

City University of New York (CUNY)

## CUNY Academic Works

---

Dissertations, Theses, and Capstone Projects

CUNY Graduate Center

---

2-2017

### **A Whole New Wurd? How Unusual Brand Name Spelling Negatively Affects Sensory Perceptions of New Products Through Cognitive and Affective Processing**

Ann E. McNeel

*The Graduate Center, City University of New York*

[How does access to this work benefit you? Let us know!](#)

More information about this work at: [https://academicworks.cuny.edu/gc\\_etds/1860](https://academicworks.cuny.edu/gc_etds/1860)

Discover additional works at: <https://academicworks.cuny.edu>

---

This work is made publicly available by the City University of New York (CUNY).

Contact: [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu)

A WHOLE NEW WURLD? HOW UNUSUAL BRAND NAME SPELLING NEGATIVELY  
AFFECTS SENSORY PERCEPTIONS OF NEW PRODUCTS THROUGH COGNITIVE AND  
AFFECTIVE PROCESSING

by

ANN E. MCNEEL

A dissertation submitted to the Graduate Faculty in Business (Marketing) in partial fulfillment of  
the requirements for the degree of Doctor of Philosophy, The City University of New York

2017

© 2017

ANN E. MCNEEL

All Rights Reserved

A Whole New World? How unusual brand name spelling negatively affects sensory perceptions  
of new products through cognitive and affective processing

by

Ann E. McNeel

This manuscript has been read and accepted for the Graduate Faculty in Business (Marketing) in  
satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Stephen Gould  
Chair of Examining Committee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Karl Lang  
Executive Officer

Supervisory Committee:

David Luna

Sunaina Chugani

Sara Williamson (St. Joseph's University)

THE CITY UNIVERSITY OF NEW YORK

## **ABSTRACT**

A Whole New World? How unusual brand name spelling negatively affects sensory perceptions of new products through cognitive and affective processing

by

Ann E. McNeel

Advisor: Stephen Gould

Introducing the importance of unusual brand name spelling to sensory marketing, this research shows that utilizing the linguistic device of unique brand name spelling can lead to differences in sensory perceptions and actual consumption of a variety of consumer products. Across five studies, we explore how perceptions of the uniqueness of a brand name can be achieved by varying one letter in the spelling of the brand name, and that such a small variation can result in less favorable sensory perceptions of taste (studies 1 and 3), scent (study 2), and vision (studies 4 and 5) as a result of brand name disfluency. We provide evidence that changes in cognitive processing (studies 3-5) and affective processing (study 5) contribute to the underlying process of this effect and demonstrate how the effect can be moderated by inducing concrete thinking (studies 4-5).

## TABLE OF CONTENTS

1. INTRODUCTION	1
2. EFFECTS OF SPELLING	2
Unusual Spelling as an Orthographic Device	2
Brand Name Spelling and Memory	4
Name Spelling	6
3. PROCESSING FLUENCY	6
Fluency and Linguistics	7
Fluency and the Senses	9
4. THE MEDIATING ROLE OF COGNITIVE PROCESSING	11
5. THE MODERATING EFFECT OF CONCRETE VERSUS ABSTRACT MENTAL REPRESENTATIONS	13
6. THE MEDIATING ROLE OF AFFECTIVE PROCESSING	18
7. STUDY 1: THE EFFECT OF BRAND NAME SPELLING ON TASTE PERCEPTIONS	21
Chocolate brand name pretest	21
Participants and Design	22
Materials and Procedure	23
Measures	24

7.01	Sensory perceptions	24
7.02	Brand name items	24
7.03	Control measures and demographics	24
Results		25
7.04	Sensory perceptions	25
7.05	Brand name items	25
7.06	Control measures and demographics	26
Discussion		26

## 8. STUDY 2: THE EFFECT OF BRAND NAME SPELLING ON OLFACTORY PERCEPTIONS 27

Perfume brand name pretest	27	
Participants and Design	29	
Materials and Procedure	30	
Measures	31	
8.01	Sensory perceptions	31
8.02	Brand name items	31
8.03	Control measures and demographics	32
Results		32
8.04	Sensory perceptions	32
8.05	Brand name items	33
8.06	Control measures and demographics	34
Discussion		34

## 9. STUDY 3: THE EFFECT OF BRAND NAME SPELLING ON TASTE PERCEPTIONS AND BEHAVIOR 35

Participants and Design 37

Materials and Procedure 37

Measures 38

9.01 Brand name items 38

9.02 Expectations 38

9.03 Level of hunger 39

9.04 Sensory perceptions 39

9.05 Cognitive processing 39

9.06 Control measures and demographics 39

9.07 Consumption 40

Results 40

9.08 Brand name items 40

9.09 Expectations 41

9.10 Sensory perceptions 41

9.11 Cognitive processing 42

9.12 Control measures 44

9.13 Consumption 44

Discussion 45

## 10. STUDY 4: THE MODERATING ROLE OF CONCRETE VERSUS ABSTRACT MENTAL REPRESENTATIONS 46

Brand name pretest 46

Participants and Design	48
Materials and Procedure	48
Measures	49
10.01 Sensory perceptions	49
10.02 Brand name items	50
10.03 Cognitive processing	50
10.04 Consumer buying interest	51
10.05 Control measures	51
Processing motivation	51
Imagery accessibility	51
Centrality of Visual Product Aesthetics	51
Need for Uniqueness	52
Results	52
10.06 Sensory perceptions	52
10.07 Brand name items	54
10.08 Cognitive processing	54
10.09 Consumer buying interest	54
Discussion	55
11. STUDY 5: THE ROLE OF AFFECTIVE PROCESSING	55
Participants and Design	56
Materials and Procedure	57
Measures	57

11.01	Sound check	57
11.02	Sensory perceptions	58
11.03	Affective response	59
11.04	Brand name items	59
11.05	Cognitive and affective processing	59
11.06	Consumer buying interest	60
11.07	Control measures	60
	Centrality of Visual Product Aesthetics	61
	Need for Uniqueness	61
Results		61
11.08	Sensory perceptions	61
11.09	Affective response	63
11.10	Brand name items	64
11.11	Cognitive and affective processing	64
11.12	Consumer buying interest	66
Discussion		66
12. GENERAL DISCUSSION		67
Limitations		68
Future Directions		70
Implications and Conclusion		73
13. TABLE		75

14. FIGURES 76

15. APPENDICES 84

16. REFERENCES 98

## LIST OF TABLES, FIGURES, AND APPENDICES

Table 1	Overview of studies	75
---------	---------------------	----

### Figures

Figure 1	Conceptual model	76
Figure 2	Study 3 competitive mediation model	77
Figure 3	Study 4 first contrast analysis of brand name spelling on sensory perceptions	78
Figure 4	Study 4 second contrast analysis of brand name spelling on sensory perceptions	79
Figure 5	Study 5 first contrast analysis of brand name spelling on sensory perceptions	80
Figure 6	Study 5 first contrast analysis of brand name spelling on sensory perceptions	81
Figure 7	Study 5 contrast analysis of negative affective reaction to brand name spelling	82
Figure 8	Study 5 full conceptual model results	83

### Appendices

Appendix A	A photograph of the individually-wrapped milk chocolates used in study 1	84
Appendix B	A photograph of the unmarked perfume bottle used in study 2	85
Appendix C	Texts of studies 4 and 5 mental representation manipulations	86

Appendix D	The visuals used for common and unique spelling conditions in studies 4 and 5	87
Appendix E	Spoken text of the audio clip played in Studies 4 and 5	88
Appendix F	Additional study exploring the interaction of product price on the effect of brand name spelling on sensory perceptions	89
AF.01	Participants and design	89
AF.02	Materials and Procedure	89
	Figure A1. Images used in common and unique brand name spelling conditions	90
AF.03	Measures	90
	Brand name items	90
	Cognitive processing	90
	Sensory perceptions	91
	Consumer buying interest	91
	Control measures	92
	Centrality of visual product aesthetics	92
	Need for uniqueness	92
AF.04	Results	92
	Brand name items	93
	Consumer buying interest	93
	Sensory perceptions	93
	Figure A2. Additional study contrast analysis of brand name spelling on sensory perceptions	94

Cognitive processing 94

Figure A3. Additional study moderated mediation  
model 96

AF.05 Discussion 96

## INTRODUCTION

Choosing a brand name is one of the most important parts of launching and positioning a new product. The importance of brand names in consumer research is highlighted by the long history of research exploring the effect of brand names on consumer judgments and consumption-related variables (e.g., Jacoby, Olson, & Haddock, 1971; Maheswaran, Mackie, & Chaiken, 1992; Gunasti & Ross, 2010; Duduciuc & Ivan, 2015). Although the right brand name is crucial to market success, developing new brand names is a rather ambiguous process, and so-called "namers" at branding agencies are paid a hefty sum, estimated to be anywhere from \$3,000 to \$75,000 to help companies develop the perfect brand name for a new product (Gabler, 2015).

Because most words in the English language have already been claimed as brand names, namers often resort to linguistic devices to come up with new brand names, such as changing letters of common words (Gabler, 2015). Examples of brand names made from using the method of changing one letter of a word may be seen in the marketing landscape across many different product categories, such as: the transportation service, Lyft; the Kool-Aid line of beverage mixes, the restaurant, Lyfe Kitchen; and Nissan's Infiniti line of automobiles. The presence of brand names made from slight variations of the spellings of common words assumes marketers believe this brand naming strategy will lead to more favorable consumer judgments and behavior. Industry experts have noted that sometimes all it takes is changing one letter of a real word in order to make a good brand name (Feloni, 2014). However, in the current work, we explore how slight spelling variations of brand names may, in fact, lead to less favorable sensory perception ratings of the product experience.

We will first situate changing the spelling of a word to make it more unique in the linguistic literature as an orthographic device, one of several potential linguistic devices, or tools used when forming language. Then, we will review relevant research on spelling and brand names, look to relevant psychology literature on naming, and explore linguistics-related consumer research to suggest that more commonly-spelled names and words are preferred. Based on naive theories of fluency, we will propose a model (see Figure 1) in which sensory-specific evaluations are found to be negatively affected by slight variations in brand name spelling—even though traditional marketing variables such as quality perceptions and buying interest may not be affected. Krishna (2012) specifically calls for further research concerning how a-modal information, or product-related information that is not sensory modality-specific, such as brand name spelling, affects consumers' sensory perceptions—especially in the less frequently explored senses of olfaction and vision. With this work, we aim to contribute both to work on the effect of a-modal information on sensory marketing (Krishna, 2012) and to the growing body of research in Consumer Linguistics, or the study of language in consumption-related and brand-related settings (Carnevale, Luna, & Lerman, working paper), by exploring how utilizing the orthographic device of unusual brand name spelling often seen in today's marketplace may be detrimentally affecting sensory perceptions of the products holding those brand names.

## **EFFECTS OF SPELLING**

### **Unusual Spelling as an Orthographic Device**

Linguists differentiate between four basic linguistic devices, or language techniques writers use to create text, which are utilized in the English language (Lowrey,

Shrum, & Dubitsky, 2003). One or a combination of these devices is typically used when forming new brand name words, and they include: phonetic devices (relating to sounds of words, such as alliteration), morphological devices (involving the addition of letters or groups of letters to words), semantic devices (dealing with the underlying meaning of words, sentences, or parts of words, such as metaphors) and orthographic devices (concerning letters and spelling, e.g. altering words to have unusual or incorrect spellings).

Focusing specifically on orthographic devices, past research in linguistics has explored differences in decision latencies in lexical decision tasks of orthographic neighbors, or words differing by only one letter in any position (Janack, Pastizzo, & Feldman, 2004). It has been suggested that the position of the mismatched letter in a pair of orthographic neighbors may have an effect on activation. In an identification task, Perea (1998) found that orthographic neighbors are less likely to be identified when they are primed by a neighbor with a mismatch in a medial letter as opposed to the first or last letter.

Another area of work on brand name spelling focuses on the differences between two types of vowels, which suggests that front vowels (such as "e" and "i"), which are formed by putting the tongue forward in the mouth, differ significantly from back vowels (such as "o" and "u"), which are formed by folding the tongue back in the mouth. Klink (2000) has shown that products with brand names containing front vowels (versus back vowels) are more likely to be perceived as small, thin, light, and feminine. In a consumer context, the bulk of research on brand names has focused on semantic and phonological

devices with the research on orthographic devices, which are the focus of the current work, being limited.

### **Brand Name Spelling and Memory**

Research related to brand name spelling has focused primarily on memory (e.g., Lowrey *et al.*, 2003; Lerman & Garbarino, 2002; McCracken & Macklin, 1998) and, in general, suggests that unusual spelling has a positive effect on brand name memory (Lowrey *et al.*, 2003). Lowrey and colleagues (2003) analyzed 480 real-world brand names for linguistic properties, including the orthographic device of altered spelling, along with consumer responses to television commercials utilizing those brand names. Despite not all linguistic devices resulting in significant main effects on consumer responses, the linguistic device of unusual spelling did result in a significant effect, such that brand names with an unusual spelling resulted in greater recognition and recall. Although, in this work, familiarity was originally a hypothesized moderating variable, such that the effect of linguistic devices was predicted to be stronger for less familiar brands, the effect of unusual brand name spelling on memory was, interestingly, significant for both more familiar and less familiar brands.

Although past work (Lowrey *et al.*, 2003) suggests that orthographic (i.e., spelling), phonetic (i.e., sound), and semantic (i.e., meaning) linguistic devices operate in distinctive ways, other work (Luna, Carnevale, & Lerman, 2010) on brand name spellings suggests that spelling is strongly linked to semantic and phonetic associations. In this research, semantic elaboration and spelling primes significantly influenced the likelihood of accurately spelling brand names heard during audio clips and, as result, influenced brand evaluations. This work suggests that when brand names occur more (versus less)

frequently, consumers are more likely to process them semantically than phonetically with semantic associations having an effect on brand evaluations. Additionally, Luna and colleagues (2010) showed that correctly spelling a nonword brand name after hearing an audio clip of the name increases recall of the brand name for brands that can be spelled in multiple ways or have low frequency spellings.

Similar to comparing a brand name word with an orthographically-altered version, Lerman and Garbarino (2002) explored the effects of words versus nonwords. This work found that a camera given a brand name of a word from the English dictionary (i.e., Simplicity or Ultimate) resulted in significantly greater recall than the same camera given a nonword brand name (i.e., Monit). The results were theoretically supported by the associative network model of memory ( Craik & Lockhart, 1972), which suggests that retrievability should be greater for words than nonwords simply because the associations and how often these associations have been accessed in the past are greater for words than nonwords.

McCracken and Macklin (1998) have also explored the effect of brand name spelling on memory. In their work, the researchers compared: (1) attribute-based brand names (conveying some attribute information about the product category; e.g., Fruitys toaster pastries), (2) family brand names (did not convey attribute information about the product category; e.g. Crowns toaster pastries), and (3) novel brand names (uniquely-spelled brand names derived from attributes of the product category but unlikely to be linked to existing memory structures; e.g., Prodoos toaster pastries). McCracken and Macklin's (1998) work suggests greater explicit and implicit memory for an attribute-based brand name (e.g., Fruitys) than a brand name with a unique and novel spelling

(e.g., Prodoos). Overall, because past research on the effect of brand name linguistic factors and spelling has focused primarily on brand recall and memory, we look to other areas of research to further explore the potential psychological effects of unique spelling variations of brand names.

### **Name Spelling**

Just as marketers are opting to change the spelling of common words to form new brand names, a trend has emerged in baby naming such that parents are choosing to give their children common names with unique spellings (e.g., Jaxon). As one blogger notes, being unique is simply not good enough for today's parents, so they are resorting to naming their child Unique or even Eunique (Walsh, 2015). Thinking about naming in the context of given names allows us to look to literature in psychology, which has long recognized the importance of name commonality versus uniqueness. Although parents today may be aiming for uniqueness, Mehrabian (2001) found that unconventionally-spelled names (versus their conventionally-spelled equivalent) resulted in the person with the unconventional name being perceived as less ethical/caring, less popular/fun, and less successful. In this work, familiarity was found as the underlying reason for the effects with more common names being associated with a greater level of familiarity.

### **PROCESSING FLUENCY**

The construct of familiarity, which has often been associated with the effects of unique spellings in past research, is very closely related to that of processing fluency, or the ease or difficulty with which new external information is processed (Schwarz, 2004). In general, more familiar (i.e., previously seen) stimuli are easier to process, and less familiar stimuli are more difficult to process. Familiarity and fluency are so closely

linked that consumers often infer familiarity from ease of information processing even when fluency is due simply to presentation cues, such as length of exposure or ease of reading one particular font over another (Alter & Oppenheimer, 2009). The relationship between familiarity and fluency is based on the Knowledge-Related Theory, one of the naive theories of fluency, which posits that one's own state of knowledge affects processing fluency (Schwarz, 2004). Disfluency is said to put individuals in a different, less positive metacognitive state (Schwarz, 2004; Mantonakis, Galiffi, Aysan, & Beckett, 2013), a state of subjective feeling that a cognitive process is not running smoothly (Oppenheimer & Frank, 2008). Empirically, fluency is quantitatively detected in a number of ways including objective measures of speed or accuracy or subjective evaluations of effort (Schwarz, 2004).

Conceptually, the literature has distinguished between two main types of fluency: perceptual fluency (related to a stimuli's physical identity or form) and conceptual fluency (related to a stimuli's semantic meaning). In a review, Alter and Oppenheimer (2009) also recognize a third type of fluency, that is linguistic fluency, which relates to the phonological simplicity of a stimulus. It has been noted that, empirically, all of the conceptual distinctions of fluency show similar effects on judgment and are considered under the general construct of *processing fluency* (Schwarz, 2004; Alter & Oppenheimer, 2009). Thus, all references to fluency in the current work refer to this general construct of processing fluency.

### **Fluency and Linguistics**

In our review of past work on fluency, we will focus on extant research related to fluency and linguistics, as it is most relevant to our work. In general, more fluent stimuli

result in more positive evaluations than less fluent stimuli across a range of various judgment domains. For example, aphorisms that rhyme are more fluent than non-rhyming aphorisms thus are considered to be more true (McGlone & Tofiqbakhsh, 2000). Similarly, Brennan, and Williams (1995) found that the absence of disfluent speech placeholders (such as "uh" and "um") implies greater truth than when those disfluent placeholders are present. In the financial domain, Alter and Oppenheimer (2006) have shown that more easily pronounced (i.e., more fluently processed) hypothetical financial stocks names (e.g., Barnings) generally outperform less fluent, more complex stock names (e.g., Fyndwyck). Similar to this work, Green and Jame (2013) have shown that companies with short and easy to pronounce corporate names benefit in terms of several important financial metrics including breadth of ownership, higher valuation ratios, increased liquidity, and greater firm value. A similar effect is seen in the pharmaceutical industry with more complex (i.e., difficult to pronounce) pharmaceutical brand names resulting in the drug being perceived as more risky (Cho, 2014). Also, in line with Mehrabian's (2001) work on unconventionally-spelled names resulting in the name holder as being perceived as less successful, Oppenheimer (2006) found that easier to process texts seem to have been written by a more intelligent author than harder to process texts (i.e., needlessly using long words). While this research clearly points to the role of processing fluency as an explanation for evaluative judgments related to uniquely-spelled brand names, fluency has also been found to be influential on sensory experiences. Accordingly, in the next section we look specifically to sensory perception literature related to fluency in order to further support our notion that fluency will affect the sensory experience of a product.

## **Fluency and the Senses**

It has previously been recognized by marketing researchers that there is a relationship between linguistic factors and the senses (Hoegg & Alba, 2007) and that words themselves can evoke sensory experiences (Juhasz & Yap, 2013). Juhasz and Yap (2013) measured what they call the sensory experience ratings (SERs) of over 5,000 words in the English language. SERs indicate the extent to which a given word evokes a sensory and/or perceptual experience when the word is read silently. SERs are theoretically based on the idea of grounded cognition, which conceptualizes the link between cognitions and perceptions (Barsalou, 2008).

Specifically related to fluency and the senses, it has been suggested that fluency can affect sensory perceptions of vision, namely aesthetic judgments (Cho & Schwarz, 2010). In past work, perceptual fluency is manipulated by showing a familiar others' images in a regular (i.e., fluent) or mirror-image (i.e., disfluent) view. The results suggest that accessories (earrings and glasses) are aesthetically preferred when they are viewed in the regular image than the mirror image (Cho & Schwarz, 2010). In recent work, Streicher and Estes (2016) conducted cross-modal sensory work using beverage containers and found that the haptic sensation of grasping a container increased the likelihood of choosing a similarly-shaped product through the process of visual fluency (i.e., because the products look alike). In other work, Mantonakis and colleagues (2013) had consumers taste orange juice with the brand name presented in either easy-to-read black Arial font or more difficult-to-read Brush ScriptMT font, which has been often been used as a successful manipulation of fluency versus disfluency (Song & Schwarz, 2008). Of particular importance to the current work, respondents reported lower taste

ratings in the disfluent condition than a control condition, suggesting that it is not fluency that necessarily gives an advantage but disfluency that creates a disadvantage (Mantonakis *et al.*, 2013). It should also be noted that in the same work, Mantonakis and colleagues (2013) found that, although disfluency decreases sensory evaluations for a utilitarian product, such as orange juice, disfluency may increase taste ratings of a hedonic product, such as wine, but only for those high in category knowledge who may be more motivated to rate products in the category more favorably. Gmuer, Siegrist, and Dohle (2015), however, found differing results on taste ratings of wine in a recent field study. They found that whether a wine was considered an everyday versus special-occasion product had no effect on taste ratings. However, wine label fluency (manipulated by easy-to-read or difficult-to-read font) had a significant effect on wine taste ratings with easy-to-read font labels resulting in higher actual taste ratings on wine. The differing results of the effects of fluency on sensory evaluations for utilitarian and hedonic products (Mantonakis *et al.*, 2013) suggests that further research on linguistic fluency cues and sensory evaluations is warranted. Although their work does not focus on sensory evaluations, Oppenheimer and Frank (2008) title their work on the effects of fluency: "A rose in any other font would not smell as sweet: Effects of perceptual fluency on categorization" (Oppenheimer & Frank 2008, p. 1178) suggesting the same idea Krishna (2012) presents when discussing further needed research on the effects of a-modal information on sensory perceptions. Although Krishna (2012) writes that we can imagine that a more favorable brand name may make a perfume smell better to the consumer, as of yet, there is no empirical exploration of whether a fluently-spelled brand name would elicit more favorable sensory perception evaluations than a disfluently-

spelled brand name. Based on the reviewed research on linguistic fluency, in the present work, we suggest that a mere one-letter spelling variation to make a brand name spelling more unique (while keeping pronunciation constant) will lead to less favorable sensory perceptions than the commonly-spelled brand name equivalent. Further, we aim to show that the unique brand name spelling not only results in differences in subjective sensory perceptions but that the effect extends to objective product consumption. Formally, we predict:

**H1:** A product with a uniquely-spelled brand name will result in less favorable sensory perception ratings and less consumption than the same product with the commonly-spelled brand name equivalent.

