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Revisiting the automaticity of phonetic symbolism effects☆

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ABSTRACT

This research extends our understanding of the automaticity of phonetic symbolism judgments for adults and children. Replicating Study 2 from Yorkston and Menon (2004), we demonstrate that phonetic-based inferences are automatic and relatively effortless for adults, but not for children. Phonetic symbolism effects have a developmental grounding, with initial phonetic-based judgments not present in younger children (6 to 9 years). Older children (10 to 13 years), however, demonstrate phonetic-based effects *only* when cognitive constraints are *not* imposed.

1. Introduction

In recent years, marketing scholars have been interested in understanding the processes, applications, and bounds of phonetic symbolism theory (e.g., Baxter & Lowrey, 2014; Baxter & Lowrey, 2014; Baxter, Ilicic, & Kulczynski, 2014; Lowrey & Shrum, 2007; Shrum, Lowrey, Luna, Lerman, & Liu, 2012; Yorkston & Menon, 2004). Implementing Gilbert's (1989) load paradigm, Yorkston and Menon (2004) in Study 2 aim to show that phonetic symbolism is an automatic phenomenon, demonstrating that effects manifest in an uncontrollable (inability to ignore non-diagnostic brand name information) and effortless manner (effects occur under cognitive capacity constraints). Yorkston and Menon (2004) propose that phonetic symbolism effects are stronger when cognitive resources are constrained, with effects occurring irrespective of brand name diagnosticity. The authors also hypothesize that phonetic symbolism effects will not manifest under conditions of normal cognitive capacity, when the brand name is high in diagnosticity. More specifically, Yorkston and Menon (2004) hypothesize a significant three-way interaction, comprising of a two-way interaction between brand name phonetic symbolism and brand name diagnosticity in the normal cognitive capacity condition, and a main effect of brand name diagnosticity in the low cognitive capacity condition. Results of Study 2 show that under conditions of normal cognitive capacity and when the brand name was described as real (high diagnosticity), participants made use of the sound symbolism in the brand name when forming their judgments regarding the brand's attributes. In addition, results show that regardless of the diagnosticity of the brand name, participants who were cognitively impaired utilized the sound symbolism in the brand name to make brand attribute judgments. Yorkston and Menon (2004) suggest that the effects they reveal are due to the likelihood that effort-requiring corrective adjustments to initial phonetic-based inferences are reduced under cognitive load, resulting in heightened phonetic symbolism based effects, reversing the moderating role of brand name diagnosticity.

A review of phonetic symbolism literature reveals that phonetic symbolism effects consistently occur under conditions of normal cognitive capacity (e.g., Baxter & Lowrey, 2014; Baxter et al., in press; Lowrey & Shrum, 2007; Shrum et al., 2012), however, no studies have further examined the automatic nature of the phenomena. Research in the context of children (representing a low cognitive resource sample; see Baxter & Lowrey, 2014) suggests that greater cognitive resources in fact heighten phonetic symbolism effects, concluding that phonetic symbolism has a strong developmental grounding. Replicating and extending Study 2 of Yorkston and Menon (2004), this research aims to revisit the concept of automaticity, and the importance of cognitive impairment and/or information diagnosticity for demonstrating phonetic symbolism effects in adults and children.

We argue that phonetic symbolism effects may manifest automatically for adults, who, over time, have developed necessary language-based skills and knowledge (for example, phonological awareness; Fowler, 1991). We, therefore, expect results consistent with Yorkston and Menon's (2004) main effect for phonetic symbolism. We also expect to find Yorkston and Menon's (2004) two-way interactions within the three-way interaction, with phonetic symbolism effects manifesting under cognitive capacity constraints (two-way interaction) irrespective of brand name diagnosticity (three-way interaction). Further, we expect these effects to diminish when brand name diagnosticity is high (two-way interaction) under normal cognitive capacity (three-way interaction).

Extending Yorkston and Menon (2004), we also examine the automaticity of phonetic symbolism effects in the context of children.

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First, we expect that children, who have not yet acquired necessary language-based skills and knowledge, will be unable to initially categorize phonetic-based inferences, regardless of the brand name information provided (i.e. no main effect for phonetic symbolism in this sample nor a two-way interaction between phonetic symbolism and brand name diagnosticity). Further, with researchers suggesting that phonetic symbolism has a developmental grounding (Baxter & Lowrey, 2014), we argue that an interaction effect will occur between phonetic symbolism and cognitive capacity, whereby phonetic symbolism effects heighten when constraints are not imposed.

2. Method

Replicating Study 2 of Yorkston and Menon (2004) two, 2 (brand name phonetic symbolism) × 2 (cognitive capacity) × 2 (brand name diagnostic information) between-subject experiments were conducted. A total of 354 adults (18 to 65 years) participated in Experiment 1a and 403 children (6 to 13 years) participated in Experiment 1b (parental consent, and child assent were obtained prior to participation).

