A Sound Idea: Phonetic Effects of Brand Names on Consumer Judgments

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In this article we examine a phenomenon known as sound symbolism, where the sound of a word conveys meanings. Specifically, brand names are composed of individual sounds called phonemes and we investigate how this phonetic structure of brand names affects a consumer's evaluation of products and their underlying attributes. We demonstrate that consumers use information they gather from phonemes in brand names to infer product attributes and to evaluate brands. We also demonstrate that the manner in which phonetic effects of brand names manifest is automatic in as much as it is uncontrollable, outside awareness and effortless.

Sound symbolism, the linguistic process in which the sounds of a word provide cues about the word's meaning, is not a new phenomenon. Plato first described the effect in the dialogues of *Cratylus*, and authors throughout time have used the sounds in words to describe people (e.g., the miniature Lilliputians and the giant Brobdingnagians in Swift's *Gulliver's Travels*) and objects (e.g., the large, dangerous Bludgers, the big, round Quaffle, and the small, fast Golden Snitch in the Quidditch game in Rowling's *Harry Potter and the Sorcerer's Stone*) represented by those words. When presented with fictitious or unfamiliar words, individuals consistently use sound symbolism to interpret meanings from the name about the referenced object (Jacobson and Waugh 1987; Sapir 1929). The effect is extremely well documented whether the tested individual's native language is English (Klink 2000, 2001), Chinese (Klank, Huang, and Johnson 1971; Lapolla 1994), or even Navajo (Sapir 1929). In fact, sound symbolism has been observed to exist in native languages in North America, Latin America, Asia, Australia, and Africa, as well as more developed languages such as English, Finnish, French, German, Modern Greek, and Japanese (for a complete discussion of these examples see Hinton, Nichols, and Ohala 1994).

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Past research on sound symbolism has focused on two aspects: the range of the effect (i.e., its universality; Huang, Pratoomaraj, and Johnson 1969) and the aspects of meaning it affects (Klink 2000, 2001; Ohala 1994). Less is known about the sound symbolism process itself. For instance, research has examined how linguistic classifiers affect categorization schema (Schmitt and Zhang 1998), and how an individual's formal writing system (i.e., logographic vs. phonetic) affects processing (Schmitt, Pan, and Tavassoli 1994; Tavassoli and Han 2001). Yet we do not know how or why individuals use sound symbolism as a source of object meaning. Current research has neither revealed whether this is a controlled strategy or an automatic process nor has it examined conditions when sound symbolism is utilized. The effect is well established, but we still lack understanding of the process by which it occurs.

Sound symbolism has been recently recognized as an important factor in how individuals infer specific meaning from unfamiliar brand names (Klink 2000, 2001). A brand name is composed of individual sounds called phonemes. These phonemes serve two purposes. First, they are the basic building blocks of language and are combined to form syllables and, in turn, words. These words and the syllables from which they are composed supply what we traditionally think of as the meaningful units of a brand name. Second, phonemes can provide meaning themselves through sound symbolism. These sounds provide cues about how the brand may perform on particular attribute dimensions. We theorize that if a brand name has phonemes that represent attributes a consumer desires, consumers will hold more positive attitudes and exhibit higher purchase intentions toward that brand. The current article provides a demonstration of the process by which sound symbolism manifests in consumer judgments. We demonstrate that the process is uncontrollable, outside of awareness, and effortless, making it au-

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tomatic (Bargh 1989). By understanding the underlying, theoretical processes of sound symbolism, we achieve greater understanding of how consumers interpret brand names and use them to evaluate brands.

Like Klink (2000, 2001), we examine the effects of sounds symbolism on attribute perceptions, but in addition, in our research we examine their effects on brand evaluations as well, using a more subtle between-subjects design. Unlike Klink (2000, 2001), our primary objective is to delineate the automaticity of the underlying process by which phonetic effects occur.