### **THE MEDIATING ROLE OF COGNITIVE PROCESSING**

As we suggested that a slight spelling variation of a brand name to make it more unique puts consumers in state of metacognitive disfluency, we hope to support this notion by illustrating that uniquely-spelled brand names result in greater cognitive processing, and this greater cognitive processing is part of the process underlying our above proposed main effect of brand name spelling on sensory perceptions. Alter and Oppenheimer (2009) describe in their review of fluency that each cognitive task can be described along a continuum from low effort to high effort, and this corresponds to a metacognitive experiences that ranges from fluent to disfluent, respectively (Alter & Oppenheimer, 2009). Thus, theoretically, level of effort corresponds closely with fluency with fluent stimuli being associated with low levels of effort and disfluent stimuli being associated with high levels of effort. In order to measure expended effort, research has

often resorted to subjective rating scales. Although such scales operated under the assumption that consumers are able to accurately introspect on their current cognitive state, past research does suggest that individuals are able to reliably give a numerical indication of their perceived expended mental effort (Gopher & Braune, 1984).

Accordingly, if a disfluent stimulus imposes greater effort on an individual, he should be able to sense this greater imposition of effort and report on it.

Past research points to reasons why disfluency may result in more cognitive processing. Alter, Oppenheimer, Epley, and Eyre (2007) have shown that metacognitive experiences of disfluency or difficulty activate analytic reasoning, which, in turn, may lead individuals to correct on the outcomes of more intuitive reasoning. For example, in one experiment, Alter and colleagues (2007) administered the Cognitive Reflection Test (CRT; Frederick, 2005) in either an easy-to-read (i.e., fluent) or difficult-to-read (i.e., disfluent) font. The test is designed in such a way that the gut reaction, first response to each question is incorrect but can be corrected through more analytic reasoning. Those in the disfluent condition scored higher on the CRT suggesting they were more likely to use analytic reasoning to correct incorrect gut reactions. Similarly, in the domains of advertising and persuasion, Lowrey (1998) shows that linguistic complexity (advertising claims written simple, active voice versus the same claims changed to negations) lead to greater elaboration in terms of cognitive responses and higher levels of recall. In a brand name context, Lerman and Garbarino (2002) theorize that the processing of nonword brand names would be a more difficult task than the processing of word brand names because words are already a part of our lexicon, or mental dictionary, which can be easily accessed through activation of nodes within our associative network. Building on the

aforementioned research, we suggest that disfluent or less familiar linguistic stimuli, such as uniquely-spelled brand names, require greater cognitive processing in terms of effort and difficulty, and this increased cognitive processing is part of the underlying mechanism of our proposed effect of brand name spelling on sensory preferences.

Formally, we hypothesize:

**H2:** Uniquely-spelled brand names require more cognitive processing than their commonly-spelled brand name equivalent.

**H3:** Cognitive processing will mediate the effect of uniquely-spelled brand names to result in less favorable sensory perceptions than the commonly-spelled brand name equivalent.

## **THE MODERATING EFFECT OF CONCRETE VERSUS ABSTRACT MENTAL REPRESENTATIONS**

As we aim to further investigate how cognitive processing plays a role in the effect of unusual brand name spelling on sensory perceptions, we look to whether manipulating abstract versus concrete mental representations influences the main effect of unique brand name spelling on sensory perceptions. Because manipulating concrete versus abstract mental representations changes the way people process information, it should have a theoretically-relevant effect on our proposed process. In other words, if our effect is based, at least in part, on differences in cognitive processing, a manipulation which alters the way people are thinking should have an effect on the underlying process of our effect.

Past research has shown that the way in which individuals "construe"—or subjectively understand the world around them—can differ and influence judgments and decisions (Fujita, 2008). There are many different theories often used in psychological and consumer research dealing with mental representations and their hierarchical structure ranging from low-level (concrete) to high-level (abstract; Vallacher & Wegner, 2007). One of those theories is action identification theory (AIT; Vallacher & Wegner, 1987). This theory suggests that there are various different possible identifications for actions, or ways we can identify our actions. The theory suggests that when an action is identified as difficult, individuals process information concretely (i.e., low level or low construal); while, when an action is not difficult, individuals process information abstractly (i.e., high level or high construal). Under AIT (Vallacher & Wegner, 1987), lower level mental representations deal with the details or specifics of the action and how the action is done, while higher level mental representations deal with a more general understanding and why an action is done. In comparison to lower level representations, higher level representations tend to provide a more comprehensive, or holistic, understanding (Vallacher & Wegner, 1987). AIT also argues that when both higher and lower identities are available, people have a tendency to favor the higher level, seemingly because humans generally tend toward the larger meaning or implication of their actions (Vallacher & Wegner, 1987).

A common practice in modern consumer psychology literature is to examine the effects of low-level/concrete versus high-level/abstract mental representations through what is known as a construal level manipulation (e.g., Dhar & Kim, 2007). Most relevant to our work, manipulating construal level has been shown in past work (e.g., Tsai &

Thomas, 2011) to moderate the typical effects of fluency. In this work, the authors work from construal level theory (CLT), which posits that individuals can interpret stimuli in their environment along a hierarchical spectrum of psychological distance. Individuals interpret the world around them in either in an abstract, generalized way (i.e., high-level construal) or in a more concrete, contextualized way (i.e., low-level construal; Trope & Liberman, 2010). As with AIT, under CLT, in high-level construals, individuals focus on the general idea of the available information and interpret stimuli in relatively simple and general characterizations as compared to low-level construals (Kim & John, 2008).

We find it important to note that although construal level theory (CLT) and action identification theory (AIT) are closely-related and analogous theories, our work theoretically builds off of AIT—not CLT. While both theories are based on the idea that people can interpret the world at different levels of abstraction (concrete versus abstract mental representations), the two theories differ in what *causes* the change in level of abstraction (Fujita, 2008). CLT deals mainly with psychological distance (near versus far), while AIT deals the difficulty in enacting an action (easy versus difficult; Fujita, 2008). We do not work under CLT, or theories of psychological distance, but under the framework of AIT and changes in mental representation due to difficulty.

We predict our effect of disfluency (caused by unusual brand name spelling) should be influenced by manipulating concrete versus abstract mental representation. In past research, specifically in a chocolate brand evaluation context and a charitable giving context, Tsai and Thomas (2011) were able to show that, although fluency generally increases positivity of evaluations (as we suggest in our work), this is not the case when people construe stimuli abstractly (at a high level). In their work, Tsai and Thomas

(2011) manipulate concrete versus abstract mental representations through a word task and manipulate fluency by presenting either an easy-to-read or difficult-to-read advertisement font. The researchers (Tsai & Thomas, 2011) found that general liking evaluations were significantly higher when the font was easy-to-read than when the font was difficult-to-read—but only in the concrete mental representation condition. In the abstract mental representation condition, there was no significant effect of fluency. In their work (Tsai & Thomas, 2011), abstract thinking is believed to help distinguish more important decision inputs from other less important inputs. They theorized that abstract thinking reduced the relevance of fluency as a decision input when making evaluative judgments.

Although a relationship between fluency and concrete versus abstract mental representations has been explored in the past work described above (Tsai & Thomas, 2011), we aim to show that sensory perceptions of products are theoretically distinct from simple evaluative judgments (Krishna, 2012) and are influenced differently. Thus, we posit that manipulating concrete versus abstract mental representation may affect sensory perceptions in a different way than it does product evaluations or judgments, adding to the novel sensory-related contribution of our work. Some research has been able to document a relationship between sensory distance (i.e., how closely in contact one is with a product) and the degree of concreteness versus abstractness of mental representations (Kardes, Cronley, & Kim, 2006), but research has not yet explored the effect of concrete versus abstract mental representations on sensory-specific perceptions.

Taking the work of Tsai and Thomas (2011), which was not sensory-focused, and relating it to our work, it may suggest that abstract thinking could diminish the

importance of brand name information and attenuate our effect under an abstract mental representation. However, we believe that sensory perception evaluations will function differently than typical brand evaluations, as in Tsai and Thomas (2011). For four possible reasons outlined below, we predict our main effect will, in fact, hold under an abstract mindset, unlike in past work (Tsai & Thomas, 2011):

(1) Firstly, as human beings, our five senses work simultaneously and holistically to help us interpret the world around us (Groeger, 2012). Accordingly, sensory processing and sensory evaluations may simply be more in line with abstract, high-level processing in which we interpret stimuli in a more holistic, generalized way.

(2) Secondly, brand names themselves seem to have a more holistic, less concrete aspect to them according to them (Maheswaran, Mackie, & Chaiken, 1992). Maheswaran and colleagues (1992) theorize that brand names are knowledge structures that provide direct evidence about the stimulus in question and operate as high-level cues.

(3) Thirdly, research on the effects of low-level versus high-level mental representations (Fujita, 2008) has found that individuals give more weight to high-level (low-level) features, such as brand names, when construing events at high-level (low-level). Thus, in an abstract processing condition, it is likely that individuals take into account the brand name spelling; while in a concrete processing condition, individuals may focus more on the sensory-specific characteristics in question (for example, packaging color) and put less attention to the brand name.

(4) Lastly, working through the lens of AIT, if it is possible that difficulty leads to concrete thinking (as AIT posits; Vallacher & Wegner, 1987); then, in reverse, concrete thinking may lead to perceptions of difficulty. This has been shown to be true in choice difficulty scenarios (e.g., Cho, Khan, & Dhar, 2013; Xu, Jiang, & Dhar, 2013). Thus, if concrete thinking leads to perceptions of difficulty, individuals in a concrete mindset condition would, theoretically, experience more processing difficulty than those in an abstract mindset condition. If this is so, in a concrete condition, all individuals may be exhibiting more cognitive processing and more cognitive effort than in an abstract processing condition, and this could attenuate our effect in a concrete mindset condition.

Formally, we hypothesize:

**H4:** The main effect of brand name spelling on sensory perceptions (H1) will hold only when individuals are processing abstractly and not when individuals are processing concretely.

### **THE MEDIATING ROLE OF AFFECTIVE PROCESSING**

As theorized above, we predict cognitive processing to play a role in the underlying process of our effect of unique brand name spelling on sensory perceptions (hypothesis 3) based on processing fluency theory. However, because fluency is a key theory on which we build our predictions, we expect affective processing, due to its theoretical relation to fluency, will also play a role in the underlying process of our effect.

Past research has suggested that disfluency may negatively influence individuals' affective states (e.g., Alter *et al.*, 2007). As mentioned above, disfluency puts individuals

in a less positive metacognitive state of subjective feeling (Oppenheimer & Frank, 2008). Winkielman, Schwarz, Fazendeiro, and Reber (2002) have outlined the theoretical underpinnings of the connection between fluency and a more positively-valenced state. The researchers describe how fluency acts as a cue for familiarity with greater familiarity generally being associated with more positive affective states. This is due to biological predispositions to greater vigilance when dealing with novel, thus potentially risky, stimuli. Additionally, Winkielman and colleagues (2002) also theorize a link between fluency and prototypicality or symmetry resulting in more positively-valenced affective states, such that more fluent stimuli are perceived as being more prototypical and more symmetrical, and human beings having, again, an innate preference for such stimuli. As a result, we hypothesize that along with increased cognitive processing, a uniquely-spelled, disfluent brand name will negatively affect one's affective state and differences in affective processing will contribute to the underlying process of our main effect.

Formally, we hypothesize the following:

**H5:** Uniquely-spelled brand names will negatively affect consumers' affective states.

**H6:** Affective processing will mediate the effect of uniquely-spelled brand names resulting in less favorable sensory perceptions than the commonly-spelled brand name equivalent.

Putting together our entire model (see Figure 1), we predict:

**H7:** Cognitive and affective processing will simultaneously mediate the effect of uniquely-spelled brand names resulting in less favorable sensory perceptions than the commonly-spelled brand name equivalent, and this mediated effect will be moderated by concrete versus abstract mental representations, such that the effect will hold when individuals are processing abstractly and not concretely.

In the following five studies, we show that uniquely-spelled brand names result in less favorable sensory perceptions of taste (study 1 and study 3), scent (study 2), and vision (study 4 and study 5) than when a commonly-spelled brand name equivalent is presented for the same product. We also gain support for the notion that the effect of uniquely-spelled brand names relies on changes in cognitive processing (studies 2-5); and, as such, the effect of brand name spelling on sensory perceptions holds only when consumers are processing information abstractly (studies 4-5). In addition to changes in cognitive processing, uniquely-spelled brand names also result in greater negative affective processing (study 5), and both cognitive and affective processing mediate the effect of unique brand name spelling on sensory perceptions. See Figure 1 for a conceptual model of the effects explored in our studies and Table 1 for an overview of the studies.

---

Insert Figure 1 about here

---

Insert Table 1 about here

---

## **STUDY 1: THE EFFECT OF BRAND NAME SPELLING ON TASTE PERCEPTIONS**

In this experiment, we sought evidence to support our first hypothesis that a product with a uniquely-spelled brand name will yield less favorable sensory perception ratings than the same product with the commonly-spelled brand name equivalent. We tested this hypothesis specifically in the sense of taste using chocolate as the consumption category. Prior to conducting study 1, it was necessary to pretest commonly- and uniquely-spelled brand names in order to choose the between-subjects brand name pair to be used in the study.

### **Chocolate brand name pretest**

We pretested a series of commonly- and uniquely-spelled brand name spelling pairs to ensure: (a) that the brand names used differed such that one was rated as being spelled more uniquely than the other; and (b) that brand name spellings utilized in the study did not present issues with potentially confounding dimensions (such as ethnicity perceptions). For example, we aimed to choose brand name pairs that did not differ in their perceived ethnicity, as perceived ethnic differences could be a potentially problematic alternative explanation. The pretest was conducted on the data collection forum Amazon Mechanical Turk and was presented to participants as an exploration of various words to be potentially used as brand names for consumer products.

Forty-eight U.S. participants whose primary language is English (30 male, 18 female) and whose mean age was 40.875 years completed the survey designed in the program, Qualtrics, asking them to rate a total of 12 words. Common/unique word pairs used as stimuli (Time/Tyme, Person/Purson, Year/Yeer, World/Wurld, Life/Lyfe,

Place/Playse, Work/Wurk, Case/Kase, Point/Poynt, Number/Numbr) were devised by first choosing twelve words from among the 25 most common nouns in the English language (<https://www.englishclub.com/vocabulary/common-nouns-25.htm>) and then altering the spelling to construct an orthographically-altered version for the uniquely-spelled version. Randomization was used to present either the commonly-spelled or the uniquely-spelled word (between-subjects) for each of the twelve words (within-subjects). We aimed to choose a word pair that did not differ on dimensions related to ethnicity and pronunciation, since these factors have been shown to influence brand image (Leclerc, Schmitt, & Dubé, 1994). Additionally, as previously mentioned, because past research suggests that the use of front vowels versus back vowels in brand names results in differing effects (Klink, 2000), we found it important to use a brand name pair in which both brand names do not differ in their use of front or back vowels.

Based on analysis of our pretest, the brand name pair chosen for the study was World/Wurld, which both utilize back vowels. The spelling of the brand name Wurld was rated as significantly more unique (1 = not at all unique spelling; 7 = very unique spelling) than the spelling of World ( $M_{\text{common}} = 1.74$ ,  $M_{\text{unique}} = 6.00$ ,  $F(1,47) = 134.402$ ,  $p < .001$ ). However, importantly, World and Wurld did not differ in how ethnic they were perceived to be (1 = not at all ethnic, 7 = very ethnic;  $M_{\text{common}} = 1.91$ ,  $M_{\text{unique}} = 1.88$ ,  $F(1,47) = .007$ ,  $p = .934$ ). Additionally, the two brand names did not differ in perceived ease of pronunciation (1 = not easy to pronounce, 7 = very easy to pronounce;  $M_{\text{common}} = 6.52$ ,  $M_{\text{unique}} = 6.28$ ,  $F(1,47) = .660$ ,  $p = .421$ ).

## **Participants and Design**

Forty-four students in a business course at large Northeastern college participated in a one-factor between-subjects design across two class sessions with the first class session (N = 25) rating the chocolates with the uniquely-spelled brand name (i.e., Wurld Chocolates), and the second class session (N = 19) rating the chocolates with the commonly-spelled brand name (World Chocolates). Participants completed a pen and paper survey for extra credit in their class. Due to the linguistically-related nature of our proposed effect, we had *a priori* plans to utilize only those respondents who have lived in the U.S. for at least 10 years in our analysis to ensure all respondents were proficient in the English language (DeKeyser, 2000). In the current study, eight students (six in the unique condition, two in the common condition) reported living in the U.S. less than 10 years and were excluded from the analysis. One additional student (unique condition) did not answer one of the key dependent variables and was also excluded from the sample, leaving a total of 35 (17 male, 18 female) participants for the analysis. The average age of respondents was 21.37 years.

### **Materials and Procedure**

The study materials consisted of a short pen and paper survey and individually-wrapped, custom-made milk chocolates printed with the brand names World Chocolates and Wurld Chocolates on the wrappers (see Appendix A for a visual of the chocolate pieces used in this study). Each piece of chocolate measured approximately 1.2 square inches.

For both groups, the survey was verbally introduced to the participants as a study concerning their opinions of the a new chocolate brand. Two pieces of chocolate (either World Chocolates or Wurld Chocolates) were given to each participant along with the

survey. Participants were instructed to taste some of the chocolate before answering the survey questions.

## **Measures**

**Sensory perceptions.** In a general liking measure, respondents were asked to rate how much they like the taste of the chocolate (1 = I do not like it at all, 7 = I like it very much). Additionally, respondents were asked to rate taste dimensions more specifically on 7-point scales (1 = not at all, 7 = very much) by asking to what extent they agree with the statements: "The taste is pleasantly sweet."; "The taste is palatable."; and "The taste is delicious.", which have been used to measure hedonic qualities of taste in past research (Leclerc *et al.*, 1994).

**Brand name items.** Additional measures included items pertaining to how well the brand name fit the chocolates (1 = not well at all, 7 = very well), how much respondents liked the packaging (1 = I do not like at all, 7 = I like it very much), how well the packaging and the brand name fit together (1 = not well at all, 7 = very well).

**Control measures and demographics.** Additionally, the respondents were informed that a 10 oz. bag (approximately 50 pieces) of chocolate normally retails at a price between \$2.00 and \$10.00, and participants were asked to pick a price in that range to indicate the amount they would be willing to pay for a 10 oz. bag of World/Wurld Chocolates. A measure also informed participants that one piece of chocolate of similar size normally contains anywhere from 30 to 100 calories, and they were asked to estimate the number of calories in one piece of World/Wurld Chocolates using this guideline. Four additional measures assessed respondents health consciousness and relevant dieting/eating behavior. Respondents were asked to indicate to what extent they agreed

with the following statements (1 = not at all, 7 = very much): "I consider myself to be a health consciousness individual."; "I am on a diet."; "I love chocolate."; "I eat chocolate regularly." Finally demographic information, including gender, age, household income, ethnicity, and how long respondents have lived in the U.S. was collected.

## Results

**Sensory perceptions.** In support of hypothesis 1, a composite measure of three ratings related to specific hedonic qualities of taste (Leclerc, Schmitt, & Dubé, 1994) including pleasantly sweet, palatable, and delicious (Cronbach's alpha= .851) revealed significant differences across groups ( $M_{\text{common}} = 5.5686$ ,  $M_{\text{unique}} = 4.6296$ ,  $F(1,34) = 4.230$ ,  $p = .048$ ) with the commonly-spelled brand name chocolate being rated significantly more positively on the taste measures than the same exact chocolate with the uniquely-spelled brand name equivalent. General health consciousness, dieting behavior, how much respondents like chocolate, and how often respondents eat chocolate were all not significant ( $p > .10$ ) covariates in the model thus were not included for the reported analysis. While specific sensory perceptions did differ across spelling conditions, respondents across commonly- and uniquely-spelled treatment groups did not report differences in general liking of the taste of the chocolate across spelling conditions ( $M_{\text{common}} = 5.53$ ,  $M_{\text{unique}} = 5.22$ ,  $F(1,34) = .393$ ,  $p = .535$ ). However, there was significant negative indirect effect (effect=  $-.8748$ ) of spelling on general liking through the composite of the specific sensory ratings (Hayes, 2013; PROCESS Model 4; 10,000 bootstrap samples) with a 95% confidence interval not including zero (95% CI [-1.8392,  $-.0713$ ]).

**Brand name items.** We observed no differences between spelling conditions in perceptions of how well the brand name fit the chocolate ( $M_{\text{common}} = 3.82$ ,  $M_{\text{unique}} = 3.22$ ,  $F(1,34) = 1.694$ ,  $p = .202$ ). However, packaging for the common spelling condition was marginally more liked than the identical packaging of our unique spelling condition ( $M_{\text{common}} = 4.82$ ,  $M_{\text{unique}} = 3.83$ ,  $F(1,34) = 3.494$ ,  $p = .071$ ). Additionally, respondents reported that the packaging and the brand name fit together significantly better for the commonly-spelled brand name than the uniquely-spelled brand name ( $M_{\text{common}} = 4.12$ ,  $M_{\text{unique}} = 2.94$ ,  $F(1,34) = 3.494$ ,  $p = .024$ ).

**Control measures and demographics.** An ANOVA of the natural log of WTP revealed that participants were willing to pay more bag of chocolates with a commonly-spelled brand name than a bag of chocolates with a uniquely-spelled brand name ( $M_{\text{common}} = .5565$ ,  $M_{\text{unique}} = -.5256$ ,  $F(1,34) = 5.083$ ,  $p = .031$ ), but the groups did not differ in their estimates of the calories contained in one piece of chocolate ( $M_{\text{common}} = 64.71$ ,  $M_{\text{unique}} = 75.71$ ,  $F(1,34) = 1.093$ ,  $p = .304$ ).

Because the results revealed differences in fit between the packaging and the brand name and also differences in willingness to pay for the chocolate, we conducted post hoc analyses to explore whether these differences were responsible for the significant effect of spelling on taste perceptions. The results of test of mediation (PROCESS model 4; Hayes, 2013) revealed that neither brand name and packaging fit (effect =  $-.1442$ , 95% CI  $[-.7910, .1778]$ ) nor willingness to pay (effect =  $-.0361$ , 95% CI  $[-.4048, .5301]$ ) influenced differences in taste perceptions.

