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DO YOU SEE WHAT I HEAR?

AN EXPERIMENTAL STUDY OF LINGUISTIC INFLUENCES

ON VISUAL AND AUDITORY PROCESSING OF NOVEL BRAND NAMES

by

DAWN B. LERMAN

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

2000

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Abstract

DO YOU SEE WHAT I HEAR?

AN EXPERIMENTAL STUDY OF LINGUISTIC INFLUENCES

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Dawn B. Lerman

Advisor: Professor Stephen Gould

Brand names, like words, are made up of morphemes. Some brand names make use of morphemes that would be considered fairly familiar to consumers in the brand's target market while other brand names make use of morphemes that would be unfamiliar to such consumers. The morphemes in the names Vitabath and Hydrovive, for example, are familiar to English speaking consumers. However, the morphemes in the names Mont Blanc and Nike might not have been upon initial exposure. Consumer researchers have studied various types of brand names including foreign-sounding names and suggestive names without drawing on this notion of morphemic familiarity. As such, this dissertation makes a number of contributions including: 1) offering a theoretical framework for the study of brand names, 2) proposing a systematic approach to brand naming based on important naming criteria, 3) making explicit the tradeoffs involved in naming, and 4) uncovering different effects following visual versus auditory exposure, the two contexts in which brand name processing occurs.

An experimental study was used to test the effects of morphemic familiarity and exposure mode on brand name distinctiveness, ease of pronunciation, associations, attitudes, recall, and recognition. The interest in the results goes beyond the support, or lack thereof, of various hypotheses to what may be considered greater findings. The first greater finding concerns the rather stark differences between native and non-native speakers in perceptions of and attitudes toward morphemically familiar and morphemically unfamiliar names. For example, morphemically familiar names appear more distinctive and more likeable than morphemically unfamiliar names among natives whereas the reverse seems to be true among non-native speakers. The second greater finding concerns the role of phonological recoding in brand name processing. Linguists have long debated whether visually-presented verbal stimuli, such as brand names appearing in a print ad, access the lexicon directly, that is, visually, or whether they are phonologically recoded. The recall results seem to suggest that the visually-presented morphemically unfamiliar name, but not necessarily the visually-presented morphemically familiar name, was phonologically recoded by subjects. A variety of theoretical and managerial implications related to these findings are discussed.

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CHAPTER 1

INTRODUCTION

The fact that companies spend millions, if not billions of dollars each year to buy brand franchises testifies to the power of brands. A brand refers to the identification of a product manufactured and/or marketed by a particular company. For most readers, the word "brand" likely conjures up images of consumer products. However, the notion of a brand now extends well beyond products like soft drinks and soap. Industrial companies, including those in commodity businesses are increasingly thinking of themselves as brands (Rooney, 1985). The chemical companies BASF and Dupont, for example, have been advertising in the mass media in an attempt to build brand equity. The 1990s has also brought another kind of brand: the web site. Whereas a traditional company wants to encourage consumers to buy its brand, an Internet company wants to encourage consumers to visit its web site (Maddox and Mehta, 1997). The key to inducing such trial is to provide consumers with an opportunity to learn about and value the brand (Kotler, 1997).

How do consumers get to know a brand? While advertising and packaging often offer brand knowledge, it is the brand name that typically provides the first image of a product and serves as a springboard for making other associations (Aaker, 1991). Managers believe that brand names themselves influence sales and are more important than packaging in inducing trial and in fostering long-term product success (Kohli and LaBahn, 1997). Brand names become exceedingly important in categories where consumers have difficulty distinguishing between brands based on attribute or design

(Durgee and Stuart, 1987) or, in other words, for products that seem to be the same in all respects except for their brand names (Meyers-Levy, 1989). As such, brand names, particularly suggestive ones, can aid in the positioning of a product and "reduce the burden on marketing communications to build awareness and link brand associations" (Keller, Heckler, and Houston, 1998, p. 49).

