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Linguistic Gender Marking and Categorization

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Gender markers provide syntactic structure and a categorization schema to language. Brand name gender is a function of both formal, structural aspects of the brand name and semantic properties of the brand's product class. In the formal gender system of Spanish, consistent formal gender marking enhances brand recall, whereas semantic product associations drive brand evaluation. In the semantic gender system of English, formal cues determine initial brand name gender, but congruent semantic associations between brand name and product category drive improved brand evaluations and brand recall. Three studies across two languages demonstrate that gender's role as a categorization tool underlies these effects.

For communication to take place, the individual parts of discourse must operate under a common set of assumptions and guidelines. Syntaxes, grammars, and vocabularies have all developed to provide a set of rules to facilitate communication. One such rule is that of agreement. When individual parts of speech (i.e., nouns, verbs, adjectives, etc.) agree in tense, number, and gender, we are better able to interpret, encode, and understand the sentence and the underlying meaning it conveys. We are startled by disagreements in number ("those cookies *was* delicious") or person ("I *has* enjoyed this beer") among elements of speech. Similarly, in languages where linguistic gender agreement is more salient than in English, as is the case with Spanish, a listener or reader would find discomfort in the phrase "*exquisita* vino Cabernet." Although an oversight such as this would be glaring and unlikely in marketing communications copy, more subtle forms of gender disagreement can occur when nouns designating products are paired with the brand names identifying these products. Consider the case of the French brand *Peugeot*, which manufactures both cars and bicycles. In French, "car" (*la voiture*) is feminine, while "bicycle" (*le vélo*) is masculine. If there

is a gender associated with the name *Peugeot*, what happens when consumers are presented with *la voiture Peugeot* versus *le vélo Peugeot*?

This article examines the dual roles that gender markers fulfill in language systems: (a) providing syntactical structure to ease comprehension and (b) providing a categorization system to better convey word meaning and ease evaluation. This research is the first to demonstrate that gender agreement between a brand name and its product class affects both brand attitude formation and brand encoding. Further, by testing our hypotheses in Spanish and in English we establish that these effects differ across languages depending upon the language's gender system.

CONCEPTUAL FRAMEWORK

Psycholinguistic research in consumer behavior explores how language processes affect individuals' behavior in the marketplace. A large majority of this work focuses on the structure of written language (phonetic vs. logographic) and its effect on the processing of visual and aural information (Tavassoli 1999; Tavassoli and Han 2001). Other studies show the influence of language structures and categorization on cognition and the effects on message processing, recall, and evaluation of products and brands (Schmitt, Pan, and Tavassoli 1994; Schmitt and Zhang 1998). For example, Schmitt and Zhang (1998) demonstrate that language classifiers influence how products are associated and categorized. Research has also examined how consumers process multiple languages within a message as well as how, in the case of bilinguals, messages are processed when multiple language systems interact within an individual (Luna and Peracchio 2001). As we will describe below, this article provides additional evidence that language structure affects cognitive processing. Specifically, we focus on how a lan-

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guage's gender system either facilitates or hinders evaluation and encoding of brand names.

Languages assign objects to different noun classes, commonly referred to as gender classes. Although in common parlance "gender" and "sex" are synonyms, in linguistics, gender (from the Latin *genus*, "kind" or "sort") is defined as identifying "classes of nouns reflected in the behavior of associated words" (Hockett 1958, 231). Therefore, gender is not necessarily determined by sex. The classification of a noun into one of various genders in a language (e.g., feminine, masculine, or neutral) often corresponds to a real-world distinction of sex, but very often it does not—indeed, gender classes may also be based on characteristics such as shape, social rank, or manner of existence (Guillelmon and Grosjean 2001). For example, the Algonquin utilize a gender system consisting of an animate and an inanimate gender class.

From the above, the link between linguistic gender and categorization becomes apparent. Linguistic gender markers assign nouns, and the objects they designate, to classes. This classification is a prerequisite for categorization and its associated cognitive outcomes; for instance, items must be classified before category knowledge can be applied to them. By assigning items to classes, gender might be expected to affect inference making. Indeed, inference is so central to categorization that Anderson (1991) based his rational model of category learning on the assumption that categories are formed to maximize people's ability to make accurate predictive inferences. In some languages, such as Chinese, Japanese, Korean, and Thai, linguistic classifiers provide rich information as to an object's shape, size, thickness, and other properties (Lucy 1992; Norman 1988; Schmitt and Zhang 1998).

Although gender classification systems vary across languages, nouns are assigned to genders within a language by one of two systems of rules: formal or semantic. In technical terms, semantic systems provide gender to a sign (word or noun) based on the meanings associated with the underlying signifier (object). This can be contrasted with nouns in the formal system, where the gender of the sign is based on structural properties of the sign alone and is independent of the object it represents. Put simply, semantic systems (e.g., English, Dyirbal, and Algonquin) assign gender to words based entirely on the word's definition. Therefore in English, a floating vessel is always feminine whether we choose to call it a boat, a barge, or a bark. In contrast, formal systems assign gender to words based on the structure of the word itself. In Spanish, the concept of "floating vessel" on its own does not have an assigned gender. Instead, it can be either masculine or feminine depending on whether we refer to it as *el barco* or *la chalupa*. Formal systems of rules may be morphological (based on the spelling of the word), as in Russian and Swahili, or phonological (based on the resulting sound of the word), as in Spanish and French. Technically, there are no purely formal systems: all gendered languages have a semantic core that allows for the assignment of gen-

der to nouns that sometimes fall into loopholes of the formal rules, such as foreign words that are adopted by a language.