## **Discussion**

Supporting our hypothesis 1, the results of the first study reveal a significant main effect of differing taste perceptions when the spelling of a brand name is common versus orthographically altered to be more unique. Participants who ate a chocolate from the hypothetical brand name World Chocolates rated the product as being more pleasantly sweet, more palatable, and more delicious than the same chocolate with the brand name Wurld Chocolates. Overall, this study supports the main effect of less favorable sensory perceptions of taste for a uniquely-spelled brand name than a commonly-spelled brand name, while also ruling out potential alternative explanations relating to differences in brand name fit with the product and calorie perceptions. While the results of this study provide evidence that brand name spelling effects taste perceptions, we seek to further generalize our proposed effect to another sense in the following study.

## **STUDY 2: THE EFFECT OF BRAND NAME SPELLING ON OLFACTORY PERCEPTIONS**

Study 1 provides evidence to support hypothesis 1 in the context of taste. The purpose of our second study was to gain further support for hypothesis 1 by showing that the effect of unique brand name spelling is not specific only to the sense of taste but can be generalized to other senses, in support of hypothesis 1. Thus, in study 2, we tested our proposed effect in relation to the sense of olfaction by asking participants to rate the scent of a perfume. The perfume used in this study was an actual consumer product on the market by the brand I AM<sup>®</sup> Fragrance (<http://iamfragrance.com/>) with limited retail distribution such that participants were not likely to have ever seen or smelled this particular scent before. Additionally, in study 2, we utilized a different spelling

manipulation than the one used in study 1 in order to increase the robustness of our effect.

### **Perfume brand name pretest**

As in study 1, before testing for our proposed effect of spelling on sensory perceptions, we pretested several potential brand names to ensure that our chosen brand name pair succeeds at manipulating spelling uniqueness while not differing on other dimensions, namely ethnicity ratings. The perfume brand name pretest was conducted on the data collection forum Amazon Mechanical Turk and was presented to participants as an exploration of various names to be potentially used as brand names for consumer products.

Sixty-seven U.S. participants completed the survey designed in the program, Qualtrics. Ten respondents did not pass a check item assessing whether they followed directions and were eliminated from the sample leaving a total of 57 participants (33 female, 24 male) with an average age of 34.95 years. Each respondent was asked to rate four proper nouns with the commonly-spelled version of the proper noun chosen from a list of most popular baby names in the U.S. (<http://www.babycenter.com/top-baby-names-2013>) and the unique spelling of the proper noun constructed by changing the spelling of the name such that it would still be pronounced the same way. The name pairs tested included: Jackson/Jaxon, James/Jaymes, Scarlett/Scarlitt, and Grace/Grayce. For each name pair, the participants were shown either the commonly-spelled or uniquely-spelled name, thus the design was within-subject for the four names but between-subjects for spelling (common/unique). Sound bytes of the names being pronounced also accompanied the written name. Whether the respondents saw the commonly-spelled or

uniquely-spelled brand name, they listened to the same sound byte of the name in order to better control for pronunciation differences and isolate spelling differences.

As with the brand names used in study 1, we aimed to keep as much orthographic similarity as possible across commonly- and uniquely-spelled brand names and, as in study 1, chose a pair of names with only one letter difference. Thus, the brand name pair chosen for study 2 was Scarlett/Scarlitt. As before, to better isolate spelling, we wished to use a brand name pair that did not differ on uniqueness overall but *did* differ on uniqueness of the spelling. Analysis revealed that the common/unique versions of the brand name (Scarlett/Scarlitt) were not rated differently on uniqueness of the name ("How unique is this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 4.19$ ,  $M_{\text{unique}} = 4.49$ ,  $F(1,56) = .567$ ,  $p = .455$ ), which could affect perceptions related to brand personality (e.g., Aaker, 1997) thus introducing potentially confounding issues. However, the *spelling* of the names was rated as being more/less unique ("How unique is the SPELLING of this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 2.88$ ,  $M_{\text{unique}} = 5.90$ ,  $F(1,56) = 43.503$ ,  $p < .001$ ), which isolates spelling as our intended manipulation. Additionally, the name pair Scarlett/Scarlitt did not differ on ethnicity perceptions (How ethnic is this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 2.31$ ,  $M_{\text{unique}} = 2.41$ ,  $F(1,56) = .065$ ,  $p = .800$ ).

In addition to the above tests, just as in study 1, utilizing an orthographic neighbor (i.e., changing only one letter of the brand name) helped control for other potentially confounding issues (e.g., brand name length); and, as before, this brand name pair (like World/Wurld) did not differ in its use of front or back vowels ("e" and "i" are both front

vowels) eliminating a potential difference in perceptions of the product being more/less soft, light, bitter, etc. (Klink, 2000).

### **Participants and Design**

One hundred fifteen participants who have lived in the U.S. for at least 10 years (DeKeyser, 2000) were recruited using flyers hung and passed out at a large Northeastern college and paid \$5.00 for their participation in a study on consumer opinions of a new perfume brand. Despite recruiting only those who have lived in the U.S. for at least ten years, 13 respondents reported living in the U.S. for less than 10 years and were eliminated from the sample for the analysis. The final sample left 102 respondents (56 female, 46 male) with an average age of 22.74 years. At each data collection session, all participants were presented the perfume with a commonly-spelled or a uniquely-spelled brand name, making for a one-factor between subjects design.

### **Materials and Procedure**

The study followed a one-factor (brand name spelling: common versus unique) between-subjects design. Materials consisted of a survey designed in Qualtrics, one unmarked bottle of perfume used in both treatment groups (see Appendix B), and paper perfume testing strips with either the brand name Scarlett or Scarlitt written on each strip. Participants in both conditions (common versus unique) were told they would be giving opinions about a new brand of perfume. According to the condition assignment, the paper perfume testing strip was labeled with either the commonly-spelled (Scarlett) or uniquely-spelled (Scarlitt) brand name. Conditions were assigned randomly. After gaining consent, participants read a set of instructions on the computer screen and were then prompted to raise their hand and receive the perfume testing strip. The researcher

then went to the participant's station, sprayed the perfume on the paper perfume strip with the brand name written on it, and handed it to the participant who then completed the survey. Participants completed the survey (same survey across conditions) with access to their perfume strip.

## **Measures**

The first item in the survey asked the respondents to type the brand name of the perfume from the testing strip, which allowed the researcher to code whether the participant was rating the perfume with the commonly-spelled brand name or the same perfume with the uniquely-spelled brand name.

**Sensory perceptions.** Respondents were asked, generally, how much they like the scent of the perfume (1 = I do not like it at all, 7 = I like it very much). To more specifically evaluate the sensory perceptions of the scent of the perfume, respondents were asked to rate the scent of the perfume based on what extent it is pleasant, lovely, and ugly (1 = not at all, 7 = very much).

**Brand name items.** Respondents were asked several measures pertaining to the brand name of the perfume including: how familiar is the brand name word (1 = not at all familiar to me, 7 = very familiar to me), how unique is the brand name (1 = not at all unique, 7 = very unique) and how unique is the spelling of the brand name (1 = the spelling is not at all unique, 7 = the spelling is very unique). Respondents also answered four other items concerning the brand name: whether it is good, bad, unexpected, and attention-grabbing (1 = not at all, 7 = very much). Another item asked how well the brand name fit the perfume (1 = not well at all, 7 = very well).

**Control measures and demographics.** Participants were informed that a one fluid ounce bottle of perfume usually retails for \$30.00 to \$100.00 and were asked to indicate the maximum they would be willing to pay in that range for a bottle of Scarlett/Scarlett perfume. Additionally, because past research suggests that disfluency may negatively influence individuals' mood state (Alter *et al.*, 2007), we included two items to assess respondents' current state by asking to what extent they agree/disagree with the statements: "I feel good" and "I feel negative" (1 = disagree completely, 7 = agree completely). Two items assessed respondents' familiarity with scents (1 = not at all familiar, 7 = very familiar) and, in general, and how often they wear scents (1 = never, 7 = on a daily basis). The survey concluded with basic demographic items (gender, age, household income) and an open-ended suspicion probe asking participants to describe what they believed the purpose of the study to be.

## Results

**Sensory perceptions.** An ANOVA on a composite item (Cronbach's alpha = .803) asking participants to rate the scent on specific scent dimensions—pleasant, lovely, and ugly (reverse-scored)—revealed a significant difference with those smelling the perfume with the uniquely-spelled brand name rating the perfume less favorably than those smelling the same perfume (from the same bottle) with the commonly-spelled brand name ( $M_{\text{common}} = 5.5679$ ,  $M_{\text{unique}} = 5.0833$ ,  $F(1,101) = 4.162$ ,  $p = .044$ ). Because the perfume used in this study was a female scent, gender, how familiar respondents are with perfumes, and how frequently respondents wear scents were originally used as covariates in the analysis in order to control for these potentially influential factors. However, gender, familiarity with scents, and frequency of wearing scents were all not significant

( $p > .10$ ) in the model and were excluded for the reported analysis. Additionally, although specific sensory perceptions items did yield significant differences, participants across common and unique brand name spelling conditions did not report differences in general liking of the scent ( $M_{\text{common}} = 5.37$ ,  $M_{\text{unique}} = 4.90$ ,  $F(1,101) = 2.542$ ,  $p = .114$ ). However, despite no direct effect of brand name spelling on general liking of the scent, there was significant negative indirect effect (effect =  $-.4666$ ; 95% CI [ $-.9791$ ,  $-.0390$ ]) of spelling on general liking through the composite of the specific sensory ratings (Hayes, 2013; PROCESS Model 4; 10,000 bootstrap samples).

**Brand name items.** In support of our manipulation, participants rated the spelling of the brand name as more unique when it was spelled uniquely than when it was spelled commonly ( $M_{\text{common}} = 3.94$ ,  $M_{\text{unique}} = 4.83$ ,  $F(1,101) = 6.324$ ,  $p = .014$ ). Further, respondents did not rate either brand name as being overall more unique than the other ( $M_{\text{common}} = 4.56$ ,  $M_{\text{unique}} = 4.25$ ,  $F(1,101) = .911$ ,  $p = .342$ ), highlighting that our manipulation isolated spelling differences and not differences related to a unique brand personality. The brand name word was also rated as significantly more familiar when spelled commonly than when spelled uniquely ( $M_{\text{common}} = 4.46$ ,  $M_{\text{unique}} = 3.48$ ,  $F(1,101) = 4.945$ ,  $p = .028$ ). In line with the idea of disfluency having a less positive metacognitive effect (Schwarz, 2004), the results of a MANOVA revealed that the commonly-spelled brand name was rated as marginally more "good" than the uniquely-spelled brand name ( $M_{\text{common}} = 4.93$ ,  $M_{\text{unique}} = 4.46$ ,  $F(1,101) = 2.783$ ,  $p = .098$ ), and the uniquely-spelled brand name was rated as more "bad" than the commonly-spelled brand name ( $M_{\text{common}} = 1.78$ ,  $M_{\text{unique}} = 2.69$ ,  $F(1,101) = 11.452$ ,  $p = .001$ ). The two brand names did not differ on how unexpected ( $M_{\text{common}} = 3.35$ ,  $M_{\text{unique}} = 3.81$ ,  $F(1,101) = 2.143$ ,  $p = .146$ ) or attention-

grabbing ( $M_{\text{common}} = 4.26$ ,  $M_{\text{unique}} = 4.29$ ,  $F(1,101) = .009$ ,  $p = .925$ ) they were perceived to be.

**Control measures and demographics.** WTP (log-transformed) for a bottle of perfume ( $M_{\text{common}} = 3.7992$ ,  $M_{\text{unique}} = 3.7213$ ,  $F(1,85) = 1.868$ ,  $p = .175$ ), brand name fit ( $M_{\text{common}} = 4.65$ ,  $M_{\text{unique}} = 4.17$ ,  $F(1,101) = 2.292$ ,  $p = .133$ ), and respondents' current state of feeling good ( $M_{\text{common}} = 5.41$ ,  $M_{\text{unique}} = 5.08$ ,  $F(1,101) = 1.137$ ,  $p = .289$ ) or negative ( $M_{\text{common}} = 1.85$ ,  $M_{\text{unique}} = 2.19$ ,  $F(1,101) = 1.490$ ,  $p = .225$ ) did not differ across brand name spelling conditions.

## **Discussion**

This study provides corroborating evidence that unique brand name spelling has an effect on sensory perceptions (hypothesis 1). This study was instrumental in showing that the effect holds for the olfactory sense in addition to the sense of taste, allowing us to conclude that the effect is not specific to any given sense. The current study was also conducted using a different common/unique brand name spelling pair in order to show the effect is not an artifact of the specific brand names used in the previous study.

After showing that a uniquely-spelled brand name leads to less favorable evaluations of a scent's pleasantness, loveliness, and ugliness, in support of hypothesis 1, we aim to begin exploring the underlying process of the effect. As such, we did an interesting additional analysis on the results of the current study. We had an open-ended suspicion probe at the conclusion of our survey and because, based on the negativity bias (Rozin & Royzman, 2001), it has been suggested that negative stimuli may result in more complex and elaborated cognitions, we chose to do a word count on this open-ended item to see if those in the uniquely-spelled brand name condition elaborated any more/less

than those in the commonly-spelled brand name condition. We found that, in fact, those who smelled perfume with the uniquely-spelled brand name used, on average, about eight more words than those who smelled the same perfume with the commonly-spelled brand name ( $M_{\text{common}} = 20.08$ ,  $M_{\text{unique}} = 28.21$ ,  $F(1,101) = 5.996$ ,  $p = .016$ ). Additionally, in a mediation analysis (Hayes, 2013; PROCESS model 4 with 10,000 bootstrap samples), it appeared that the word count of the open-ended item (mean-centered) mediated the effect of spelling on our composite sensory perception item (effect =  $-.1328$ , 95% CI [ $.0238$ ,  $.3353$ ]), such that a unique brand name spelling led to less favorable sensory perceptions through the mediator of word count. These results suggest that those in the uniquely-spelled brand name condition subsequently elaborate more, giving initial evidence for hypothesis 3. Although we had not originally intended to use our open-ended item suspicion probe as a process measure, the findings do begin to suggest the extent of cognitive effort expended may be the underlying process for our effect (hypothesis 3). In the following study, we aim to explicitly test cognitive processing as the predicted mediator of the effect of spelling on sensory perceptions.

### **STUDY 3: THE EFFECT OF BRAND NAME SPELLING ON TASTE PERCEPTIONS AND BEHAVIOR**

In our third study we aim to: (a) replicate our previously shown effect of spelling on sensory perceptions, (b) extend the effect to actual consumption, (c) begin to *explore* the process underlying our effect, and (d) continue to rule out alternative explanations. In both of the first two studies, despite rating the two brands differently on specific taste/scent dimensions, consumers did not indicate differences in general liking of the

product (i.e., general liking was only *indirectly* negatively affected through sensory perceptions). This raises the question: if consumers do not like the product more or less with a uniquely-spelled or commonly-spelled brand name, would they consume the same amount of product? We predict that uniquely-spelled brand names result in less favorable sensory perception ratings of the product than commonly-spelled brand names; and uniquely-spelled brand names lead individuals to, on average, consume less of the product when the brand name is spelled uniquely (hypothesis 1). In study 1, we gave only two pieces of chocolate to each participant and did not record how much was consumed. However, in study 3, we again utilize the same chocolate as used in study 1 but give each participant a greater amount of chocolate and record how much they eat to see if our proposed effect leads to consumption differences.

In addition to showing that our proposed effect also extends to actual consumption, we aim to begin elucidating the underlying process of the effect. In line with hypotheses 2 and 3, in the current study, we show that a uniquely-spelled brand name requires more cognitive processing than a commonly-spelled brand name, which is what leads to less favorable sensory perception evaluations when the brand name is spelled uniquely.

In this study, we also attempt to rule out a very important alternative explanation. One potential explanation for our effect is that simply seeing a brand name may activate implicit associations, which may influence consumers' expectations (e.g., Lee, Frederick, & Ariely, 2006). In other words, based only on the brand name, consumers may have certain expectations before even tasting the product, and these prior expectations are the explanation for our effect. In study 3, we aim to show that consumer expectations (after

seeing the brand name but before engaging the sense of taste and eating the chocolate) do *not* differ across commonly- and uniquely-spelled brand name conditions, which would suggest that our proposed effect is not simply an inferential bias (Krishna, 2012) based on prior expectations.

### **Participants and Design**

One hundred twenty-eight marketing students at a Northeastern college participated in this pen and paper survey for course credit. Thirteen participants (eight from the common brand name spelling condition, five from the unique brand name spelling condition) did not complete the survey and were excluded from the sample. Two additional participants (both from the unique spelling condition) correctly guessed the purpose of the study and explicitly used the word "spelling" in an open-ended suspicion probe thus were also excluded from the sample. Also, as in the previous studies, to ensure our participants had a certain base level of proficiency with the English language, we a priori predicted our effect only for those subjects who have lived in the U.S. for ten years or more leaving a total of 82 respondents (39 female, 43 male) for our analysis. The average age of respondents was 21.39 years. The study was conducted during several lab sessions in the university's behavioral lab with the uniquely-spelled brand name chocolates (i.e., Wurld Chocolates) or the commonly-spelled brand name (World Chocolates) being given to all participants in the room during a given lab session for a one-factor between-subjects design.

### **Materials and Procedure**

Similar to study 1, the materials consisted of a pen and paper survey and the same individually-wrapped, custom-made milk chocolates printed with the brand names World

Chocolates and World Chocolates on the wrappers (Appendix A). The only differences in materials for the current study is that five pieces of chocolate were given to each participant (instead of two pieces), and the chocolates were placed in small, disposable white bowls in a separate room before handing out the bowls with chocolate to the participants. The survey was verbally introduced to all participants as a study concerning their opinions of the a new chocolate brand. Before receiving any chocolates to taste, participants read instructions introducing the brand name of the chocolate and answered questions regarding the brand name, their expectations prior to tasting, and other key variables. Following these items, participants were instructed to raise their hand to indicate they are ready to receive the chocolate. At this point, participants received the bowl with five chocolates and completed the remainder of the survey.

## **Measures**

**Brand name items.** The survey first asked respondents to answer several measures concerning the brand name of the chocolate they would receive, including how unique is the brand name (1 = not at all unique, 7 = very unique), how unique is the spelling of the brand name (1 = the spelling is not at all unique, 7 = the spelling is very unique), and how familiar is the brand name word (1 = not at all familiar to me, 7 = very familiar to me). Respondents also answered four other items concerning the brand name, namely whether it is good, bad, unexpected, and attention-grabbing (1 = not at all, 7 = very much).

**Expectations.** Following these items, respondents were presented with two items adapted from extant research (Raghunathan, Naylor, & Hoyer, 2006) in order to gauge their expectations of the taste of the chocolate prior to tasting. These items help us

explore whether consumer's sensory perception ratings of the taste are influenced by the brand name spelling even before any tasting takes place. If expectations of the taste differ across spelling conditions, this would suggest our effect of spelling is purely a cognitive one based on prior expectations (e.g., inferential thinking; Krishna, 2012) but we hope to rule out this alternative explanation. Two items asked respondents to rate (based on only knowing the brand name) how tasty they think the chocolate would be (1 = would not be tasty at all, 10 = would be very tasty) and how much they think they would enjoy eating this chocolate (1 = would not enjoy at all, 10 = would enjoy very much).

**Level of hunger.** Also, because different lab sessions occurred at various hours of the day, the final item before respondents received chocolate to taste asked respondents to gauge their current level of hunger (1 = I am starving right now, 7 = I am very full right now) in order to later control for this important exogenous variable.

**Sensory perceptions.** After raising their hands and receiving a bowl with five pieces of chocolate, respondents were asked the same items as in study 1, including how much they like the taste overall (1 = I do not like it at all, 7 = I like it very much) and how pleasantly sweet, palatable, and delicious is the taste (1 = not at all, 7 = very much; Leclerc *et al.*, 1994).

**Cognitive processing.** Two items prompted respondents to indicate to what extent they agreed with the following statements: "I had to put in mental effort to understand this brand name" and "It was difficult to understand this brand name" both on 9-point scales (1 = not at all, 9 = very much).

**Control measures and demographics.** As in the study 1, subjects were asked to indicate how much they would be willing to pay for a 10 ounce bag of the chocolate

(between \$2.00 and \$10.00), and we hoped they would not show differences in this measure. This would lend more support to our assertion that unique spelling affects sensory perceptions specifically—not inferential evaluations, such as those of product quality, which is closely tied to price evaluations (Jacoby *et al.*, 1971). Also, as in study 1, respondents were asked to rate how well the brand name fits the chocolate, the estimated number of calories per piece of chocolate (in a range from 30 to 100 calories), their general health-consciousness, dieting behavior, how much they like chocolate, and whether they eat chocolate regularly. Basic demographic information was collected (age, gender, ethnicity, HHI), and whether respondents have lived in the U.S. less than 10 years or 10 years or more was also measured. Two additional measures asked respondents to indicate their height and weight to calculate body mass index (BMI); and, finally, an open-ended suspicion probe asked participants to indicate their presumed purpose of the study.

**Consumption.** Unlike in study 1, in the current study, once respondents completed the survey, the researchers collected both the survey and the bowl with chocolate and counted the number of pieces of chocolate left over by each respondent and recorded this value on each participant's survey.

## Results

**Brand name items.** Although respondents did not consider one brand name to be more unique than the other ( $M_{\text{common}} = 3.87$ ,  $M_{\text{unique}} = 3.86$ ,  $F(1,81) = .000$ ,  $p = .988$ ) controlling for potential issues related to unique brand personality differences, in support of our manipulation, consumers did rate the *spelling* of the brand names as differing in uniqueness ( $M_{\text{common}} = 4.70$ ,  $M_{\text{unique}} = 2.21$ ,  $F(1,81) = 49.819$ ,  $p < .001$ ). The brand name

word was considered to be significantly more familiar when spelled commonly than when spelled uniquely ( $M_{\text{common}} = 5.79$ ,  $M_{\text{unique}} = 2.23$ ,  $F(1,81) = 76.651$ ,  $p < .001$ ). The results of a MANOVA of the four remaining brand name items (brand name is good, bad, unexpected, attention-grabbing) revealed that the commonly-spelled brand name is rated more positively than the uniquely-spelled brand name in terms of whether the brand name is good ( $M_{\text{common}} = 3.84$ ,  $M_{\text{unique}} = 2.89$ ,  $F(1,81) = 6.980$ ,  $p = .010$ ) and bad ( $M_{\text{common}} = 3.37$ ,  $M_{\text{unique}} = 4.25$ ,  $F(1,81) = 4.296$ ,  $p = .041$ ). The uniquely-spelled brand name was also rated as being significantly more unexpected ( $M_{\text{common}} = 3.00$ ,  $M_{\text{unique}} = 4.57$ ,  $F(1,81) = 19.588$ ,  $p < .001$ ) but not more attention-grabbing ( $M_{\text{common}} = 3.42$ ,  $M_{\text{unique}} = 4.05$ ,  $F(1,81) = 2.615$ ,  $p = .110$ ) than the commonly-spelled brand name. How well the brand name fit the chocolate did differ across spelling conditions ( $M_{\text{common}} = 3.97$ ,  $M_{\text{unique}} = 3.25$ ,  $F(1,81) = 4.123$ ,  $p = .046$ ) with respondents rating the fit between the brand name and the chocolate to be better for the commonly-spelled brand name than the uniquely-spelled brand name, but an analysis of whether brand name fit is responsible for differences in taste perceptions proved not significant (Hayes, 2013; PROCESS Model 4 with 10,000 bootstrap samples; spelling as the IV, mean-centered brand name fit as the mediator, and taste evaluation composite as the DV; effect = .0412; 95% CI [-.0377, .2301]), revealing that perception of brand name fit does not mediate the effect of brand name spelling on sensory perceptions.