Given the importance of brand names, manufacturers have devised highly formalized brand name selection processes. In a survey of 82 managers in Fortune 500 consumer products companies, McNeal and Zeren (1981) found that the brand name selection process typically ranges from three to seven steps. The prevalent pattern, however, consists of six steps: 1) identification of the objectives or brand name selection criteria, 2) generation of brand name candidates, 3) initial screening of brand name candidates, 4) submission of selected brand names to consumer research, 5) trademark search for remaining brand name candidates, and 6) final brand name selection. In a more recent study, Kohli and LaBahn (1997) identified a more parsimonious and seemingly more accurate five-step process consisting of: 1) specification of branding objectives, 2) creation of brand name candidates, 3) evaluation of brand name candidates, 4) brand name selection, and 5) trademark registration.

Researchers have taken great interest in these steps, defining each one and identifying some of the more common approaches among both consumer and industrial products companies (e.g., Kohli and LaBahn, 1997; McNeal and Zeren, 1981; Shipley, Hooley, and Wallace, 1988; Shipley and Howard, 1993). However, there exist few studies that examine the relationship among these steps. For example, it would be useful

to know how the types of brand names created in step two perform on the criteria managers use for evaluation. In addition, can a brand name candidate outperform other name candidates on all evaluation criteria or do tradeoffs exist in selecting the final brand name?

One exception is a conceptual study by Robertson (1989) that suggests that brand names composed of familiar morphemes will perform better on naming criteria such as connotations and recall than names composed of unfamiliar morphemes. A morpheme is the smallest unit of language that carries information about meaning or function (O'Grady, Dobrovolsky, and Aronoff, 1989). One approach to brand name creation entails generating different combinations of morphemes taken from either a native or foreign language (Gershman, 1986). Robertson (1989) argues that using morphemes familiar to the consumer (e.g., English language morphemes for names of brands marketed in the United States) is beneficial because the morphemes themselves as well as their meanings are already held in memory, thus aiding recall of the name containing those morphemes and encouraging the consumer to make particular associations to the brand. Although her study provides a good introduction to morphemes and their benefits when used in brand names, it does not include the full range of naming criteria and does not offer empirical evidence for the expected performance of brand names composed of familiar morphemes.

This dissertation serves to fill this gap in the literature by examining the effect of morphemic (un)familiarity as a linguistic influence on the performance of brand names on those criteria that managers deem important: connotations, distinctiveness, ease of pronunciation, overall liking by consumers, and ease of recognition and recall (Kohli and

LaBahn, 1997; McNeal and Zeren, 1981). In doing so, this dissertation intends to make two contributions: 1) to propose a systematic approach to brand naming based on important naming criteria, and 2) to make explicit the tradeoffs involved in naming. The goal is to provide managers with a tool to predict the performance of brand name candidates on evaluation criteria, thereby increasing the efficiency of the brand naming process.

This dissertation makes a third contribution by examining the effect of auditory and visual exposure on consumer processing of morphemically (un)familiar brand names. The effects of visual and auditory presentation have a wide variety of implications for consumer shopping activities. For example, suppose a consumer sees a print ad for a brand with a morphemically unfamiliar name and decides to look for it in a store typically carrying such products. During her visit she does not see the brand and asks the manager if the store sells it. Having seen but never having heard the name before, she may be reluctant to ask for the brand by name or may so severely mispronounce it that the manager, familiar with the proper pronunciation, may not understand her request. In either case, the shopper may leave empty-handed despite the fact that the store does indeed carry the brand. This same consumer may even hear a radio ad for this brand during the car ride home and not realize that it is the same one advertised in the print ad. By examining the effect of exposure mode along with the effect of morphemic (un)familiarity, this dissertation will begin to shed light on the likelihood of such occurrences.