In language, gender's role goes beyond that of being a classification scheme for objects; it also acts as the agreement cue for an object's referents. That is, a noun's gender class systematically affects and determines the nature of other parts of speech, such as pronouns, articles, adjectives, and verbs associated with that noun. The study of grammatical gender has implications well beyond the purely linguistic; it sheds light on the way in which information is stored in the brain (Pinker 2000), and it has implications for language processing (Corbett 1991). For example, evidence suggests that congruent gender marking (e.g., *exquisito vino*) enhances the processing of information relative to incongruent or no marking (Friederici and Jacobsen 1999; Guillelmon and Grosjean 2001). Jakubowicz and Faussart (1998) demonstrated that gender disagreement (e.g., *exquisita vino*) further inhibits processing. Also, it has been observed that phrase structures that require merging of disagreeable gender features often do not get constructed in the mind and therefore do not enter the set of competing alternatives (Van Berkum, Brown, and Hagoort 1999). This suggests that gender incongruence should lead to diminished encoding or recall. Our research builds on previous investigations into the effects of linguistic gender on cognitive processes by extending the effects from simply retrieval to more elaborate cognitive processes including evaluations and attitude formation. In the next section we examine the role that gender plays in processing information in the formal language of Spanish.

STUDY 1: THE ROLE OF GENDER IN A FORMAL LANGUAGE

According to the 2000 U.S. Census, Spanish is the second most common language in the United States and is spoken in 11% of households. Spanish's increased influence is reflected in recent research on English-Spanish bilinguals (Luna and Peracchio 2001). In the formal system of Spanish, the singular forms of nouns determine their gender (Corbett 1991). Typically, objects in Spanish that are designated by nouns that end with an *-a* belong to the feminine gender, and articles and adjectives connected to these nouns must also be feminine in order to maintain agreement. Similarly, objects designated by nouns ending in *-o* or in most consonants (e.g., the foreign word "whiskey") are masculine, and related articles and adjectives must agree in gender. This agreement rule is extended to names associated with entities, notably people, but also pets. Thus, most given names for males end in *-o* or a consonant (e.g., *Gustavo*), and most given names for females end in *-a* (e.g., *Julia*). Exceptions may occur, and formally feminine names on occasion are bestowed on masculine entities, and vice versa (e.g., the male name *Jose Maria*).

Gouet (1976) noted that brand names work similarly to people's names in that they act as an identifier for the noun class. After familiarization with the product, these names

share the gender of the product they represent. However, it is not clear whether this “adopted agreement” between formally incongruent genders is something individuals accept and then dismiss or whether it is incorporated as a legitimate agreement, thereby resulting in a name/product combination that neither impairs nor facilitates encoding or evaluation. In the present studies we examine new, fictitious names (i.e., devoid of meaning and unfamiliar to respondents) such that possible adopted agreement between the names and products has not yet occurred and both evaluation and encoding effects can be observed.

Alternately, established product classes are rich with semantic meanings. Individuals follow semantic cues and associate these products with nonneutral genders. Often our masculine or feminine associations with an object transfer that object out of a neutral residue and into either the masculine or feminine gender. For example, technological objects have been historically associated with the masculine while natural objects are often regarded as feminine (Merchant 1980). This application of nonneutral genders to linguistically neutral gendered objects has also appeared in the consumer domain. Mathiot and Roberts (1979) present a case where a female customer at a store refers to a bedspread by asking, “Is he washable?” These assumptions were verified in pilot studies. Therefore, whereas our stimulus brand names only have one type of gender (formal, because they are abstract, nonsensical nouns), product classes (e.g., wine) have both a formal gender (depending on the formal gender rules that apply to the noun designating the product) and a “semantic” gender (linked to gender stereotypes associated with the product). This leads us to predict a rather nuanced pattern of effects of gender agreement on recall and evaluations.

The formal gender of a noun involves its relation to other parts of speech (articles, adjectives, etc.) and does not relate to the meaning of the entities involved per se. Any agreement or lack thereof between the formal gender of a product and that of its brand should have no effect on brand/product evaluations as formal gender provides no interpretable cues to brand name meaning. Consequently, we do not advance any hypotheses predicting formal agreement effects on evaluations. However, because semantic genders are derived from associated meaning, we do expect that the degree of agreement between a product’s semantic gender and the brand’s gender will have an effect on how the brand is evaluated. More specifically, we posit that brands will be more positively evaluated when their formal gender agrees with the semantic gender of the products they identify.

H1a: In a formal gender system, consumers form more positive brand attitudes when formal brand name gender is congruent (vs. incongruent) with semantic product gender.

Formal gender agreement may be irrelevant when it comes to evaluations, but it becomes important in the case of information processing. Lack of gender agreement might corrupt syntactic integrity and thus interfere with the sub-

sequent processing of sentence information (Jakubowicz and Faussart 1998). This should be observed in the cases of formal gender disagreement: less efficient processing and encoding of information should result in diminished recall of that information. Thus, we predict that agreement between the formal gender of a product and that of its brand will lead to enhanced recall of the brand name.

