

CONSONANT SOUND SYMBOLISM IN DIETARY SUPPLEMENT PRODUCT
NAMES

by

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ABSTRACT

CONSONANT SOUND SYMBOLISM IN DIETARY SUPPLEMENT PRODUCT NAMES

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The linguistic term “sound symbolism” refers to the inherent sound-to-meaning correspondences that appear to exist in language. According to sound symbolic theory, minimal elements of language, such as phonemes and syllables, are capable of evoking larger concepts usually communicated through complete lexical items. In other words, the mere sounds that make up a language can evoke feelings, impressions of attributes such as size, gender, and color, or abstract ideas. As such, sound symbolism is often employed in the creation of product names to enhance marketing efforts and to emphasize product qualities or intended purpose. This study examines sound symbolism in dietary supplement product names, particularly focusing the possible English C/V clusters (*bl, fl, gl, kl, pl, sl*), and the corresponding singletons (*b, f, g, k, p, s*). In this study, 261 participants were asked to rank possible names for two fictional dietary supplement products: a joint health supplement and a hair, skin, and nails supplement.

Product names varied in word-initial onset (C/l/ or C), as well as two possible endings, one based on the product's main ingredient and the other based on the product's marketed benefit, respectively. Each ending was paired with each onset (C/l/+ingredient, C/l/+benefit, C+ingredient, and C+benefit), resulting in a total of 24 possible names. Participants ranked names, presented in four groups of six for each product, and ultimately selected the best name from their top choices. Results show that, although phonetic symbolism was certainly a motivator of choice, consumers, when primed with a marketing claim, will more frequently pull associations from the inventories of their established lexicons, rather than their phonological inventories.

CHAPTER 1. INTRODUCTION

The consumer marketplace is saturated with products vying for the attention of shoppers. Faced with overwhelming agency and choice, a consumer may base her purchasing decisions on factors such as brand recognition, pricing, product claims, reviews and recommendations, or on the spot observations such as an appealing package design. However, in some cases, it is the product's name that most attracts a consumer to a product.

Existing evidence shows that consumers often infer product attributes—and therefore make judgements—solely by way of the unique phonemes that make up a product's name. These individual phonemes, first coined as *phonaesthemes* by Firth (1930), are considered to possess functional meaning or communicative properties. According to Firth, there exists a “vital nexus between phonetic habits and the behavior patterns of our common social life” (p.190). Firth's theory inspired a niche sector of linguistic study called *sound symbolism*. In the same way that a song written in a minor key may evoke feelings of sadness, these consistently recurring patterns of sound symbolism in language suggest that there exist inherent sound-semantic correspondences. Further, evidence of sound symbolism supports theories claiming the correlation between sound and meaning in language may not be completely arbitrary (Hinton et al. via Sereno 1994).

Successful product names must either possess a literal, widely-accepted meaning, or they must evoke associations that effectively position the product to communicate ideas and win the hearts—and pocketbooks—of consumers. Conceived as a “jumble of sounds” akin to Frankenstein’s monster, the most successful product names have been “distilled down to the rudiments of letters and word parts able to convey meaning” (Frankel 2004, p. 163). Products with names specifically curated to convey an intended purpose or benefit, or to appeal to a given audience, may perform better than products that were not named with such consideration (Sedivy & Carlson 2011, p. 46).

Do certain sounds appeal to certain groups? Do products featuring a name beginning with a consonant, for example, perform better in male-targeted markets than in female markets? Utilizing findings from linguistic research, brand managers and marketers incorporate sound symbolism in product names to make a greater appeal to their target audiences. This study explores the presence of sound symbolism in dietary supplement product names, and, more specifically, investigates how sound symbolism can evoke an understanding of product function or benefit.

1.2 Sounds that Sell

In the context of branding and marketing, research on sound symbolism in product names emerged with the rise of American (and global) consumer culture after the Industrial Revolution of the 19th century. The mass production of goods and services sparked increased competition among manufacturers and providers looking to stand out from other brands (Smithsonian Institution 2017). As employment opportunities rose and

workers began bringing home larger paychecks, families found themselves equipped with expendable income that allowed for purchases of what may have previously been considered non-essential items or luxuries, perhaps only attainable by the social elite. As such, Americans have adopted lifestyles wherein consumption plays a central role (Bocock 1993, p. 27). This cultural shift has inspired psychological, anthropological, and economic research on consumer behavior—the study of individuals and organizations and how they select and use products and services. Consumer behavior research examines (Smith 2016):

- How consumers think and feel about different alternatives (brands, products, services, and retailers)
- How consumers reason and select between different alternatives
- The behavior of consumers while researching and shopping
- How consumer behavior is influenced by their environment (peers, culture, or the media)
- How marketing campaigns can be adapted and improved to more effectively influence the consumer

The study of sound symbolism fits snugly into the greater research on consumer behavior, and researchers have amassed an appreciable amount of empirical evidence in support of sound symbolism's unique role in consumer culture—particularly, how sound symbolism informs choice or preference.

The theory of sound symbolism suggests that there exists a systematic connection between sound and meaning, and studies in sound symbolism have found a considerable

number of such sound/meaning relationships, as will be discussed in §2. Given these findings, it can be assumed that, in a product name, certain combinations of sounds (e.g., consonants and vowels, consonants and consonants, etc.), or single occurrences of a particular phone can strengthen a brand's message to consumers (Klink 2014). For example, if a brand wishes to highlight a product's strength or longevity, could a name beginning with a certain sound or combination of sounds emphasize that attribute?

Assuming brand loyalty is not already established, a consumer, when faced with a row of seemingly identical products, actively seeks information to better understand the function or value—and sound symbolism plays a significant role in providing that information. Product names devised with careful linguistic consideration can provide valuable clues that inform choice and establish brand recognition, which, in turn, determines a product's longevity on the market.

Not only should a name be easy to spell and pronounce, it must be memorable and hold significant meaning for the target audience (Charmasson 1988; Blake & Blake-Bohne 1991). Undoubtedly, brands seek to instill products into popular culture and, with optimal success, achieve the status of a household name. Existing products such as Kleenex, Windex, Chapstick, and Band-Aid have transcended the boundaries separating product names and common English words (Sedivy & Carlson 2011). These product names own prime real estate in consumers' mental lexicons and have essentially replaced the names of the objects to which they were originally naming—therefore losing the status of a name or proper noun and becoming genericized. For example, over time, the uppercase *K*- of Kleenex assimilated into a lowercase *k*-, as the name “infect[ed] common

speech” after the product earned supreme loyalty from consumers (Frankel 2004, p. 3). As a result, the word *kleenex* became interchangeable with *tissue*, when referencing the object into with noses are blown or tears are dried.

Looking more closely at the aforementioned product names, one could form reasonable assumptions about their origins. Windex presumably inherited its prefix *wind-* from the English word *window*, and, as will be discussed in §2, the suffix *-ex* possesses a quasi-scientific meaning, often understood to communicate a sense of “out of” or “away,” as denoted by the identical Latin prefix (Sebba 1986). Combined, these morphemes suggest the removal of something from a window. In its Kleenex brand story, Kimberly-Clark Worldwide, Inc., explains the product’s name as follows:

[The name Kleenex was inspired by] the development of our first consumer product, Kotex[®] feminine napkins. Our Kotex[®] trademark was derived from the words "cotton texture" and met our requirements for being short, easy to say, easy to remember and easy to explain. Kleenex[®] Tissue was originally designed in 1924 as a cold cream remover; hence, the "Kleen" portion of the word was coined to convey the cleansing purpose. We then added the "ex" from Kotex[®] in order to convey what was the beginning of a family of products.¹

Similarly, the combined morphemes that make up the name Chapstick communicate a symptom (*chapped lips*) and the product’s shape, a cylindrical tube or *stick*.

Thoughtfully created, the aforementioned product names function as well-formed, productive English words. The associations formed are clear, easy to arrive at, and consistent with English language use. However, the individual sounds within these names

¹ Excerpt from Frequently Asked Questions (FAQ) - Kleenex[®] Brand Tissues. (n.d.). Retrieved from <https://www.kleenex.com/en-us/faq>

also play a significant role in the product's overall market performance. If these products had been named *Fleenex* or *Chaptube*, would they have seen the same degree of success on the market? *Flee-* is homophonous the English word flea, which would likely sound unappealing to consumers as fleas are not associated with cleanliness. The cluster /fl/ may also evoke feelings of fluid movement, which could reasonably divert consumer attention to ideas or worsening a mess rather than eliminating it. Additionally, the sequence of vowels in *Chaptube* moves back then up, which may feel heavy and too dark for a personal care product. *Chapstick* features a front mid-vowel [æ] followed by a high front vowel [ɪ], which may sound more pleasant and uplifting than *Chaptube*, which features a front mid-vowel followed by a high back vowel [u]. These examples, to be discussed further in §2, suggest sound symbolism is certainly at play.

More than one million new businesses enter the American marketplace each year (Blake & Blake-Bonhé 1991). As these businesses launch their respective advertising campaigns, consumers find themselves bombarded with commercial messages promoting individual, uniquely-named products. Modern consumption depends on marketing and branding strategies that harness a consumer's unconscious desires (Bocock 1993, p. 93) and competing brands must create a "symbolic exchange value" and market products that make a unique, direct appeal to the target audience (Fine & Leopold 1993, p. 199). An element of this exchange value is the creation of the product name and, if a name alone can leave a lasting impression in the consumer's mind, then it is critical that trends in sound symbolism be thoroughly studied and tested.

1.3 The Dietary Supplement Marketplace

Pharmaceutical companies actively utilize sound symbolism in product names to help boost consumer recognition of medication brands and set products apart from one another. To make a dual appeal to both doctors and consumers, drug names often sound chemical, featuring identifiable prefixes, suffixes, or Latin roots, yet generic enough to promote allusion or associations with symptoms or benefit (Frankel 2004, p. 146).

Though not classified or regulated as pharmaceuticals, dietary supplements have risen in popularity as wellness seekers attempt to adopt a more holistic, personalized healthcare regimen (Shenkar & Griffiths 2018). A 2013 Gallup poll found that half of all Americans reported taking one or more dietary supplements—in 2018, that figure grew to 75 percent (CRN 2018). Further, in 2017, U.S. dietary supplement sales reached \$43.4 billion (New Hope 2019). As the marketplace continues to grow, unique supplement brands may benefit from employing the same sound-symbolic strategies used by pharmaceutical companies. With an estimated 80,000 to 90,000 dietary supplement products currently on the market (Boghani 2016), products cannot afford to get lost in the crowd. To provide linguistic evidence beneficial for marketers and brand managers in this rapidly expanding industry, this research focuses specifically on names for dietary supplement products.

1.3.1 Dietary Supplement Regulation

Contrary to pharmaceutical products, the U.S. Food and Drug Administration (FDA) does not have the authority to review dietary supplement products for safety and

effectiveness before going to market (CFSAN 2017). The Agency does, however, maintain and enforce guidelines² for dietary supplement product naming, advertising, and marketing, in conjunction with the Federal Trade Commission (FTC).

Crucially, dietary supplement label statements or marketing materials may not claim that the product treats, cures, or mitigates a disease or class of diseases. For example, the language “protective against the development of cancer” qualifies as a disease claim. A statement is also classified as a disease claim if its language implies that the product has an effect on a specific disease or class of diseases, such as “relief from bronchospasm” (i.e., asthma). Though a claim statement may not mention a specific disease, it may refer to identifiable characteristic signs or symptoms of a disease such that the intended use or benefit of the product may be inferred.