Finally, this dissertation extends the theoretical basis for understanding linguistic

influences on consumer processing of verbal stimuli. Recent interest in language processing in consumer behavior has resulted in a variety of empirical studies on topics as diverse as phonetic symbolism (Robertson, 1989; Schloss, 1981; Vanden Bergh, 1981/1982; Vanden Bergh, Collins, Schyltz, and Adler, 1984), semantics (Durgee and Stuart, 1987; Peterson and Ross, 1972; Zinkhan and Martin, 1987), and word frequency (Krishnan and Shapiro, 1996; Meyers-Levy, 1989). Most linguists agree that language processing occurs at the morphemic level (Andrews, 1986). That is, individuals construct words by combining morphemes and deconstruct words (e.g., in learning a new one) by dividing them into morphemes. Yet despite this fundamental role, researchers have overlooked morphology, the study of morphemes, when exploring language processing within a consumer context. An understanding of morphology will, at the very least, serve to shed further light on the language topics that interest consumer researchers and will likely open additional avenues for research in the area of consumer language processing.

The next chapter reviews the literature on language processing, or more specifically morphemic-level processing, as it pertains to brand names. This review forms the basis for a series of hypotheses predicting brand name performance on various naming criteria as developed in Chapter 3. Chapter 4 describes the methodology used to test these hypotheses and Chapter 5 reports the results of the empirical study. Finally, theoretical and managerial implications, limitations of the study, and directions for further research are discussed in Chapter 6.

It is expected that most readers will be unfamiliar with the linguistic terminology used throughout this dissertation. As such, definitions are provided each time a new

linguistic term is introduced. Given the newness of the material to consumer researchers, however, readers may need to be reminded of these definitions as they continue through the chapters. In such cases, readers are invited to refer to the Glossary of Linguistic Terms appearing in Appendix A.

Readers will also find that the Appendix includes a variety of material to supplement chapter discussions including, but not limited to experimental stimuli, measures, coding schemes, and instructions. References are made throughout the chapters to alert the reader to relevant materials in the Appendix.

CHAPTER 2

LITERATURE REVIEW

As a linguistic unit, a brand name is comparable to a word in that once heard (and/or seen) it needs to be properly processed in order to become part of one's active vocabulary. In developing and promoting brands, managers often demonstrate their understanding (albeit likely implicit) of language processing by choosing, for example, to visually display the brand name in a television ad instead of relying solely on the voiceover to communicate the name. Studies have indeed shown that visual display of verbal stimuli does indeed aid processing and often results in more accurate memory (Hirschman and Jackson, 1997; Smith and Hunt, 1998).

In contrast, the tremendous amount of time, effort, and money spent on the brand naming process (Kohli and LaBahn, 1997) suggests that managers still have much to learn. It is expected that an explicit understanding of language processing can help managers to generate higher quality brand name candidates and to better assess the relative performance of brand name candidates on naming criteria prior to consumer testing. Toward this end, this chapter reviews the literature on language processing as it pertains to brand names. The review begins with a discussion of language structure and the means for deciphering language with a particular emphasis on the word as a unit of language. The discussion continues with an explanation of the applicability of such linguistic theory to brand names and forms the basis for a series of hypotheses, as presented in the next chapter, that predict brand name performance on the various naming criteria.

The Mental Lexicon

A consumer exposed to marketing stimuli such as advertising or packaging relies on the lexicon to understand its verbal content. The lexicon can be considered a mental dictionary in that it contains a variety of information about words such as their phonology (i.e., sound), orthography (i.e., spelling), and semantics (i.e., meaning) (Harley, 1995). In addition to an entry for each word in the speaker's vocabulary, the lexicon stores a set of word formation rules (O'Grady, Dobrovolsky, and Aronoff, 1989) which, as will be seen, are essential for processing brand names.

The organization of the lexicon allows word naming and recognition to occur before and independently of word comprehension (Garnham, 1985). In the case of word naming, an individual uses a learned set of grapheme-to-phoneme correspondence rules (i.e., letter-sound associations) to pronounce a visually-presented word and a set of phoneme-to-grapheme correspondence rules (i.e., sound-letter associations) to spell an orally-presented word. Word recognition, on the other hand, occurs when a particular string (i.e., series of letters or sounds) matches a word found in the lexicon. In this case, an individual relies on memory to determine whether a given string is a word or not. This task is often referred to as lexical decision since the presence or absence of the letter string in the lexicon determines an individual's response.