CONCEPTUAL FRAMEWORK

Sounds, and the resulting aural frequencies, are based upon the position and curvature of the tongue in the mouth, ranging from a high-front to low-back position (see Klink 2000 for a review). The affective meanings generated by sound symbolism follow a similar pattern. These vowel sounds roughly form an ordered sound-symbolic list: [ē], [i], [e], [ā], [a], [ō], [o], [ä], [u], and [ü] (e.g., beat, bit, bet, bait, bat, boat, bought, posh, but, put, and boot). The existence of this hierarchy is fairly consistent across languages (Makino, Nakada, and Ohso 1999). Sound symbolism conveys information such that high-front vowels (e.g., *ee* in flea and *i* in fly) represent associations with smaller size and less power than low-back vowels (e.g., the *ow* in bout and *oo* in boot), which, in turn, connote greater size, and more power (Hinton et al. 1994; Makino et al. 1999). In an empirical demonstration, Klink (2000) showed that the use of front vowels (as opposed to the back vowels) in brand names conveys attribute qualities of smallness, lightness, mildness, thinness, fastness, coldness, bitterness, femininity, weakness, lightness, and prettiness. Furthermore, Klink (2001) demonstrated the interactive effects of sound symbolism with semantic meaning in affecting consumers' evaluations of various brands.

Consistent with Klink (2000, 2001), we expect that when consumers encounter a brand name, they infer attribute meaning. In testing our theory, we used the longer, broader [ä] sound (as in b*o*ther and ch*o*p) from the middle of the phonetic vowel scale and contrasted it against the shorter, tighter [i] sound (as in k*i*ss and n*y*mph) from the lighter, sharper, smaller, end of the sound-symbolism scale. The derivation of the pair of sounds that we use in our experiments is a function of the theory associated with the position of the tongue in the mouth (O'Grady, Dobrovolsky, and Katumba 1997). The chosen pair of vowel sounds we test ([i] and [ä]) are not the extremes on either end of this scale. For example, the sounds *ee* and *oo* lie nearer the two respective endpoints of the phonetic-symbolic spectrum. Thus, the vowel pairing we use (i.e., [i] and [ä]) may be considered a more conservative test of the sound symbolism hypothesis. An additional consideration in our decision to test only one sound pair was our strong desire to control for latent semantic associations that could interfere with our studies (a discussion of how we controlled for semantic associations is below). Since the goal of our research was not merely to provide further support for the phenomenon of sound symbolism but to understand the process by which sound symbolism affects meaning, we decided that the advantages gained by ruling out this alternative hypothesis outweighed the costs of limiting the range of tested vowels. Formally, our baseline hypothesis is

H1: Consumers will evaluate the individual attributes of brand names with the phonetic [ä] sound heavier than attributes of brand names with the phonetic [i] sound.

Stated simply, sound symbolism affects attribute perceptions. This raises the possibility that consumers use the brand name as a phonetic cue regardless of perceived value of this information. We are now left with the question of when exactly consumers are affected by the phonetics of brand names. We posit that consumers attempt to strategically use the brand name as information when they perceive it to supply diagnostic information. Alternately, consumers will attempt to ignore, and adjust for, the phonetic meaning in situations where the brand name is perceived as less diagnostic. Thus,

H2: The effects of brand names on attribute perceptions will be moderated by the perceived diagnosticity of the brand name, such that, the phonetic effects of brand names will manifest only when the brand name is described as the true versus the test name.

It has been documented recently that a large number of consumer decisions are nonconscious (see Bargh 2002 for a review). Bargh (1989) asserts that a process may have one or more of the four automatic criteria to be differentiated from a conscious or controlled process; that is, a process is automatic if it is effortless, unintentional, used outside of awareness, or uncontrollable. We investigate the automaticity of sound symbolism effects in this article.

If sound symbolism manifests automatically and is used in an uncontrollable fashion, then participants who are told that the phonetic information is nondiagnostic after they have experienced the brand name information should not be able to completely discount the phonetic information. This is because if the process is partly automatic, people are either unaware of or unable to control for the incorporation of phonetic effects in their judgments (Bargh 1989, 2002). On the other hand, if the experienced effects of sound symbolism are discounted at the time it is felt, then it should not enter into the judgment. Specifically,

H3: The timing of information about the diagnosticity of brand names will moderate the effects of sound symbolism on attribute perceptions, such that:

a) When this information is provided at the same time as the brand name information (i.e., sound symbolism can be discounted while being experienced), the phonetic effects will be erased in the low diagnosticity condition, and will manifest in the high diagnosticity condition (as

predicted in hypothesis 2).

b) When this information is provided after the brand name information (i.e., sound symbolism has been experienced), the basic phonetic effects will manifest in both the low and high diagnosticity conditions (as predicted in hypothesis 1).