In 2002, the FDA released its “Guidance for Industry: Structure/Function Claims; Small Entity Compliance Guide,” which relayed the legal requirements set forth in regulation concerning labeling claims for dietary supplements—including product names. In 2015, the Agency released its “Guidance for Industry: Best Practices in Developing Proprietary Names for Drugs,” which, as the title suggests, laid out specific expectations and limitations on drug names.³ Regarding the impact of sound symbolism in a product name, the latter document reads, “In determining whether a name is misleading, common morphological and semantic associations are considered along with phonesthemes (the sound of the name) and phonosemantics (meaning conveyed by the sound of the word) of

² Copies of the guidelines discussed here can be found on FDA’s website, here: <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/DietarySupplements/default.htm>

³ Despite the specific mentioning of drugs (i.e., pharmaceuticals), this Guidance was used as a framework for dietary supplement naming as well.

the name” (p. 12). As such, the 2015 document lists the following guidelines for the naming of dietary supplement products:

- Names should not incorporate medical abbreviations or others commonly used for prescription communication because the incorporation of such abbreviations could inadvertently be a source of error (p. 4)
- Names of fixed combination products should not include or suggest the name of one or more, but not all, of its active ingredients (p. 5)
- FDA recommends [against] incorporating product-specific attributes, such as manufacturing characteristics (e.g. “NameLyophilized”), dosage form (e.g. “Nametabs”), or route of administration (e.g. “Nameoral”) as part of the proposed name (p. 6)

Without considering supplement regulations, one would assume that creating product names that clearly express a dietary supplement’s claimed benefit would see overarching success on the market. For example, *CholestorLess* for a niacin supplement⁴ or *Depressnomore* for a St. John’s Wort supplement (Hall-Flavin 2018) would likely appeal to consumers looking to lower LDL cholesterol or improve mood, respectively. However, according to the FDA, *CholestorLess* and *Depressnomore* may not serve as names for dietary supplements as they are “implied disease claims.”. However, the dietary supplement *Wobenzym*, marketed by Atrium Innovations, Inc., was named after a sophisticated natural enzyme formulation created by the Austrian scientists Drs. Max Wolf and Helen Benitez. They called their product the “Wolf-Benitez-Enzymtherapie,”

⁴ According to the Mayo Clinic, niacin may lower LDL cholesterol and improve HDL (Mayo Clinic 2018).

or *Wobenzym* for short.⁵ This name is acceptable to regulators and thus lawfully marketed in the U.S.

As this study is designed for linguistic scholarship and the literature therein—thus not intended for direct application in the marketing and communications disciplines within the dietary supplement industry—the product naming guidelines and regulations discussed in this section were not closely observed or adhered to. However, findings present significant evidence for sound symbolism in product names that can be translated and adopted into the best practices of brand managers and product marketers in the supplement industry.

1.4 Motivations for This Research

The purpose of this study is to evaluate how adult, English-speaking consumers show preference for dietary supplement products with names specifically crafted using linguistic elements intended to trigger certain associations such as benefit or active ingredient. Specifically, this study focuses on names beginning with consonants (C/I/ clusters and the associated singletons).⁶ As is discussed in §2, the existing literature on sound symbolism is heavily saturated with research on vowels, and the sound-symbolic associations of singleton consonants and consonant clusters is less abundant. The results of this research will provide evidence both for and against types of sound symbolism

⁵ According to Atrium Innovations, Inc., in “The Story Behind Wobenzym,” found here, <http://www.wobenzym.com/en/how-wobenzym-works/the-story-behind-wobenzym/>

⁶ Throughout this paper, orthography and morphology are represented in italics (*linguistics* or *gl-*). Syllables and other phonological items will be represented with brackets or hash marks ([lɪŋgwɪstks] or /gl/).

associated with product names, and the data collected will help inform decisions of brand managers when marketing new products.

The terms *sound symbolism*, *phonetic symbolism*, and *morphological symbolism* occur often throughout this paper. As such, the following definitions are provided here:

- **Sound symbolism:** The relationship between the sound of an utterance and its meaning. The utterance can be any linguistic device, including, but not limited to, phonemes, morphemes, onomatopoeia, involuntary noises, or complete lexical items (Hinton et al. 1994)
- **Phonetic symbolism:** The relationship between phonetic items (e.g., phones, syllables) and meaning
- **Morphological symbolism:** The relationship between morphological items and meaning (e.g., individual morphemes, productive processes, and items generally considered to be complete “words” within a language community)⁷

Though phonetic symbolism was certainly a motivator of choice, results of this study show that consumers, when primed with a marketing claim, will more frequently pull associations from the inventories of their established lexicons, rather than their phonological inventory.

⁷ What is first proposed here as “morphological symbolism” could arguably be an alternative term for semantic interpretation. However, as shown in §5, “morphological symbolism” does not exclusively exist in recognizable, well-understood lexical items.

CHAPTER 2. LITERATURE REVIEW

Commentary on sound symbolism in language spans thousands of years, though the most fruitful, academic analyses emerged in the 20th century. Early literature describes an archetypal relationship between words and ideas, suggesting that a word’s meaning is conveyed by virtue of the individual sounds one must combine to pronounce it—that sounds possess “instinctive interpretations” in both physical and psychological contexts (Ogden & Richards 1927, p. 75-76). In Plato’s dialogue *Cratylus*, written in 360 BCE, Socrates outlines the feelings and concepts he believes certain Greek letters convey, noting that rho (r) represents motion, iota (i) suggests subtlety, and lambda (l) conveys yielding (Riley 2005). In *The Upanishads* (Sanskrit texts written in 800–200 BCE), Aitareya Aranyaka III.2.6.2 states that “The mute consonants represent the earth, the sibilants the sky, the vowels heaven. The mute consonants represent fire, the sibilants air, the vowels the sun... The mute consonants represent the eye, the sibilants the ear, the vowels the mind.”⁸ Modern literature focuses on the observable symbolism of phonology (individual phonemes, rhyme, repetition, alliteration), morphology (blending or compounding words), and orthography (unusual spellings, abbreviations, plays on words) (Shrum & Lowrey 2007). This paper focuses on sound symbolism in English phonology.

⁸ The term “mute consonant” presumably refers to those wherein the airstream is blocked or disrupted, such as plosives. In contrast, English sibilants include /s, z, ʃ, ʒ, tʃ, dʒ/.

Evidence of sound symbolism in vowels is clear and well-reported on, but the existing literature lacks exploration of sound symbolism in consonants. As discussed in §2.1 below, vowels have been shown to reflect several distinctions including big/small, light/dark, fast/slow, soft/hard, cold/warm, near/far, and weak/strong. Vowels have also been shown to account for perceptions of characteristics such as dominance, politeness, friendliness, gender, and aggression (Klink 2000). Literature on consonant sound symbolism focuses primarily on singletons rather than clusters and does not ultimately speak to perceptions of a product's intended purpose or claimed benefit. This research investigates how sound symbolism is reflected in dietary supplement product names and seeks to determine whether consumers associate certain product attributes with a particular word-initial consonant (C) or C/I/ onset cluster. The results fill a crucial void in the literature and directly contribute to best practices in brand management and product marketing, in addition to linguistic scholarship.

2.1 Vowels

In 1929, Edward Sapir conducted what is widely considered to be the first major study of sound symbolism in vowels. Sapir demonstrated that there exists “a feeling of the symbolic magnitude value of certain differences in vowels, regardless of the particular associations due to the presence of these vowels in meaningful words in the language of the speaker” (p. 227). After introducing the nonsense words *mal* and *mil*,⁹ Sapir asked subjects to determine which word described a small or large table,

⁹ Pronounced [mal] and [mil], respectively (Sapir 1929, p.229).

respectively. Regardless of age or first language spoken, more than 80 percent of subjects associated the back vowel /a/ with the large table and the front vowel /i/ with the smaller table. Similar findings on size association have been consistently repeated across the literature (Bolinger 1950; Fischer-Jorgensen, 1978; Jakobson & Waugh, 1987; Newman, 1933; Klink, 2000, 2003; Haynie et al. 2014). Given the volume of supportive literature, the correlation of vowel quality and size distinction provides what is perhaps the strongest evidence in support of sound symbolism.

Vowels have also been shown to communicate characteristics of a product. Klink and Athaide (2012) provide evidence for sound symbolism and its impact on consumers' assumptions of brand personality and brand attributes. Inspired by Aaker's Brand Personality Scale (BPS),¹⁰ Klink and Athaide note several traits presented in the BPS are linked to sound symbolism: ruggedness (masculinity), femininity and good looking/pretty (sophistication), and friendly (sincerity). In their study, they examined the associations between ruggedness and back vowels, femininity and front vowels, and friendliness and front vowels. Results confirmed the researchers' hypotheses regarding these traits. Further, similar to Sapir (1929), an experiment involving the fictional ice cream brands *Frish* and *Frosh*¹¹ conducted by Yorkston and Menon (2004) found that sound symbolism can communicate product attributes and influence consumer judgments. The goal of their research "was not to provide further support for the phenomenon of sound symbolism, but to understand the process by which sound symbolism affects meaning" (p. 49). In two separate studies, results demonstrated that consumers applied broader

¹⁰ Framework developed to help marketers determine the set of human traits a brand or product may convey (Aaker 1997).

¹¹ Pronounced [fiʃ] and [fɔʃ] (Yorkston & Menon 2004, p. 45).

dimensions of sound symbolism (large/small, light/heavy, fast/slow) to evaluate the ice cream products. Consistent with prior findings for low vowels, subjects perceived ice cream with the name *Frosh* to be smoother, creamier, and richer than ice cream with the name *Frish*. A secondary finding of their study, Yorkston and Menon concluded that consumers gather and process information from brand names in an automatic, effortless manner. From this evidence, we understand that consumers form associations from sound symbolism unconsciously.

Additional research demonstrates that the back vowels /u/ or /ʌ/ are considered to sound foolish (Waugh 1979) or can signify an expression of disgust (Jespersen 1922), /ɪ/ often indicates brevity (Waugh 1979), and words denoting vigorous action feature the vowel /æ/ (Bolinger 1950).¹² In terms of color, Klink (2001) notes red and blue are associated with /a/, white and yellow with /e/ and /i/, and blue, brown, and black with /o/ and /u/ (p. 32).

Though sound-symbolic associations have been consistent across the literature, evidence also demonstrates that sound symbolism evolves as language use changes over time. Just as a speech community may create lexical items or assign new meaning to items already in use, sound symbolism may emerge and develop alongside sociolinguistic variables, individual processing constraints, and the overall process of language use within a given communal lexicon. A prime example is given by Krause (2015), who found that *e-* and *i-* prefixes (/i/ and /aɪ/) commonly represent or evoke a connection to electronics, computers, or the internet. Starting out as syllables, these prefixes have in

¹² As in *schmuck* [ʃmʌk] or *yuck* [jʌk]; *swift* [swɪft] or *sprint* [sprɪnt]; *pat* [pæt] and *stamp* [stæmp].

fact developed into unique morphemes that possess specific, widely-understood meaning. Based on the results of his research, Krause states “It is possible that this type of variation is attributable to the passing popularity of certain products, fashions, or fads; the introduction of new technology that subsequently becomes either commonplace or obsolete; or even shifting consumer priorities or preferences. Unlike age grading, these instances reflect a sound-meaning association that sticks with a particular generation” (p. 46). In other words, as a result of the digital revolution in the late 20th century, the prefixes *e-* and *i-* now function as relatively productive morphemes that evoke a perhaps universal understanding among modern consumers—just as email is understood to be digital mail, any noun featuring an *e-* prefix is assumed to involve pixels on a screen. See §5.3 for additional discussion regarding phoneme-to-morpheme sound symbolism.