**Expectations.** To explore whether consumer's expectations about the taste of the chocolate are influenced by the brand name spelling alone, we created a composite item of the two items assessing respondent expectations about how tasty they think the chocolate would be and how much they think they will enjoy eating the chocolate

(Cronbach's alpha = .827). The results reveal that participant expectations of the taste of the chocolate after learning the brand name but before tasting the chocolate did *not* differ across spelling conditions ( $M_{\text{common}} = 6.1579$ ,  $M_{\text{unique}} = 5.8864$ ,  $F(1,81) = .491$ ,  $p = .486$ ).

**Sensory perceptions.** In support of hypothesis 1, when asked to rate the taste of the chocolate on the three specific, hedonic taste dimensions of sweetness, palatability, and deliciousness (Leclerc, Schmitt, & Dubé, 1994), those who tasted the uniquely-spelled brand name chocolate rated its taste as less favorable than those who tasted the commonly-spelled brand name chocolate ( $M_{\text{common}} = 5.5263$ ,  $M_{\text{unique}} = 5.000$ ,  $F(1,81) = 5.205$ ,  $p = .025$ ). The prior expectations composite was included as a covariate in this analysis to see if expectations were influencing sensory perceptions, but it proved to be a non-significant covariate ( $p > .10$ ). As before, respondents do not report differences in general liking across spelling conditions ( $M_{\text{common}} = 6.1579$ ,  $M_{\text{unique}} = 5.8864$ ,  $F(1,81) = .491$ ,  $p = .486$ ). However, there was significant negative indirect effect (effect =  $-.3839$ ; 95% CI [ $-.7530$ ,  $-.0774$ ]) of spelling (common versus unique) on general liking through the composite of the specific taste perception ratings (Hayes, 2013; PROCESS Model 4; 10,000 bootstrap samples).

**Cognitive processing.** To explore whether a uniquely-spelled brand name requires more cognitive processing on the part of the consumer (hypothesis 2) and whether this cognitive effort expended leads to less favorable sensory perceptions (hypothesis 3), we first ran an ANOVA on a composite of our two mental effort items (Cronbach's alpha = .879). In line with hypothesis 2, this analysis revealed that the uniquely-spelled brand name did require more effort and was more difficult to process than the commonly-spelled brand name ( $M_{\text{common}} = 2.5789$ ,  $M_{\text{unique}} = 3.8295$ ,  $F(1,81) =$

5.730,  $p = .019$ ). We then ran a PROCESS model 4 with 10,000 bootstrap samples (Hayes, 2013) to test whether a uniquely-spelled brand name leads to less favorable sensory evaluations through cognitive processing expended. Our model included spelling (common versus unique) as the independent variable, the cognitive processing composite item (mean-centered) as the mediator, and the taste perceptions composite as the dependent variable. The results reveal a significant indirect effect of spelling (common versus unique) on taste perceptions (effect =  $-.6867$ , 95% CI [ $-1.1444$ ,  $-.2289$ ]). In support of hypothesis 3, results of the analysis indicate that the cognitive processing required to process the uniquely-spelled brand name does mediate the effect of less favorable taste evaluations with a 95% confidence interval not including zero (effect =  $.1604$ , 95% CI [ $.0307$ ,  $.3990$ ]). Brand name spelling (common versus unique) had a significant positive effect through the mediator of cognitive processing, such that those in the unique brand name spelling condition reported higher levels of expended cognitive processing than those in the common spelling condition. See Figure 2.

---

Insert Figure 2 about here

---

Interestingly, the results of our mediation analysis reveal what is known as competitive mediation (Zhao, Lynch, & Chen, 2010)—that is, our direct effect is of an opposite sign than our indirect effect. In their work, "Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis" Zhao and colleagues (2010) explain that when both a direct and indirect effect are significant but of opposite signs and the direct effect is substantially larger than the indirect effect (as is in our case), this suggests a not fully unexplained direct effect and suggests future research to look for other mediators

that match the sign of the direct effect (Zhao *et al.*, 2010<sup>1</sup>). Zhao *et al.* (2010) explain that competitive mediation does, in fact, give evidence for the hypothesized mediator (Zhao *et al.* 2010) but that there is likely an omitted mediator in the model suggesting an incomplete theoretical model (Zhao *et al.*, 2010). Thus, in further studies, we will aim to uncover other potential mediators that may be working concurrently with cognitive processing to explain our effect of brand name spelling on sensory perceptions.

**Control measures.** An ANOVA of the effect of spelling condition (common versus unique) on WTP (log-transformed) with household income (HHI) income as a covariate did not reveal a difference in WTP across brand name spellings conditions ( $M_{\text{common}} = 1.4753$ ,  $M_{\text{unique}} = 1.4733$ ,  $F(1,81) = .001$ ,  $p = .979$ ; HHI was not significant in the model and was excluded for the reported analysis). An additional ANOVA revealed that respondents did not perceive differences in the number of calories in a piece of chocolate across spelling conditions ( $M_{\text{common}} = 64.08$ ,  $M_{\text{unique}} = 69.43$ ,  $F(1,81) = 1.811$ ,  $p = .182$ ).

**Consumption.** In order to determine whether our effect of spelling on sensory perceptions extends to actual consumption differences of chocolate, we conducted an ANOVA, which revealed that brand name spelling does have a significant effect on number of chocolates eaten when controlling for current level of hunger ( $F(1,81) = 9.956$ ,  $p = .002$ ) and regular chocolate consumption behavior ( $F(1,81) = 11.550$ ,  $p = .001$ ). The results indicate that, out of a maximum five pieces of chocolate given to participants, those in the commonly-spelled brand name condition ate about one half a piece more than

---

<sup>1</sup> Zhao and colleagues note that not only complementary mediations should be judged to be publishable, which has been a result of researchers' reliance on Baron and Kenny's *X-Y test*" (Zhao *et al.*, 2010).

those in the uniquely-spelled brand name condition ( $M_{\text{common}} = 2.9868$ ,  $M_{\text{unique}} = 2.5568$ ,  $F(1,81) = 4.061$ ,  $p = .047$ ). Health consciousness, dieting behavior, and love of chocolate were also originally included as covariates but were not significant in the model thus were excluded for the reported analysis.

## **Discussion**

In study 3, we were once again able to support our first two hypotheses by showing that: (a) a uniquely-spelled brand name results in less favorable sensory perceptions than a commonly-spelled brand name (hypothesis 1); and (b) brand name spelling has an effect on behavior with those who saw the uniquely-spelled Wurld Chocolates eating significantly less chocolate than those who saw the commonly-spelled World Chocolates (hypothesis 1). We were also able to begin exploring the underlying process by revealing that uniquely-spelled brand names required participants to expend greater cognitive processing effort (hypothesis 2), and that cognitive processing, at least in part, mediates the effect of brand name spelling on sensory perceptions (hypothesis 3). Another important feature of study 3 was that we were able to rule out the notion that brand name spelling influences taste expectations, which may, in turn, influence taste perceptions. Those who were introduced to the brand name Wurld Chocolates before tasting did not expect the chocolate to be any less tasty or enjoyable to eat than those who saw the brand name World Chocolate, and expectations did not influence the effect of brand name spelling on sensory perception evaluations. In the following study, we aim to again support our hypotheses in yet another sense (vision) while further exploring the underlying process of our effect utilizing a manipulation of concrete versus abstract mental representations.

## **STUDY 4: THE MODERATING ROLE OF CONCRETE VERSUS ABSTRACT MENTAL REPRESENTATIONS**

The purpose of our fourth study was to: (a) replicate our effect of unique spelling on sensory perceptions (hypothesis 1) in yet another sense (vision), in another product category (wine), and with a new stimulus brand name pair (Harper/Harpyr) in order to further maximize the robustness of our findings; and (b) continue to explore cognitive processing as the underlying process by testing whether manipulating participants' mental representations (concrete versus abstract) moderates our effect (hypothesis 4). Building from AIT (Vallacher & Wegner, 1987), which deals with abstract/concrete mindsets and the way in which individuals cognitively interpret stimuli as difficult, we predict that our proposed detrimental effect of unique brand name spelling on sensory perceptions will hold when individuals are processing abstractly but not concretely.

### **Brand name pretest**

As in studies 1 and 2, before testing for our proposed effect of spelling on sensory perceptions with a new brand name pair, we pretested the brand names to ensure that our chosen brand name pair succeeds at manipulating spelling uniqueness while not differing on other potentially confounding dimensions. The pretest of the new brand name pair followed the general procedure of the previous two pretests in studies 1 and 2. It was conducted on the data collection forum Amazon Mechanical Turk and was presented to participants as an exploration of their opinions of various names.

Fifty-six U.S. participants (37 female, 19 male; mean age = 35.35 years) correctly completed the survey designed in the software Qualtrics. Each respondent was asked to evaluate either the commonly-spelled name (Harper) or uniquely-spelled name (Harpyr),

thus the pretest design was one factor, between-subjects for spelling (common/unique). A sound byte of the name being pronounced also accompanied the written name. As in previous pretests, whether the respondents saw the commonly-spelled or uniquely-spelled brand name, all respondents listened to the same sound byte of the name in order to control for equivalent pronunciation across differing spelling conditions. As with the other brand names used, we aimed to keep as much orthographic similarity as possible across commonly- and uniquely-spelled brand names and manipulated only one letter difference.

Analysis revealed that the common/unique versions of the brand name (Harper/Harpyr) were rated marginally differently on uniqueness of the name ("How unique is this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 4.18$ ,  $M_{\text{unique}} = 4.86$ ,  $F(1,56) = 3.054$ ,  $p = .086$ ). The spelling of the names was rated as being significantly more/less unique ("How unique is the SPELLING of this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 1.71$ ,  $M_{\text{unique}} = 5.41$ ,  $F(1,56) = 66.665$ ,  $p = .000$ ), which is in line with differences in spelling as our intended manipulation. As in previous pretested names, the name pair Harper/Harpyr did not differ on ethnicity perceptions (How ethnic is this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 2.06$ ,  $M_{\text{unique}} = 1.73$ ,  $F(1,56) = .941$ ,  $p = .336$ ). Additionally, the two spellings did not differ in how American they were perceived to be ("How American is this name?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 5.26$ ,  $M_{\text{unique}} = 4.82$ ,  $F(1,56) = 1.014$ ,  $p = .319$ ); and the common and unique spellings did not differ in perceptions of how easy they are to pronounce ("How easy is this word to pronounce?"; 1 = not at all, 7 = very much;  $M_{\text{common}} = 6.85$ ,  $M_{\text{unique}} = 6.77$ ,  $F(1,56) = .458$ ,  $p = .501$ ). Since we were able to control for our key intended measures, we determined

the brand name pair Harper/Harpyr to be suitable for use as the new brand name pair in the following study.

### **Participants and Design**

One hundred ninety-four North American participants were recruited on the online data collection forum, Mechanical Turk, and were compensated \$0.25 for participation. Seven participants reported living in the U.S. less than 10 years (four from the common brand name spelling condition, three from the unique brand name spelling condition) and were excluded from the sample for the following analysis leaving 186 total participants who completed the survey (110 female, 83 male; mean age = 33.21 years). Each participant was randomly assigned to view the product in one of two spelling conditions and one of two mental representation conditions, making for a 2 (spelling: common versus unique)  $\times$  2 (mental representation: concrete versus abstract) between-subjects design.

### **Materials and Procedure**

Participants completed a survey online via Qualtrics software. For all groups, the survey was presented as a two-part evaluation consisting first of a survey dealing with ideas about relationships with others and a second, seemingly-unrelated survey regarding evaluation of a new wine brand. The purpose of the first survey was to manipulate participants' mental representations to be either concrete or abstract. To do this, a previously used procedure adapted from Freitas, Gollwitzer, and Trope (2004) was utilized. For the concrete condition, participants were told that they have a goal in life of maintaining relationships with others and were asked to write a paragraph about *how* they would achieve this goal. For the abstract condition, individuals were told they have the

same goal of maintaining relationships with others but were asked to describe *why* they would achieve this goal (see Appendix C for full text of the concrete and abstract mental representations conditions). A series five placeholder questions followed the concrete/abstract manipulation (for example, "1. To what extent do you agree with the following statement?: When thinking about why I might maintain relationships with others, I thought about my family." 1 = very little, 5 = very much) in order to maintain the appearance of the manipulation being separate from the following wine survey. The five questions were not analyzed and will not be discussed further.

In the second survey, respondents were asked to imagine they are at the store to buy wine and deciding on a wine to choose based on the label. Each respondent saw the same label design with either the brand name Harper or Harpyr (see Appendix D for visual representations of the labels used in the common and unique spelling conditions). After seeing a visual of the wine and hearing an audio clip describing the wine (see Appendix E for text of the audio clip), respondents answered a series of questions.

## **Measures**

**Sensory perceptions.** Participants were first asked about the design of the wine label by asking, "To what extent is the design of the label visually-appealing?" (1 = not at all visually appealing, 7 = very visually-appealing). The following measures asked respondents to agree/disagree with statements relating to the design of the wine label: "The design elements of the label are aesthetically-pleasing," "I like the colors used on the label," and "The label is too decorative" (1 = completely disagree, 7 = completely agree). Respondents were also asked two additional items relating to the design of the wine label: "to what extent do you think the design is pleasant/unpleasant?" (1 =

unpleasant, 7 = pleasant) and "to what extent did you enjoy/not enjoy looking at the design of the label?" (1 = did not enjoy at all, 7 = enjoyed very much). An overall liking item was also included ("to what extent do you like the label?; 1 = do not like at all, 7 = like it very much). Five 7-point scale items from Hirschman's (1986) Aesthetic/Emotional scale (attractive/not attractive, desirable/not desirable, arousing/not arousing, beautiful/not beautiful, and makes me like this product/does not make me like this product) were also included.

**Brand name items.** Participants were asked several measures pertaining to the brand name of the wine including: how well the brand name fits with the design of the label (1 = not well at all, 7 = very well); how unique is the brand name (1 = not at all unique, 7 = very unique); how unique is the spelling of the brand name (1 = not at all unique, 7 = very unique); and, although the wine is not yet on the market, how familiar does the brand name seem? (1 = not at all familiar, 7 = very familiar).

**Cognitive processing.** As in the previous study, respondents were asked to rate how much mental effort they had to put in to understand the brand name and how difficult the brand name was to understand both on 9-point scales (1 = not at all, 9 = very much). As another measure of mental effort expended, respondents were presented with an open-ended item asking them to write in their own words what they think of the design of the label, and a timer was also placed on the page with all of the visual evaluation items (including the open-ended item) in order to assess the time spent by each participant on the items.

**Consumer buying interest.** Participants were asked to rate how likely they would be to buy the wine if they saw it in a store (1 = not at all likely, 7 = very likely), to

what extent they are interested in learning more about this brand of wine (1 = not at all interested, 7 = very interested), how interested they would be in tasting some of the wine (1 = not at all interested, 7 = very interested), and what they think this wine is rated on a typical wine quality rating scale from 50 to 100.

Participants were also asked whether they agree/disagree with making their judgments about the wine based on whether it was of good quality and whether it was of good value (1 = completely disagree, 7 = completely agree).

**Control measures.** *Processing motivation.* Measures adapted from Tsai and McGill (2011) assessed respondents' processing motivation as a potential covariate. Four items on seven-point scales (1 = not at all, 7 = very) asked respondents when evaluating the wine: "how important was it for you to think carefully about your answers?"; "to what extent were you absorbed in the decision-making process?"; "to what extent were you stimulated by the decision-making process?"; and "to what extent were you involved in the decision-making process?"

*Imagery accessibility.* Following Petrova and Cialdini's (2005) work on fluency and imagery appeals, three items assessed respondents' imagery accessibility during the study as a potential covariate. Three items on seven-point scales (1 = not easy at all, 7 = very easy) asked: "How easily were you able to imagine yourself in the decision-making process of choosing wines?"; "How clear was the mental image of yourself in the decision-making process of choosing wines?"; and "How easy was it for you to imagine the taste of the wine?" (Petrova & Cialdini, 2005).

*Centrality of Visual Product Aesthetics.* We also included an 8-item subset of the centrality of visual product aesthetics (CVPA) scale, which measures the individual

differences in significance of visual aesthetics for a specific consumer, as a potential covariate. Items asked for the respondents' agreement/disagreement (1 = completely disagree, 7 = completely agree) with statements such as: "I enjoy seeing displays of products that have superior designs" and "When I see a product that has a really great design, I feel a strong urge to buy it" (Bloch, Brunel, & Arnold, 2003).

*Need for Uniqueness.* An additional scale measured for individual differences in need for uniqueness (Tian, Bearden, & Hunter, 2001) by asking respondents what extent they agree/disagree (1 = strongly disagree, 5 = strongly agree) with four statements such as: "The more commonplace a product or brand is among the general population, the less interested I am in buying it" (Tian *et al.*, 2001, p.56). Demographic information (gender, age, education, household income, ethnicity) was collected, along with a few control measures pertaining to wine consumption. Participants were asked how familiar respondents they are with wine (1 = not at all familiar, 7 = very familiar), to what extent they consider themselves knowledgeable about wine (1 = not at all knowledgeable, 7 = very knowledgeable), and how often they drink wine (1 = never, 5 = most days per week). Finally, respondents were asked how long they have lived in the U.S. (1 = less than 10 years, 2 = 10 years or more).

## **Results**

**Sensory perceptions.** We took a composite mean of the six visual sensory perception items (visually-appealing, aesthetically-pleasing, like colors, too decorative, pleasant/unpleasant, and enjoy-not enjoy; Cronbach's alpha = .660). Utilizing contrast analysis, we are able to show that, in line with hypothesis 4, the effect of unique brand name spelling resulting in less favorable visual sensory evaluations is significant in the

abstract mental representation condition ( $M_{\text{common}} = 5.678$ ,  $M_{\text{unique}} = 5.090$ ,  $F(1,181) = 3.699$ ,  $p = .056$ ) but not significant in the concrete mental representation condition ( $M_{\text{common}} = 5.692$ ,  $M_{\text{unique}} = 5.418$ ,  $F(1,181) = .975$ ,  $p = .325$ ). See Figure 3. Need for uniqueness was originally included as a covariate in the analysis but was not significant ( $p > .1$ ) thus was not included in this or further analyses. In support of hypothesis 1, the main effect of spelling on visual sensory perceptions was significant ( $M_{\text{common}} = 5.6854$ ,  $M_{\text{unique}} = 5.2727$ ,  $F(1,184) = 4.361$ ,  $p = .038$ ) with those viewing the uniquely-spelled brand name rating the wine label less favorably than those who saw the commonly-spelled brand name. The interaction between spelling and concrete versus abstract mental representation was not significant ( $F(1,184) = .582$ ,  $p = .447$ ).

---

Insert Figure 3 about here

---

Additionally, we collapsed the five items from Hirschman's (1986) Aesthetic/Emotional scale (attractive/not attractive, desirable/not desirable, arousing/not arousing, beautiful/not beautiful, and makes me like this product/does not make me like this product; Cronbach's alpha = .935) and also conducted a contrast analysis for the resulting composite for further support of our hypotheses. The analysis supported the above results in support of hypothesis 4 with the effect of unique brand name spelling resulting in less favorable visual sensory evaluations is significant when participants were processing abstractly ( $M_{\text{common}} = 5.227$ ,  $M_{\text{unique}} = 4.575$ ,  $F(1,183) = 4.082$ ,  $p = .045$ ) but not when they were processing concretely ( $M_{\text{common}} = 5.381$ ,  $M_{\text{unique}} = 5.020$ ,  $F(1,183) = 1.504$ ,  $p = .222$ ). See Figure 4. In support of hypothesis 1, there is a significant main

effect of brand name spelling on sensory perceptions ( $M_{\text{common}} = 5.3102$ ,  $M_{\text{unique}} = 4.8202$ ,  $F(1,185) = 5.379$ ,  $p = .021$ ). The interaction between spelling and concrete versus abstract mental representations was not statistically significant ( $F(1,185) = .444$ ,  $p = .506$ ).

---

Insert Figure 4 about here

---

**Brand name items.** An ANOVA revealed no significant effect of spelling on how well the brand name fits with the design of the wine ( $M_{\text{common}} = 4.10$ ,  $M_{\text{unique}} = 4.00$ ,  $F(1,186) = .160$ ,  $p = .689$ ). In support of our manipulation, ratings of the spellings of the brand names differed on uniqueness ( $M_{\text{common}} = 2.44$ ,  $M_{\text{unique}} = 6.00$ ,  $F(1,186) = 216.212$ ,  $p < .001$ ). The commonly-spelled brand name was also rated as marginally more familiar than the uniquely-spelled brand name ( $M_{\text{common}} = 3.23$ ,  $M_{\text{unique}} = 2.75$ ,  $F(1,186) = 3.130$ ,  $p = .079$ ).

**Cognitive processing.** In support of hypothesis 2, respondents reported putting in more effort to understand the brand name when the brand name was spelled uniquely than when it was not ( $M_{\text{common}} = 3.07$ ,  $M_{\text{unique}} = 4.31$ ,  $F(1,186) = 11.097$ ,  $p = .001$ ). Similarly, participants reported that the brand name was more difficult to understand when the brand name was spelled uniquely versus commonly ( $M_{\text{common}} = 2.48$ ,  $M_{\text{unique}} = 3.75$ ,  $F(1,186) = 13.515$ ,  $p < .001$ ).

**Consumer buying interest.** Three buying-related measures (how likely to buy, interest in learning more about the brand, interest in tasting the wine) were collapsed into a composite item (Cronbach's alpha = .865). As in previous studies, brand name spelling

did not have a direct effect on buying-related variables ( $M_{\text{common}} = 4.9048$ ,  $M_{\text{unique}} = 4.5655$ ,  $F(1,186) = 2.150$ ,  $p = .144$ ), lending support that our effect is sensory, not simply an attitude bias. In further support of this, participants did not rate the commonly-spelled wine higher than the uniquely-spelled wine on a traditional wine quality rating scale of 50 to 100 ( $M_{\text{common}} = 75.1531$ ,  $M_{\text{unique}} = 75.9663$ ,  $F(1,186) = .271$ ,  $p = .603$ ).