It is also possible that phonetic effects manifest effortlessly. Gilbert (1989) suggests that the automatic process in judgment formation is a two-stage process comprising of the initial anchor based on an automatic input, and the subsequent correction (e.g., incorporating ignored inputs, or correcting weights) performed in a more controlled manner. For example, in experiments on stereotype activation and use, Gilbert and Hixon (1991) found that the application of an activated stereotype was moderated by the availability of cognitive resources. Those with capacity constraints were less likely to engage in corrective adjustments to the automatically activated stereotypes.

If an automatic source of information is used (i.e., the sound symbolism of the brand name) together with a controlled input (i.e., information about the diagnosticity of the brand name), then the automatic input will have a greater effect when cognitive resources are constrained than when they are abundantly available (Bargh and Thein 1985; Gilbert, Pelham, and Krull 1988). With increased cognitive load, information that is automatically processed will have a proportionately greater impact on judgments as many of the conscious, effort-requiring adjustments will not be possible (Bargh and Thein 1985; Gilbert 1989). In the current study, we use Gilbert's load paradigm to reverse the moderating effect of diagnosticity and replicate the basic phonetic effect when cognitive constraints are imposed. Thus,

H4: Cognitive capacity will moderate the effects of sound symbolism on attribute perceptions, such that:

a) Under conditions of normal cognitive capacity, the phonetic effects will be erased in the low diagnosticity condition, and will manifest in the high diagnosticity condition (as predicted in hypothesis 2).

b) Under conditions of impaired cognitive capacity, the diagnosticity of the brand name will not have an effect and the basic phonetic effects will manifest (as predicted in hypothesis 1).

We now present two studies that were designed to test these hypotheses.

STUDY 1

Method

Choice of Stimuli. We chose ice cream as the product category for the studies reported in this article, as it produced high interest and involvement among the student population, was likely to be purchased in the near future, and elicited product evaluations that incorporated a small number of attributes. An initial pretest ($n = 48$) established that ice cream attributes consisted of three main factors: taste, cost, and calorie content. Since taste was reported as the most primary attribute and is a fairly ambiguous one, we further explored the underlying factors of taste. When participants were asked to elaborate upon taste, the attributes of smoothness, creaminess, richness, and sweetness emerged. Our findings were corroborated by a *Consumer Reports* (1994) article on ice cream that discussed taste in their overall brand comments using the terms "creamy," "rich," "smooth," and "sweet." Our pretest, however, indicated that although people, in general, preferred creamier, richer, and smoother ice creams, preference for sweetness was more divided. Therefore, the final attributes we used were smoothness, creaminess, and richness, three attributes that consumers prefer more of, and that may be communicated by the sound symbolism of the brand name.

The first goal in designing the brand names for the studies was to develop two names that were fictitious and either avoided or controlled for other linguistic complexities. Since we were examining the symbolic differences between the [ä] and [i] sounds, we held all consonants in the words constant, avoiding hard consonants, since their rough sound symbolizes attributes that contradict those desired in our product category of ice cream (Schloss 1981; Vanden Bergh et al. 1984).

The second goal was to have two names that were considered similar. Besides balancing the names phonetically, we pretested five pairs of names that met the above phonetic requirements. Forty-four undergraduate participants ranked the 10 names, with one being the name most likely to be an ice cream name and 10 being the name least likely to be an ice cream. Frosh and Frish best met the criterion of being equally likely to be an ice cream name (M's = 3.33 and 3.55, respectively, NS). These were also the most preferred mean rankings among all the product names.

Based on this pretest and our research goals, we chose the names Frosh and Frish differing only on the phonetic sounds [ä] and [i]. In general, the [ä] sound is associated with perceptions of objects being bigger, heavier, slower, and duller. The [i] sound, on the other hand, is associated with perceptions of the object being smaller, lighter, livelier, and sharper. Therefore, in the context of ice creams, we expect the [ä] sound in Frosh to communicate a smoother, creamier, and richer ice cream than the [i] sound in Frish.

To ensure that a phonetic distinction manifesting through affective meaning drove the evaluations of the two brand names, we examined the denotative meaning evoked by these names through another pretest. We asked 56 partici-

pants to list the first three words that came to their mind when they thought of the ice cream name. A content analysis was performed to ensure that there were no common word associations that could be moderating the brand name evaluations. Two independent coders blind to the hypotheses classified the resulting 167 words as positive, negative, or neutral when describing an ice cream. Coders' classifications matched in 84.4% of the cases. Disagreement between coders was settled through discussion. Frosh and Frish generated equivalent numbers of positive (30 vs. 28), negative (10 vs. 13), and neutral (43 vs. 43) semantic associations ($\chi^2 < 1$, NS). Therefore, as desired, the two names were well matched in terms of semantic associations. In general, of all the semantic associations the names generated, 34.7% were positive (e.g., frosty and fresh), 51.5% were neutral (e.g., name and Irish), and 13.8% were negative (e.g., frog and fish).