2.2 Consonants

The literature provides evidence that consonants in onset positions can represent what we see, hear, and feel. Stops in word-initial position signify a sudden beginning, though stops in word-final denote actions with a momentary burst of noise, specifically (Blake 2017, p. 288). Klink (2001) claims that /z/ communicates rapidity better than /b/, and /v/ conveys lighter weight than /g/. Thorndike (1945) via Elsen (2017) suggests that velar consonants /k/, /g/, and /x/ (including clusters /kr/ and /gr/) all sound unpleasant because they are associated with growling, grunting, and groaning. To explain this phenomenon, Elsen proposes that “Phonemes that stimulate the muscular reactions typical of an emotion may engender perception of that emotion” (p. 493). Along these

same lines, Waugh (1979) found that post-vocalic stops are often sensed like a forceful blow or hit.

However, as many of the top brands in the United States begin with a plosive (Lerman et al. 2018), names beginning with such consonants may be more memorable or influential. Further, in the pharmaceutical industry, many top product names feature fricatives (e.g., Prozac, Zoloft, Viagra, Valium, Zyrtec), suggesting these sounds may be symbolic of health, science, or medicine (Sedivy & Carlson 2011, p. 47).

Voicing and continuance appear to play a role in sound-symbolic qualities of both vowels and consonants. Klink (2000) found that fricatives are perceived as lighter, mild, thinner, weaker, softer, faster, colder, prettier, more bitter, friendlier, and feminine (p. 14). Voiceless stops are considered smaller, faster, lighter, and more feminine than voiced stops, and voiceless fricatives are labelled faster, softer, and more feminine than their voiced counterparts. Using the made-up words *takete* and *maluma*, Kohler (1929) observed that *takete* was assumed to be an angular shape, whereas *maluma* was labeled a rounded figure. As such, Kohler found that obstruents are more likely to be associated with angular movements than with round movements, and that voiced obstruents, specifically, are more likely to be associated with large movements than with small movements.

2.2.1 Consonant Clusters

The two most discussed consonant clusters are /gl/ and /fl/, with nearly identical conclusions reported throughout the literature. Bolinger (1950) first stated that “roughly

half of the popular words in English that begin with /gl/ either have, or are very close to, the implication ‘visual’” (p. 133). Further, Bolinger states that /fl/ suggests “phenomena of movement” (p. 119). Similar observations were reported by Bolinger (1965), Waugh (1979), Fitch (1994), Klink (2000), Haynie et al. (2014), Blake (2017), and Elsen (2017). As noted in Charmasson (1988), /sl/ is often associated with movement due to the large number of English verbs beginning with *sl-* (e.g. slice, slick, slide, slip). As noted above, English clusters /kr/ and /gr/ evoke sensations of growling, grunting, and groaning, and are therefore considered unfavorable by consumers (Elsen 2017). These studies aside, the sound symbolism literature is severely lacking in discussions of consonant clusters. This imbalance is the primary motivator of this research.

2.3 Vowel/Consonant Combinations and Morphology

As the majority of English words contain both vowels and consonants, a small portion of the literature is dedicated to vowel/consonant combinations, as well as morphological units. As Bolinger (1950) states, “meanings occur in clusters” (p. 120), so it is important to consider sound-symbolic qualities of morphemes in addition to single phonemes. Crucially, morphological symbolism is not the same concept as semantic interpretation, as such symbolism may occur in morpheme-like syllable clusters that do not possess standard meaning. Providing evidence of morphological sound symbolism, Bolinger observed that *-owl* [awl] is thought of as “sinister,” *-amp* [æmp] implies “having to do with earth” (pg. 123), *-ash* [æʃ] suggests a “fragmented” quality (pg. 133), and *-irk* [ɜrk] signifies “energy” (p. 125). As such, Bolinger considers these items to be syllables

acting as root-like morphemes: owl, prowl, scowl, frowl, foul; stamp, damp, clamp, ramp; gash, hash, flash, splash, gnash; jerk, perk, work.¹³ Further, Bolinger argues that words containing the same morpheme are closely related and likely have the same meaning. In a study conducted with a class of 20 people tasked with assigning a sinister or bad definition to presumably unknown words, 14 of the participants assigned *cowl* the target definition.

Consistently observed associations among speakers of the same language may suggest that sound symbolism is strongly influenced by the speaker's lexicon. However, *phonetic* symbolism specifically is arguably universal, as shown in Marchand's (1959) broad analysis, Shrum & Lowrey's (2007) review of the literature, a study of Australian languages conducted by Haynie et al. (2014), Elsen's (2017) study of German consumers, Nacchia et. al's (2017) *Unilever* case study, a study of 136 languages conducted by Ultan (Serenio 1994), and Adelman et al.'s (2018) analysis of five Indo-European languages. These studies provide global evidence of the sound-symbolic qualities of both vowels and consonants, nearly identical to the English research discussed in this section. In the context of product naming, brands looking to enter the international marketplace can utilize these findings, as well as note language differences (discussed in §5), to ensure product qualities and attributes are successfully translated across languages and see success in non-English-speaking markets.

The process of creating product names mimics the morphological processes of language, as new words are often formed by generating unique morphemic combinations.

¹³ These items can also be considered as rime syllables, consisting of a nucleus and a coda.

These new combinations, if successful, become widely accepted and understood in consumers' lexicons. For example, a considerable number of American product names feature the ending *-ex*. Taking a close look at this common ending, Sebba (1986) notes that, in English, *-ex* has come to serve as a sort of quasi-scientific suffix for brand names. This phenomenon is closely related to the newfound symbolic nature of *e-* and *i-* prefixes, as discussed in Krause (2015) above and later in §5.3. Based his research, Sebba suspects that brands marketing products in a given industry have capitalized on this concept, established market authority in developing product names with *-ex* endings, and have consequently out-performed competitors. As discussed in §1.2, in the case of *Kleenex* and *Windex*, Sebba highlights that these are no longer considered unique brands, but rather the noun after which products are named. In other words, *Puffs* (a brand name) is considered to be a type of *Kleenex*, demonstrating how *Kleenex* has totally lost its individual brand-association—the name merely represents the object (p. 319).

Turning to phonology, Sebba notes that very few *-ex* products are monosyllabic. Pharmaceutical names tend to be three syllables, whereas over-the-counter products are usually assigned two-syllable names.¹⁴ Additionally, Sebba found that no products feature /k/ or /ks/ before *-ex* (citing a lack of euphony), and that the most common consonants occurring before *-ex* are “intrusive” /r/ and /d/ (p. 324).

¹⁴ In this study of dietary supplement products, all names consisted of three syllables, akin to pharmaceuticals.

2.4 Looking Ahead

As illustrated in this section, the majority of literature on sound symbolism is limited in that it is heavily vowel-centric and mostly concentrated on size distinction and other contrasts in qualities or characteristics. Previous research indeed provides a solid foundation for modern sound symbolism studies, but the surface has barely been scratched. Additional research on consonants is critical, and studies focused on emotional associations and abstract concepts would further contribute to advancements in the marketing and product branding disciplines.

The purpose of this study is to add to the existing body of research by examining evidence of sound symbolism in dietary supplement products with names containing word-initial C/l/ onset clusters. This study places a primary focus on the English clusters /gl/ and /fl/ in the context of dietary supplement product names. Research is based on the following two hypotheses:

- **Hypothesis 1 (H1):** Participants will prefer names that begin with clusters historically shown to denote the given marketing claim. As the literature indicates words beginning with /fl/ are commonly associated with movement or ease (e.g., flow, fly, fluid, etc.), participants will assign a product marketed for joint health a name that begins with /fl/. Previous research shows /gl/ evokes impressions of radiance, light, and beauty, therefore it is expected that participants will prefer names beginning with /gl/ for a hair, skin, and nails supplement.

- **Hypothesis 2 (H2):** When presented with names containing singleton onsets, participants will show preference for the same consonant that begins their cluster preference. As such, given H1, participants will prefer /f/ onsets for the joint health product, and /g/ for the hair, skin, and nails product. It is believed that sound-symbolic nature is carried in a singleton and, despite the introduction of a secondary consonant (in this case, /l/), the associations evoked remain the same.¹⁵

In addition to contributing to the literature on consonants, results will inform the collective understanding of how sound symbolism is closely tied to consumers' interpretations of functional claims and product attributes.

¹⁵ Perhaps it is the proceeding vowel that triggers a potential change in meaning. However, such an assessment is beyond the scope of this research.

CHAPTER 3. METHODOLOGY

This study investigated the presence of sound symbolism in dietary supplement product names by way of a short, ranking-question survey. Results are based on observable trends and preferences, as noted by participant responses. As noted above, the two main hypotheses were as follows:

- **H1:** *Participants will prefer names that begin with clusters historically shown to denote the given marketing claim.*
- **H2:** *When presented with names containing singleton onsets, participants will show preference for the same consonant that begins their cluster preference.*

3.1 Design

The survey focused on two dietary supplement products: a joint health product and a hair, skin, and nails (hereafter, HSN) product. These two products were selected based on their rising popularity within the industry, as well as previous research in sound symbolism.

Nearly 8 in 10 U.S. adults over the age of 55 take dietary supplements, and roughly a quarter of those users cite joint health as a top reason they take supplement products. Of the 69 percent of millennial consumers that take dietary supplements, 28

percent cite hair, skin, and nail health as a top reason for taking supplements (CRN 2018).

Given that the existing, though limited, literature on sound symbolism in consonant clusters shows strong evidence of the inherent implications of /fl/ and /gl/, respectively, the joint health and HSN products were chosen to further test and replicate previous findings.

H1 predicts that consumers would show preference for a joint health product with a name starting with /fl/, considering the previously discussed associations with words or sensations involving movement, and that consumers would assign the HSN product a name that begins with /gl/, given well-supported evidence that this cluster evokes images of light, reflection, and beauty. H2 predicts that, when presented with names containing singleton onsets, participants would show preference for the same consonant that began their cluster preference (i.e., if /gl/, then /g/).

In the survey questions, onsets were paired with two respective options for an ending to the product name, one reflecting the supplement's active ingredient and the other reflecting the intended benefit. Each ending contained the same number of syllables and reflected the same primary stress patterns, respectively. Before the study's launch, during a brief testing period, it was confirmed that endings were pronounced as intended when paired with both the cluster and singleton onset.