## **Discussion**

The current study explored the proposed effect in yet another sense (vision), a new product category (wine), and with a new brand name pair (Harper/Harpyr) increasing the robustness of the work. In this study, it was shown that, in support of hypothesis 4, our proposed effect of unique brand name spelling on sensory perceptions only holds when an abstract mental representation is induced. When individuals are in a concrete mindset, the effect does not hold. A unique brand name spelling resulted in less favorable sensory perception evaluations overall (hypothesis 1), but when manipulating mental representation, the main effect holds only for individuals who are thinking in an abstract, generalized way. This finding suggests the way individuals process information contributes to the underlying process of our effect, in support of hypothesis 3. We also were able to show that brand name spelling did not directly influence quality perceptions or other marketing variables, such as purchase likelihood, which again supports the idea that the effect of unique spelling is not simply an bias based on expectations about the product.

## **STUDY 5: THE ROLE OF AFFECTIVE PROCESSING**

The purpose of this study was to further investigate the underlying process of our established effect of brand name spelling on sensory perceptions. While our previous studies have provided some evidence that cognitive processing plays a role in our effect, it appears from our analyses to not fully explain the effect of a unique brand name spelling on sensory perceptions. Because past research has suggested that disfluency may negatively influence individuals' affective states (e.g., Alter *et al.*, 2007) and we saw significant differences across brand name spellings on Hirschmann's (1986) Aesthetic/Emotional scale in the previous study, we have support that affective processing is likely being affected alongside cognitive processing when consumers encounter a uniquely-spelled brand name. Accordingly, in study 5, we aim to explore the role of affect in the underlying process of our brand name spelling effect. We predict that cognitive and affective processing will simultaneously mediate the effect of unique brand name spelling on sensory perceptions (hypothesis 6). Additionally, in the current study, with the use of an audio clip and accompanying sound check item, we improve upon potential confounds in previous studies by specifically controlling for identical pronunciation of the brand name across unique and common brand name spelling conditions, which better isolates our construct under investigation—namely, brand name spelling.

### **Participants and Design**

One hundred thirty-two North American participants recruited on the online data collection forum, Mechanical Turk, and were compensated \$0.25 for proper completion of the study. Of these participants, three participants reported living in the U.S. less than 10 years and were excluded from the sample. Further, an additional 29 participants did

not pass a sound check item and were excluded from the sample for not following directions, leaving a total of 100 participants for analysis (70 female, 30 male; mean age = 33.85 years). As in the previous study, each participant was randomly assigned to view the product in one of two spelling conditions and one of two mental representation conditions, making for a 2 (spelling: common versus unique)  $\times$  2 (mental representation: concrete versus abstract) between-subjects design.

### **Materials and Procedure**

As in study 4, the survey was presented in Qualtrics as a two-part evaluation consisting first of a survey dealing with ideas about relationships with others and a second seemingly-unrelated survey regarding evaluation of a new wine brand (see Appendix C for full text of the concrete and abstract mental representations manipulations). The overall design was identical to the previous study with the concrete versus abstract manipulations first, placeholder questions, and hypothetical wine buying scenario following.

### **Measures**

**Sound check.** The recruitment text for this study specifically stated that participants must be able to listen to a sound byte. The purpose of the sound byte was for both brand name spelling groups (Harper or Harpyr) to hear the same sound byte in order to control for the pronunciation of the brand name across spelling conditions. After hearing the audio clip describing the wine (see Appendix E for text of the audio clip), respondents were asked what information they learned from the sound byte. The possible answer choices included: "the history of the wine", "the flavors of the wine", "foods that pair best with the wine", or "the wine-making philosophy of the winery owner". Any

respondents who incorrectly chose an answer other than "the flavors of the wine" were assumed to have not listened to the sound byte, which would not allow us to control for brand name pronunciation and were eliminated from the sample for not following directions.

**Sensory perceptions.** Participants were asked the same visual sensory perception items as in study 4: "To what extent is the design of the label visually-appealing?" (1 = not at all visually appealing, 7 = very visually-appealing); "The design elements of the label are aesthetically-pleasing," "I like the colors used on the label," and "The label is too decorative" (1 = completely disagree, 7 = completely agree); "To what extent do you think the design is pleasant/unpleasant?" (1 = unpleasant, 7 = pleasant); "To what extent did you enjoy/not enjoy looking at the design of the label?" (1 = did not enjoy at all, 7 = enjoyed very much). As before, an overall liking item was also included ("to what extent do you like the label?; 1 = do not like at all, 7 = like it very much) in addition to an open-ended item asking participants to write their thoughts about the design of the wine label. Also, the five 7-point scale items from Hirschman's (1986) Aesthetic/Emotional scale (attractive/not attractive, desirable/not desirable, arousing/not arousing, beautiful/not beautiful, and makes me like this product/does not make me like this product) were presented.

**Affective response.** Directly prior the Hirschman (1986) visual sensory perception items, two affect-related items were included. In line with Winkielman and Cacioppo's (2001) hedonic fluency model, which purports that fluency results in temporary affective changes, we asked participants to rate the degree of their positive reaction to the wine line (1 = no positive reaction, 4 = very positive reaction) and the

degree of their negative reaction to the wine label (1 = no negative reaction to 4 = very negative reaction).

**Brand name items.** Participants the same items as in the previous study: how well the brand name fits with the design of the label (1 = not well at all, 7 = very well); how unique is the brand name (1 = not at all unique, 7 = very unique); how unique is the spelling of the brand name (1 = not at all unique, 7 = very unique); and how familiar does the brand name seem? (1 = not at all familiar, 7 = very familiar).

**Cognitive and affective processing.** As in our previous studies, respondents were asked to rate how much mental effort they had to put in to understand the brand name and how difficult the brand name was to understand (1 = not at all, 9 = very much).

The following section was unique to this study and was modeled after Crites, Fabrigar, and Petty's (1994) paper on measuring the affective and cognitive properties of attitudes. The section included four lists of words to which participants were asked to react. The first three (of four) stimuli lists of words were adapted from Crites *et al.* (1994) and included: (1) general evaluation items (<sup>2</sup>positive<sup>+</sup>, negative<sup>-</sup>, like<sup>+</sup>, dislike, good<sup>+</sup>, bad<sup>-</sup>, desirable<sup>+</sup>, undesirable<sup>-</sup>); (2) cognitive items (useful<sup>+</sup>, useless<sup>-</sup>, wise<sup>+</sup>, foolish<sup>-</sup>, beneficial<sup>+</sup>, harmful<sup>-</sup>, valuable<sup>+</sup>, worthless<sup>-</sup>, perfect<sup>+</sup>, imperfect<sup>-</sup>); and (3) affective items (love<sup>+</sup>, hateful<sup>-</sup>, sad<sup>-</sup>, happy<sup>+</sup>, calm<sup>+</sup>, tense<sup>-</sup>, excited<sup>+</sup>, relaxed<sup>+</sup>, angry<sup>-</sup>, disgusted<sup>-</sup>, joy<sup>+</sup>, sorrow<sup>-</sup>). For each word, respondents were asked to indicate whether the word describes their feelings towards the design of the wine label. Four possible answer choices were: does not apply (coded as 0), does not describe (coded as 0), slightly describes (coded 1 or

---

<sup>2</sup> Superscript plus symbol (+) indicates this item was coded as a positive, while superscript minus sign (-) indicates this item was coded as negative when participants chose slightly describes (coded 1 or -1) or definitely describes (coded as 2 or -2)

-1 depending on whether the word is positive or negative), and definitely describes (coded as 2 or -2 depending on whether the word is positive or negative).

The fourth word list in this section was adapted from Baker, D'Mello, Sidney, Rodrigo, Mercedes, and Graesser's (2010) paper on cognitive-affective states, which describe certain states as having *both* significant cognitive and affective components, unlike either a purely cognitive state or a purely affective state. The cognitive-affective word items to which participants reacted included: boredom<sup>-</sup>, confusion<sup>-</sup>, delight<sup>+</sup>, engaged concentration<sup>+</sup>, frustration<sup>-</sup>, and surprise<sup>+</sup>. Respondents were asked to indicate whether or not they experienced each of the words while looking at the design of the wine label. Answer choices included: definitely (coded as 2 or -2 depending on whether the word is positive or negative), slightly (coded as 1 or -1 depending on whether the word is positive or negative, and no (coded as 0).

**Consumer buying interest.** As in study 4, participants were asked to rate how likely they would be to buy the wine (1 = not at all likely, 7 = very likely), to what extent they are interested in learning more about the brand of wine (1 = not at all interested, 7 = very interested), how interested they would be in tasting some of the wine (1 = not at all interested, 7 = very interested), and what they think this wine is rated (50 to 100).

**Control measures.** We collected demographic information (gender, age, education, household income, ethnicity) and a the same control measures pertaining to wine consumption as in the previous study (e.g., how familiar respondents they are with wine; 1=not at all familiar 7=very familiar). Respondents were asked how long they have lived in the U.S. (1=less than 10 years, 2=10 years or more) as a key filter variable.

*Centrality of Visual Product Aesthetics.* Following study 4, we included an 8-item subset of the centrality of visual product aesthetics (CVPA) scale as a potential covariate (e.g., "I enjoy seeing displays of products that have superior designs" (1 = completely disagree, 7 = completely agree; Bloch, Brunel, & Arnold, 2003).

*Need for Uniqueness.* As in the prior study, we included the need for uniqueness scale (Tian, Bearden, & Hunter, 2001) as a potential covariate (e.g., "The more commonplace a product or brand is among the general population, the less interested I am in buying it;" 1 = strongly disagree, 5 = strongly agree).

## **Results**

**Sensory perceptions.** As in the previous study, we took a composite mean of the five items from Hirschman's (1986) Aesthetic/Emotional scale (attractive/not attractive, desirable/not desirable, arousing/not arousing, beautiful/not beautiful, and makes me like this product/does not make me like this product; Cronbach's alpha = .947) and conducted a contrast analysis on the resulting composite item with brand name spelling (common versus unique) and mental representation (concrete versus abstract) as the fixed factors. As in the previous study, we gain further support for hypothesis 4 with the effect of unique brand name spelling resulting in less favorable visual sensory evaluations being marginally significant in the abstract mental representation condition ( $M_{\text{common}} = 5.417$ ,  $M_{\text{unique}} = 4.667$ ,  $F(1,99) = 2.867$ ,  $p = .094$ ) but not in the concrete mental representation condition ( $M_{\text{common}} = 4.970$ ,  $M_{\text{unique}} = 4.845$ ,  $F(1,99) = .076$ ,  $p = .784$ ). The centrality of visual product aesthetics (CVPA) scale was originally included as a covariate but was not significant in the model ( $p > .05$ ). Also, as in study 4, need for uniqueness was originally included as a covariate in the analysis but was not significant ( $p > .05$ ); thus, both

potential covariates, were not included in this or further analyses. See Figure 5. The interaction term between spelling (common versus unique) and mental representation (concrete versus abstract) was not significant ( $F(1,99) = .972, p = .327$ ).

---

Insert Figure 5 about here

---

Analysis of the composite of participants' reactions to the Crites *et al.* (1994) general evaluation items (positive, negative, like, dislike, good, bad, desirable, undesirable; Cronbach's alpha = .927) supports the above results on visual evaluations and concrete versus abstract mental representations. Contrast analysis on the general evaluation composite with spelling (common versus unique) and mental representation (concrete versus abstract) as fixed factors reveals that consumers' evaluation of the wine label visual was more positive in response to the commonly-spelled wine label than the uniquely-spelled wine label only in the abstract mental representation condition ( $M_{\text{common}} = 5.042, M_{\text{unique}} = 2.667, F(1,99) = 3.748, p = .056$ ) and not in the concrete mental representation condition ( $M_{\text{common}} = 4.296, M_{\text{unique}} = 3.818, F(1,99) = .145; p = .704$ ). See Figure 6. The interaction between spelling (common versus unique) and mental representation (concrete versus abstract) was not significant ( $F(1,99) = 1.167 p = .283$ ).

---

Insert Figure 6 about here

---

Finally, lending support to hypothesis 1, the main effect of spelling on sensory perceptions regardless of mental representation condition (general attitudes scale; Crites *et al.*, 1994) was marginally significant with respondents who saw the commonly-spelled wine label rating it more favorably than those who saw the uniquely-spelled wine label ( $M_{\text{common}} = 4.6471$ ,  $M_{\text{unique}} = 3.1837$ ,  $F(1,99) = 2.821$ ;  $p = .096$ ). However, responses to the visual sensory perceptions composite (visually appealing, aesthetically-pleasing, like colors, too decorative, pleasant/unpleasant, enjoy/not enjoy looking) did not differ across spelling conditions ( $M_{\text{common}} = 5.5588$ ,  $M_{\text{unique}} = 5.2483$ ,  $F(1,99) = 1.137$ ;  $p = .289$ ). The main effect of spelling on sensory perceptions was also not significant for responses to Hirschman's (1986) Aesthetic/Emotional scale ( $M_{\text{common}} = 5.1804$ ,  $M_{\text{unique}} = 4.7469$ ,  $F(1,99) = 1.899$ ;  $p = .171$ ).

**Affective response.** Participants response to the item asking them to rate the degree of their negative reaction to the wine label (1 = no negative reaction to 7 = very negative reaction) was in line with the above results. In support of hypothesis 5, respondents reported a greater negative reaction to the uniquely-spelled brand name than the commonly-spelled brand name only in the abstract mental representation condition ( $M_{\text{common}} = 1.375$ ,  $M_{\text{unique}} = 1.815$ ,  $F(1,99) = 3.471$   $p = .066$ ) and not in the concrete mental representation condition ( $M_{\text{common}} = 1.741$ ,  $M_{\text{unique}} = 1.636$ ,  $F(1,99) = .187$ ,  $p = .667$ ). See Figure 7. The interaction between spelling (common versus unique) and mental representation (concrete versus abstract) on hedonic fluency was not significant ( $F(1,99) = 2.595$   $p = .111$ ). Additionally, the main effect of spelling on negative reactions toward the label was directionally in line with our predictions (a more negative reaction

toward the label in the unique condition) but was not statistically significant ( $M_{\text{common}} = 1.57$ ,  $M_{\text{unique}} = 1.73$ ,  $F(1,99) = .986$ ,  $p = .323$ ).

---

Insert Figure 7 about here

---

**Brand name items.** An ANOVA revealed a marginal effect of spelling on how well the brand name fits with the design of the wine ( $M_{\text{common}} = 4.02$ ,  $M_{\text{unique}} = 3.49$ ,  $F(1,99) = 3.051$ ,  $p = .084$ ). In support of our manipulation, ratings of the spellings of the brand names differed on uniqueness ( $M_{\text{common}} = 2.18$ ,  $M_{\text{unique}} = 6.37$ ,  $F(1,99) = 225.891$ ,  $p < .001$ ). The commonly-spelled brand name was also rated as more familiar than the uniquely-spelled brand name ( $M_{\text{common}} = 3.80$ ,  $M_{\text{unique}} = 3.00$ ,  $F(1,99) = 4.980$ ,  $p = .016$ ).

**Cognitive and affective processing.** Respondents reported putting in more effort to understand the brand name when the brand name was spelled uniquely than when it was not ( $M_{\text{common}} = 2.92$ ,  $M_{\text{unique}} = 4.57$ ,  $F(1,99) = 11.092$ ,  $p = .001$ ), and the brand name was more difficult to understand when the brand name was spelled uniquely versus commonly ( $M_{\text{common}} = 2.16$ ,  $M_{\text{unique}} = 4.16$ ,  $F(1,99) = 23.068$ ,  $p < .001$ ), in line with hypothesis 2.

Additionally, we formed a composite mean from the responses to the cognitive items (<sup>3</sup>useful<sup>+</sup>, useless<sup>-</sup>, wise<sup>+</sup>, foolish<sup>-</sup>, beneficial<sup>+</sup>, harmful<sup>-</sup>, valuable<sup>+</sup>, worthless<sup>-</sup>, perfect<sup>+</sup>, imperfect<sup>-</sup>; Cronbach's alpha = .822) and the affective items (love<sup>+</sup>, hateful<sup>-</sup>, sad<sup>-</sup>, happy<sup>+</sup>, calm<sup>+</sup>, tense<sup>-</sup>, excited<sup>+</sup>, relaxed<sup>+</sup>, angry<sup>-</sup>, disgusted<sup>-</sup>, joy<sup>+</sup>, sorrow<sup>-</sup>; Cronbach's alpha = .828). These composites allowed us to explore the role of both cognition and

---

<sup>3</sup> Superscript plus symbol (+) indicates this item was coded as a positive, while superscript minus sign (-) indicates this item was coded as negative when participants chose slightly describes (coded 1 or -1) or definitely describes (coded as 2 or -2)

affect as the underlying processes of the effect of brand name spelling on visual evaluations of the wine label.

In order to look at our conceptual model as a whole and test hypothesis 7, we tested for mediation utilizing the Hayes' (2013) PROCESS macro (model 8; 10,000 bootstraps) with brand name spelling (common versus unique) as the dependent variable, the cognitive items composite mean-centered and the affective items composite mean-centered as the mediators, mental representation condition (concrete versus abstract) as the moderator, and the general evaluations (Crites *et al.*, 1994) composite as the independent variable in order to test for conditional mediation at differing levels of the moderator. The results reveal a significant indirect effect (effect = -1.0907) of brand name spelling on general evaluations through affective processing only with a 95% confidence interval not including zero (95% CI [-2.5530, -.1189]) in the abstract mental representation condition. As predicted, in the concrete mental representation condition, affective processing does not significantly mediate the relationship with a 95% confidence interval including zero (effect = -.7848; 95% CI [-2.2160, .2768]). Thus, for individuals in the abstract mental representation condition, brand name spelling (common versus unique) had a significant negative indirect effect, such that those who saw the uniquely-spelled brand name rated the wine label less favorably than those who saw the commonly-spelled brand name. However, in this model, cognitive processing does not significantly mediate for the concrete mental representation condition (effect = -.6832; 95% CI [-1.9695, .3624]) nor the abstract mental representation condition (effect = -.6837; 95% CI [-1.9510, .3483]), not fully supporting our complete conceptual model (H7). See Figure 8. The direct effects of brand name spelling on sensory perceptions are not

significant for abstract (effect =  $-.6007$ ; 95% CI [ $-2.0177, .8164$ ]) nor concrete (effect =  $.9899$ ; 95% CI [ $-.4446, 2.4244$ ]) mental representation conditions. The indexes of moderated mediation for the cognitive processing (index:  $-.0004$ ; 95% CI [ $-1.6668, 1.5568$ ]) and affective processing (index:  $-.3059$ ; 95% CI [ $-2.0693, 1.1915$ ]) mediators both include zero in the 95% confidence interval.

---

Insert Figure 8 about here

---

**Consumer buying interest.** As in the previous study, the three buying-related measures (how likely to buy, interest in learning more about the brand, interest in tasting the wine) were collapsed into a composite item (Cronbach's alpha =  $.920$ ). As before, brand name spelling does not have a direct effect on buying-related variables ( $M_{\text{common}} = 4.9804$ ,  $M_{\text{unique}} = 4.7143$ ,  $F(1,99) = .695$ ,  $p = .406$ ), again lending support for the sensory nature of the effect. Once again, participants did not rate the commonly-spelled wine higher than the uniquely-spelled wine on a wine quality rating scale of 50 to 100 ( $M_{\text{common}} = 76.9412$ ,  $M_{\text{unique}} = 76.0408$ ,  $F(1,99) = .245$ ,  $p = .622$ ).

## Discussion

The current study has gained support for our proposed effect of brand name spelling on sensory perceptions. When consumers are processing information abstractly, a uniquely-spelled brand name is more likely to result in less favorable visual sensory perceptions (hypothesis 4). In addition to cognitive processing, affective processing is affected by a unique brand name spelling (hypothesis 5) and plays a key role in the

underlying process of the effect (hypothesis 6), as it mediates the effect of brand name spelling on sensory perceptions.

## **GENERAL DISCUSSION**

When coming up with brand names for new products, one strategy used by marketers in many industries is altering the spelling of common words to form brand names with unique spellings (Feloni, 2014; Gabler, 2015). Although the use of this strategy in the marketplace suggests that a unique brand name spelling is beneficial to the brand, we explore why and when this may not be the case for sensory products. Across several senses and product categories, we find that a unique spelling of a common word or name as a brand name results in less favorable sensory perceptions of a product than when the brand name is a commonly-spelled equivalent. Drawing on processing fluency theory (Schwarz, 2004; Alter & Oppenheimer, 2009), we show that uniquely-spelled brand names act as disfluent stimuli and impose greater cognitive processing and more negative affective processing on the consumer, as shown both by manipulating consumers' mental representations to be either concrete or abstract and also measuring cognitive and affective responses. Further, our work gives evidence that the effect of unique brand name spelling does not alter prior expectations nor quality perceptions of the product, suggesting that the effect is not simply an inferential bias based on brand name information but that disfluency leads to sensory perception differences.

Our work contributes to sensory marketing knowledge on the effect of a-modal information on sensory perceptions (Krishna, 2012) and to the fluency literature—namely the work focusing on linguistic fluency (e.g., McGlone & Tofiqbakhsh, 2000; Brennan

& Williams, 1995; Oppenheimer, 2006)—which has focused mainly on complex pronunciations or altered fonts (e.g., Alter & Oppenheimer, 2006; Green & Jame, 2013; Cho, 2014) and has not previously looked specifically at spelling variations when pronunciation is held constant, as we do in our work. We also contribute to the growing body of literature on consumer linguistics (Carnevale *et al.*, working paper). We show that a mere one letter orthographic change may be enough to put consumers in a disfluent metacognitive state and alter sensory perceptions. We find that when a consumer reads a uniquely-spelled brand name, it effects both their cognitive and affective processing and, in turn, negatively affects sensory perceptions.

### **Limitations**

One limitation of our work is that, although we explored differences in the effect of a commonly-spelled brand name versus a uniquely-spelled brand name on sensory perceptions, we did not include a control group with no brand name. Including a control group could yield interesting results as we could explore whether even a commonly-spelled brand name has a significant effect versus a control of no brand name or whether a control group's perceptions are line with a commonly-spelled brand name group's perceptions. Importantly, a control group could reveal information about consumers' sensory perceptions with no semantic brand name associations.