Design. We used a 2 (sound symbolism of brand name) × 2 (diagnosticity of brand name) × 2 (timing of diagnosticity information) between-subjects design. Sound symbolism was manipulated using Frish and Frosh. We manipulated the diagnosticity of the brand name by informing participants that the brand name was either a 'true' name (high diagnosticity) or a 'test' name (low diagnosticity) at the time they first encountered the brand name. Participants in the true name (i.e., high diagnosticity) condition were informed that the brand name in the press release was the name that would eventually be used once the product came to market. Participants in the test name (i.e., low diagnosticity) condition were informed that the brand name in the press release was only for testing purposes and would not be the name of the ice cream when it was released to the public. Further, in order to manipulate the timing of the diagnosticity information, this information was provided either simultaneously with the names of the ice cream or afterward.

Procedure. One hundred and twenty-six undergraduate students in a large northeastern university participated in the study for partial course credit. Participants read a paragraph stating that a new ice cream was to be introduced into the area and were asked to read a press release (containing our manipulations) describing the planned promotional activities that were to accompany the ice cream debut. After reading the press release, participants evaluated the ice cream on its richness, smoothness, and creaminess. They then reported their overall evaluation of the ice cream, and their intentions to purchase it. At the end of the questionnaire, participants reported how much the brand name reminded them of an ice cream, listed their ice cream consumption, and assessed the difficulty of the brand evaluation task. Finally, they were asked how involved they were in the study and whether they were aware of using the information gathered from the brand name. The participants were then debriefed and dismissed.

Results

Manipulation and Confound Checks. In order to confirm that our manipulation of the diagnosticity of the ice cream name worked as intended, we conducted 2 (brand name) × 2 (diagnosticity) × 2 (timing) ANOVA on the likelihood that the ice cream name revealed to participants would be used as the brand name when ice cream was finally launched. This ANOVA indicated a main effect of diagnosticity such that participants who were told that the name of the ice cream was a test name believed that the brand name in the press release was less likely to be an ice cream name than individuals in the true name condition (M's = 2.60 vs. 4.10; $F(1, 117) = 17.56$, $p < .01$). No other effect was significant ($p > .05$).

A similar analysis on ratings of involvement revealed that participants reported equal involvement in the study irrespective of condition (overall mean = 4.39, all contrast $F < 1$), indicating that our manipulation of the diagnosticity of the brand name was not confounded with consumer involvement. Finally, the reported frequency of ice cream consumption did not vary across experimental conditions.

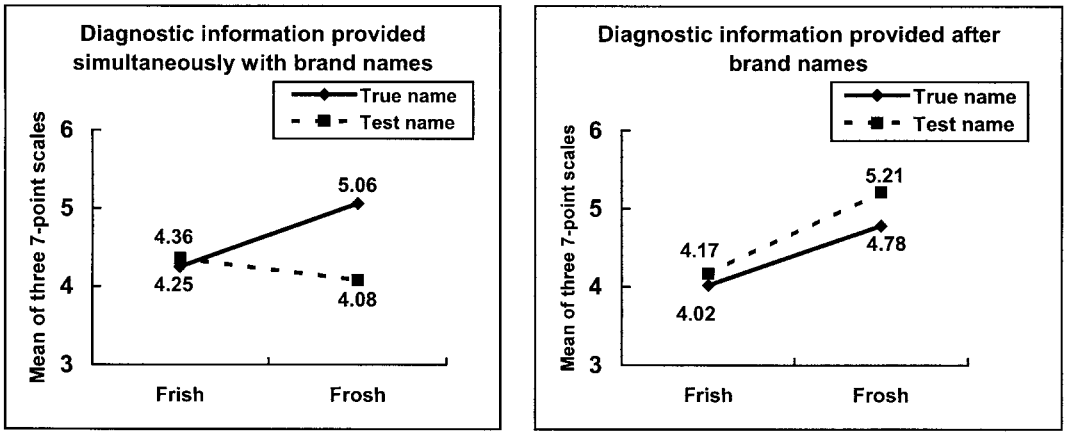
Hypotheses Tests. We created an Attribute Perception Index using the attribute evaluations of creaminess, richness, and smoothness evaluations (Cronbach's $\alpha = .86$) and a Brand Evaluation Index using an average of the overall evaluation and purchase intention (Cronbach's $\alpha = .81$). We used a 2 (sound symbolism of brand name: Frish vs. Frosh) × 2 (diagnosticity of brand name: test vs. true) × 2 (timing: simultaneous vs. after) ANCOVA (with the level of involvement in purchase decisions in the product category as a covariate) to test the hypotheses. For our hypotheses to be supported, we should obtain a significant three-way interaction (hypothesis 3), made up of a two-way interaction between brand name and diagnosticity in the simultaneous condition (hypothesis 3a), and a main effect of brand name in the after condition (hypothesis 3b). Note that support for hypothesis 3a is also support for hypothesis 2, and support for hypothesis 3b is support for our baseline hypothesis.