H1b: In a formal gender system, consumers exhibit greater brand recall when formal brand name gender is congruent (vs. incongruent) with formal product gender.

Method

Eight brand name roots (Aiz, Val, Zat, Ral, Halix, Ere, Liskavi, and Dian) were chosen from a pretested list of fictitious names. The formal gender of the brand name was manipulated by changing the *-o* or *-a* ending attached to the root (e.g., Aiza as feminine and Aizo as masculine). This resulted in 16 gendered brand names that matched on word likability. The product categories of footwear and alcoholic beverages were selected because each contained products that possessed strong masculine or feminine semantic associations. Table 1 indicates the product genders, the product names in Spanish, and their appropriate English counterparts. Because the isolated nouns *zapato* (shoe) and *sandalia* (sandal) do not have an associated semantic gender unless the user of the product is known, these products were accompanied by pictures of women’s or men’s shoes or sandals, respectively. Category choice was also influenced by the need for stimuli replicability in English for studies 2 and 3. Product categories were needed that were similarly familiar and gendered in both languages. Pretests confirmed that gender associations were consistent across languages.

Surveys were written in English and translated into Spanish by a native Spanish speaker. These were then translated back into the source language by a second native Spanish

TABLE 1

STUDY STIMULI AND THEIR RESPECTIVE FORMAL AND SEMANTIC GENDERS

Product	Formal gender (product noun gender)	Semantic gender (associated typical user’s gender)
Cerveza (beer)	Feminine	Male
Whiskey	Masculine	Male
Vino blanco (white wine)	Masculine	Female
Margarita	Feminine	Female
Zapato de hombre (men’s shoes)	Masculine	Male
Zapato de mujer (women’s shoes)	Masculine	Female
Sandalia de hombre (men’s sandals)	Feminine	Male
Sandalia de mujer (women’s sandals)	Feminine	Female

speaker and compared with the initial survey. Both translators were bilingual and agreed that the existing fictitious brand names were both pronounceable and yet nonsensical in Spanish. As the study was to be run in Chile, an additional check of the product names by a native Chilean was enlisted to ensure that the chosen fictitious brand names were, in fact, nonsensical and carried no regional meanings.

One hundred sixty-two business students from a metropolitan Chilean university completed the study for partial course credit. All participants were native Spanish speakers. As name/product agreement effects have never before been established, it was important to demonstrate that our effects were not observed solely due to one brand name or brand/product pair. Thus, to enhance the generalizability of the results we chose to maximize the number of brand and product gender variants across an ample range of product classes and brand name roots while minimizing participant fatigue. We utilized a 2 (formal product gender) $\times$ 2 (semantic product gender) $\times$ 2 (formal brand gender) within-subjects, full-factorial design. The eight brand name roots were rotated across the eight products within-subjects using a Latin square design.

Participants were asked to take part in the early stages of a new product launch that examined two potential new product lines. Participants read four beverage and four footwear product scenarios consisting of a brand name and product description. Participants were to imagine purchasing the product either for themselves or a close friend and evaluated the product for overall liking and likelihood of trial on nine-point scales. After completing two, unrelated filler tasks, participants listed as many brand names as they could remember from the first part of the study. Interest, involvement, gender, language ability, and language acquisition measures were also collected. Participants were then thanked, debriefed, and dismissed.

Results

Brand Evaluation. A 2 (formal brand-name gender) $\times$ 2 (formal product gender) $\times$ 2 (semantic product gender) within-subjects ANOVA was conducted on brand evaluations. Analysis revealed a significant two-way interaction between formal brand name gender and product semantic gender ($F(3, 149) = 9.60, p < .01$) as predicted by hypothesis 1a. More positive attitudes were elicited by semantically congruent pairs (e.g., *cerveza Aizo*) than by incongruent pairs (e.g., *margarita Aizo*; $M = 3.72$ vs. 3.35 ; $F(1, 149) = 7.18, p < .01$). Consumers appear to prefer brand names that provide information that is consistent with product category expectations in terms of semantic gender.

There was no interaction between formal brand name gender and formal product gender. Formal congruency was not evaluated more favorably than incongruency ($M = 3.59$ vs. 3.48 ; $F(1, 149) < 1$). This may seem counterintuitive, since formal cues determine gender in Spanish. However, formal gender is based on morphological or phonetic

rules and is independent of the meaning (semantics) of the parts involved. Therefore, formal agreement or disagreement should not provide any advantages when evaluating a product.

Analysis did reveal a main effect of product category wherein footwear was preferred to beverages ($M = 3.92$ vs. 3.15 ; $F(1, 155) = 42.28, p < .01$). One possibility for participants' higher ratings of footwear over beverages could be due to the difference in stimuli between the two product categories. The footwear stimuli included pictures, and this more concrete representation could have resulted in higher evaluations. The three-way interaction of brand name gender, formal product gender, and semantic product gender was not significant ($F(1, 155) < 1$), and no other effects were observed.

Brand Recall. A "successful recall" was defined as accurately recalling both the root and the ending of the brand. On average, participants successfully recalled 1.6 of the eight brand names. A 2 (formal brand name gender) $\times$ 2 (formal product gender) $\times$ 2 (semantic product gender) within-subjects ANOVA was conducted on number of brands recalled. In this design, both factors of formal and semantic product gender can be combined with brand name gender to create an independent name/product congruency assessment: one formal and one semantic. Consistent with hypothesis 1b, analysis revealed only a significant formal congruency interaction effect between the brand name and the formal product factor ($F(1, 155) = 12.43, p < .01$). Participants' free recall of brand names was significantly higher when the brand's gender was congruent with the product's formal gender than in instances of incongruent gender ($M = .94$ vs. $M = .65$).