For the joint health product (Product 1), the ingredient-based ending was *-ostamine* [ɔst.ə.min] and the benefit-based ending was *-ostamove* [ɔst.ə.mu:v]. The product's ingredient-based ending was comprised of the symptom osteoarthritis (*-ost-*)

and the product's active ingredient, glucosamine (-*amine*).¹⁶ The product's benefit-based ending was comprised of the symptom osteoarthritis (-*ost*-) and the English word *move*, as the marketing claim states the product will support “optimal mobility throughout the day.” For the HSN product (Product 2), the ingredient-based ending was -*yogen* [aɪ.oo.dʒɛn] and the benefit-based ending was -*yoderm* [aɪ.oo.dʒɜrm]. The product's ingredient-based ending was a combination of the -*y*- in *enzyme*, the biological catalysts the product claims to support, and the product's active ingredient, collagen (-*gen*).¹⁷ The product's benefit-based ending was comprised of the of the -*y*- in *enzyme*, as noted above, and the English lexical item *derm*, meaning skin. For Product 2, the diphthong /oo/ was drawn from the word *biotin*, another supplement commonly used to support healthy hair, skin, and nails.

As noted in §2.2.1, the literature lacks substantive research on the sound-symbolic qualities of consonants and consonant clusters. After deciding on products presumably associated with /fl/ and /gl/ onsets, the remaining possible C/l/ clusters in English were tested as well. Each fictional product was assigned 24 fabricated names, broken into four groups. Each name started with a C/l/ cluster possible in English orthography (*sl, fl, pl, gl, kl, bl*) or the associated singleton (*s, f, p, g, k, b*),¹⁸ and ended with one of two morphemes suggesting either product benefit or main product ingredient, respectively. Each onset grouping (cluster or singleton) was paired with each final

¹⁶ Strong evidence from randomized controlled trials supports the use of glucosamine in the treatment and management of osteoarthritis, particularly of the knee (Ulbricht 2010, p. 370).

¹⁷ Collagen is a protein found in most connective tissues, including cartilage, bone, and skin. Research has found that collagen exerts beneficial effects on skin photoaging and significantly improves antioxidative enzyme activities in skin (Song et al. 2017).

¹⁸ *cl* and *c* were omitted from this research, given the possible phonetic realizations as /sl/ and /kl/, and /s/ and /k/. Further, singleton /l/ was not tested as /l/ is typically not a grammatical English onset cluster (with the exception of loan words and names such as Lloyd).

morpheme (benefit or ingredient). See Appendix 1 and Appendix 2 for full lists of names for each product.

3.2 Implementation

The survey instrument consisted of 24 questions total: six (6) demographic questions, two (2) practice questions, and 16 main survey questions. Administered online through the Qualtrics platform, the survey took an average of 12 minutes to complete. The survey began with a request for basic demographic information to later isolate responses according to gender, age, and language history. Demographic questions also assessed a participant's language history. Participants were asked to note whether English was their first language (if not, participants were asked to identify their L1), as well as if they spoke any languages other than English.

After completing a short practice exercise designed to familiarize participants with the ranking question format,¹⁹ participants were presented with a fictional product image and an accompanying product description containing a marketing claim. To avoid over-priming participants, marketing claims did not contain words beginning with the target onset cluster or singleton. In two separate sections containing eight questions each, participants were presented with an image and description of the joint health product and the HSN product, respectively. Participants were then asked to rank six randomly ordered names for the target dietary supplement product from best to worst, on a scale of 1–6 (1 indicated best, 6 indicated worst). As designed, the data reported the participant's top

¹⁹ Practice questions mimicked studies conducted by Kohler (1929) and Sapir (1929), discussed in §2.1 and §2.2. Participants were asked to rank possible names for a given shape from best to worst. Names varied in vowels only.

choice for each possible combination: C/I/+ingredient, C/I/+benefit, C+ingredient, and C+benefit. Figure 1 presents an image of the ranking question.

What is the **best** name for this product?

Rank the following options from best to worst on a scale of 1-6 (1=best, 6=worst).
Drag and drop each option to rearrange the list's order.

- 1 Glostamine
- 2 Blostamine
- 3 Flostamine
- 4 Klostamine
- 5 Plostamine
- 6 Slostamine

[Figure 1. Sample ranking question.]

The ranking system was chosen as it provided clear answers for a participant's most- and least-preferred product names. The physical process of rearranging the names by dragging and dropping was interactive and allowed participants to see the hierarchy change in real time. Additional reasoning is provided in §5.6.

Next, based on the answers given, the participant was shown the four names they ranked as their top choices for each product. The choices were presented in pairs (two C/I/ choices and two C choices, pitting each of the two endings against one another). The participant was then asked to select the most preferred name from that pair (Figure 2).

In two previous questions, you ranked **Glostamine** and **Glostamove** as the best names for the joint support supplement. Of the two names you chose, which name do you feel **best fits** this product?



The image shows a sample pairing question interface. It consists of two light gray rectangular buttons stacked vertically. The top button contains the text 'Glostamine' and the bottom button contains the text 'Glostamove'. The buttons are centered horizontally and have a subtle shadow effect.

[Figure 2. Sample pairing question.]

Finally, the top C/I/ choice was paired with the top C choice. The participant was asked to select their most preferred option from the ultimate pairing. The survey then extended an opportunity for the participant to explain his or her choice.

3.3 Participants

Participation in this study was limited to adults (ages 18 or older) capable of speaking and reading English. The data-gathering period lasted a total of seven days, and participants were recruited via email, social media, and personal outreach. A total of 261 individual responses were gathered. Participants included 192 women, 65 men, and 4 individuals who identified as nonbinary, all ranging in ages from 19–73. The 18–34 age range was the most widely-represented with a total of 165 individuals, followed by 35–54 (58), and 55+ (38). Of the total population, 150 participants reported that they took dietary supplements regularly.

3.3.1 Languages

Whereas the majority of participants reported growing up in the United States, 19 individuals noted they had grown-up in the following countries: Australia (1), Brazil (1), Canada (2), China (1), Ecuador (1), Germany (1), Japan (3), Mexico (1), the Netherlands (1), Romania (1), Saudi Arabia (4), Ukraine (1), the United Kingdom (2), and Uruguay (1).²⁰ As such, 14 participants noted that English was not their first language. Instead, they reported to have grownup speaking Arabic (5), Chinese (1), Dutch (1), French (2), German (1), Japanese (1), Romanian (1), and Spanish (2).²¹

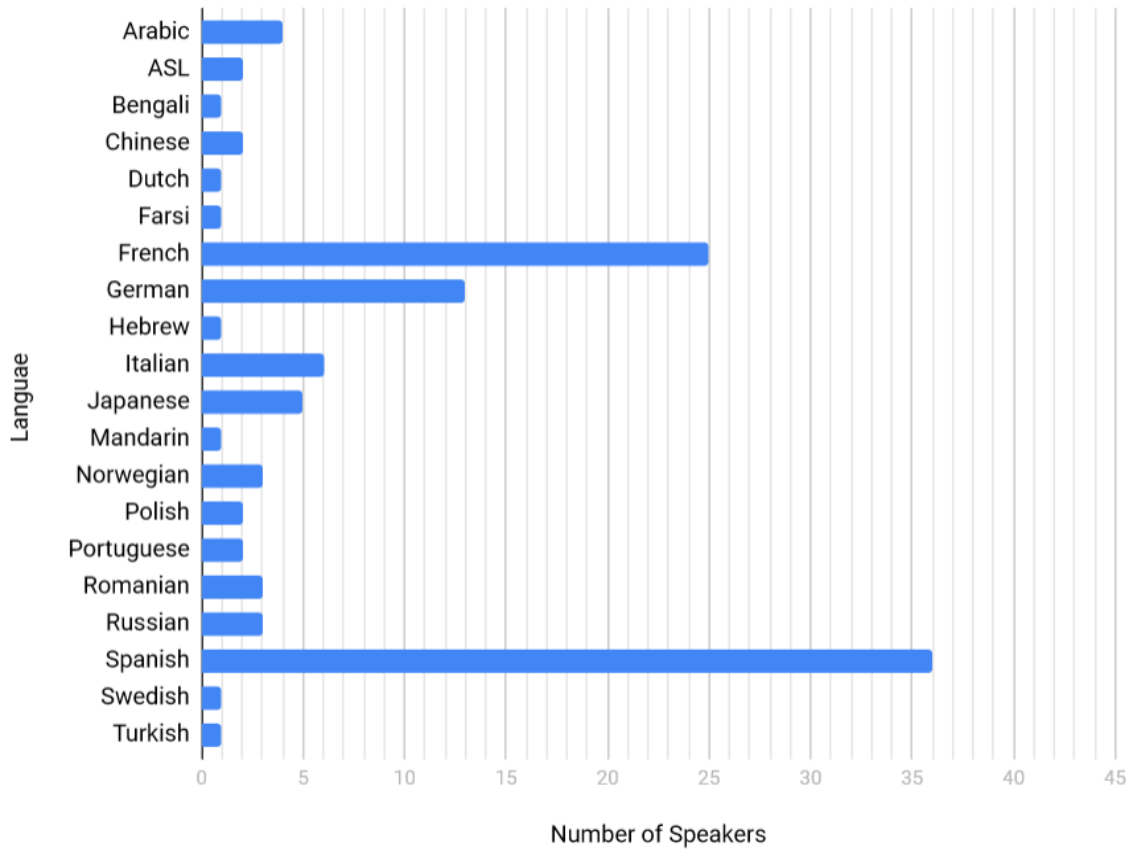
Overall, 34 percent of participants identified as multilingual. Though most individuals in this group were bilingual, 15 identified as trilingual and four reported to speak four or more languages.²² Figure 3 shows language diversity among the sample population.

²⁰ One participant reported to have grown up in Brazil, Japan, and Mexico.

²¹ Participants reporting an L1 of Arabic or Chinese did not note the varieties spoken.

²² 89 individuals reported to speak one or more languages, in addition to English. They were not required to note their degree of fluency.

Other Languages Spoken by Participants



[Figure. 3. Languages, other than English, spoken by survey participants.]

CHAPTER 4. RESULTS

Results were calculated based on data collected from all 261 participants. The primary analysis focused on overall preference shown for product names (i.e., demographic information was not considered). Secondary analysis explored trends in data observed among choice subgroups, such as age, gender, and languages spoken. The following section presents topline data representative of the entire population's preferences. Data from the secondary analysis will be presented in §5, along with a deeper discussion of the data's greater implications.