In some sense, the use of the term "lexical decision" for word recognition is a bit misleading since in reality, both word naming and word recognition require that an individual rely on the lexicon. The difference between word naming and word recognition is more appropriately described by the level of access required for successful completion

of the task at hand. Word naming requires access to graphemes (i.e., letters) and their corresponding phonemes (i.e., sounds) when the task is to pronounce a printed word or to individual phonemes and their corresponding graphemes when the task is to spell an orally-presented word. Word recognition, on the other hand, requires access to entire words found in the lexicon. The difference between word naming and recognition then lies in the type of information needed from the lexicon to perform the task.

Whereas recognition requires previous exposure to the word in question, word naming does not. This is not to say, however, that an individual performing a lexical decision task will automatically reject an unfamiliar word. In such a case, word formation rules (i.e., rules governing permissible letter or sound combinations in a particular language) allow an individual to determine whether the word is one which could exist in his language and perhaps one which he does not know or whether the word cannot exist in his language and is, in essence, a non-word. For example, in lexical decision experiments American subjects can very quickly recognize a letter string such as *xgyz* as not being a word in the English language (Garnham, 1985). In this case, at least three English word formation rules are violated by *xgyz*: 1) the rule that a word cannot contain four consecutive consonants, 2) the rule forbidding this particular combination of consecutive consonants, and 3) the rule indicating that all words must contain at least one vowel (Massaro and Cohen, 1994; Venezky and Massaro, 1979).

Although word formation rules lead to the rejection of letter strings such as the one above, knowledge of such rules does not necessarily mean that lexical decision is always an easy task. When the non-word does conform to word formation rules but

happens not to be a word, as in the case of the non-word *nint* within the English language, subjects take more time to make a decision. In such cases, it takes American subjects slightly longer to reject properly formed non-words than to accept infrequent but established words in the English language (Rubinstein, Garfield, and Millikan, 1970 and Stanners and Forbach, 1973). Furthermore, the greater the similarity between a non-word and real words, the harder the non-word is to reject (Coltheart, Davelaar, Jonasson and Besner, 1977).

The Role of Morphology in Word Formation and Language Processing

Despite the importance of word formation rules in language processing, such rules are not sufficient for distinguishing between words and non-words. Let us reconsider the non-word *nint*. How does an individual know that this is a non-word and not simply a word that is indeed in the dictionary but one that he never learned? In this case, the individual would rely on a learned set of morphemes to determine that *nint* is not a word in the English language. A morpheme is defined as the smallest unit of language that carries information about meaning or function (O'Grady, Dobrovolsky, and Aronoff, 1989). English contains more than 6,000 morphemes ranging from full words (free morphemes) such as "man" to small parts of words that cannot stand alone (bound morphemes) such as "-ly." These 6,000+ morphemes can and have been combined to form the tens of thousands of words found in today's English language dictionaries.

In addition to the word formation and correspondence rules described above, the lexicon includes knowledge of the morphemic structure of a learned language. More

specifically, it contains knowledge of the morphemes within a language as well as the rules for combining them (Barsalou, 1992). English speakers know, for example, that the bound morpheme "s" can be added to nouns (to express plurality) and verbs (for proper subject-verb agreement) but not to adjectives or adverbs. They also know, for example, that adding the prefix "non" to a word changes the meaning of that word to its opposite. Thus, in any language, additional words may be formed by generating new morphemic combinations and speakers of the language will be able to draw on their morphemic knowledge to understand the meaning of these newly formed words. At one time, for example, words like "Americanize" and "globalize" did not exist in our language; yet no English speaker needed a dictionary to understand these new words upon initial exposure. Similarly, if an English speaking job applicant were told at an interview, "Unfortunately, our company is not at all cyberized," he would understand his interviewer even having never before heard the term "cyberized."