Further, we manipulated common/unique spellings of both a common noun (World/Wurld) and a proper noun (the names Scarlett/Scarlitt and Harper/Harpyr) in hopes of increasing robustness of the effect. We were able to show that the effect of unique spelling variations led to the same sensory perception effect for both the common noun and proper noun. However, past work has suggested that proper nouns have a

distinct neuropsychological effect on the human brain (Gontijo & Zhang, 2007). Saffran, Schwartz, and Marin (1976) showed that dyslexic patients were able to more accurately read the same word as part of a proper noun (e.g., Olive Cooper) than when the word was not part of a name (e.g., olive). Further work could more specifically investigate the process underlying our effect and explore whether the process may be different for common nouns and proper nouns. Although both are presented as brand names, it is possible that the greater cognitive processing expended for a uniquely-spelled brand name is triggered by distinct processes for common nouns and proper nouns.

Although past work (Lowrey *et al.*, 2003) suggests that orthographic (i.e., spelling), phonetic (i.e., sound), and semantic (i.e., meaning) linguistic devices operate in distinctive ways, other work (Luna *et al.*, 2010) on brand name spellings suggests that spelling is strongly linked to semantic and phonetic associations. In our work, we make an effort to control for phonetic associations by keeping pronunciation constant, yet we have not formally tested or measured the semantic associations potentially evoked by differing spellings. Work on pseudohomophones ("bye" versus "buy; Davis & Herr, 2014) suggests that, because individuals subvocalize, or silently speak word sounds, while reading, it is word pronunciation—*not* spelling—that activates meanings stored in memory. As such, in our work, if pronunciation is held constant, activated meanings should not significantly differ across conditions. This may be why we were able to control for several key variables in our studies (e.g., expectations prior to consuming the product). Still, it may be beneficial for respondents to list any associations activated by the brand names and conduct a content analysis to explore any major semantic differences.

Our work focused solely on new product introductions of hypothetical brands. That is, the brands in each study were introduced as a "new chocolate brand" or a "new perfume brand." Future work could explore whether the effect of unique spelling on sensory perceptions also holds for established brands. Although real-world brands likely could not be used due to the previously held associations of well-known brands, it is possible to introduce a hypothetical brand as being already established in the marketplace to explore the effect in a brand repositioning context. If the brand is presented with the common (unique) spelling, and it is explained that the brand managers are wishing to change the brand name to have a more unique (common) spelling, then, whether one type of change (unique to common versus common to unique) is more favorable than the other could be explored.

### **Future directions**

Aside from future work suggested by our above limitations, another avenue for future research is to integrate the field of neuromarketing (Thompson, 2003) and collect biological measures to more objectively explore how cognitions and senses are being affected by unique spelling variations. Because the parietal lobe, located in the cerebral hemisphere in the brain, is responsible for visual functions, language, reading, and sensory comprehension (Society for Neuroscience, 2012), neuromarketers may be interested to observe potential differences in brain activity in the parietal lobe when common versus unique spellings of brand names are used.

Another opportunity for future research, which also incorporates more objective measures of the underlying process is the use of a response time to measure the speed with which commonly- versus uniquely-spelled brand names are processed. The

frequency effect (less frequently used words take longer to process than more frequently used words; Gontijo & Zhang, 2007) and the lexicality effect (words are processed more quickly than nonwords; Gontijo & Zhang, 2007) both suggest that a uniquely-spelled brand name would take longer to process than a commonly-spelled brand name resulting in longer response times. Response time measures in future studies could help to gain support for our underlying process.

Further, anything that disrupts processing fluency should attenuate our effect. Another relevant possibility for a theoretically-relevant moderator is cognitive load, which represents the burden that a given task or stimulus inflicts on our cognitive system (Pass *et al.*, 2003). Similarly, sensory overload, or the overburdening of the brain due to excess sensory stimuli, may also moderate our effect by hindering information processing (Malhotra, 1984; Vermeulen, Corneille, & Niedenthal, 2008). While cognitive load may moderate our effect by increasing the amount of information processing in the commonly-spelled brand name condition, sensory overload may moderate the effect by decreasing the ability for information processing in the uniquely-spelled brand name condition. So, though both types of load may moderate our effect, this could be due to differing underlying reasons.

Additionally, it has been suggested that the idea of misattribution may prove to moderate our effect of spelling. Misattribution paradigms have been extensively used in past research; and, relatively recently (Tsai & McGill, 2011), misattribution of the cause of ease or difficulty of a task to music playing in the background has been shown to attenuate the effects of fluency manipulations (Tsai & McGill, 2011). It is possible that imposing some kind of misattribution manipulation, such as background music, and

explaining to participants that music makes it more difficult to process or understand brand names may be one way to eliminate the detrimental effect of unique brand name spelling on sensory perceptions. Additionally, although they did not explicitly call their manipulation a misattribution manipulation, in an exploration of fluency effects, Tsai and Thomas (2011) manipulated the importance of fluency/disfluency in a task related to chocolate evaluation. Participants were told either to focus on the fluent/disfluent brand-related information (fluency important condition) or to focus only on their subjective and instinctive feelings and not the brand-related information (fluency not important condition). This type of manipulation may be used in our work in order to explore whether de-prioritizing the fluency/disfluency would moderate our effect.

Future research should also aim to explore the involvement of product price or luxury product status on the effect of brand name spelling. It has been suggested that uniquely-spelled brand names may evoke perceptions of a "knock-off" product; while past research has interestingly found that disfluent brand names result in more favorable evaluations in high-priced, special-occasion product categories. Pocheptsova, Labroo, and Dhar (2010) have shown that disfluency and metacognitive difficulty (by manipulating font) actually enhances product preferences for high-end, special occasion goods, such as gourmet cheese. Because this type of product is purchased for its exclusivity and uncommonness and is also likely to be higher in price, associating this type of product with anything unique or distinctive is associated with more positive evaluations (Pocheptsova *et al.*, 2010). We found the idea of price an interesting one in relation to our work and ran an additional study to explore whether product price interacted with our main effect. One hundred seventy participants (87 female, 83 male;

mean age = 34.47 years) on an online data collection forum evaluated a wine brand with the name Scarlett or Scarlitt in either a low-priced or high-priced condition making for 2 (spelling: common versus unique)  $\times$  2 (price: low versus high) between-subjects design. We found our main effect of unique brand name spelling results in less favorable sensory perceptions to hold in the low price condition only. Instead of a reversal of the effect, as would be suggested by the aforementioned past research on disfluency and special occasion goods (Pocheptsova *et al.*, 2010), we did not find a significant effect in the high price condition. A separate paper could explore price implications of the effect of unique brand name spelling. See Appendix F for a full write-up of our additional study concerning product price.

### **Implications and Conclusion**

The five studies presented in this work provide the first empirical evidence of how altering one letter of a brand name to make the spelling more unique affects sensory perceptions. Although marketers and namers at creative agencies are using this brand naming strategy, we suggest that marketers of products consumed primarily for their sensory properties may wish to stick with commonly-spelled brand names. Even if two brand names, one spelled uniquely and one spelled commonly, are market tested against each other, consumers may not reveal differences in important variables such as willingness to pay, preferences for the brand names, general liking, or buying interest. However, if marketers delve deeper to ask consumers about more sensory-specific dimensions, they may learn that the uniquely-spelled brand name that they thought would set them apart in the marketplace actually leads to less favorable sensory perceptions during the product experience and less consumption.

Overall, we introduce the idea that, when a brand name is formed by altering the spelling of a common or proper noun, this uniquely-spelled brand name may detrimentally affect sensory perceptions of the product holding that brand name. Based on the notion of processing fluency, we theorize and give evidence for the idea that a uniquely-spelled brand name increases cognitive processing effort required to process the brand name and negatively affects individuals' affective states as compared to its commonly-spelled equivalent. We have also been able to show differences in food consumption across common and unique spelling conditions and rule out alternative explanations, such as potential differences in prior expectations, need for uniqueness differences, and differences in phonetic associations. We have begun to explore the intricate underlying process of our effect, but there is ample room for future research to further explore the effect of unique brand name spellings.

**Table 1**

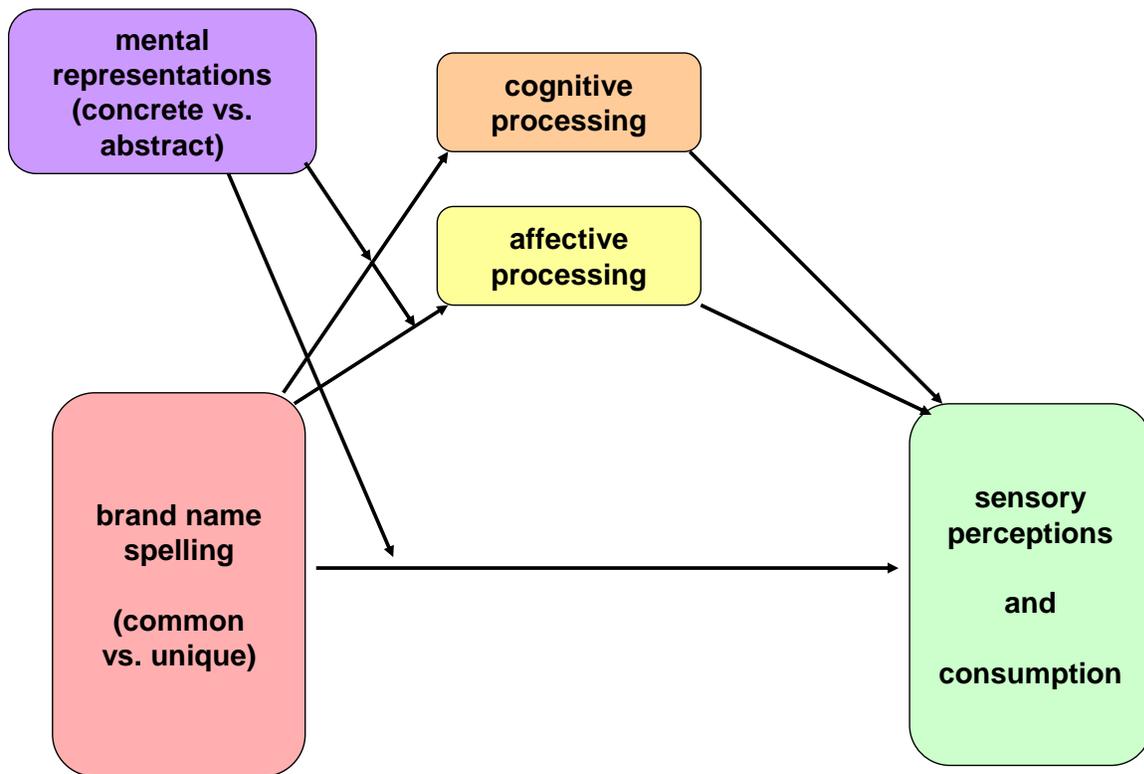
Table 1

*Overview of studies*

	Test	Sense	Product Category	Hypothesis Supported
Study 1	<ul style="list-style-type: none"> <li>main effect</li> </ul>	taste	chocolate	<ul style="list-style-type: none"> <li>H1</li> </ul>
Study 2	<ul style="list-style-type: none"> <li>main effect</li> </ul>	olfaction	perfume	<ul style="list-style-type: none"> <li>H1</li> <li>H3</li> </ul>
Study 3	<ul style="list-style-type: none"> <li>main effect</li> <li>cognitive mediation</li> <li>actual consumption differences</li> </ul>	taste	chocolate	<ul style="list-style-type: none"> <li>H1</li> <li>H2</li> <li>H3</li> </ul>
Study 4	<ul style="list-style-type: none"> <li>moderation by mental representation</li> </ul>	vision	wine	<ul style="list-style-type: none"> <li>H1</li> <li>H2</li> <li>H4</li> </ul>
Study 5	<ul style="list-style-type: none"> <li>cognitive and affective mediation</li> <li>moderation by mental representation</li> </ul>	vision	wine	<ul style="list-style-type: none"> <li>H1</li> <li>H2</li> <li>H4</li> <li>H5</li> <li>H6</li> </ul>

**Figure 1**

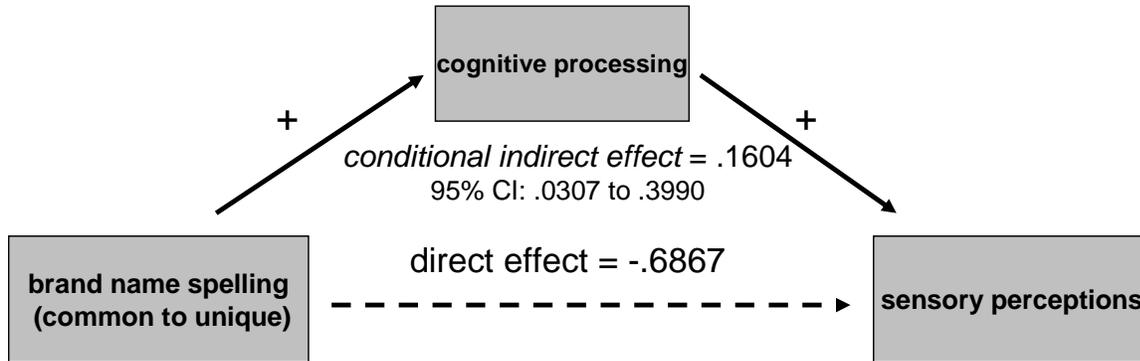
**Figure 1.** Conceptual model



*Figure 1.* The conceptual model of the effect of brand name spelling on sensory perceptions and consumption simultaneously mediated by both cognitive and affective processing and moderated by mental representation (concrete versus abstract).

**Figure 2**

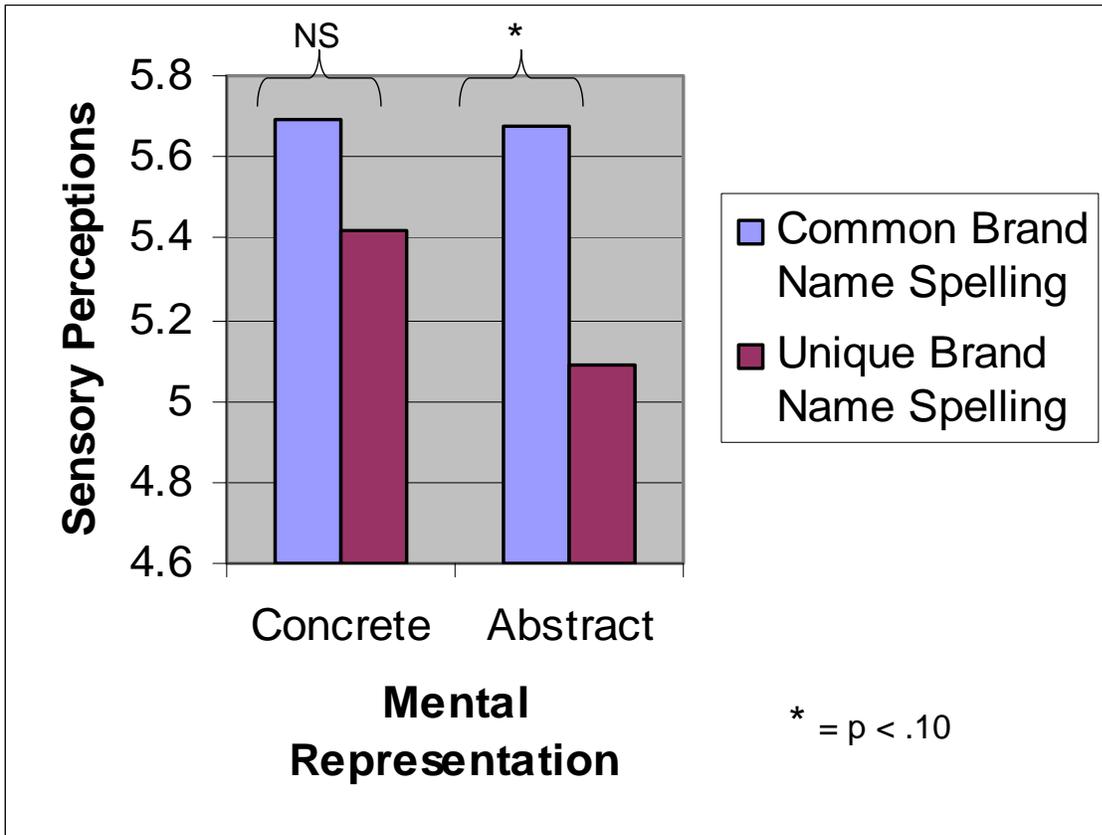
**Figure 2.** Study 3 competitive mediation model



*Figure 2.* Study 3 competitive mediation model revealing a significant negative direct effect of brand name spelling on sensory perceptions with a significant positive indirect effect of spelling on sensory perceptions through greater cognitive processing.

**Figure 3**

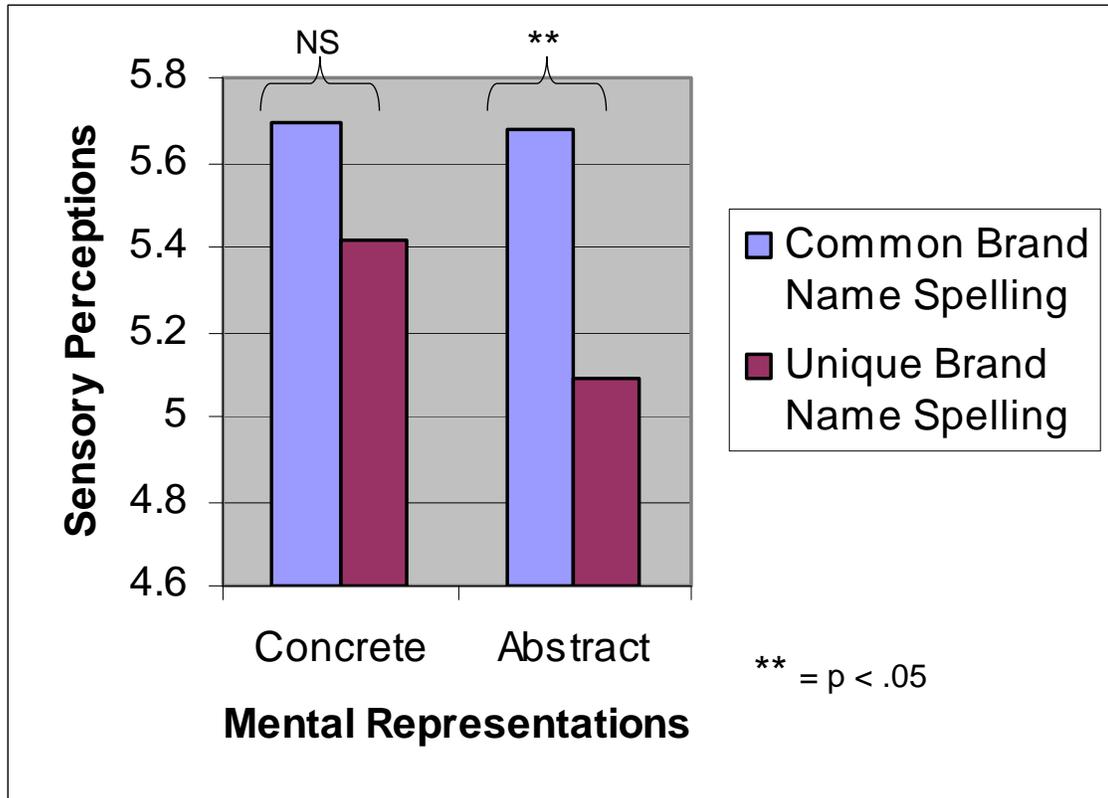
**Figure 3.** Study 4 first contrast analysis of brand name spelling on sensory perceptions



*Figure 3.* In study 4, unique brand name spelling results in less favorable sensory perceptions when individuals' mental representations are abstract but not when they are concrete.

**Figure 4**

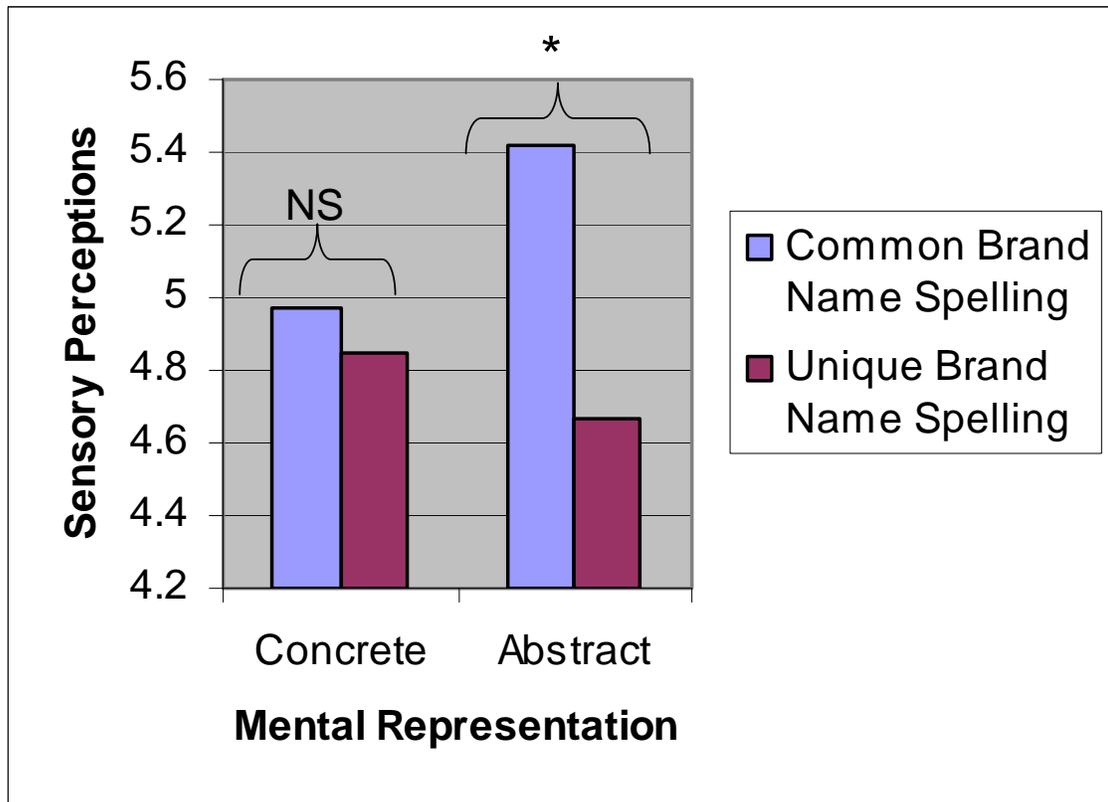
**Figure 4.** Study 4 second contrast analysis of brand name spelling on sensory perceptions



*Figure 4.* In study 4, unique brand name spelling again results in less favorable sensory perceptions when individuals' mental representations are abstract but not when they are concrete.