First, participants in the cognitive capacity constraints conditions were shown a numerical matrix and were asked to count and memorize the number of '5's visible in the matrix/box. Participants in the normal cognitive capacity conditions did not undertake this task. Consistent with Yorkston and Menon (2004), participants were asked to read an announcement pertaining to the launch of a new branded product (with the vowel sound in the brand name manipulated across conditions, Frish vs. Frosh), and were then asked to evaluate the product in terms of its creaminess, richness, and smoothness (measured on a 7-point scale). The time taken to read the announcement was recorded. Participants in the true name conditions (high diagnosticity) were told that the brand name was real and will be used when the product becomes available in store, whilst participants in the trial name conditions (low diagnosticity) were told that the name was for testing purposes only and will not be used when the product becomes available. Experimental stimuli and items remained consistent across Experiments 1a and 1b; however, responses were measured on a 4-point scale for the child sample to promote reliability (Hota, Chumpitaz, & Cousin, 2010).

Finally, whilst all researchers should evaluate the statistical power of their samples, this is a particularly important consideration for those undertaking replication studies. Specifically, Button et al. (2013) highlight that researchers seeking to replicate effects that only barely achieve statistical significance in the original study (for example, $p \approx .05$), will not achieve sufficient statistical power using the same sample size as the original study (that is, power ≈ 50%). With Yorkston and Menon (2004) employing a 10% significance level in their study, we performed a posteriori power analysis via *G*Power* to ensure that our sample had sufficient statistical power. Results indicate that both the adult and child samples in our studies have sufficient power to detect medium effects (>98%) at a 5% significant level; surpassing the recommended level for replication studies (that is, 80%; Button et al., 2013, p. 3).

3. Results

3.1. Product attribute evaluation

To examine the automaticity of phonetic symbolism effects, we first created an Attribute Perception Index (API) using participant evaluations of product creaminess, richness, and smoothness. According to phonetic symbolism theory, brand names containing back vowel sounds (Frosh) should be perceived as creamier, richer, and smoother, than brand names containing front vowel sounds (Frish), therefore, a higher API is expected for Frosh evaluations (Yorkston & Menon, 2004). A 2 (brand name phonetic symbolism) × 2 (cognitive capacity) × 2 (brand name diagnostic information) ANOVA was then performed for each experiment with the API as the dependent variable. Table 1 provides

Table 1
Main and interaction effects — comparison of Yorkston and Menon's (2004) Study 2 and current study.

	Yorkston and Menon (2004) Study 2		Adult sample		Child sample	
Sample size	111		354		403	
	F	p	F	p	F	p
Phonetic symbolism of brand name	8.03	<.01	11.70	.001	3.72	.054
Diagnosticity of brand name	.	>.05	3.60	.058	.01	.910
Cognitive capacity	.	>.05	3.29	.070	.22	.639
Phonetic symbolism × Diagnosticity	.	>.05	.174	.677	.92	.339
Phonetic symbolism × Cognitive capacity	.	>.05	.120	.729	5.11	.024
Diagnosticity × Cognitive capacity	.	>.05	3.71	.055	.13	.718
Phonetic symbolism × Diagnosticity × Cognitive capacity	3.84	<.05	.641	.424	.97	.326

. = Not reported.

a summary of the main and interaction effects for both the adult and child samples, and provides a comparison to the effects found by Yorkston and Menon (2004).

3.2. Experiment 1a

Results of Experiment 1a are not consistent with Yorkston and Menon (2004), with a significant three-way interaction not found ($F(1, 353) = .64, p = .424$). The main effect for brand name phonetic symbolism was the only significant effect observed ($F(1, 353) = 11.69, p = .001$). Consistent with phonetic symbolism theory, Frosh ($M_{API} = 4.84$) achieved a higher API than Frish ($M_{API} = 4.53$). Significant differences in the API were found across the phonetically manipulated brand names, Frish vs. Frosh, irrespective of brand name diagnosticity and cognitive capacity (summarized in Table 2).

3.3. Experiment 1b

As predicted, results of Experiment 1b are not consistent with Yorkston and Menon (2004), with a significant three-way interaction not observed ($F(1, 402) = .97, p = .326$). Additionally, a significant main effect for brand name phonetic symbolism was not found ($F(1, 402) = 3.72, p = .054$). As anticipated, results also show a significant interaction between brand name phonetic symbolism and cognitive capacity ($F(1, 402) = 5.11, p = .024$). Specifically, results showed that Frosh ($M_{API} = 2.40$) achieved a significantly higher API than Frish ($M_{API} = 2.21$), only under conditions of normal cognitive capacity (refer to Table 3). No other main or interaction effects were observed.

Further analysis was conducted to examine differences across younger (6 to 9 years, n = 210) and older (10 to 13 years, n = 193) children. When considering younger children, our results are consistent with Baxter and Lowrey (2014), with no phonetic-based effects observed, and all main and interaction effects found to be non-significant ($p > .21$). However, a significant main effect was observed for brand name phonetic symbolism for older children ($F(1, 192) = 5.14, p = .025$), with a significant interaction found between brand name sound symbolism and cognitive capacity ($F(1, 192) = 4.25, p = .041$). Again, results showed that Frosh ($M_{API} = 2.41$) achieved a significantly higher API than Frish ($M_{API} = 2.16, t = -3.10, p = 003$) in conditions of normal cognitive capacity, with no significant difference observed in cognitive capacity contraints conditions ($M_{Frish\ API} = 2.36$, $M_{Frosh\ API} = 2.37, t = .148, p = .882$).