In a formal gender system, semantic meanings do not contribute to sentence agreement, and therefore semantic congruency does little to aid language processing. Indeed, participants recalled virtually the same number of brands whether they were congruent or incongruent with the semantic gender of the product ($M = .81$ vs. $M = .79$; $F < 1$). No interaction effect was found between formal and semantic gender congruency manifesting through a three-way interaction. If this were a case where moderate incongruency leads to greater processing and evaluation (Mandler 1982; Meyers-Levy, Louie, and Curren 1994), then we should have seen a case where the moderately incongruent conditions would have resulted in an interaction effect and no main effects. The results also do not support the idea that more congruency between a brand name and the product is always better; semantic gender appeared to have no effect on brand recall. Clearly, the solitary effect of formal congruency demonstrates that the type of gender congruency rather than the level of congruency is a more important determinant of correct brand name recall.

Discussion

When individuals make judgments about a brand, their attitudes are influenced not only by explicit marketing com-

munications but also by other data in the environment. Elements such as gender markers that are permanently attached to products and their brands are an additional source of information that affects consumers' cognitions. Even when language processing relies on a formal gender system, formal gender cues have no effect on evaluations. Instead, the agreement of a product's semantic gender with its brand name's gender leads to more positive attitudes toward the brand for consumers.

The implications are twofold. First, it shows that formal systems and semantic systems are interdependent rather than exclusive from each other. Second, it demonstrates the dual roles of gender systems in language. Formal aspects of gender provide a syntactic structure that aids recall, while the semantic gender cues are imbued with meaning and provide a classification structure that aids in the assignment of meaning and evaluation.

STUDY 2: THE ROLE OF GENDER IN A SEMANTIC LANGUAGE

Study 1 supports the idea that brand names are more appropriate when they share gender associations with the objects they represent. Even in a language with a strong, formal gender system, products had semantic gender associations, and consumers rewarded the agreement between the product's semantic gender and its brand's gender by forming more positive evaluations. In this second study we focus on English, a language in which gender is determined semantically, and in which, according to the strict definition of semantic gender assignment, nonsensical nouns (such as brand names) should not yet be gender marked. We will propose, however, that just as we observed both semantic and formal influences in Spanish, we will see the additional influence of formal gender cues in English.

We posit that individuals will use formal cues to assign nonneutral genders to English words (fictitious brands) in the absence of semantic information. The "leakage" of formal gender cues into semantic languages is apparent in our choice for male and female names; we are accustomed to female names with traditional formal feminine markers (e.g., Julia, Laura, Angela) and male names with traditional formal masculine markers (e.g., Harold, Romeo, Victor). Thus, we expect fictitious brand names that include such formal markers to trigger similar gender associations.

Following the same line of reasoning that guided study 1, we again posit that a brand name that reflects the characteristics of the product class (i.e., it has a congruent semantic gender) should elicit more positive attitudes. Formally,

H2a: In a semantic gender system, consumers form more positive brand attitudes when formal brand name gender is congruent (vs. incongruent) with semantic product gender.

Categorization is only one purpose of gender classes. Gender classes also ease language comprehension by pro-

viding a consistent syntactic structure across sentence components. Gender congruency between the product class and the brand should ease comprehension and encoding. However, unlike in study 1, it is semantic gender that drives consistency in semantic systems. Therefore, when the semantic genders of the brand name and the product are congruent we should observe better recall of the brand name.

H2b: In a semantic gender system, consumers exhibit greater brand recall when formal brand name gender is congruent (vs. incongruent) with semantic product gender.

Method

Ninety-three business students from a metropolitan U.S. university participated in the study as part of a course requirement. The method in study 2 replicated that employed in study 1. The stimuli were the initial English surveys used to produce the Spanish translations, and the same procedure was followed. The lack of a formal assignment rule in English simplifies the resultant design, and the 2 (brand name gender) $\times$ 2 (semantic product gender) full-factorial design is now replicated within the two product classes (beverages and footwear).

Results

Brand Evaluation. A 2 (formal brand name gender) $\times$ 2 (semantic product gender) $\times$ 2 (product class) within-subjects ANOVA on brand evaluations revealed a significant product gender by brand name gender interaction ($F(3, 85) = 6.89, p < .01$) in which gender congruent product/brand name pairs were preferred to incongruent pairs ($M = 4.53$ vs. 4.09). When presented with a semantically feminine product, participants preferred a formally feminine name to a formally masculine name ($M = 4.95$ vs. 4.42; $t(85) = 2.40, p < .01$). When participants evaluated a masculine product, they preferred names that were formally masculine ($M = 4.11$ vs. 3.75; $t(85) = 1.63, p < .05$). These results support hypothesis 2a and are consistent with the findings in study 1. Congruent semantic gender associations lead to more appropriate brand names and translate to higher attitudes toward the brand.