(i) Attribute Perception Index. We conducted a 2 × 2 × 2 ANCOVA on the Attribute Perception Index that revealed the predicted three-way interaction ($F(1, 117) = 3.84$, $p < .05$). In addition, the main effect of brand name was significant ($F(1, 117) = 9.51$, $p < .01$). Means are graphically presented in figure 1.

In order to investigate the significant three-way interaction, we first examined the simple effects of the 2 (sound symbolism) × 2 (diagnosticity of the brand name) effects for the condition when the diagnostic information was simultaneously provided with the brand names. This ANCOVA revealed a significant two-way interaction ($F(1, 121) = 4.34$, $p < .05$), accompanied by a significant main effect of brand name ($F(1, 121) = 10.07$, $p < .01$). When the name was described as true, participants utilized the sound symbolism and evaluated the associated attributes for Frosh higher than Frish (M's = 5.06 vs. 4.25; contrast

FIGURE 1

STUDY 1 RESULTS



NOTE.—Attribute ratings as a function of timing of diagnostic information (Attribute Perception Index).

$F(1, 122) = 4.43, p < .05$). Individuals presented with a test brand name discounted the diagnosticity of the name and evaluated Frish equivalent to Frosh on the attributes (Frish $M = 4.36$ vs. Frosh $M = 4.08$; contrast $F < 1$). These results support hypothesis 2 and hypothesis 3a.

Next, we conducted a similar 2 × 2 analysis of the simple effects when diagnostic information was provided after the sound symbolism was encountered. Consistent with hypothesis 3b, analysis revealed only a main effect of sound symbolism ($F(1, 118) = 9.94, p < .01$). Frosh ($M = 5.00$) was rated higher than Frish ($M = 4.09$) on the Attribute Perception Index regardless of whether the name was described as a true or test name. The results support hypothesis 3a. Hypothesis 1 is also further supported as the baseline sound symbolism effect again manifests.

(ii) Brand Evaluation Index. We predicted a similar set of results using brand evaluations as the dependent measure. A 2 × 2 × 2 ANCOVA on the Brand Evaluation Index revealed the predicted three-way interaction ($F(1, 118) = 4.78, p < .05$). As with the Attribute Perception Index, the main effect of brand name was significant ($F(1, 118) = 9.39, p < .01$); no other effect was significant.

Given the significant three-way interaction, we examined the simple effects of the 2 (sound symbolism) × 2 (diagnosticity of the brand name) design separately by the timing of the diagnostic information. In the condition where the diagnostic information was provided after the sound symbolism was encountered, analysis revealed a significant interaction ($F(1, 121) = 7.77, p < .01$), accompanied by a significant main effect of brand name ($F(1, 121) = 10.83, p < .01$). When the name was described as true, participants used the sound symbolism and evaluated the associated attributes for Frosh higher than Frish (M's = 5.12 vs. 3.97; contrast $F(1, 122) = 8.14, p < .01$). Individuals presented with a test brand name discounted the diagnosticity of the name and evaluated Frish equivalent to Frosh on the attributes (Frish $M = 4.50$ vs. Frosh $M = 4.16$; contrast $F < 1$). These results support hypotheses 2 and 3a.

A similar 2 × 2 analysis of the simple effects completes the replication of our attribute perception findings for overall brand evaluations. When the diagnostic information was provided simultaneously with the sound symbolism of the brand names, the main effect of sound symbolism was significant ($F(1, 121) = 9.29, p < .01$), such that Frosh ($M = 4.84$) was rated higher than Frish ($M = 4.00$) on the Brand Evaluation Index regardless of whether the name was described as true or test, supporting hypothesis 1 and hypothesis 3b.