4.1 Product 1

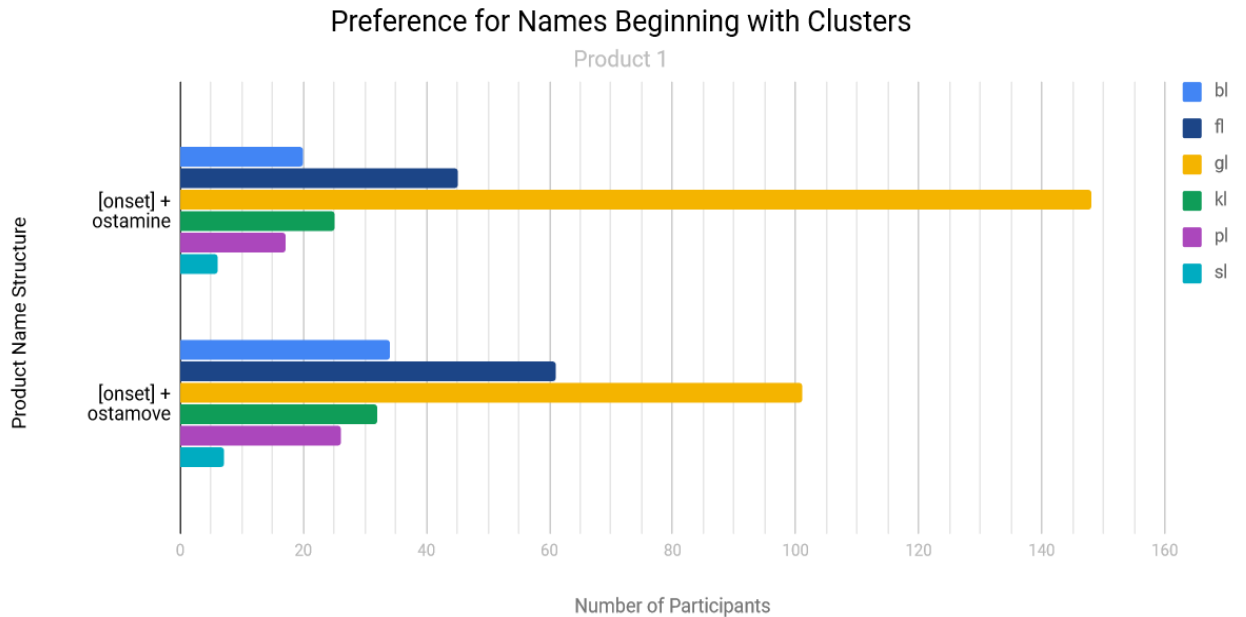
Product 1 was a fictional joint health supplement marketed to “support healthy joint function for optimal mobility throughout the day” (Figure 4). Participants were primed with a marketing claim that featured words and themes consistent with what the literature indicates are often associated with movement (e.g., “mobility,” “lubricate joints,” and “relieve inflammation”). These words were included to further guide participants toward an /fl/ preference—crucially, as noted above, no words with /fl/ onsets were featured. H1 would be supported if participants favored /fl/ names, regardless of priming stimuli.



This product helps support healthy joint function for optimal mobility throughout the day. The active ingredient is an amino sugar that provides the raw material needed to lubricate joints and relieve inflammation or pain that may occur after physical activity.

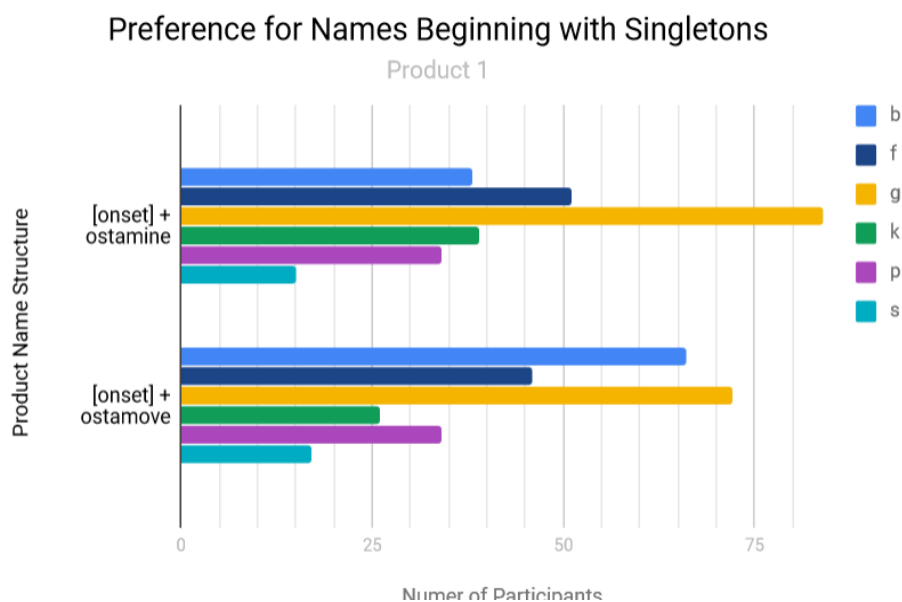
[Figure 4. Joint health supplement product image and marketing claim.]

Data collected on Product 1 reflected a superior preference for names beginning with /gl/ onsets, regardless of the name's ending (benefit-based or ingredient-based). Conversely, the least preferred onset was /sl/ (Figure 5). As such, the data did not present sufficient evidence to support H1.



[Figure 5. Participant preferences for C/I onsets in Product 1.]

However, the data did provide evidence in support of H2. Whereas /gl/ was overwhelmingly preferred for names starting with a cluster, names beginning with the /g/ singleton were also ranked highest—apart from *bostamove*, a phenomenon to be discussed in §5. See Figure 6 for overall rankings of top singleton name choices. Participants’ lowest-ranked preference may also support H2, as the singleton onset /s/ was least preferred as the top name choice for the joint support product, just as /sl/ was the least preferred cluster option.



[Figure 6. Participant preferences for C onsets in Product 1.]

As shown in Figure 5, a nearly identical ranking sequence was observed for both the ingredient-based and benefit-based endings: $g > f > b / k > p > s$.²³ However, a greater variance was observed in the singleton rankings. The [C+*ostamine*] group reflects a $g > f > k > b > p > s$ sequence, whereas the [C+*ostamove*] shows a sequence of $g > b > f > p > k > s$. From these data, voiced stops (in this case, /g/ and /b/) were most preferred for the joint health product name. Such preference would be consistent with the literature, which states, as discussed in §2, that voiced stops are commonly perceived to signify a sudden beginning or to be more action-inducing—even though voiceless stops arguably have a more explosive aspiration when pronounced.

Finally, when presented with pairs representing the participant’s top choices for [C/I+ingredient, C/I+benefit] and [C+ingredient, C+benefit] names for P1, respectively,

²³ /k/ was ranked higher than /b/ in in [C/I+*ostamine*] group, and vice versa in the [C/I+*ostamove*] group.

data indicate the ingredient ending *-ostamine* was more preferred than the benefit ending *-ostamove* in both the C/I/ and C groups. When presented with their top choices for C/I/ and C onsets, more participants chose the C/I/ option. According to the results of this survey, *glostamine* was the optimal product name for the joint health product.

4.2 Product 2

Product 2 was a fictional HSN supplement marketed as “an essential part of any beauty regimen” (Figure 7). As with Product 1, participants were primed with a marketing claim—this time designed to evoke associations with iridescence and attractiveness (e.g., “look and feel radiant!”). H1 assumed that participants would rank names beginning with /gl/ as the most preferred for this product.

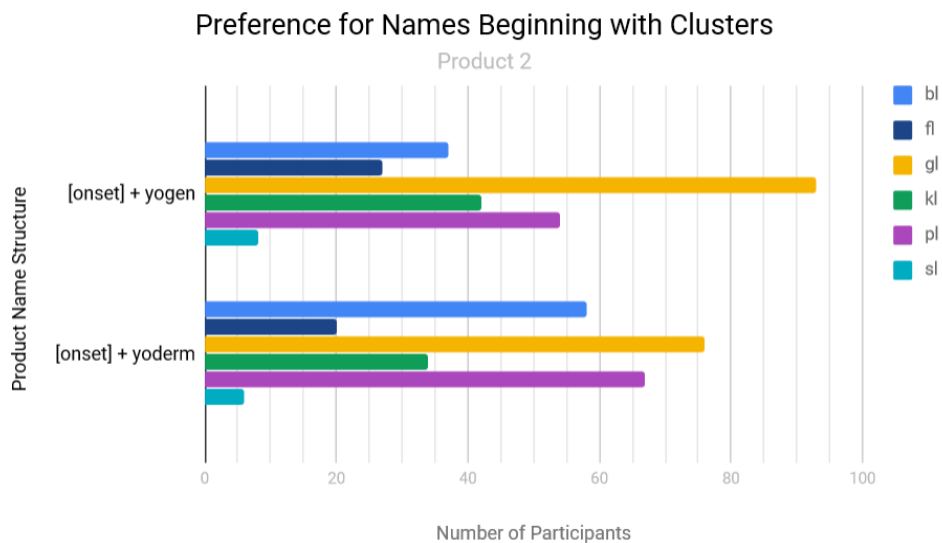


This product can serve as an essential part of any beauty regimen.

The active ingredient is necessary for the proper functioning of certain enzymes and supports healthy hair, skin, and nails. Look and feel radiant!

[Figure 7. Hair, skin, and nails supplement product image and marketing claim.]

Data collected on Product 2 supported H1. Participants indeed showed preference for names starting with /gl/, explicitly noting the cluster “sounded pleasant” and made them think of “glossy or glowing things.”²⁴ Figure 8 shows participants’ top choices for C// names for Product 2. As observed with Product 1, /sl/ was the least preferred cluster for product names ending in either *-yogen* or *-yoderm*.

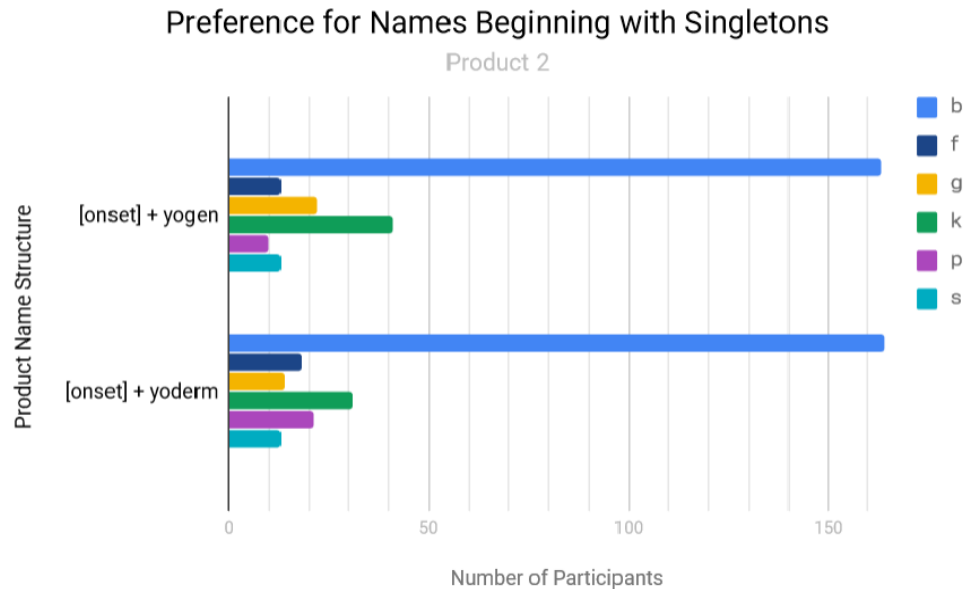


[Figure 8. Participant preferences for C// onsets in Product 2.]

For singletons, data collected reflected a superior preference for *b-* for C onsets, therefore failing to support H2. For names containing the benefit-based ending *-yoderm*, the predicted singleton onset /g/ was, in fact, among the names least preferred, as shown in Figure 9. As with Product 1, results for Product 2 perhaps demonstrate a preference for

²⁴ At the end of each section, participants were given the option to explain why they preferred their top overall name choice.

voiced stops. However, deeper analysis, as presented in §5, shows that participant preference for /b/ onsets is perhaps more heavily rooted in morphology than phonology.²⁵



[Figure 9. Participant preferences for C onsets in Product 2.]

When presented with pairs representing the participant’s top choices for [C/l/+ingredient, C/l/+benefit] and [C+ingredient, and C+benefit], respectively, participants favored the benefit-based ending *-yoderm* than the ingredient-based ending *-yogen*. When presented with their top choices for C/l/ and C onsets, more participants chose the C option. Thus, according to the results of this survey, *byoderm* is the optimal product name for the given HSN product.