Analysis also revealed a main effect of product gender such that participants preferred the feminine products to masculine products ($M = 4.68$ vs. 3.93; $F(1, 85) = 23.89, p < .01$). Again, there was an effect of product category in which footwear received higher evaluations than beverages ($M = 4.46$ vs. 4.16; $F(1, 85) = 5.00, p < .05$). This could be due to footwear pictures providing additional product information and increasing the product's tangibility or salience. Analysis revealed no significant effects either across brand name roots, between brand name root and product, or between brand name root and brand gender. Additionally, there were no participant gender effects; all effects held regardless of the participant's gender.

Brand Recall. Hypothesis 2b predicts participants will recall more brand names associated with congruently (vs. incongruently) gendered products. Each respondent read four gender-congruent and four gender-incongruent branded product scenarios. This resulted in recall scores between zero (no brand names recalled) and four (all brand names recalled) for both congruent and incongruent gender sets. Analysis demonstrated that participants' free recall of brand names was significantly higher when brand gender was congruent with the semantic product gender ($M = 1.17$) versus instances of incongruent gender ($M = .93$; $F(1, 89) = 3.91$, $p < .05$). The results support hypothesis 2b.

Discussion

In English, gender is semantically determined and provides additional semantic associations to the consumer. Consumers value a consistent message and prefer brand names with associations that agree with those of the product category (hypothesis 2a). Individuals will utilize these associations even when not explicitly asked and will incorporate this information into judgments even when additional product information is available. Further, the shared semantic associations between the brand name and the product enhance the subsequent recall of the brand name (hypothesis 2b). Study 2 corroborates the need to understand how gender markers affect cognitions across different linguistic gender assignment systems. This study provides further support that semantic and formal systems are interdependent. Taken together, these two studies demonstrate cognitive processing differences between semantic and formal language speakers. In Spanish, formal gender cues function as syntactic markers that govern the relation between a sentence's elements but do not convey any further information. In English, semantic gender cues are imbued with meaning and influence branded products' evaluations.

STUDY 3: GENDER'S ROLE IN CATEGORIZATION AND COMPREHENSION

Studies 1 and 2 demonstrated that gender agreement plays a role in both brand evaluation and brand recall. In study 3 we explore how these effects manifest: Are more positive brand evaluations due to gender affecting a brand name's fit within a product category, or are they simply a by-product of gender congruency causing easier processing? Is enhanced brand recall driven by less interference at the time of encoding, or does congruency aid in brand name retrieval? Study 3 tests how the two roles of gender—syntactic structure and classification—provide possible and nonexclusive explanations for the phenomena observed in studies 1 and 2. Each explanation is tested at both the encoding and retrieval stages of information processing. Comparing the results of these tests provides us a clearer picture of the processes behind linguistic gender marking's effects on cognitions.

Semantic languages assign gender to objects based on meaning and not on formal characteristics of the noun representing the object. Hence, the structural/syntactic function of markers is likely to be secondary to their classification function. This implies that semantic cues should be more salient than formal syntactic cues. Thus, a psycholinguistic process such as reading fluency is bound to be more heavily influenced by the fit of representative objects (e.g., feminine products) in active categorical schemas (e.g., feminine objects) than by syntactical congruity between markers. In an information acquisition process such as reading, sentence subjects represented by an active category should be more easily incorporated into memory than subjects that are not members of an active category. For example, when the feminine schema is activated, sentences describing wine should be more easily processed than sentences describing whiskey.

Previous research in categorization has shown that individuals find it easier to encode and evaluate statements where the elements are representative examples of a category (Rosch 1975). For instance, "the robin is a bird" is more easily encoded and evaluated than the statement "the swan is a bird." Lakoff (1987) has suggested that linguistic categories show prototype effects and that these effects occur at every level of language. Activating a category in people's minds (e.g., masculine) should make it easier to encode representative members of that category (e.g., whiskey). If a product is easier to encode when its gender category has been activated, this encoding should be done more quickly. Alternately, when the primed gender category mismatches that of the branded product under evaluation, this "category interference" should slow down the encoding of information.

Experimentally, if the overarching masculine gender category is primed, sentences containing "whiskey" should be read faster than sentences containing "wine." Note that we are predicting the priming effect to hinge on the product's gender rather than the brand's gender. First, the product is the subject and the relevant focal object of a sentence, as it determines the gender of its modifiers. Second, the gender of the product is assigned semantically, while that of the brand is assigned formally (-o vs. -a ending). Thus, we posit that, in a semantic system like English, gender markers will facilitate processing in their capacity as categorizers. Stated formally,

H3a: Faster encoding of the marketing message occurs when the primed gender matches (vs. mismatches) the product class gender.

Despite the fact that we are dealing with a semantic gender system, a look at syntactic agreement is warranted. As we saw in study 2, formal gender cues do have an effect on branded product evaluations. It could be that it is easier for us to read, understand, and evaluate sentences referring to a product and its brand when their gender markers agree (e.g., "Valio whiskey") than when they disagree (e.g., "Valia whiskey"). Still, as mentioned earlier, psycholinguistics findings on the effects of gender marker agreement on pro-

cessing times have yielded disparate results across languages (e.g., Miozzo, Costa, and Caramazza 2002). The inconclusiveness of the extant research warrants our examination of syntactic agreement in this study.

The “syntactic structure” explanation, rooted in the agreement of gender markers, posits that the effects of gender matching manifest because congruent gender markers are easier to process than incongruent ones. Accordingly, sentences containing “Valio whiskey” should be read faster than sentences containing “Valia whiskey.” Notice that this possible explanation does not necessarily bypass the role played by categorization. If supported, it would merely suggest that at the information acquisition stage congruent gender markers facilitate processing, which in turn could account for better evaluation and recall. This possible explanation is formally stated in hypothesis 3b below.