Awareness of Influence of Phonetic Effects. We also examined participants' ratings of whether the brand name affected their evaluations by conducting a 2 × 2 × 2 ANOVA. These ratings were elicited on a seven-point, semantic differential scale anchored at "Brand names did not influence my evaluations at all" and "Brand names influenced my evaluations a lot." This analysis revealed no significant effect, with the mean for the sample at a 2.68 on a scale of seven (midpoint = 4), with a higher number indicating a higher level of awareness. We then computed a correlation between these ratings and the Attribute Perception Index (see Wegener, Petty, and Dunn 1998). The correlation was nonsignificant ($p > .6$), indicating unawareness on the part of the participants of the influence of brand names on judgments.

Discussion

The results of this study provide evidence that sound symbolism influences attribute perceptions (hypothesis 1). However, the phonetic effects of brand names can be undercut by alternate information at the time at which brand

names are encountered that discredits the effects of sound symbolism. Our findings suggest that when information regarding the diagnosticity of the brand name is provided at the time the name is encountered, consumers can control whether or not to process the underlying sound symbolism (hypothesis 2). However, the use of sound symbolism in brand perceptions is not completely in the individuals' control. The individuals' inability to discount a brand name that is demonstrated to be nondiagnostic after their initial encounter with the name attests to the uncontrollable manner in which phonetic effects manifest (hypothesis 3). This study also provides initial evidence that participants are unaware of using sound symbolism as an input in judgments. Our next study tests whether the use of sound symbolism is effortless, a third element of an automatic process.

STUDY 2

Method

Design. To test hypothesis 4, we used a 2 (sound symbolism of brand name) × 2 (diagnosticity of brand name) × 2 (cognitive capacity) between-subjects design. Sound symbolism was again manipulated using Frish and Frosh. The diagnosticity of the brand name was manipulated as before by informing participants that the name was a true versus a test name at the time the brand name information was encountered (i.e., the simultaneous condition in study 1). Finally, participants were read a list of numbers and had to count the number of times the experimenter said the word five in the condition in which cognitive capacity was impaired. Participants in the normal cognitive capacity condition did not undertake this task.

Procedure. One hundred and eleven undergraduate students in a large West Coast university participated in the study for partial course credit. Unlike the previous study, this study was administered on computer. As before, participants read a paragraph stating that a new ice cream was to be introduced in the area and were asked to read a press release describing the planned promotional activities that were to accompany the ice cream debut. Again, participants in the true name condition were informed that the brand name in the press release was the name that would eventually be used once the product came to market, while the participants in the test name condition were informed that the brand name in the press release was only for testing purposes and would not be the name of the ice cream when it was released to the public. Unbeknownst to participants, the time taken to read this initial press release was monitored. After reading the press release, participants evaluated the ice cream overall, rated the ice cream on its richness, smoothness, and creaminess and stated their purchase intention. Finally, attribute importance ratings were collected. All evaluations were elicited on 100-point sliding rule scales. Participants were then debriefed and dismissed.

Results

Manipulation Checks. To test the success of the manipulation impairing cognitive capacity, we used the time taken to read the article about the ice cream as an indication of task difficulty. A 2 × 2 × 2 ANOVA on the reading time indicated a significant main effect of the cognitive capacity manipulation ($F(1, 103) = 7.09$, $p < .01$) with participants in the normal cognitive capacity condition taking less time ($M = 30.33$ sec.) than those in the cognitive capacity impaired condition ($M = 37.45$ sec.).[1] Thus, our manipulation to impair cognitive capacity was successful.

Hypotheses Tests. We used a 2 (sound symbolism of brand name: Frish vs. Frosh) × 2 (diagnosticity of brand name: test vs. true) × 2 (cognitive capacity: normal vs. impaired) ANOVA to test hypothesis 4. As in study 1, we created an Attribute Perception Index using the attribute evaluations of creaminess, richness, and smoothness (Cronbach's $\alpha = .82$). For hypothesis 4 to be supported, we should obtain a significant three-way interaction, comprising of a two-way interaction between brand name and diagnosticity in the normal cognitive capacity condition (hypothesis 2), and a main effect of brand name in the low cognitive capacity condition (hypothesis 1).

