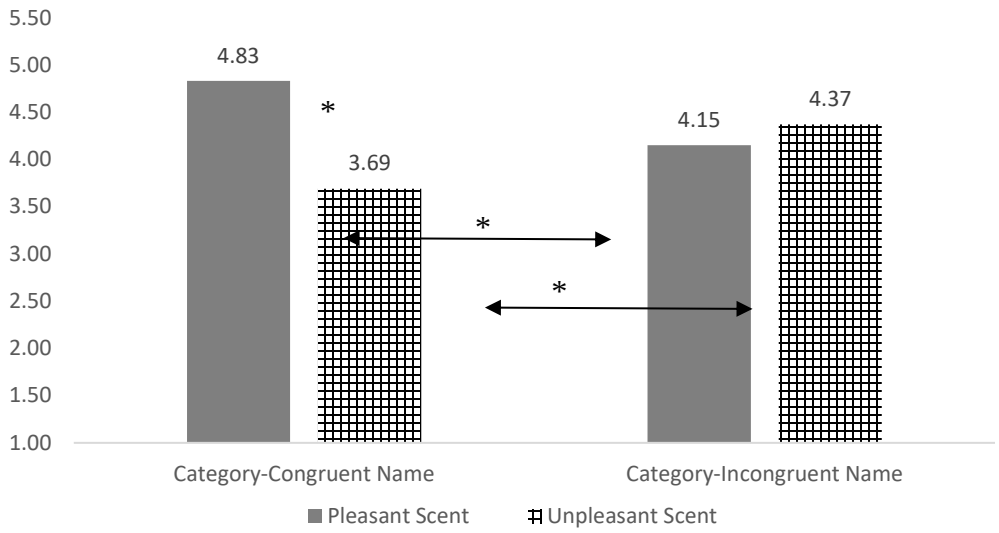


TABLE A

MEDIATED MODERATION BY EVALUATION TIME ON PRODUCT EVALUATION

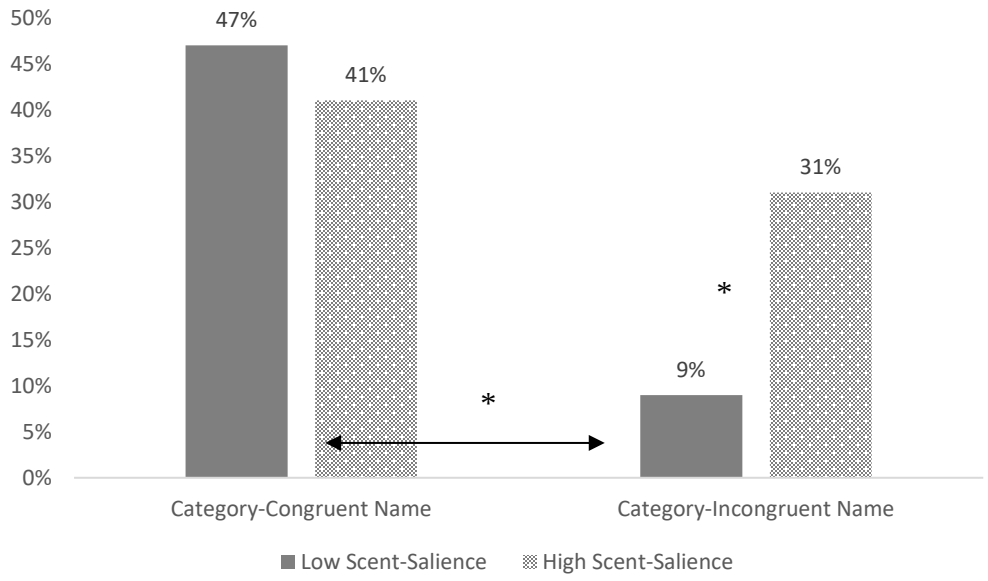
(STUDY 2)*

Variable	Coefficient	*SE*	*T*	*P*	LLCI	ULCI
DV: Evaluation time						
Intercept	25.439	2.468	10.308	.000	20.548	30.330
Product Scent Valence (SV)	5.203	3.410	1.526	.130	-1.555	11.961
Name congruence (NC)	7.746	3.552	2.181	.031	.706	14.785
SV X NC	-14.771	5.144	-2.872	.005	-24.966	-4.577
DV: Product evaluation						
Intercept	3.892	.315	12.368	.000	3.268	4.515
SV	-.312	.313	-.999	.320	-.932	.307
Evaluation time	.019	.009	2.149	.034	.001	.036
NC	-.821	.329	-2.494	.014	-1.473	-.168
SV X NC	1.634	.484	3.376	.001	.675	2.593
Conditional Indirect Effects through Evaluation Time						
Incongruent names	.097	.076			-.016	.271
Congruent names	-.179	.116			-.449	-.003
Direct Effects of Product Scent Valence						
Incongruent names	-.312	.313			-.932	.307
Congruent names	1.322	.359			.610	2.033
Index of Mediated Moderation						
	-.276	.163			-.643	-.016