Although it is clear that morphology plays a key role in word formation, linguists tend to disagree over its role in language processing particularly with respect to known (i.e., not newly formed) words. More specifically, they agree that morphology does influence word recognition, but do not agree on the process (Andrews, 1986). As a result, various models have been proposed to explain the morphological influence. The best explicated and most widely tested model is the decompositional model proposed by Taft and Forster (1975, 1976). According to this model, affixed words (i.e., words containing prefixes and/or suffixes) are not actually represented in the lexicon but are recognized via access to their stems. In other words, words are decomposed into a stem

and affixes (i.e., prefixes and suffixes) in order that the stem be made available for use in sensory-to-lexical match in the input device (Taft, 1991). Thus, for example, "access to the entry 'just' in the input store allows the representation of 'unjustly' to be found in the central lexicon" (Taft, 1991, p., 94). Similarly, the word "revive" would gain recognition by the decomposition of the word into morphemes and the stripping of the prefix "re" from the stem "vive," a bound morpheme containing the core of the word's meaning.

Based on inconsistent results in testing the Taft and Forster model, researchers have proposed a variety of alternatives to explain the role of morphology in word recognition. Fowler, Napps, and Feldman (1985), for example, have proposed an activation model similar to the Taft and Forster model in that morpheme-based input leads to the word-based central lexicon system; however, the two models differ in that the Fowler et al. (1985) model does not require prefix stripping for the activation of a stem morpheme. In other words, according to this model, the stem node is activated whenever the appropriate combination of letters occurs within the letter string regardless of whether this combination is preceded by a prefix. Other models suggest that both whole words and morphemes are represented in the lexicon and that access may be gained via either route (e.g., Caramazza, Laudanna, and Romani, 1988; Henderson, 1985b, Stanners et al., 1979a). More specifically, they posit that morphological decomposition is used when lexical access via the whole word fails.

The issue as to whether morpheme access is strategic or obligatory is somewhat of a moot point with respect to novel brand names. As will be discussed in the next section,

brands names are typically developed by generating novel combinations of morphemes. A consumer exposed to such a name for the first time does not have a lexical entry for the entire name although he may indeed create one as a result of the exposure. As such, morphemic decomposition must occur at least for initial brand name processing.

Brand Name Morphology

Brand names, like words, are typically created from morphemic combinations (Robertson, 1989). Consulting companies specializing in brand naming, for example, use computers to generate multiple morphemic combinations which are then individually evaluated by managers if not also by consumers (Gershman, 1986). Examples of such brand names abound in the modern marketplace; the names "Vitabath" (bath products), "Duracraft" (household fans), and "Hydrovive" (shampoo), for example, each represent a combination of two English language morphemes.

The morphemic approach to brand naming carries a number of advantages for the marketer. For an English speaking consumer, for example, the morphemes contained in the names "Vitabath," "Duracraft," and "Hydrovive" are already represented in memory, thus aiding brand name learning. Moreover, since morphemes themselves are meaningful units, their use can result in a name with associations that support the desired brand image (Robertson, 1989). Thus, the name "Duracraft" suggests that the fans bearing this name are well-made and will last a long time. As such, this name would seem to satisfy at least two of the criteria identified by managers as important for brand names: memorability and elicitation of brand benefits (Kohli and LaBahn, 1997).

What happens, however, to the Duracraft name in the non-English speaking countries where this brand may be sold? Given that each language has its own unique set of morphemes, the advantages of the Duracraft name will not necessarily hold across the globe. This is not to say that no two languages share morphemes, but rather that the morphemic combination of any name is unlikely to be meaningful to consumers in markets where the brand with that name is sold. For example, "dur" is a morpheme in French with a similar meaning as the English language morpheme "dur;" however, this same morpheme does not exist in Korean. Thus one could make a distinction between native (or familiar) and foreign (or unfamiliar) morphemes and say that "dur" is a native morpheme for both English and French speakers, but a foreign morpheme for Korean speakers.

Despite the advantages of familiar morphology, some managers choose names that consist of non-native morphemes even within their domestic markets. Managers wanting to elicit a country-of-origin effect, for example, will likely use morphemes that are generally recognized as originating from the language intended as the country-of-origin (e.g., French-sounding Mont Blanc, a German brand) (Harris, Richard Jackson, Ruth E. Strum, Michael L. Klassen, and John I. Bechtold, 1986). However, the use of unfamiliar morphemes goes beyond foreign-sounding names. Even Nike, the all-American brand has a name consisting of a Greek free morpheme meaning "victory." While certainly meaningful for the brand, few consumers outside of Greece would ever make this association between the name and the brand unless the company were to make this association explicit, perhaps through advertising. Of course, the company could have chosen a name like "Victory" (or some other name containing the free morpheme

"victor"). In this case, however, the name would have likely been less distinctive and distinctiveness is yet another important naming criteria according to marketing managers (Kohli and LaBahn, 1997).