**Figure 5**

**Figure 5.** Study 5 first contrast analysis of brand name spelling on sensory perceptions

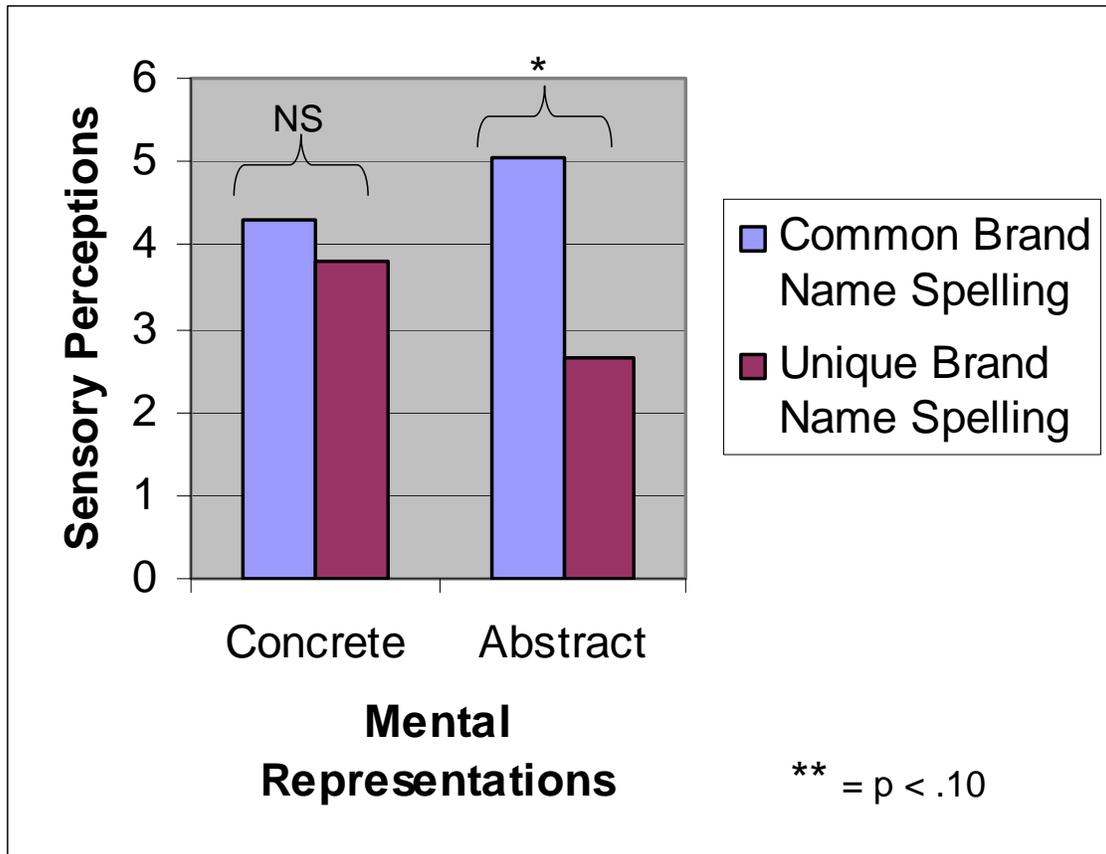


\* =  $p < .1$

*Figure 5.* In study 5, unique brand name spelling results in less favorable sensory perceptions when individuals' mental representations are abstract but not when they are concrete.

**Figure 6**

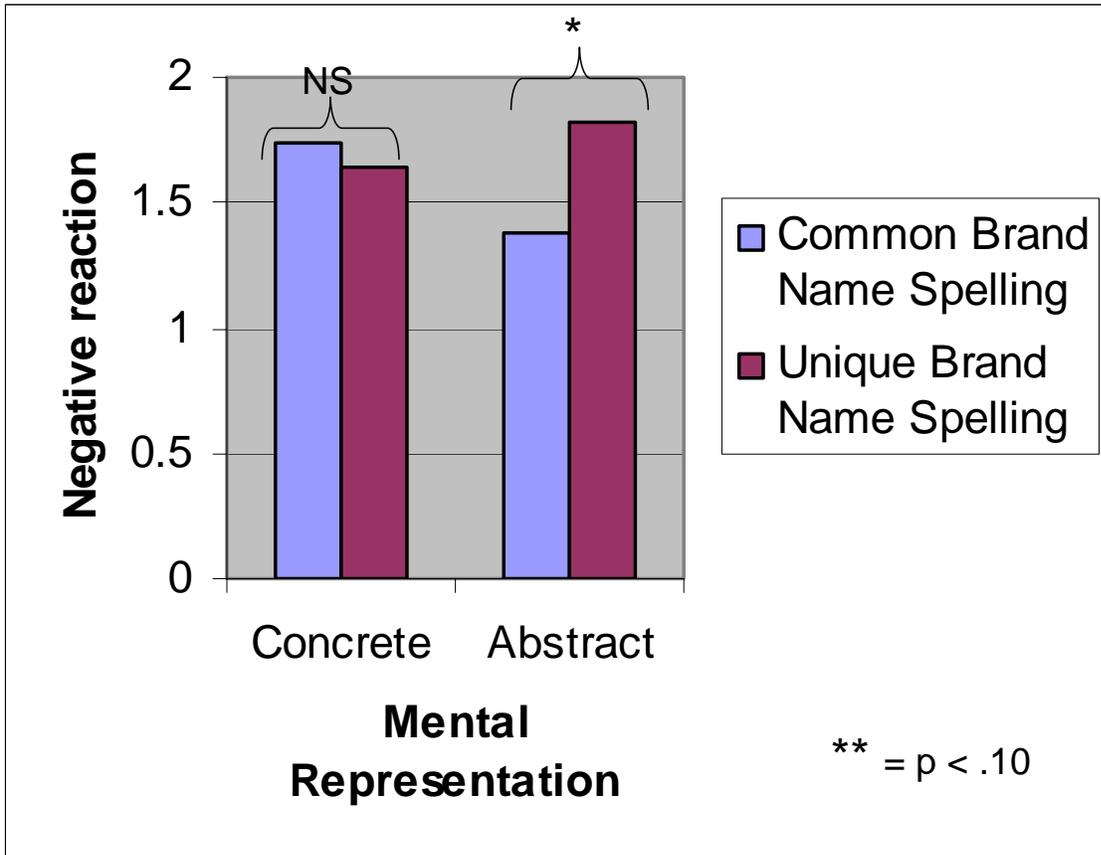
**Figure 6.** Study 5 second contrast analysis of brand name spelling on sensory perceptions



*Figure 6.* In study 5, unique brand name spelling results in less favorable sensory perceptions of the wine label than common brand name spelling only when individuals' mental representations are abstract and not when they are concrete.

**Figure 7**

**Figure 7.** Study 5 contrast analysis of negative affective reaction to brand name spelling

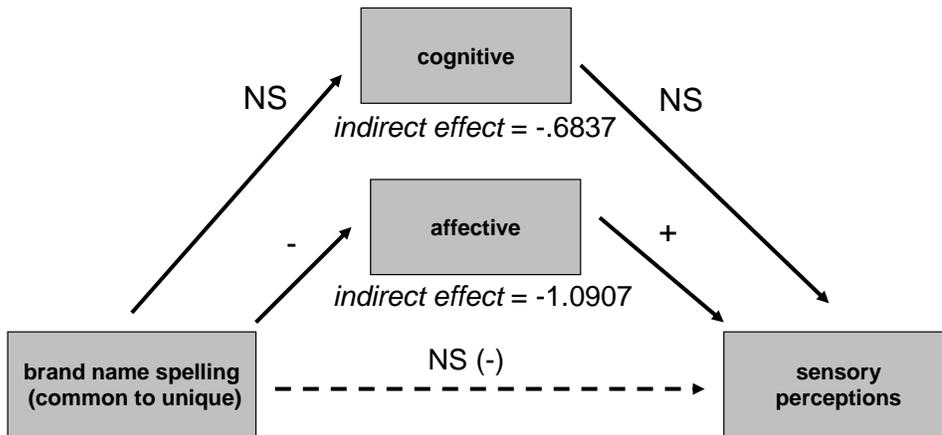


*Figure 7.* In study 5, unique brand name spelling results in more of a negative response to the wine label than common brand name spelling only when individuals' mental representations are abstract and not when they are concrete.

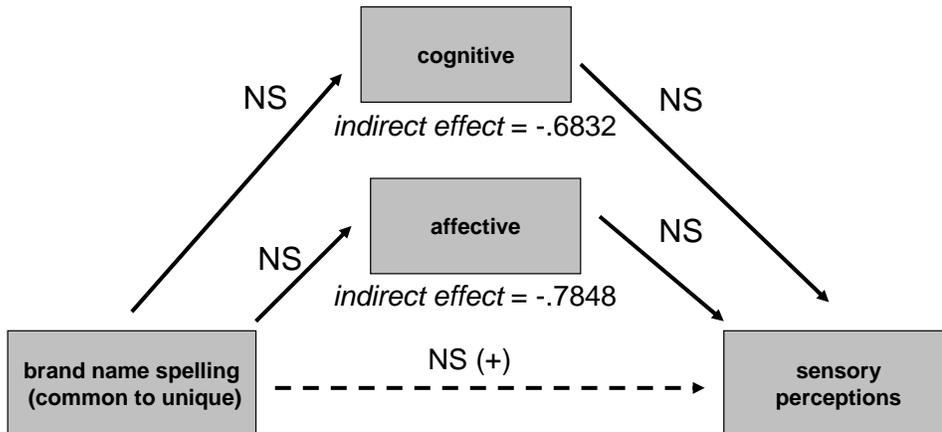
**Figure 8**

**Figure 8.** Study 5 full conceptual model results

**ABSTRACT CONDITION:**



**CONCRETE CONDITION:**



*Figure 8.* Study 5 mediation models in which only affective processing mediates the effect of unique brand name spelling on visual sensory perceptions of a wine label in the abstract mental representation condition only.

## Appendix A

A photograph of the individually-wrapped milk chocolates used in study 1



## Appendix B

A photograph of the unmarked perfume bottle used in study 2



Photo by author.

## Appendix C

### Texts of studies 4 and 5 mental representation manipulations

Text of concrete mental representation manipulation (adapted from Freitas, Gollwitzer, & Trope 2004)

For everything we do in life, there is a process of HOW we do it.

Most people have goals in life, and whether or not we achieve those goals can be traced back to specific behaviors. For example, many people wish to maintain close relationships with others or increase their knowledge. How do we increase our knowledge? Perhaps by working toward a degree, learning new skills, or engaging in new hobbies.

Past research suggests that engaging in thought exercises about how we achieve goals can improve people's life satisfaction. In this survey, we are testing this technique.

The thought exercise in this survey is intended to focus your attention on how you do the things you do.

For this exercise, we would like you to specifically consider the following activity: "maintaining relationships with others."

In the box below, please describe HOW you might go about maintaining relationships with others.

Please try to include at least three separate ideas and to be as specific as possible.

-----

Text of the abstract mental representation manipulation (adapted from Freitas, Gollwitzer, & Trope 2004)

For everything we do in life, there are reasons WHY we do it.

Most people have goals in life, and we do specific behaviors to achieve those goals. For example, many people wish to maintain close relationships with others or increase their knowledge. Why might we wish increase our knowledge? Perhaps because we are working toward a degree, hoping to learn a new skill, or wish to engage in a new hobby.

Past research suggests that engaging in thought exercises about why we achieve goals can improve people's life satisfaction. In this survey, we are testing this technique.

The thought exercise in this survey is intended to focus your attention on why you do the things you do.

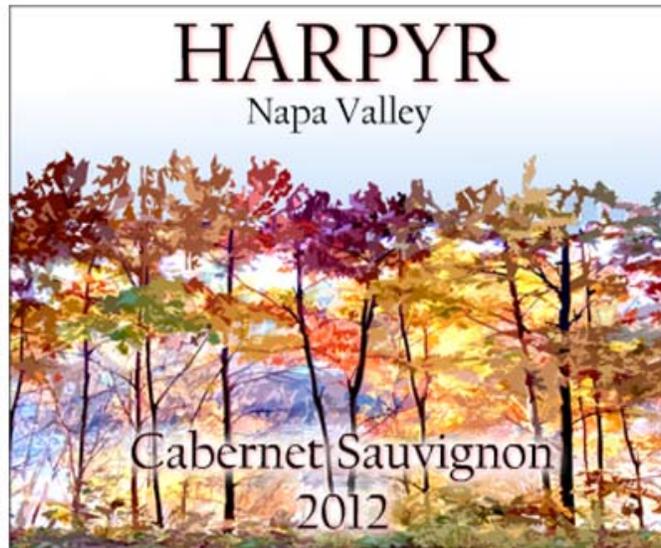
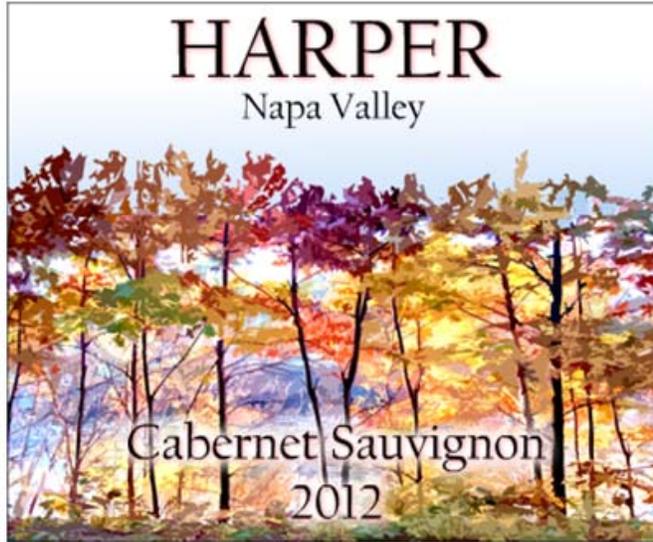
For this exercise, we would like you to specifically consider the following activity: "maintaining relationships with others."

In the box below, please describe WHY you might go about maintaining relationships with others.

Please try to include at least three separate ideas and to be as specific as possible.

## APPENDIX D

The visuals used for common and unique spelling conditions in studies 4 and 5



Images designed by author.

## APPENDIX E

Spoken text of the audio clip played in Studies 4 and 5

*"Harper is a delicious, full-bodied Cabernet Sauvignon. It boasts hints of rich black cherry, mocha espresso, and spices. It unfolds gracefully with smooth, silky tannins and a long, elegant finish."*

Text written by author.

## APPENDIX F

Additional study exploring the interaction of product price on the effect of brand name spelling on sensory perceptions

### Participants and Design

One hundred seventy-two North American participants were recruited on the online data collection forum, Mechanical Turk, and were compensated \$0.50 for participation. Two participants reported living in the U.S. less than 10 years and were excluded from the sample for the following analysis leaving 170 total participants (87 female, 83 male; mean age = 34.47 years). Each participant was randomly assigned to view the product in one of two spelling conditions and one of two price conditions, making for a 2 (spelling: common versus unique)  $\times$  2 (price: low versus high) between-subjects design.

### Materials and Procedure

The study materials consisted of a survey designed in Qualtrics. For all groups, the survey was presented as an evaluation of a new wine brand. Respondents were asked to imagine they are at the store to buy wine. They are perusing the wine section and deciding on a wine to choose based on the label. Each respondent saw the same label design with either the brand name Scarlett or Scarlitt (see Figure A1 for visual representations of the labels used in the common and unique spelling conditions). After seeing a visual of the wine and learning that it is priced at either \$11.99 or \$49.99, respondents answered a series of questions.

**Figure A1.** Images used in common and unique brand name spelling conditions.



Figure A1. Visual images of wine labels presented in the common (Scarlett) and unique (Scarlitt) brand name spelling conditions. Images designed by the author.

## Measures

**Brand name items.** Participants were asked several measures pertaining to the brand name of the wine including: how well the brand name fits with the design of the label (1 = not well at all, 7 = very well); how unique is the brand name (1 = not at all unique, 7 = very unique); how unique is the spelling of the brand name (1 = not at all unique, 7 = very unique); and, although the wine is not yet on the market, how familiar does the brand name seem? (1 = not at all familiar, 7 = very familiar).

**Cognitive processing.** Respondents were asked to rate how much mental effort they had to put in to understand the brand name and how difficult the brand name was to understand both on 9-point scales (1 = not at all, 9 = very much).

**Sensory perceptions.** Participants were first asked for a general evaluation of liking by asking, "Overall, to what extent do you like the label?" (1 = do not like it at all, 7 = like it very much). Participants were then instructed to focus primarily on the design of the label and were asked: "To what extent is the design of the label visually-appealing?" (1 = not at all visually-appealing, 7 = very visually-appealing). Participants were asked to rate to what extent they agree/disagree with the following statements: "The label is too decorative"; "The design elements of the label are aesthetically-pleasing"; and "I like the colors used on the label" all on 7-point scales (1 = completely disagree, 7 = completely agree). Two additional items asked respondents to again consider the design of the wine label and rate how pleasant/unpleasant is the design (1 = unpleasant, 7 = pleasant) and to what extent they enjoyed/did not enjoy looking at the design of the label (1 = did not enjoy at all, 7 = enjoyed very much). Five 7-point scale items from Hirschman's (1986) Aesthetic/Emotional scale (attractive/not attractive, desirable/not desirable, arousing/not arousing, beautiful/not beautiful, and makes me like this product/does not make me like this product) were also included. Respondents were presented with an open-ended item asking them to write in their own words what they think of the design of the label, and a timer was also placed on the page with all of the visual evaluation items (including the open-ended item) in order to assess the time spent by each participant on the items.

**Consumer buying interest.** Participants were asked to rate how likely they would be to buy the wine if they saw it in a store (1 = not at all likely, 7 = very likely), to what extent they are interested in learning more about this brand of wine (1 = not at all interested, 7 = very interested), how interested they would be in tasting some of the wine

(1 = not at all interested, 7 = very interested), and what they think this wine is rated on a typical wine quality rating scale from 50 to 100.

**Control measures.** Demographic information (gender, age, education, household income, ethnicity) was collected, along with a few control measures pertaining to wine consumption. Participants were asked how familiar respondents they are with wine (1 = not at all familiar 7 = very familiar), to what extent they consider themselves knowledgeable about wine (1 = not at all knowledgeable, 7 = very knowledgeable), and how often they drink wine (1 = never, 5 = most days per week). Finally, respondents were asked how long they have lived in the U.S. (1 = less than 10 years, 2 = 10 years or more).

*Centrality of visual product aesthetics.* We included an 8-item subset of the centrality of visual product aesthetics (CVPA) scale, which measures the individual differences in significance of visual aesthetics for a specific consumer. Items asked for the respondents' agreement/disagreement with statements such as: "I enjoy seeing displays of products that have superior designs" and "When I see a product that has a really great design, I feel a strong urge to buy it" (1 = completely disagree, 7 = completely agree; Bloch, Brunel, & Arnold, 2003).

*Need for uniqueness.* An additional scale measured for individual differences in need for uniqueness (Tian, Bearden, & Hunter, 2001) by asking respondents what extent they agree/disagree with four statements such as: "The more commonplace a product or brand is among the general population, the less interested I am in buying it" (1 = strongly disagree, 5 = strongly agree; Tian *et al.*, 2001, p. 56).

## **Results**

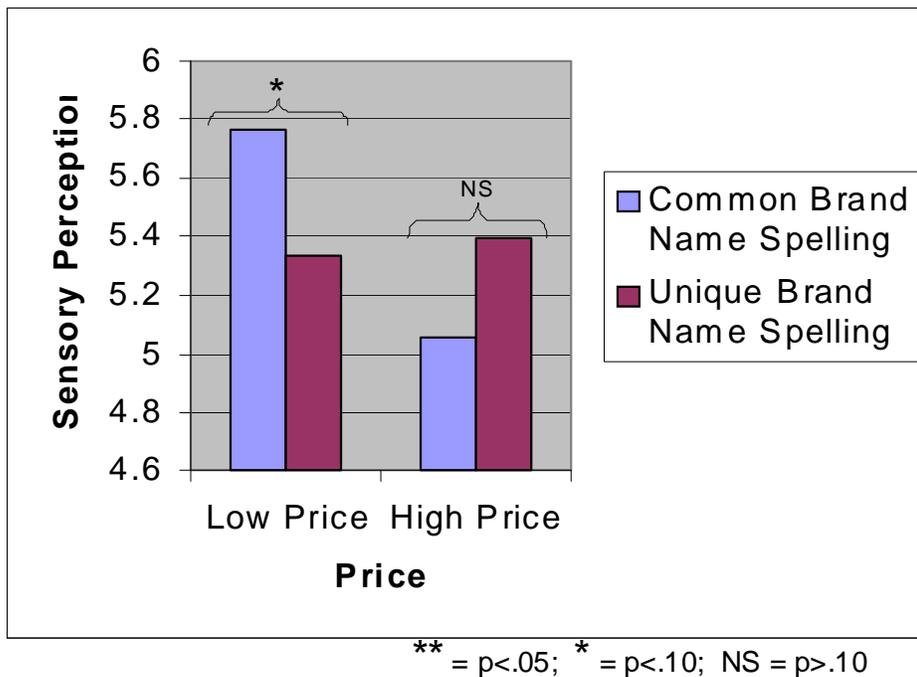
**Brand name items.** An ANOVA revealed no significant effect of spelling on how well the brand name fits with the design of the wine ( $M_{\text{common}} = 5.02$ ,  $M_{\text{unique}} = 4.89$ ,  $F(1,169) = .313$ ,  $p = .577$ ). In support of our manipulation, ratings of the spellings of the brand names differed on uniqueness ( $M_{\text{common}} = 3.64$ ,  $M_{\text{unique}} = 5.67$ ,  $F(1,169) = 90.967$ ,  $p < .001$ ). The commonly-spelled brand name was also rated as significantly more familiar than the uniquely-spelled brand name ( $M_{\text{common}} = 3.95$ ,  $M_{\text{unique}} = 3.30$ ,  $F(1,169) = 6.627$ ,  $p = .011$ ).

**Consumer buying interest.** Respondents did not report differences in likelihood of purchasing the wine across spellings conditions ( $M_{\text{common}} = 3.90$ ,  $M_{\text{unique}} = 3.46$ ,  $F(1,169) = 2.577$ ,  $p = .110$ ). Similarly, participants were no more/less interested in learning more about the brand of wine across spelling conditions ( $M_{\text{common}} = 4.29$ ,  $M_{\text{unique}} = 4.02$ ,  $F(1,169) = .954$ ,  $p = .330$ ); and they were no more/less interested in tasting some of the wine ( $M_{\text{common}} = 5.42$ ,  $M_{\text{unique}} = 5.40$ ,  $F(1,169) = .022$ ,  $p = .961$ ). Additionally, ruling out quality perception differences across spelling conditions, respondents did not believe the commonly-spelled wine brand was rated to be of higher quality than the uniquely-spelled wine brand ( $M_{\text{common}} = 80.785$ ,  $M_{\text{unique}} = 79.000$ ,  $F(1,169) = 1.275$ ,  $p = .260$ ).