* PROCESS Model 8 (Hayes, 2013); 5,000 bootstrapped samples; 95% CI.

FIGURE 4

EFFECT OF BRAND NAME CONGRUENCE AND SCENT SALIENCE ON LIP BALM PURCHASE (STUDY 3)



Appendix A

Study 1 and study 3, *A priori* Sample size requirement calculations

Input parameters	
Tails	Two
Odds ratio	3.47
Pr(Y=1 | X =1) H0	0.5
Alpha	0.05
Power (1-β)	0.8
R^2 other X	0
X distribution	binomial
X parm π	0.25
Output parameters	
Critical z	1.960
Total sample size	135
Actual power	0.800

Study 2, *A priori* sample size requirements calculations

Input parameters	
Effect size f	0.250
Alpha	0.050
Power (1-β)	.8
Numerator df	1
Number of groups	4
Number of covariates	2
Output parameters	
Noncentrality parameter λ	8.000
Critical F	3.92
Denominator df	122
Total sample size	128*
Actual power	.801

Despite not having reached exactly the desired sample size (N=113), post hoc power analysis eliminates any concern as the observed power is = .824 (see table below).

Study 2, Post hoc observed power calculations

Input parameters	
Effect size f	0.274
Alpha	0.05
Total sample size	113
Numerator df	1
Number of groups	4
Number of covariates	2
Output parameters	
Noncentrality parameter λ	8.502
Critical F	3.930
Denominator df	107
Power (1-β)	0.824

Study 1: Brand name congruence pretest, average scores (standard deviation in parenthesis) and paired sample T-tests

Brand Name	Product Category	Congruency Average Score (SD)	Paired Sample T-tests		
Frosh	Lip balm	3.43 (1.46)	df	t	P
Frish		2.72 (1.37)			
			74	3.32	.001
Bromley	Lip balm	3.12 (1.53)			
Brimley		3.32 (1.53)			
			74	-1.03	.310
Lome	Hand Lotion	3.76 (1.34)			
Leam		3.32 (1.46)			
			74	2.36	.020
Soot	Hand Lotion	1.85 (1.37)			
Sait		2.76 (1.37)			
			74	-4.28	<.001
Gommel	Hand Sanitizer	2.52 (1.38)	df	t	P
Gimmel		3.16 (1.40)			
			74	-3.61	<.001
Ponner	Hand Sanitizer	3.35 (1.48)			
Pinner		2.70 (1.31)			
			74	3.08	.003
Sottal	Hand Sanitizer	2.64 (1.38)			
Sittal		2.79 (1.36)			
			74	-.98	.330

Study 1: Desirability of lip balm attributes pretest, one sample t-tests

Attribute desirability	Average Score (SD)	Test Value = 4			
		t	df	Sig. (2-tailed)	Mean difference
Smoothness	6.51 (.68)	25.81	48	<.001	2.51
Richness	4.96 (1.58)	4.25	48	<.001	.96
Softness	5.61 (1.37)	8.26	48	<.001	1.61

Study 1: Scent valence pretest, average scores across all scented lip balms (standard deviations in parenthesis)

	Pleasantness	Likeability
Vanilla scented	5.88 (1.33)	5.86 (1.24)
Mint Scented	4.94 (1.83)	4.73 (1.63)
Licorice Scented	3.76 (1.80)	3.59 (1.84)
Oak Scented	3.96 (1.91)	3.82 (1.79)
Unscented	3.22 (1.53)	3.04 (1.50)

Study 2: Desirability of product attributes pretest, one sample t-tests

Attribute desirability	Average Score (SD)	Test Value = 4			
		t	df	Sig. (2-tailed)	Mean difference
Light/Heavy	6.00 (1.28)	13.49	74	< .001	2.00
Bright/ Dark	5.73 (1.22)	12.28	74	< .001	1.73
Cool/Warm	5.88 (1.25)	13.01	74	< .001	1.88
Thin/Thick	5.64 (1.47)	9.68	74	< .001	1.64