A 2 × 2 × 2 ANOVA on the Attribute Perception Index revealed the predicted three-way interaction ($F(1, 103) = 3.84$, $p < .05$; see fig. 2). In addition, the main effect of brand name was significant ($F(1, 103) = 8.03$, $p < .01$). No other effect was significant.

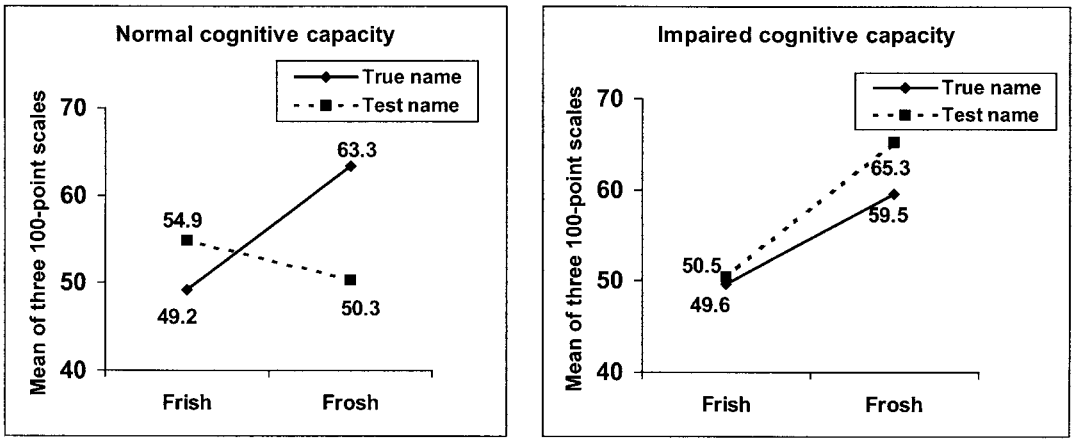
Given the significant three-way interaction, we investigated the simple effects separately in the two cognitive load conditions. A 2 (sound symbolism) × 2 (diagnosticity of the brand name) analysis in the normal cognitive capacity condition revealed a significant interaction ($F(1, 107) = 4.84$, $p < .05$) accompanied by a significant main effect of brand name ($F(1, 107) = 7.68$, $p < .01$). An examination of the means indicates that under normal cognitive capacity and when the name was described as true participants utilized the sound symbolism and evaluated the associated attributes for Frosh higher than Frish ($M = 63.3$ vs. 49.2; contrast $F(1, 108) = 5.47$, $p < .05$). Individuals presented with a test brand name discounted the diagnosticity of the name and evaluated Frish equivalent to Frosh on the attributes (Frish $M = 54.9$ vs. Frosh $M = 50.3$; contrast $F < 1$). These results are consistent with hypothesis 2 and support hypothesis 4a.

Analysis of the 2 × 2 simple effects for the impaired cognitive capacity condition revealed only a significant main effect of sound symbolism ($F(1, 107) = 7.81$, $p < .01$). Regardless of whether the name was described as true or test, when respondents were cognitively impaired, Frosh ($M = 62.4$) was rated higher than Frish ($M = 50.0$) on the At-

[1] These results were replicated through a self-reported measure of task difficulty.

FIGURE 2

STUDY 2 RESULTS



NOTE.—Attribute ratings as a function of cognitive capacity (Attribute Perception Index).

tribute Perception Index; this is consistent with hypothesis 1 and supports hypothesis 4b.[2]

Discussion

The results of this study indicate that participants were unable to actively discount the brand name information when they were cognitively impaired. We thus obtain evidence for the use of sound symbolism being effortless such that even when cognitively impaired, the effects filter through to judgments. The results of this study provide corroborative support to the prior study's findings that the inferences of attribute information from brand names and the subsequent evaluations of the brand are automatic processes.

GENERAL DISCUSSION

In this article, we provide support for the proposition that consumers gather and process information from brand names in an automatic manner. However, consumers can control for this provided they process information that discredits the brand name at the time the name is encountered. An important aspect of sound symbolism established in this article is how it affects consumers' attitudes at the attribute level (hypothesis 1). Consumers may knowingly control for the process when they have access to information that credits or discredits the brand name at the time at which they encounter the brand name (hypothesis 2). Yet, consumers are not fully aware of this process and cannot fully control for the effect; we show evidence for the uncontrollability of the effect unless the name is discredited at the time of encoding (hypothesis 3) and the consumer is not cognitively impaired (hypothesis 4). These results provide evidence for the automatic processing of brand names and their phonetic effects.