H3b: Faster encoding of marketing messages occurs when the brand name and product class gender are congruent (vs. incongruent).

When individuals are asked to list members of a group represented by a masculine form used in a generic sense (e.g., actor, policeman, spokesman), the appearance of the masculine generic facilitates the retrieval of male exemplars and hinders that of female exemplars of the category from memory (Moulton, Robinson, and Elias 1978; Stahlberg, Sczesny, and Braun 2001). If a product and brand are categorically congruent (i.e., they belong in the same gender class), their simultaneous elicitation should be facilitated. It should be easier to recall a brand sharing a product’s gender category (e.g., Valio whiskey) than one that belongs to a different gender category (e.g., Valia whiskey). Formally,

H3c: Faster recall of the brand occurs when the brand name and product class gender are congruent (vs. incongruent).

Finally, we investigate the effect ease of encoding plays on retrieval. Hypothesis 3a posits that activation of a gender category leads to easier (faster) encoding of information. If recall is a function of ease of encoding, brands associated with products matching the primed gender should be recalled faster than brands associated with products not matching the primed gender. Thus,

H3d: Faster recall of the brand name and product occurs when the primed gender matches (vs. mismatches) the product class gender.

In sum, hypotheses 3a and 3b examine how gender affects encoding through categorization (hypothesis 3a) and syntactic structure (hypothesis 3b). Hypotheses 3c and 3d test the effects of gender on recall due to categorization effects (hypothesis 3c) as well as through ease and depth of processing at the acquisition stage (hypothesis 3d). Given the exploratory nature of these tests, a more exhaustive interpretation of the outcome will be offered post hoc.

Method

Studies 1 and 2 established the robustness of the gender agreement effect. The repeated measure design allowed us to establish the generalizability of the effect across language systems, product categories, and multiple brand names. Study 3 focuses on internal validity and manipulates all factors between subjects, thereby resulting in a more elegant design with greater control of potential demand effects. By making study 3 a computer-based task, response time measures are available to explore the underlying processes. These considerations result in the 2 (primed gender) $\times$ 2 (brand name gender) $\times$ 2 (product gender) between-subjects design described below.

Two hundred forty-eight business students from a metropolitan U.S. university participated in a computer study for partial course credit. After receiving brief instructions, participants were given five incomplete sentences relating to either males (or females) performing stereotypical masculine (or feminine) behaviors. Participants filled in blanks in the sentences indicating what activity the male or female protagonist was going to engage in. For example, one of the sentences in the feminine prime read, “Jane is very excited as she drives to the theater to see an important . . . (blank) . . . performance.” The task acted as either a masculine or a feminine category prime, and respondents’ sentence completions served as a manipulation check of the prime.

Next, participants read a paragraph describing either a new wine or whiskey (the product gender manipulation) named *Valio* or *Valia* (the brand gender manipulation). The brand name and product category were coupled five times inside the paragraph, and the time spent reading the paragraph was recorded. Participants then rated the branded product for overall liking and likelihood of product trial on a seven-point scale. Participants then attempted to recall the brand name and product category. Response times were collected for all dependent measures. Finally, the number of languages spoken, multiple measures of English fluency, involvement measures, and participants’ gender were elicited before they were debriefed and dismissed.

Results

Brand Evaluation. A 2 (primed gender) $\times$ 2 (brand name gender) $\times$ 2 (product gender) between-subjects ANOVA on brand evaluations replicated the findings of study 2. A significant interaction between the brand name gender and product gender ($F(1, 240) = 6.09, p < .05$) provided additional support for hypothesis 2a such that gender congruence led to more favorable evaluations than gender incongruence ($M_{\text{Con}} = 4.92$ vs. $M_{\text{Incon}} = 4.57$; $F(1, 246) = 6.19, p < .05$). In addition, consistent with hypothesis 3a, an interaction between primed gender and product gender ($F(1, 240) = 4.20, p < .05$) resulted in a priming effect where participants evaluated the brand more favorably when primed with the gender that matched the product than when primed with the mismatching gender.

($M_{\text{Match}} = 4.89$ vs. $M_{\text{Mis}} = 4.61$; $F(1, 246) = 4.55$, $p < .05$). No other effects were significant.

Reading Time. A 2 (primed gender) $\times$ 2 (brand name gender) $\times$ 2 (product gender) between-subjects ANCOVA was conducted on paragraph reading time with English fluency and involvement as covariates ($F(1, 239) = 18.47$ and $F(1, 239) = 6.81$, respectively; p 's $< .01$). Since the reading response time data distribution reflected a typical pattern in response time studies where skewness is expected, we truncated all responses that were greater than two standard deviations from the mean (Ulrich and Miller 1994). All analyses reported below additionally hold if these individuals' responses were instead dropped from the analysis or if a logarithmic transformation is used to adjust for extreme response times.