Study 2: Scent valence pretest, average scores across all scents (standard deviations in parenthesis)

	Pleasantness	Likeability
Orange	5.50 (1.55)	5.54 (1.43)

Musty Pine	3.25 (1.67)	3.11 (1.73)
Lemon	5.39 (1.47)	4.86 (1.58)
Mint	4.39 (2.06)	3.36 (2.13)

APPENDIX B

The purpose of this study was to replicate the effect of brand name congruence on participants' evaluations of products, with similar experimental conditions to those typically reported in literature (i.e., in which participants assessed hypothetical products without any physical interaction). Specifically, we asked participants to evaluate three products (including a lip balm and a hand sanitizer) with brand names that differed in phonetic congruence with their respective categories.

Brand Name Selection

For lip balm and hand sanitizer, brand names were selected based on the pretest results included in study 1 and study 2. For a third product category (i.e., hand lotion) we conducted two separate pretests. First, because front vowel sounds tend to be associated with attributes such as lightness, femininity, brightness, and coolness, we expected that brand names with front vowel sounds would be preferred over those with back vowel sounds. To test this assumption, we first asked participants (N= 106) to rate the desirability of a number of product attributes in a hand lotion (e.g., via seven-point semantic differential scale; heavy/light; dark/bright; warm/cool; masculine/feminine). As predicted, participants rated attributes typical of those conveyed by front vowels as being desirable in a hand lotion, with means significantly above the midpoint (M_{Light} = 5.30, SD = 1.7; M_{Bright} = 5.31, SD = 1.31; M_{Cool} = 4.85 SD = 1.73; $M_{Feminine}$ = 5.16, SD = 1.47; all p's < .001). We then asked seventy-five participants to assess the extent to which a series of name pairs (that varied only in terms of a front versus back vowels- e.g., Soot and Sait, Detal and Dutal, Leam and Lome) were phonetically congruent with the hand lotion category

(using the same scale adopted in studies 1 and 2 pretest; $\alpha_{Sait} = .96$; $\alpha_{Soot} = .99$). We selected the brand name pair Sait and Soot, given that the former was rated as significantly more congruent with the hand lotion category than the latter ($M_{Sait} = 2.76$, SD = 1.37 versus $M_{Soot} = 1.85$, SD = 1.37; $t(74) = 4.28$, $p < .001$).

Design and Procedure

This study included 282 Mechanical Turk participants (52% female, $M_{age} = 36$) and consisted of a 2 (Brand Name: Congruent vs. Incongruent) x 3 (Product Category: Lip balm vs. Hand lotion vs. Hand sanitizer) mixed-model design, with Brand Name as a between-subjects variable and Product Category as a within-subjects variable. Participants were told that they would be asked to evaluate a series of new products. For each product category, participants were told, "We are interested in your opinion of a new [lip balm/hand lotion/hand sanitizer] called [brand name]." Brand name was manipulated to be either phonetically congruent or incongruent with the respective category, as per pretest results (Frosh/Frish, Gimmel/Gommel, and Sait/Soot for lip balm, hand sanitizer, and hand lotion, respectively). Participants were then shown a picture of the product with the brand name manipulation. For each product category, participants were asked how they would expect to evaluate the featured product (with the same product evaluation items used in study 2, $\alpha_{LipBalm} = .97$, $\alpha_{HandLotion} = .96$, $\alpha_{HandSanitizer} = .96$).

Results

Product Evaluations. A repeated-measures analysis of variance with Brand Name as a between-subjects variable and Product Category as a within-subject variable revealed a significant main effect of Brand Name on Product Evaluation ($F(1, 280) = 9.25$, $p < .010$). The

pattern of means is consistent with previous literature (Yorkston & Menon 2004; Lowrey & Shrum 2007) suggesting phonetically congruent brand names (M_{Frosh} = 5.05, SD = 1.49; M_{Sait} = 4.77, SD = 1.47; M_{Gimmel} = 4.90, SD = 1.45) were preferred over their phonetically incongruent counterparts (M_{Frish} = 4.67, SD = 1.41; M_{Soot} = 3.95, SD = 1.57; M_{Gommel} = 4.79, SD = 1.47). This pattern of results did not differ by product category (F= 1.87, $p > .17$).

APPENDIX C

Stimuli used in study 2

APPENDIX D

Stimuli used in study 3