**Sensory perceptions.** When we collapse six items related specifically to the design of the label (visually-appealing, too decorative reverse-scored, aesthetically-pleasing, like the colors used, pleasant, enjoy looking; Cronbach's alpha = .903), the results of an ANOVA reveal a significant interaction ( $F(1,169) = 4.650$ ,  $p = .032$ ). To account for important individual differences, need for uniqueness and centrality of visual product aesthetics (CVPA) were originally included as covariates but neither were

significant ( $p > .05$ ) thus were excluded from the reported analysis. As show in Figure A2, utilizing contrast analysis, we are able to show that the effect of unique brand name spelling resulting in less favorable visual sensory evaluations is marginally significant when price is low ( $M_{\text{common}} = 5.7652$ ,  $M_{\text{unique}} = 5.333$ ,  $F(1,166) = 2.966$ ,  $p = .087$ ) but not significant when price is high ( $M_{\text{common}} = 4.898$ ,  $M_{\text{unique}} = 5.299$ ,  $F(1,166) = 1.768$ ,  $p = .185$ ).

**Figure A2.** Additional study contrast analysis of brand name spelling on sensory perceptions



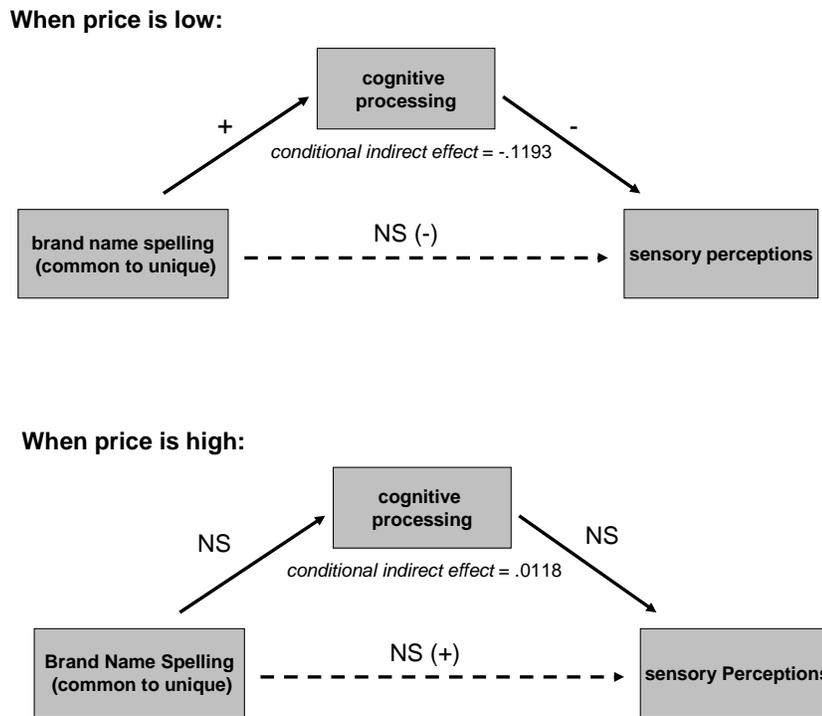
*Figure A2.* Unique brand name spelling resulting in less favorable sensory perceptions when price is low but not when price is high.

**Cognitive processing.** To more closely explore whether cognitive processing is the process underlying the effect of unique spelling on sensory evaluations, we utilized

the PROCESS macro in the software SPSS to test for mediation (Hayes, 2013; PROCESS Model 8). Utilizing 10,000 bootstraps, the model included spelling (common versus unique) as the independent variable, the six-item sensory perception composite as the dependent variable, price (low versus high) as the moderator, and composite of the two mental effort items (Cronbach's alpha = .885) mean-centered as the mediator. The analysis revealed a significant indirect effect (effect = .1311) of the highest order interaction and significant index of moderated mediation with a 95% confidence interval not including zero (95% CI [.0054, .3810]). Taking a closer look at the conditional indirect effects at low and high price conditions (see Figure A3) revealed a significant indirect effect (effect = -.1193) of brand name spelling on sensory evaluations through cognitive processing with a 95% confidence interval not including zero (95% CI [-.2994, -.0283]) in the low price condition. However, the indirect effect (effect = .0118) was not significant in the high price condition (95% CI [-.1025, .1437]). The moderated mediation analysis supported the hypothesized underlying process of cognitive processing for the effect of brand name spelling on sensory evaluations, such that a unique brand name spelling lead to less favorable sensory evaluations through increased cognitive processing. Additional support for our prediction that those in the unique brand name spelling condition expend more cognitive processing comes from the time spent on the sensory evaluation page. Controlling for need for uniqueness ( $F(1,169) = 12.900, p < .001$ ) and centrality of visual product aesthetics ( $F(1,169) = 4.897, p = .028$ ), which were both significant covariates in the analysis, an ANOVA revealed that those in the unique brand name spelling condition spent significantly more time (about 20 seconds more)

than those in the common brand name spelling condition ( $M_{\text{common}} = 104.8415$ ,  $M_{\text{unique}} = 124.2258$ ,  $F(1,169) = 4.520$ ,  $p = .035$ ) on the sensory perception items.

**Figure A3.** Additional study moderated mediation model



*Figure A3.* Additional study moderated mediation model in which brand name spelling has a significant indirect effect on sensory perceptions through cognitive processing, such that those who saw the uniquely-spelled brand name expended more cognitive processing and had less favorable sensory perceptions in the low price condition only (and not in the high price condition).

### Discussion

In this study, it was shown that price acts as a boundary condition for our proposed effect of unique brand name spelling on sensory perceptions. A unique brand

name spelling resulted in less favorable sensory perception evaluations but only when price was low. Additionally, the current study explored the proposed effect in yet another sense (vision) and a new product category (wine) increasing the robustness of the work. Replicating the proposed underlying process from previous studies we were again able to show that the greater cognitive processing expended to process the unique brand name spelling indirectly influences the effect of spelling on sensory perceptions by integrating cognitive processing into the model exploring the interaction between brand name spelling and price. We also were able to show that brand name spelling did not influence quality perceptions or other consumer buying interest variables, such as purchase likelihood, which again supports the idea that the effect of unique spelling is not simply an bias based on expectations about the product.

## References

- Aaker, J. L. (1997). Dimensions of Brand Personality. *Journal Of Marketing Research* , 34(3), 347-356.
- Alter, A. L., & Oppenheimer, D. M. (2006). Predicting short-term stock fluctuations by using processing fluency. *Proceedings of the National Academy of Sciences*, 103, 9369-9372.
- Alter, A., & Oppenheimer, D. (2009). Uniting the Tribes of Fluency to Form a Metacognitive Nation. *Personality And Social Psychology Review*, 13(3), 219-235.
- Alter, A., Oppenheimer, D., Epley, N., & Eyre, R. (2007). Overcoming intuition: Metacognitive difficulty activates analytic reasoning. *Journal Of Experimental Psychology-General*, 136(4), 569-576.
- Anderson, T. (1985). Unique and commons names of males and females. *Psychological Reports*, 57, 204-206.
- Andrews, S. (1997). The effect of orthographic similarity on lexical retrieval: Resolving neighborhood conflicts. *Psychonomic Bulletin and Review*, 4, 439-461.
- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, 59(1), 617-645.
- Bloch, P.H., Brunel, F.F., & Arnold, T.J. (2003). Individual differences in the centrality of visual product aesthetics: Concept and measurement. *Journal Of Consumer Research*, 29(4), 551-565.
- Brennan, S. E., & Williams, M. (1995). The feeling of another's knowing: Prosody and filled pauses as cues to listeners about the metacognitive states of speakers. *Journal of Memory and Language*, 34, 383-398.
- Carnevale, M., Lerman, D., & Luna, D. (working paper). Consumer Linguistics: A Framework to Understand Language Effects in Consumer Behavior.
- Cho, E. K., Khan, U., & Dhar, R. (2013). Comparing apples to apples or apples to oranges: The role of mental representation in choice difficulty.(Report). *Journal of Marketing Research*, 50(4), 505.
- Cho, H. (2014). The malleable effect of name fluency on pharmaceutical drug perception. *Journal of Health Psychology*, 1359105314525486. doi: 10.1177/1359105314525486

- Cho, H., & Schwarz, N. (2010). I like those glasses on you, but not in the mirror: Fluency, preference, and virtual mirrors. *Journal of Consumer Psychology, 20*(4), 471–475. doi:10.1016/j.jcps.2010.07.004
- Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.
- Crites, Jr., S.L, Fabrigar, L.R., & Petty, R.E.(1994). Measuring the Affective and Cognitive Properties of Attitudes: Conceptual and Methodological Issues, *Personality and Social Psychology Bulletin, 20*(6), 619-634.
- Davis, D., & Herr, P. (2014). From Bye to Buy: Homophones as a Phonological Route to Priming. *Journal of Consumer Research, 40*(6), 1063-1077.
- DeKeyser, R.M. (2000). The robustness of critical period effects in second language acquisition. *Studies in second language acquisition, 22*(04), 499-533.
- Dhar, R., & Kim, E.Y. (2007). Seeing the Forest or the Trees: Implications of Construal Level Theory for Consumer Choice. *Journal of Consumer Psychology, 17*(2), 96-100.
- Dodds, W.B., & Monroe, K.B. (1985). The Effect of Brand and Price Information on Subjective Product Evaluations. In Elizabeth C. Hirschman and Morris B. Holbrook (Eds.) *Advances in Consumer Research Volume 12* (pp.85-90). Provo, UT: Association for Consumer Research.
- Dodds, W.B., Monroe, K.B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal Of Marketing Research, 28*(3), 307-319.
- Duduciuc, A. C., & Ivan, L. (2015). Brand naming: Sound Symbolism, brand preference and performance. *Studies and Scientific Researches. Economics Edition, (20)*.
- Feloni, R. (2014, June 5). Expert Explains What Makes The Best Brand Names So Good. *Business Insider*. Retrieved from <http://www.businessinsider.com/expert-on-best-brand-names-2014-6#ixzz3U0YL7plq>
- Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives, 19*, 25–42.
- Freitas, A. L., Gollwitzer, P., & Trope, Y. (2004). The Influence of Abstract and Concrete Mindsets on Anticipating and Guiding Others' Self-Regulatory Efforts. *Journal of Experimental Social Psychology, 40*: 739-52.

- Fujita, K. (2008). Seeing the Forest Beyond the Trees: A Construal–Level Approach to Self–Control. *Social and Personality Psychology Compass*, 2(3), 1475-1496.
- Gabler, N. (2015, January 15). The Weird Science of Naming New Products. *New York Times Magazine*. Retrieved from [http://www.nytimes.com/2015/01/18/magazine/the-weird-science-of-naming-new-products.html?\\_r=1](http://www.nytimes.com/2015/01/18/magazine/the-weird-science-of-naming-new-products.html?_r=1)
- Gmuer, A., Siegrist, M., & Dohle, S. (2015). Does wine label processing fluency influence wine hedonics? *Food Quality and Preference*, 44, 12-16.
- Gontijo, P.F.D., & Zhang, S. (2007). The Mental Representation of Brand Names: Are Brand Names a Class by Themselves? In Tina M. Lowrey (Ed.), *Psycholinguistic phenomena in marketing communications* (pp. 23-37). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Gopher, D., & Braune, R. (1984). On the psychophysics of workload: Why bother with subjective measures? *Human Factors*, 26, 519–532.
- Green, T., & Jame, R. (2013). Company name fluency, investor recognition, and firm value. *Journal Of Financial Economics*, 109(3), 813-834. doi: 10.1016/j.jfineco.2013.04.007
- Groeger, L. (2012, Feb 28). Making Sense of the World, Several Senses at a Time. *Scientific American*. Retrieved from <http://www.scientificamerican.com/article/making-sense-world-several-senses-at-time/>
- Gunasti, K., & Ross, W. (2010). How and When Alphanumeric Brand Names Affect Consumer Preferences. *Journal of Marketing Research*, 47(6), 1177-1192.
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: Guilford Press.
- Herr, P.M., Page, C.M., Pfeiffer, B.E., & Davis, D.F. (2012). Affective Influences on Evaluative Processing. *Journal of Consumer Research*, 38(5), 833-845. doi: 10.1086/660844
- Hirschman, E.C. (1986). The Effect of Verbal and Pictorial Advertising Stimuli on Aesthetic, Utilitarian and Familiarity Perceptions. *Journal of Advertising*, 15(2), 27-34.
- Hoegg, J., & Alba, J.W. (2007). Linguistic framing of sensory experience: there is some accounting for taste. In Tina M. Lowrey (Ed.), *Psycholinguistic phenomena in marketing communications* (pp. 3-21). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

- Isen, A. M., & Means, B. (1983). The influence of positive affect on decision-making strategy. *Social Cognition*, 2, 18–31.
- Jacoby, J., Olson, J.C., & Haddock, R.A. (1971). Price, brand name, and product composition characteristics as determinants of perceived quality. *Journal of Applied Psychology*, 55(6), 570-579.
- Janack, T., Pastizzo, M.J., & Feldman, L.B. (2004). When orthographic neighbors fail to facilitate. *Brain And Language*, 90(1-3), 441-452. doi: 10.1016/S0093-934X(03)00455-3
- Johnston, W. A., & Hawley, K. J. (1994). Perceptual inhibition of expected inputs: The key that opens closed minds. *Psychonomic Bulletin and Review*, 1, 56-72.
- Juhasz, B., & Yap, J. (2013). Sensory experience ratings for over 5,000 mono- and disyllabic words. *Behavior Research Methods*, 45(1), 160-168.
- Kalist, D.E., & Lee, D.Y. (2009). First Names and Crime: Does Unpopularity Spell Trouble? *Social Science Quarterly*, 90 (March), 39-49.
- Kardes, F., Cronley, M., & Kim, J. (2006). Construal-Level Effects on Preference Stability, Preference-Behavior Correspondence, and the Suppression of Competing Brands. *Journal of Consumer Psychology*, 16(2), 135.
- Kim, H., & John, D.R. (2008). Consumer response to brand extensions: Construal level as a moderator of the importance of perceived fit. *Journal of Consumer Psychology*, 18(2), 116–126. doi:10.1016/j.jcps.2008.01.006
- Klink, R.R. (2000). Creating Brand Names with Meaning: The Use of Sound Symbolism. *Marketing Letters*, 11(1), 5–20.
- Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of Consumer Psychology*, 22(3), 332-351.
- Leclerc, F., Schmitt, B. H., & Dubé, L. (1994). Foreign branding and its effects on product perceptions and attitudes. *Journal of Marketing Research*, 31(2), 263–270.
- Lee, L., Frederick, S., & Ariely D. (2006). Try It, You'll Like It The Influence of Expectation, Consumption, and Revelation on Preferences for Beer. *Psychological Science*, 17(12), 1054-1058.

- Lerman, D., & Garbarino, E. (2002). Recall and Recognition of Brand Names: A Comparison of Word and Nonword Name Types. *Psychology and Marketing*, 19(7/8), 621-639.
- Lowrey, T.M. (1998). The Effects of Syntactic Complexity on Advertising Persuasiveness. *Journal of Consumer Psychology*, 1(2), 187-206.
- Lowrey, T. M., & Shrum, L. J. (2007). Phonetic symbolism and brand name preference. *Journal of Consumer Research*, 34, 406–414.
- Lowrey, T.M., Shrum, L. J., & Dubitsky, T.M. (2003). The Relation between Brand-Name Linguistic Characteristics and Brand-Name Memory. *Journal of Advertising*, 32(Autumn), 7-17.
- Luna, D., Carnevale, M., & Lerman, D. (2010). Google or Googol? How Meanings of Sound and Spelling Processes Influence Evaluations for Brand Names. *Advances in Consumer Research*, 37, 860-862.
- Luna, D., Carnevale, M., & Lerman, D. (2013). Does brand spelling influence memory? The case of auditorily presented brand names. *Journal of Consumer Psychology*, 23(1), 36–48
- Maheswaran, D., Mackie, D.M., & Chaiken, S. (1992). Brand name as a heuristic cue: The effects of task importance and expectancy confirmation on consumer judgments. *Journal of Consumer Psychology*, 1(4), 317–336.
- Malhotra, N. (1984). Information and sensory overload. Information and sensory overload in psychology and marketing. *Psychology and Marketing*, 1(3 - 4), 9-21.
- Mantonakis, A., Galiffi, B., Aysan, U., & Beckett, R. (2013). The Effects of the Metacognitive Cue of Fluency on Evaluations about Taste Perception. *Psychology*, 4(3A), 318-324.
- McCracken, J., & Macklin, M. (1998). The Role of Brand Names and Visual Cues in Enhancing Memory for Consumer Packaged Goods. *Marketing Letters*, 9(2), 209-226. doi:10.1023/A:1007965117170
- McGlone, M. S., & Tofighbakhsh, J. (2000). Birds of a feather flock conjointly (?): Rhyme as reason in aphorisms. *Psychological Science*, 11, 424-428.
- Mehrabian, A. (2001). Characteristics Attributed to Individuals on the Basis of Their First Names. *Genetic, Social, and General Psychology Monographs*, 127(1), 59-88.

- Oppenheimer, D. M. (2006). Consequences of erudite vernacular utilized irrespective of necessity: Problems with using long words needlessly. *Applied Cognitive Psychology, 20*, 139-156.
- Oppenheimer, D. M., & Frank, M. C. (2007). A rose in any other font wouldn't smell as sweet: Fluency effects in categorization. *Cognition, 106*, 1178-1194.
- Paas, F., Tuovinen, J., Tabbers, H., & Van Gerven, P. (2003). Cognitive load measurement as a means to advance cognitive load theory. *Educational Psychologist, 38*(1), 63-71.
- Perea, M. (1998). Orthographic neighbors are not all equal: Evidence using an identification technique. *Language and Cognitive Processes, 13*, 77-90.
- Petrova, P., & Cialdini, R. (2005). Fluency of Consumption Imagery and the Backfire Effects of Imagery Appeals. *Journal of Consumer Research, 32*(3), 442-452.
- Pocheptsova, A., Labroo, A., & Dhar, R. (2010). Making Products Feel Special: When Metacognitive Difficulty Enhances Evaluation. *Journal of Marketing Research, 47*(6), 1059-1069.
- Purohit, D., & J. Srivastava (2001). Effects of manufacturer reputation, retailer reputation, and product warranty on consumer judgments of product quality: A cue diagnosticity framework. *Journal of Consumer Psychology, 10*(3), 123-134.
- Raghunathan, R., Naylor, R.W., & Hoyer, W.D. (2006). The Unhealthy = Tasty Intuition and Its Effects on Taste Inferences, Enjoyment, and Choice of Food Products. *Journal of Marketing, 70*(4), 170-184
- Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5*, 296-320.
- Saffran, E.M., Schwartz, M.F., & Marin, O.S.M. (1976). Semantic mechanisms in paralexia. *Brain and Language, 3*, 255-265.
- Salerno, A., Laran, J., & Janiszewski, C. (2014). Hedonic eating goals and emotion: When sadness decreases the desire to indulge. *Journal of Consumer Research, 41*(1), 135-151.
- Schwarz, N. (2004). Meta-cognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology, 14*(4), 332-348.
- Sherman, J., Lee, A., Bessenoff, G., & Frost, L. (1998). Stereotype efficiency reconsidered: Encoding flexibility under cognitive load. *Journal Of Personality And Social Psychology, 75*(3), 589-606.

- Society For Neuroscience (2012, April 1). Mapping the Brain. Retrieved from:  
<http://www.brainfacts.org/brain-basics/neuroanatomy/articles/2012/mapping-the-brain/>
- Song, H., & Schwarz, N. (2008). If it's hard to read, it's hard to do: Processing fluency affects effort prediction and motivation. *Psychological Science, 19*, 986-988. doi:10.1111/j.1467-9280.2008.02189.x
- Song, H., & Schwarz, N. (2009). If It's Difficult to Pronounce, It Must Be Risky. *Psychological Science, 20*(2), 135-138.
- Stern, L. D., Marris, S., Millar, M. G., & Cole, E. (1984). Processing time and the recall of inconsistent and consistent behaviors of individuals and groups. *Journal of Personality and Social Psychology, 47*, 253-262.
- Streicher, M., & Estes, Z. (2016). Multisensory interaction in product choice: Grasping a product affects choice of other seen products. *Journal of Consumer Psychology, 4*: 558-565.
- Taylor, V. A. (2009). Brand name and price cue effects within a brand extension context. *Academy of Marketing Studies Journal, 13*(2), 59-75.
- Thompson, C. (2003, October 26). There's a Sucker Born in Every Medial Prefrontal Cortex. *New York Times*. Retrieved from:  
<http://www.nytimes.com/2003/10/26/magazine/26BRAINS.html>
- Tian, K.T., Bearden, W.O., & Hunter, G.L. (2001). Consumers' Need for Uniqueness: Scale Development and Validation. *Journal of Consumer Research, 28*(1), 50-66.
- Trope, Y., & Liberman, N. (2010). Construal-Level Theory of Psychological Distance. *Psychological Review, 117*(2), 440-463.
- Tsai, C., & McGill, A. (2011). No Pain, No Gain? How Fluency and Construal Level Affect Consumer Confidence. *Journal of Consumer Research, 37*(5), 807-821.
- Tsai, C., & Thomas, M. (2011). When Does Feeling of Fluency Matter? How Abstract and Concrete Thinking Influence Fluency Effects. *Psychological Science, 22*(3), 348-354. doi: 10.1177/0956797611398494
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review, 94*, 3-15.
- Vermeulen, N., Corneille, O., & Niedenthal, P.M. (2008). Sensory Load Incurs Conceptual Processing Costs. *Cognition, 109*(2), 287-294.

- Walsh, Meghan (2015, January 6). What Your Name Says About You. OZY. Retrieved from <http://www.ozy.com/fast-forward/what-your-name-says-about-you/38082>
- Winkielman, P. & Cacioppo, J.T. (2001) Mind at Ease Puts a Smile on the Face: Psychophysiological Evidence That Processing Facilitation Elicits Positive Affect *Journal of Personality and Social Psychology*, 81(6), 989-1000.
- Winkielman, P., Schwarz, N., Fazendeiro, T.A., & Reber, R. (2002). The Hedonic Marking of Processing Fluency: Implications for Evaluative Judgment. In J. Musch & K. C. Klauer (Eds.), *The Psychology of Evaluation: Affective Processes in Cognition and Emotion*. (pp. 189-217). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Xu, J., Jiang, Z., & Dhar, R. (2013). Mental representation and perceived similarity: How abstract mindset aids choice from large assortments. *Journal of Marketing Research*, 50(4), 548.
- Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, 37(2), 197-206.