Analysis revealed a significant interaction effect of the primed gender and product gender ($F(1, 239) = 5.09$, $p < .05$), such that cases where the primed gender matched the product gender were read faster than paragraphs where the primed gender mismatched the product gender ($M_{\text{Match}} = 30.74$ sec. vs. $M_{\text{Mis}} = 33.07$ sec.; $F(1, 246) = 5.12$, $p < .05$). Results support hypothesis 3a indicating that the effect of gender marking is tied to the categorization process. Although the interaction effect of brand gender and product gender congruency on reading time was in the direction predicted by hypothesis 3b ($M_{\text{Con}} = 31.55$ sec.; $M_{\text{Incon}} = 32.27$ sec.), this difference did not approach statistical significance ($F(1, 239) < 1$). It appears that syntactic differences in gender do not affect the encoding of information. Instead, in a gender system reliant on semantic meaning, categorization is the main driver of gender encoding effects. These results, plus the findings for brand recall discussed below, are illustrated in figure 1.

Brand Recall. Six participants incorrectly recalled the brand name and product and were dropped from subsequent analysis. A 2 (primed gender) $\times$ 2 (brand name gender) $\times$ 2 (product name gender) between-subjects ANCOVA was conducted on respondents' brand recall time with English fluency as a covariate ($F(1, 232) = 6.68$, $p < .01$). As op-

posed to paragraph encoding, analysis revealed a significant interaction effect between the brand and product gender ($F(1, 232) = 10.679$, $p < .01$). When a brand's gender was congruent with the product's gender, the brand was recalled faster than in conditions of incongruency ($M_{\text{Con}} = 6.02$ sec. vs. $M_{\text{Incon}} = 8.30$ sec.; $F(1, 230) = 11.34$, $p < .05$). This supports hypothesis 3c; a feminine brand (e.g., Valia) in a feminine product class (e.g., wine) is a more prototypical category member and thus is easier to retrieve.

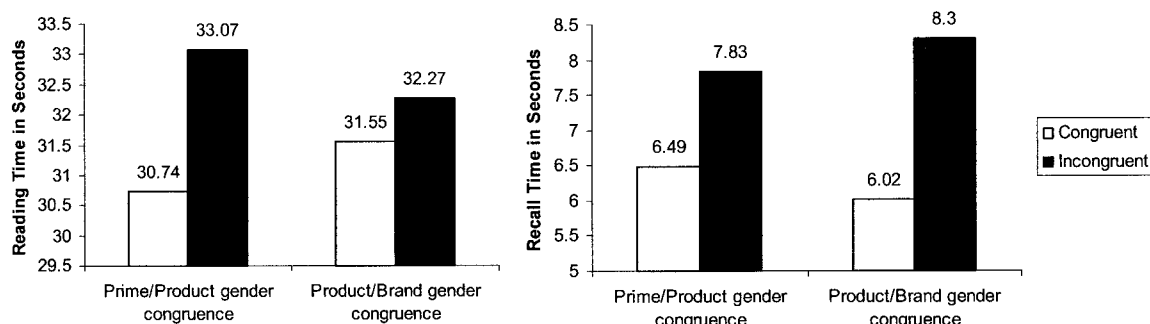
Support for hypothesis 3a suggests that matching the primed gender with the product gender facilitated message-processing time. If the increased ease of processing resulted in stronger encoding of the brand name and product, then, as predicted by hypothesis 3d, priming the matching product gender may aid in brand retrieval. Analysis revealed only moderate support for this hypothesis as the interaction between the primed gender and the product gender approached significance ($M_{\text{Match}} = 6.49$ sec. vs. $M_{\text{Mis}} = 7.83$ sec.; $F(1, 230) = 3.88$, $p < .10$). This demonstrates that gender categorization plays separate roles in the encoding and retrieval of brand names. If a gender category is activated, then a product whose gender matches that product will be more easily processed (hypothesis 3a). During message processing, brand/product congruency appears to have little effect. However, when retrieving brand information from memory, categorization again manifests, and the more prototypical brand name, as represented by brand/product congruency, becomes the driving facilitator for successful recall (hypothesis 3c).

Discussion

Study 3 demonstrates that the syntactic structure provided by gender systems plays a limited role in a semantic system. Gender's role as a categorizing system is the main driver for brand evaluation and retrieval effects. Priming a gender category leads to faster processing of product members of that category, and products with brand names that provide a consistent category message are favored to less prototypical category members. It is interesting to note the lack of

FIGURE 1

STUDY 3: TYPE OF GENDER CONGRUENCE AND ITS EFFECTS ON INFORMATION ENCODING AND RECALL TIMES



a significant difference between the encoding times of congruent and incongruent brand name/product pairs. During encoding, congruent genders provide a stronger syntactical structure that would ease comprehension and increase the processing of the message. However, this effect is not observed. Yet, later on in the study, when this consistency between a brand and product gender acts as a retrieval cue, the congruency effect manifests. This lends additional support to the argument that categorization, and not syntactic consistency, is the underlying process driving the gender effects in a semantic gender system.

GENERAL DISCUSSION

Gender markers provide a categorization schema for objects and a syntactic structure for language. In both of these capacities they affect information encoding and brand attitude formation. Gender systems vary across languages, and the role played by gender markers differs in semantic systems such as English and formal systems such as Spanish. The three studies provide a cohesive explanation of the gender marking process across languages. Study 1 demonstrates the basic effects of gender marking in Spanish, which has a strong, formal language system. Study 2 examines the role gender plays in English, which has a weaker, semantic system where the effects are less expected. Studies 1 and 2 demonstrate the robustness of the phenomenon across language systems, across brand name roots, and across product categories. Finally, study 3 establishes the cognitive processes that drive the gender effects. Recent work by Miozzo et al. (2002) did not find gender congruency effects in Romance languages. They noted that the time interval between a prime and a target's recognition was unaffected by gender agreement in Italian and Spanish. Our research helps explain why no significant effect may have been found. Although formal congruency eases language processing, priming a target's formal gender does not provide a categorization cue for target recall or recognition.