²⁵ Crucially, *byo-* was pronounced [baɪoʊ].

CHAPTER 5. DISCUSSION

As shown in §2, certain phones can reflect meaning—and that meaning can be inferred by diverse populations consistently. Generally, sound and meaning prove to be inalienably interconnected for members of any extant speech community (Jakobson & Waugh 1987). However, there does not appear to be a clear-cut formula for creating words that convey universally-accepted attributes.

The results of this study show that, although phonetic symbolism can play a role in communicating intended purpose or claimed benefit, consumer preference for product names is subjective and ultimately depends on an individual's prior knowledge or homophonic associations to words already within their lexicon. In other words, “upon exposure to a [new] word, a [consumer] will search her lexicon for matching sounds” (Lerman 2007, p. 90) and will draw conclusions about the word (in this case, product name) based on strong matches with existing lexical items.

This lexical intrusion distracts from underlying phonological motivators of sound symbolism. This is not to say that phonology, specifically, does not possess symbolic significance—this study's data show it indeed does. However, the inherent implications of a product's name appear to be motivated by a number of varying factors and linguistic devices.

5.1 The Genus of /g/-ness

The overall results of this study demonstrate that names beginning with /g/, specifically /gl/, were ranked highest among the six possible options—in some cases, supremely. The consistently positive behavior of /g/ was surprising, given the findings of past studies. Reflecting on the literature, words beginning /g/ are often associated with heaviness and unpleasant sounds (Klink 2001; Elsen 2017). As such, one could assume that a product beginning with a voiced, velar consonant would be disliked and avoided by consumers, and consequently suffer from low sales on the market. However, /g/ occurs over one and a half times more frequently in Paul Verlain’s tender poems than in his angry ones (Tsur 1992), thus demonstrating that /g/ is not inherently “bad.” Likewise, the literature also provides strong evidence that the cluster /gl/ evokes positive associations with pleasing visuals (Bolinger 1950)—completely opposite from its singleton relative.

Considering these previous observations alone, it might be assumed that /l/ possesses an inherent softening quality (Charmasson 1988) or a yielding nature, as noted by Plato in *Cratylus*. True to its label as a liquid consonant, /l/ is slippery and allows speakers to flow from a syllable’s onset to its coda to fill a space and cluster together the surrounding elements (Magnus 2010). With /l/ assisting the movement of meaning, perhaps a /gl/ onset adopts the sound-symbolic qualities of the preceding vowel, therefore permitting a spectrum of possible meanings. Testing this theory, the word *gloss* [glɒs] should carry the same negative connotation as the word *glum* [glʌm], given the tendency for back vowels to be considered foolish or disgusting (Waugh 1979). However, reasonably, *gloss* evokes positive imagery, whereas *glum* evokes negative imagery;

Therefore, the transformative /l/ hypothesis does not hold up. Perhaps, then, individual letters and phones, such as /g/, have a more varied interpretation than words (Klink 2001) and phonological features indeed have conflicting abstract meanings, depending on context.

Of course, this study did not assess the sound-symbolic qualities of all English consonants. Of the six consonants tested, /g/-based onsets behaved the most uniquely and might therefore be considered the most adaptive or flexible in meaning when it comes to sound symbolism and naming products.

5.2 The /s/ Aversion

On the other end of the preference spectrum are /s/ and /sl/. In seven of the eight ranking questions, /s/ and /sl/ were sequestered as the least preferred onsets. This trend was surprising as, historically, voiceless fricatives are perceived as fast, light, and soft (Klink 2000), and it would seem as though products marketed for ease of movement and enhanced beauty would want to communicate such qualities.

However, learned synesthetic connections and sensory experiences may influence sound symbolism for versatile phones, such as English's /s/ (Nukolls 1999). Children learn to mimic a snake by producing a prolonged /s/ and moving their hands in a slithering motion, and snakes generally give people the creeps. Looking at the results of this study, is the /s/ aversion learned behavior, or is there an inherent discomfort contained within /s/? Words featuring an /s/ onset have been called sissy, weak, and less potent (Coulter & Coulter 2010; Shrum & Lowrey 2011). Coulter & Coulter found that

perceptions of discounts were overestimated when the sale price contained a fricative/front vowel combination, such as Product 2's /sai/. Colloquially, we may refer to an inexpensive or heavily-discounted product as “cheap”— a word with conflicting connotations (a cheap product may be a low-quality product). Likewise, fricatives paired with low, back vowels, such as Product 1's [sast], are perceived as clunky or large (Klink & Wu 2014). Reasonably, products marketed for ease of movement or beauty, respectively, would not appeal to consumers if their names implied a cheap and clunky quality.

Particularly, /sl/ received an extremely disparate number of votes in each of the four cluster onset questions—exclusively earning total votes in the single digits. The literature suggests /sl/ has a pejorative phonetic habit (Firth 1930) and that this habit reinforces, and is reinforced by, the related meaning of the words containing them (Drellishak 2006). In this study's free-text responses, many participants explicitly noted the unpleasantness of /sl/, describing the cluster as “sleazy,” “slimy,” and akin to “slosh.” Consistent with the literature, /sl/ “refers to the consequences of the shapelessness of liquids” and may evoke synesthetic associations such as unfavorable taste or smell (Rhodes 1994, p. 287). Further, fricatives in a consonant cluster (in which there is a partial closure of articulators, but the airstream is not fully blocked), are often considered to be harsh, rough, difficult, angular (Krause 2015), or to signify a physical or verbal attack (Blake 2017). If it's true that consumers “respond better to names they can understand [...] and feel good about” (Blake & Blake-Bohné 1991, p. 63), the associations noted above may explain participants' aversion to names beginning with /sl/.

As noted in §3, all possible product names contained three, well-formed English syllables with identical primary stress patterns. Further, all possible choices abided by the Sonority Sequencing Principle (SSP). However, SSP ranks /s/ higher than all other possible consonant onsets tested in this study (apart from /f/), meaning there exists less distance between these syllable’s /s/ onset and secondary consonant (in the case of /sl/) or coda (in the case of /s/). As states the Syllable Contact Law, “For all syllable contacts A.B, the more sonority falls from A to B, the more A.B is preferred” (Clements 1992, p. 67). Therefore, names beginning with /s/ and /sl/ would indeed be less preferred. However, as states Clements (1992), /s/ is exceptional with respect to the SSP—particularly when it is pronounced with another consonant in the same syllable. As such, clusters with an /s/C onset tend to defy the rules of SSP.

The only instance where an /s/ name didn’t receive the lowest top choice ranking was in Product 2’s C+*yogen*, suggesting /s/ may be more favored as a singleton. What sets *syogen* apart? Notably, /sl/ and /s/ names for Product 1 contain identical syllable structures: CCVCC.C.CVC for clusters ([slɔst.ə.min] and [slɔst.ə.muv]) and CVCC.C.CVC for singletons ([sɔst.ə.min] and [sɔst.ə.muv]). However, syllable structures in Product 2’s names vary slightly: CCV.V.CVC or CCV.C.CVCC for clusters ([slai.ou.dʒɛn] and [slai.ou.dʒɛrm]) and CV.V.CVC or CV.V.CVCC for singletons ([sai.ou.dʒɛn] and [sai.ou.dʒɛrm]). *Syogen* follows the CV.V.CVC pattern, so perhaps the pairing of two sibilant sounds in the first and third syllable onsets (/s/ and /dʒ/) caused *syogen* to overtake *pyogen* in the ranking order.

5.3 Sound Symbolism in Product 1

In the case of Product 1, the joint support product, /g/ and /gl/ onsets prevailed. Contrary to the associations triggered by voiced stops, as noted in the literature, participant responses indicated no associations between /g/ or /gl/ and heaviness or aggressiveness. Instead, participants noted /g/ and /gl/ sounded “scientific” and evoked smooth movement.²⁶ As shown in §4.1, /gl/ was ranked the number one name choice in each of the cluster categories—*glostamine* was ranked number one by 57 percent of participants, whereas only 17 percent chose *flostamine*, the second most preferred name. Though the variances between rankings of Product 1’s singleton name options were not as great as the cluster options, /g/ was indeed ranked highest in both the ingredient-based name and the benefit-based name. Though the alignment of singletons and clusters is as predicted in H2, /g/ and /gl/ outranked the /f/ and /fl/ onsets predicted to be superior by H1.

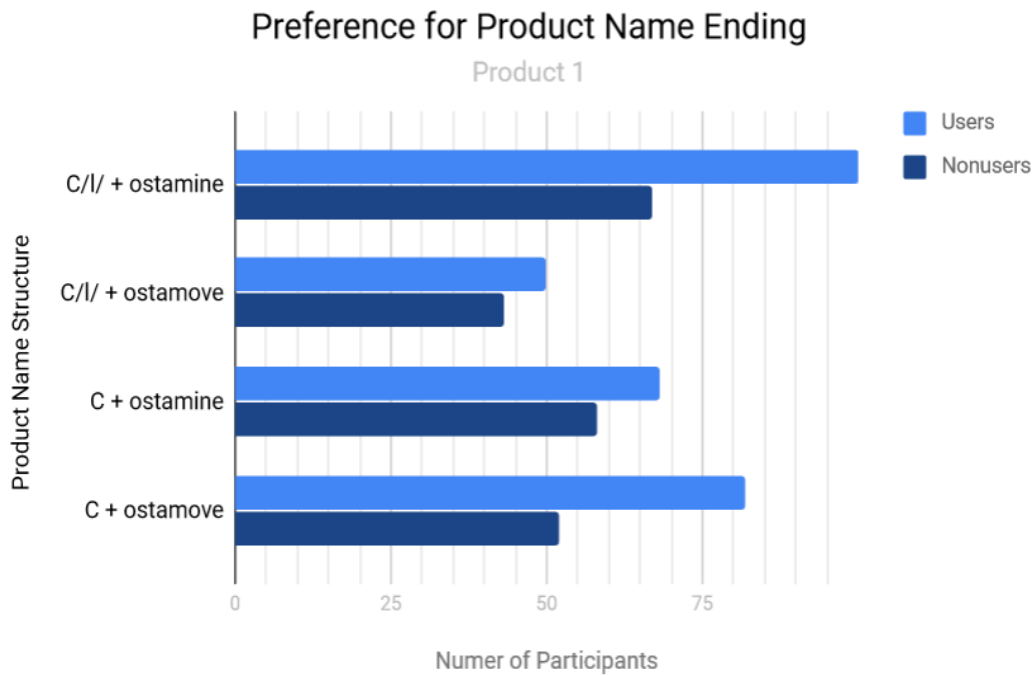
Crucially, the /g/ and /gl/ preferences were not exclusively phonetically-driven. Homophony or morphological analogy proved to be a strong motivator of participants’ rankings. As noted above, many participants preferred product names that closely matched existing words. In reviewing the survey’s free text responses, most participants revealed they chose /g/ and /gl/ onsets because the resulting name sounded like another word with which they were familiar. Hansen (1972) labels this process a “Clue-Guided Choice”, wherein consumers rely on previous experiences with the same or similar conflicts (or stimuli) to decide whether or not they purchase a product or try a new brand

²⁶ Previous research has found /g/ to sound “more metallic” than other voiced plosives (Tsur 1992). A correlation could reasonably be drawn between smoothness and metallic features.