Our purpose in this article was to understand the process underlying sound symbolism. The basic phenomenon of sound symbolism has been demonstrated for a wide range of sounds across multiple dimensions (Klink 2000). In our article, we focused on the internal validity of our studies in order to build theory about the sound symbolism process. We therefore tested one set of brand names and used a between-subjects test of sound symbolism. This strengthens the existing case for sound symbolism since participants are not aware that sounds are being manipulated or that one brand name should provide different information than another. Further, we increase the internal validity of the experiments by testing for phonetic effects when the brand name is not the only information provided to the subject. Additionally, we show that this effect carries through attribute perceptions to the overall evaluation of the brand. Demonstrating these effects of sound symbolism increases our confidence in the robustness of our theory.

Automatic processes in social cognition domains have been demonstrated empirically in various contexts (see Bargh 1989). This article adds to this literature by demonstrating the automatic use of sound symbolism. This is an important issue to examine, given that if phonetic effects manifest even partially automatically, then this automatic effect will exert a more consistent influence over attitudes and behavior over time (see Bargh 2002). Since sound symbolism is a fairly common naming device (Begley 2002), it is possible that phonetic links are highly accessible. Attitudes relating to the phonetic aspects of the brand name would be automatically activated. Considering the limited capacity consumers usually devote to product evaluation (Hoyer 1984), the results of studies 1 and 2 indicate that

[2]A similar analysis using the Brand Evaluation Index (Cronbach's $\alpha = .75$) revealed an identical pattern of results; we do not report these results here due to space constraints.

under this diminished cognitive capacity, the phonetic effects of brand names may be activated and influence choice. If brand name phonetic cues are chronically accessible, congruency of brand name and product would be of even greater importance.

Our studies tested names in which only one phoneme was manipulated. In most categories, where multisyllabic words are the norm, sound symbolism may occur in different positions and/or on multiple positions in the same word. This flexibility would not only increase the complexity of the message conveyed by sound symbolism but also may increase the strength of the effect. This article has focused primarily on the sound symbolism provided by the vowels of a brand name. The role consonants play in brand names and their effects on product evaluations is an underresearched area. Past research has shown that brand names that begin with hard consonants (i.e., Kodak and Pepsi), elicit higher recognition (Vanden Bergh et al. 1984), and occur more frequently than we would expect from the English lexicon (Schloss 1981). Although linguistic anthropologists have noted phonetic patterns for consonants (i.e., harder sounding consonants tend to represent harder, sharper objects than softer sounding consonants), these findings have not been directly tested on brand names. A systematic study of consonants and their interaction with multiple vowels is an avenue worthy of future research.

Our studies demonstrated that sound symbolism, although evaluated on the attribute level, affects overall evaluations. We demonstrated that sound symbolism affected the attributes of creaminess, sweetness, and richness: three category specific attributes. It appears that consumers will take the broader dimensions that sound symbolism operates upon (e.g., smallness, lightness, mildness, fastness, etc.) and extrapolate these findings to the specific properties of ice cream. Creating a successful brand name depends not only upon the creation of a name that is congruent with the product category, but one that phonetically fits the positioning of the brand within that product category. Future research could examine whether it is possible to phonetically manipulate meaning over a wide range of attributes in a broad set of product categories.

The automatic nature of the sound symbolism leads to important implications of this research upon the use of personal names as brand names. For example, if the ice cream was named for its maker, Joseph Frish, then the brand name should be seen as less diagnostic, and the phonetic effect should not appear. This assumes that the information as to the name's origin is known at the time of encoding and that processing capabilities are not constrained. Telling the consumer that the ice cream was named for the maker after the ice cream has been tasted should have little effect upon consumers' use of sound symbolism in accordance with our findings. An interesting further study would be where we manipulate the diagnosticity of the name through the use of a personal name versus a purely fictitious name.

Over 2,000 years ago, Plato supported the onomatopoetic theory of language by arguing that words were formed by the imitation of ideas in sounds (Jowett 1953). The argument still holds. Sound symbolism shows that the sounds of words still convey meaning. More important, consumers recognize this phonetic meaning and will use it as a source of product information. The effects of time, the influence of foreign languages, the desire of euphony, and elements of chance all distill and, at times, distort the effects of sound symbolism. Yet even with these caveats, attending to phonetic meanings and leveraging the attribute associations when creating a brand image is sound advice when creating a new brand name.

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