Psycholinguistic Implications. Similarities and, perhaps to a greater extent, differences in results found in English and Spanish shed light on interesting psycholinguistic processes inherent to semantic and formal gender systems. Our findings suggest that formal gender cues act as mere syntactic markers that facilitate cognitive processing (i.e., encoding) when these markers are consistent across sentence components. Their lack of meaning is suggested by the null effect they have on the formation of attitudes toward the objects involved. This does not mean that objects are devoid of "gender meaning" in formal systems. Study 1 provides evidence that individuals "genderize," or assign semantic gender to, objects. This subsequently affects attitude formation, contingent on the (in)congruence of the semantic gender of the object and the formal gender of its name. Although languages may be guided structurally by either a strictly formal or semantic set of gender rules, our research

shows that in practice a complex interdependence between the two systems exists in both formal and semantic systems.

Furthermore, our studies suggest that linguistic markers also act as categorization cues for information encoding, storage, and recall, particularly in semantic systems. Our research provides additional evidence on how language structure influences cognitions. In particular, it contributes to the most recent reformulations of the Whorfian hypothesis of linguistic relativity that states that language shapes perception (see Hunt and Agnoli 1991; Schmitt and Zhang 1998).

Consumer Behavior Implications. In semantic and formal gender systems, individuals readily assign masculine and feminine gender to neutral or inanimate objects such as products. Consumers spontaneously utilize brand name gender associations and incorporate them into their evaluations of branded products, rewarding those brand name/product pairings that provide consistent gender cues, even when additional product information is available. As semantic languages borrow words from formal languages, these formal gender rules gain semantic gender associations. Consumers use these formal gender patterns when deriving meanings for unfamiliar brand names.

In formal languages, although formal gender cues of product names may affect the encoding and subsequent recall of brand names, semantic product associations interact with brand name gender to influence consumer evaluations of branded products. This characteristic of formal systems has another interesting implication for consumer behavior. In the case of a new brand, we can expect that consumers will better recall a brand whose gender agrees with the product's formal gender. We also know that consumers will more highly evaluate a brand whose gender agrees with the product's semantic gender. This presents an interesting conundrum for products that have competing formal and semantic genders. Consider the case of popular and successful products whose brand's gender does not match the product's semantic gender: an example would be *cerveza Corona*. Although we cannot say what the initial evaluation of this product was when it first entered the Mexican market, we do know that today it is successful and enjoys a positive attitude regardless of the brand/product gender incongruency. It might be that the formal agreement aided brand recall when the product was first launched, and then over time any potential disadvantage the product had in terms of brand evaluation was compensated and overcome as consumers tried and started adopting the "masculine" product as legitimate despite its "feminine" name. Further research should explore whether these issues and the current findings in Spanish extend to other Romance languages (e.g., French, Italian) and other formal languages (e.g., Russian).

Future Research. In the studies presented in this article, the brand names used as stimuli were nonsense words, fictional random names devoid of background meaning. Whereas this certainly allows for a more stringent control

over other factors that might affect the results, it naturally prompts the question of what happens when brand equity builds. In the marketplace, brands names over time become laden with rich meanings, and these meanings should then affect the gendering of the brand. This should be particularly prominent in English, which is a semantic system. But then also in a formal language such as Spanish it could eventually trump the formal cues that individuals use, and these derived associations would determine the gender of the brand name. Therefore, when it comes to the evaluation of existing brands, formal cues might not be as important as the semantic cues provided by the brand's acquired meaning. Future research should test this. However, we would expect the effects of formal gender agreement on recall to hold even after a brand has developed a meaning because the facilitated processing effect of formal agreement should remain unaffected, as past research has shown this result for existing words rich with semantic meanings.

The sex/gender link is not a characteristic of all gender systems. For the present research, we chose a semantic language and a formal language with a semantic core that happen to exhibit a sex/gender link. We made this choice based both on peculiarities of these systems that make them particularly intriguing from a psycholinguistic perspective, and on the relevance that the English and Spanish languages have for consumers virtually around the world. The sex/gender link also happens to be the most common, obvious, and important distinction between objects (especially people) and is therefore the gender decision rule for a majority of languages. In future studies, it would be interesting to explore whether any interesting and unexpected results manifest, either differently or similarly within other semantic or formal systems that lack the sex/gender link.

In sum, this article brings to the forefront the role played by linguistic gender markers in the development of attitudes toward branded products. It provides evidence to the effect that gendering of inanimate objects (products) and nonsensical nouns (brands) occurs spontaneously and non-arbitrarily: indeed, consumers adhere to rules dictated by the gender assignment system of the language they speak. Furthermore, our findings show that the idiosyncratic characteristics of formal versus semantic systems result in different outcome patterns of brand recall as a result of effects of gender markers on information processing and encoding. The present research expands our knowledge of psycholinguistic consumer processes, stressing the need to incorporate this discipline to the study of consumer behavior across cultural and linguistic borders.

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