(p. 217). A highly automated process, Clue-Guided Choices often occur when the consumer is overly familiar with the conflict at hand (in this case, interpreting unfamiliar product names). If a sound or morpheme within a name is highly-recognizable within an L1 lexicon, consumers will likely be drawn to those elements.

The sample population was fairly evenly divided between supplement users and nonusers, with 57 percent of participants identifying as supplement users and 43 percent identifying as nonusers.²⁷ When presented with the penultimate name pairings, as detailed in §3, supplement users were more likely to prefer the ingredient-based ending than were nonusers (Figure 10). Though both groups ultimately preferred the ingredient-based ending, *-ostamine*, most supplement users who selected the *-ostamine* name over the *-ostamove* name specifically noted a familiarity with the ingredient glucosamine, or with the vocabulary items “glucose” and “amino.” These individuals’ prior—and perhaps heightened—knowledge of dietary supplements influenced the decision-making process.

²⁷ A participant was asked to identify as a “supplement user” if they took one or more dietary supplements regularly.



[Figure 10. Supplement user and nonuser preferences for product name endings.]

Similarly, participants who chose the benefit-based ending, *-ostamove*, revealed the straightforward implication of the morpheme *-move* informed their decisions. Explanations for this choice included “When you have healthy mobility, you move” and “You want a joint [supplement] that makes it sound like you can move.” The *C+ostamove* rankings exhibited the least amount of variance between onset options, as shown in Table 1, suggesting that participants paid less attention to the phonemic onset and more attention to the familiar lexical item at the end of the product name.

[Table 1. Ranking of C+ostamove names.]

| Product Name | Times Ranked #1 by Participants |
|--------------|---------------------------------|
| Gostamove | 72 |
| Bostamove | 66 |
| Fostamove | 46 |
| Postamove | 34 |
| Kostamove | 26 |
| Sostamove | 17 |

Paronomasia, or word play, unintentionally influenced results for Product 1. As shown in §4.1 Figures 5 and 6, /f/ and /fl/ were ranked second highest three out of four times; *Flostamine*, *flostamove*, and *fostamine* were the second most preferred names in the respective categories, with *bostamove* unexpectedly outranking *fostamove* by 20 votes. Given /f/ behaved similarly to /fl/ otherwise, perhaps the secondary ranking of *bostamove* is an anomaly that could have been avoided were it not for an apparent distraction. In other words, *fostamove* quite likely would have been ranked second most preferred, given the behavior exhibited in the other name categories. *Bostamove* is an outlier.

Participants who ultimately chose *bostamove* as the best overall name for Product 1 remarked that the name humorously sounded like “bust a move.” Similarly, participants who chose *gostamove* as the ultimate name noted the similarity to the phrase “gots to move.” Humorous names are memorable and friendly and will likely appeal to a more

youthful audience (Charmasson 1988). As one participant noted, *bostamove* “works well for what the product is trying to sell, but ultimately might have come off as juvenile.”

Another respondent asserted that *bostamove* sounds like an attempt to “force 'bust a move' into one word” and, upon hearing the name in conversation, the individual would “wonder how you got from talking about your daily supplement regimen to 80s pop music.”

The unexpected results of Product 1 demonstrate that consumers use often look to existing morphemes to inform their impression of a product. Lerman et al. (2018) suggest that English-speaking consumers will inherently understand the use or benefits of products named, for example, *Vitabath*, *Duracraft*, or *Hydrodrive*, as the morphemes used to create each name are “already represented in memory” (p. 72) and that, in names such as these, individual syllables or phones are less likely to direct consumers’ impressions of a product. However, Lerman et al. later note that sound-to-meaning associations may stem “not only from the meanings of the words themselves, but also from the initial and final sounds of each word.” Consider *Mc-* or *i-*; A name containing a *Mc-* onset is widely-understood to denote a product marketed by McDonald’s, and a product name with an *i-*onset is understood to be manufactured by Apple. In building their respective brand identities around a “McLanguage” or “iLanguage,” companies such as McDonald’s and Apple send linguistic cues to consumers by encouraging them to decompose products such as *McNuggets* or an *iMac* as being made up of two meaningful units (Sedivy & Carlson 2011; Krause 2015). Similarly, participants seemed to isolate /g/

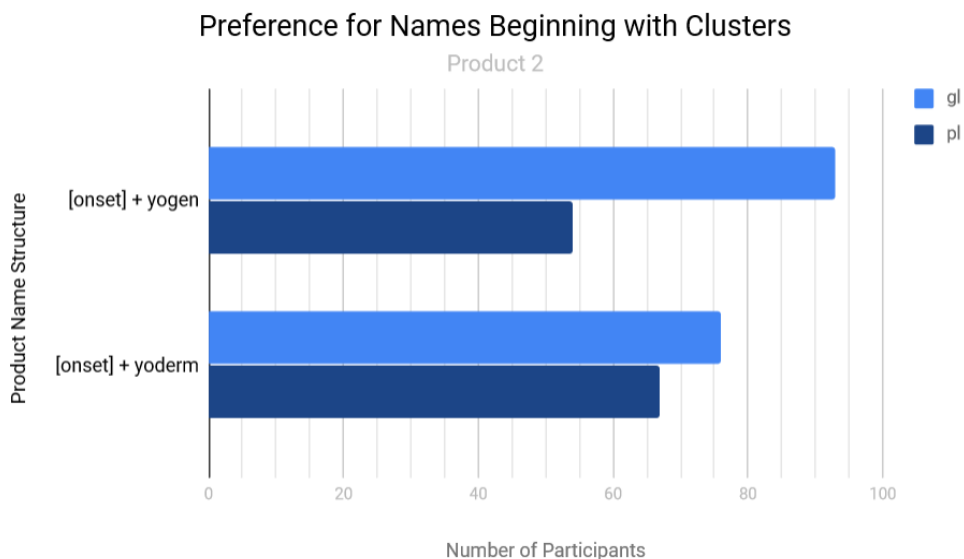
and, more strongly, /gl/, as morphemes themselves, serving as the root of a well-known word closely-related to the product (e.g., glucose, glycerin, etc.).

One could conclude that the word associations evoked by /g/ and /gl/ simply muddled the results, and that it is significant that /f/ and /fl/ were ranked second 75 percent of the time—In other words, H1 was half supported. Though such a definitive conclusion will not be drawn in this analysis, the secondary rankings of /f/ and /fl/ show that the predicted (and previously observed) sound-symbolic behavior may not be entirely lost.

5.4 Sound Symbolism in Product 2

Product 2 was marketed as a “natural beauty” supplement designed to brighten complexions and promote radiance within users. As predicted, /gl/ prevailed as the top ranked cluster onset. Participants that ultimately preferred a /gl/ product name indeed noted that the cluster evoked specific ideas of glossiness, light, beauty, smoothness, and a gleaming or glowing quality. Additionally, /gl/ names were described as sounding “pleasant,” “easy to remember,” “more appropriate for a beauty supplement,” and “would look most natural on a bottle.”

Although preference for /gl/ is reflective of the literature, the variance between the number one and number two ranking was not as large as in Product 1’s cluster preferences. For both the ingredient-based ending *-yogen* and benefit-based *-yoderm*, /pl/ fell closely behind /gl/, as shown in Figure 11.



[Figure 11. Ranking of /gl/ and /pl/ names.]

Once again, morphology influenced the ranking sequence. Participants that ultimately ranked *plyogen* or *plyderm* as the number one Product 2 name choice consistently reported recognition of the English word *ply* (as a morpheme of pliable), and therefore made a positive association between the product’s use and benefit. Ranking explanations included “I would want my skin to be pliable,” “*ply-* makes me think of skin being supple,” and “the *ply-* syllable makes me think that this product will help keep my skin pliable and therefore strong, flexible, elastic, and healthy.” Further, another participant saw /ply/ as a suffix of the English word “apply,” noting that the product name *plyoderm* implied the product is “applied directly to the skin.” Just as observed in Product 1, participants identified a particular sound and matched it to a familiar word or phrase, suggesting that /pl/ is not particularly symbolic of a skincare product, but rather the larger item /ply/ carries the communicative intention.

Individual phones, then, may behave as traditional morphological units in that their meaning changes when a new unit is introduced to the root. In other words, a phone has a meaning that is altered when additional phones/phonemes are introduced, just as morphemes influence meanings of lexical items. Looking more closely at /ply/, the literature indicates /p/, on its own, is expressive of explosive or sudden noises, ends or tips, (Marchand 1959; Magnus 2010; Blake 2017). When clustered, the addition of /l/ seems to soften the lone /p/, as the resulting /pl/ evokes feelings of dull impact (Marchand 1959). As observed in this study, the third element /y/ alters the meaning yet again, this time forming a recognizable English word orthographically (*ply*, as in *pliable*) and adopting an identical meaning, as noted above.

However, /g/ was not ranked as the most preferred singleton onset for the HSN product. Instead, in both the C+yoderm and C+yogen categories, 63 percent of participants placed both *byoderm* and *byogen* at the top of the respective hierarchies. Despite matching in both voicing and manner of articulation, it appears as though /g/ and /b/ behave differently. Further, recalling H2 (participants will show preference for the same singleton consonant that begins their cluster preference), it appears as though /gl/ behaves differently than /g/, and /b/ behaves differently than /bl/. Once again, this phenomenon appears to be completely motivated by morphology, rather than phonology.

Though slightly different orthographically, the morpheme *byo-* was perceived by participants to be pronounced the same as *bio-* [baɪoʊ], an arguably universal English abbreviation of *biology*, the study of life. Nearly every participant that ranked *byoderm*

and/or *byogen* as the most preferred Product 2 names specifically noted an immediate attention to the [baɪoʊ] onset, and automatically assumed the product to have sustainable, natural, scientific, and healthy qualities. As noted one participant, “It sounds like something I’d want to put on my skin.” Though this study attempted to eliminate stimuli inarguably similar to existing, familiar English words, the overall design neglected to account for the now obvious case of Product 2’s singleton /b/ onset.

Despite this oversight, consumers generally seem to crave familiarity in product names, and that desire for connection and relatability ultimately informed the preferences recorded in this study.

5.5 Demographic Differences

As discussed in §2, correlations of sound and meaning relating to size, speed, color, sound, and other attributes have been frequently and consistently documented. More specifically, research on product names and branding has shown that phones often reflect more abstract concepts such as human qualities and emotions. Based on these findings, marketers could logically employ generalizations about human-based sound-symbolic associations in product names to target a niche group of consumers, such as those of a certain gender or age (Krause 2015). Stereotypically, high front vowels—characterized as light, friendly, petite, pretty, breathy, and sophisticated—should appeal to women, whereas low, back vowels should attract men drawn to things that are rugged, large, blunt, and strong (Firth 1930; Jakobson & Waugh 1987; Klink & Athaide 2012; Elsen 2017).

Because these demographic measures are found to be common factors in language variation, it would be logical to presume that age and gender would be variables that influence sound symbolism as well. This study's sample skewed heavily young, female, Midwestern, and native English-speaking. However, close examination of unique groups among the population showed slight, yet relevant, differences in name ranking and onset preference.

5.5.1 Gender

The largest group within the sample was that of women. Providing 192 of the 261 responses, women certainly directed the overall results. A slight ranking variation was observed in Product 1, wherein more female respondents ranked *klostamove* over the majority's *blostamove*, as well as in Product 2, where results reflected a statistically insignificant reordering of the C+yogen names least often selected as the number 1 choice. Female ranking showed a slight $b > k > g > s > p > f$ preference, whereas the majority reflected a $b > k > g > f > s > p$ preference.

Men, however, showed different preferences in nearly all sections of the survey. Specifically, men showed preference for low sonority onsets, while women showed preference for more sonorous onsets. The most disparate ranking occurred with C/l+ostamine and C/l+yoderim, as illustrated in Table 2.

[Table 2. Female and male rankings of C/l/+ostamine and C/l/+yoderm names.]

| Product Name Structure | Female Ranking Order | Male Ranking Order |
|------------------------|----------------------|--------------------|
| <i>C/l/ + ostamine</i> | | |
| | Glostamine | Glostamine |
| | Flostamine | Klostamine |
| | Klostamine | Blostamine |
| | Blostamine | Plostamine |
| | Plostamine | Flostamine |
| | Slostamine | Slostamine |
| <i>C/l/ + yoderm</i> | | |
| | Glyoderm | Plyoderm |
| | Plyoderm | Glyoderm |
| | Blyoderm | Blyoderm |
| | Klyoderm | Klyoderm |
| | Flyoderm | Flyoderm |
| | Slyoderm | Slyoderm |

Most notably for *C/l/+ostamine*, the second highest ranked onset for women was /fl/, whereas men ranked /fl/ second to last. As such, men least favored the two most sonorant onsets. For *C/l/+yoderm*, first and second highest ranked onsets were swapped among the two groups, with more male participants favoring /p/ over /g/. If voiceless stops like /k/ and /p/ are considered smaller, faster, lighter, and more feminine than

voiced stops, why did *klostamine* and *plyoderm* rank higher among men than women? As discussed earlier in this section, perhaps the presence of /l/ alters the sound symbolic meaning of stops and blurs the gender preference distinction. While it's easy to form conclusions based on gender stereotypes,²⁸ it is not possible to draw any data-supported conclusions from the study results. The literature would benefit from future research focused solely on female and male name preferences for identical products.²⁹

5.5.2 Native Language Influence

To reach a broader range of consumers, product marketers and brand managers must operate in a global context, as linguistic devices may not successfully translate from one language system to another. In the American marketplace, English language fluency of non-native speakers may directly impact how these consumers process phonological and semantic features of a product name (Zhang & Schmitt 2007). For example, a product name with a word initial /l/ onset may not be lexically accessible to a Japanese consumer as the Japanese inventory does not include an alveolar lateral approximant. Therefore, the product may not perform as well in a Takayama drugstore as it would in Cleveland, OH.

Criteria to participate in this study included the ability to read and speak English. Crucially, though, this study did not exclude non-native speakers (hereafter, L2 participants), so it was expected that linguistic diversity would surface among informants.

²⁸ For example, women may be more receptive to abstract concepts, thus preferring /gl/, which forms “look words” (Marchand 1959). Men may be drawn to *ply-* given it is an existing English morpheme with clear implications relevant to the HSN supplement.

²⁹ The four non-binary participants formed too small a sample to analyze uniquely.

As noted in §3, the sample population included 14 individuals who noted they grew up speaking a language other than English, and 89 individuals who spoke two or more languages.³⁰ Unfortunately for this study, the limited number of non-native English speakers yielded insufficient data to form a well-formed and supported analysis. However statistically insignificant, the data warrant a brief commentary.

In the case of Product 1, L2 participants were consistent with the majority in favoring the /gl/ cluster for both the ingredient-based and benefit-based endings. However, the most preferred singleton onset was /p/ for both name endings, whereas the majority ranked /p/ names as the second to last best for the joint health product. Product 2 data show that /b/ names were ranked most preferred by L2 participants, again reflecting the majority. For clusters, /gl/ tied with other clusters as the top name choice; /sl/, /fl/, /kl/, and /gl/ all received an equal number of votes in the *-yogen* category, and /gl/ tied with /pl/ in the *-yoderm* category. Notably, /s/ and /sl/ were not ranked as low as observed in the majority data and were generally ranked in the middle of the hierarchy.

Reflective of Zhang & Schmitt’s suggestion that the process of interpretation is made complex “when a name or phrase needs to be adapted from one linguistic system into another” (p. 60), L2 participant commentary revealed names were ranked based solely on pronounceability or general timbre. When asked why they made their ultimate choices, select L2 participants said:³¹

- (1) “[Flostamine] was easier to read.” —Arabic speaker
- (2) “[Flyoderm] was easy to pronounce.” —Chinese speaker

³⁰ Because participants were not required to note degree of language proficiency, multilingual data was not heavily consulted throughout the data analysis period.

³¹ Responses pulled mentioned the overall “sound” of the name, rather than specific similarity to existing words.

- (3) “[Flyoderm]. Other alphabets sounded too strong.” —Japanese speaker
- (4) “[Flostamine] sounds like a scientific word.” —French Speaker
- (5) “[Blostamove] sounds good.” —Chinese speaker
- (6) “[Postamine] has a nice ring to it.” —Arabic speaker
- (7) “[Glostamine] sounds like a medicine’s name.” —Spanish speaker

Crucially, these responses are not motivated by morphological inferences.

Although there are not enough data to confidently propose a theory, perhaps L2 speakers are less inclined to identify English morphemes in fabricated product names and more likely to focus on acoustic (phonetic) qualities. If so, this theory presents a strong case for symbolism in individual sounds (or combinations of sounds) and the inherent abstract interpretations of phonological features.

If native language inventory influences consumers’ preferences for product names, such implications were not reflected in this study’s extremely limited data. For example, it might be logical to expect an L2 participant to rank names containing phonological elements considered ungrammatical in their L1 lowest on the hierarchy. However, results from this study were not consistent with that hypothesis. Arabic was the most widely-represented language among L2 participants and, since many varieties of Arabic do not allow CC syllable onsets, these individuals, presumably, would ultimately prefer a product name featuring a singleton onset. Brief analysis of Arabic speakers’ individual responses reflected the contrary—when presented with a pairing of their C/I/ and C name choices, Arabic speakers preferred C/I/ names over C names 50 percent of the time.

Again, the limited data do not provide enough evidence to conduct a thoughtful analysis or draw well-supported conclusions on language-specific preferences. Future

research may benefit from focusing exclusively on non-native English speakers, or by requiring multilingual participants to note their language proficiency to better understand the potential influence of dominant versus nondominant languages on name preference. Additionally, research with a heightened focus on variations in preference based on L1 will further evaluate the potential existence of universal sound symbolism.

5.6 Reflection and Further Work

Though results produced sufficient data to draw well-supported conclusions about the effects of sound symbolism in dietary supplement product names, the study featured several limitations. These limitations did not diminish the study's overall integrity, but lessons learned may provide clearer foundations for future sound symbolism research.

The ranking question system provided a quick, easy method for participants to demonstrate preference. As the primary analysis focused on the names participants ranked as their number one choice, the ranking system allowed for a clear illustration of preference. Likewise, this system was quite useful in determining the names least ranked as the number one choice. For this study's purpose, names ranked in the middle of the hierarchy were not as important, as the placement of those names suggested a somewhat neutral opinion. If the design had featured a forced choice mechanism, results would have yielded the top overall choice for product names and nothing else.

However, ranking questions do not allow for participants to note joint preference (i.e., if two different names are most preferred). In cases where the variance between the most preferred and second most preferred were not as extreme (such as in Product 1

where a mere 33 votes ranked *gostamoine* above *fostamine*, versus over 100 votes separating *glostamine* and *flostamine*), the ability to rank two product names as the number one choice may have produced results wherein participants experiencing lexical intrusion could demonstrate equal inclinations of phonetic symbolism. For example, a participant may have determined a name starting with /gl/ sounded best because it reminded her of an existing word, but /fl/ sounded equally good as it evoked feelings related to ease of movement.

As discussed, a significant limitation of this study was that some product names invited lexical intrusion—that is, some product names were too similar to existing English lexical items, which caused participants to draw conclusions based on morphology alone. For Product 1, *glostamine* was the most preferred name overall due to its similarity to the ingredient glucosamine. Participants most preferred *byoderm* for Product 2 because *bio-* and *-derm* are well-understood, widely-recognized English morphological items. To truly assess trends in *phonetic* symbolism, future researchers must take extra care to craft product names that in no way exactly mimic existing words in the target population’s lexicon. Additionally, product names containing clear English-derived morphemes may not perform as well internationally, or within domestic markets of L2 English speakers.

As noted, this study’s sample population skewed heavily female, with the majority of participants being between the ages of 18–34, originally from the Midwest, and native English-speaking. Participants were primarily recruited from the researcher’s individual social network, which limited the probability of gathering a more diverse

group. As such, results based on demographic differences were drawn from limited data. Increased diversity among participants would present an opportunity for a more detailed analysis and allow for greater contributions to the literature in revealing how L1, gender, geographic location, and age may influence sound-symbolic associations. Data of this nature are required to form stronger conclusions regarding universal trends in sound symbolism, and, more broadly, language.

CHAPTER 6. CONCLUSION

This study filled a crucial void in the literature by assessing the sound-symbolic quality of consonant clusters—specifically, C/I/ word-initial onsets. Though preference predictions noted in the hypotheses were loosely confirmed, data showed that consumers most often infer product attributes through phoneme-to-grapheme or phoneme-to-morpheme association. Though phonetic symbolism was certainly a motivator of choice, results of this study show that consumers, when primed with a marketing claim, will more frequently pull associations from the inventories of their established lexicons, rather than their phonological inventory. This phenomenon is significant in that it could determine the market success of one product over another, fueling brand competition.

Given the variance in participant’s ranking hierarchies, sound symbolism is indeed a motivator of perception, preference, and understanding. Most certainly, there exist consonant clusters (as well as singletons) that possess inherent qualities capable of informing decisions and guiding attention to certain attributes or qualities. Likewise, morphemes, however small, carry significant weight and often overtake the symbolic nature of phones.

The literature on sound symbolism must expand—if not for linguistic scholarship, then for the benefit of businesses marketing products nation- or worldwide. An informed understanding of linguistic motivations behind consumer preference for product names

could increase sales, heighten brand recognition, and allow for greater marketplace representation. Additionally, more diverse research could provide evidence for universal characteristics of language.

APPENDIX 1

Product 1 Names

C/A+ostamine and C+ostamine

- Glostamine Gostamine
- Flostamine Fostamine
- Klostamine Kostamine
- Blostamine Bostamine
- Plostamine Postamine
- Slostamine Sostamine

C/A+ostamove and C+ostamove

- Glostamove Gostamove
- Flostamove Fostamove
- Klostamove Kostamove
- Blostamove Bostamove
- Plostamove Postamove
- Slostamove Sostamove

APPENDIX 2

Product 2 Names

C/I+yogen and C+yogen

- Glyogen Gyogen
- Flyogen Fyogen
- Klyogen Kyogen
- Blyogen Byogen
- Plyogen Pyogen
- Slyogen Syogen

C/I+yoderm and C+yoderm

- Glyoderm Gyoderm
- Flyoderm Fyoderm
- Klyoderm Kyoderm
- Blyoderm Byoderm
- Plyoderm Pyoderm
- Slyoderm Syoderm

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