As these examples suggest, the morphological choices in brand naming are laden with tradeoffs; whereas familiar morphemes (or combinations thereof) are likely to aid learning and elicit associations, unfamiliar morphemes (or combinations thereof) likely appear more distinctive. The degree to which the morphology of a brand name serves to satisfy the various naming criteria identified by managers should depend, however, upon the presentation mode of the name. Thus, the next section considers presentation mode as a determinant of name processing.

Lexical Access and Presentation Mode

The process by which verbal information accesses the lexicon depends upon the manner in which it is presented. It is widely accepted that English speakers rely on sound-based coding, whether acoustic or phonological, for auditorily-presented information (Salamé and Baddeley, 1982; Tyler and Frauenfelder, 1987). In other words, upon exposure to an orally-presented word, a listener searches his lexicon for matching sounds. If a matching sound or combination of sounds is identified, then the word is recognized. Such recognition may occur before the listener has heard the word completely, particularly if "the word recognition point corresponds to its uniqueness point, where the word's initial [sound] sequence is common to that word and no other" (Harley 1995, p. 53).

The processing of visually-presented information, however, is less well understood

and therefore much more widely studied. Based on the results of a variety of experiments (e.g., McKay, 1972, Meyer, Schvaneveldt, and Ruddy, 1974; Rubinstein, Lewis, and Rubinstein, 1971; Shulman, Hornak, and Sanders, 1978), many researchers originally supported the notion of phonological recoding. According to the phonological recoding hypothesis, readers rely on a learned set of grapheme-to-phoneme correspondence rules "that translate letter patterns into the sound patterns produced by the auditory analysis of spoken words" (Garnham, 1985, p. 57). One attractive feature of this hypothesis is its consistency with language learning. That is, "spoken language is prior to written language- both in the development of the species and of the individual- and learning to read is, at least initially, learning that certain visual patterns correspond in an orderly way to words already in the speaking vocabulary" (Garnham, 1985, p. 57).

A simple example of phonological recoding can be provided by a word that appears in this sentence: the word "phonological." Typically, the grapheme "p" corresponds to the phoneme /p/ as in the word "plant" and the grapheme "h" corresponds to the phoneme /h/ as in the word "house." An English speaker knows, however, that these letters, when appearing consecutively, can correspond to different phonemes under certain circumstances. Such is the case with the word "phonological." Here, a reader must rely on a combination of correspondence rules and word formation rules which together indicate that the graphemes "p" and "h," when appearing consecutively at the beginning of a word, are equivalent in sound to the letter "f." This sound is written phonologically as /f/ and is the same phoneme that appears in the words "foliage," "feather," and "forest."

Despite its appeal, the phonological recoding hypothesis was seriously challenged by an experiment conducted by Kleiman (1975). Having found that sound interferences prevented subjects from classifying orally-presented information but not visually-presented information, Kleiman (1975) proposed that visually-presented words can either gain direct access to the mental lexicon or indirect access via phonological recoding. Despite the popularity of such dual access theories (Garnham, 1985), the circumstances determining access route remain unclear. Noting that children use the grapheme-to-phoneme conversion route by spelling out words letter by letter when they learn to read, Harley (1995) suggests that phonological recoding may only be used for learning new words and pronouncing non-words. In the only study of its kind within the marketing literature, Schmitt, Pan, and Tavassoli (1994) found disconfirming evidence in that subjects performed better at a visual recognition task than an auditory recognition task when a non-word was visually presented as a brand name.

The results obtained by Schmitt, Pan, and Tavassoli (1994) might be reconciled with past results within the linguistic literature given the latest thinking that reliance on phonology is strategically contingent. In developing the newest models of visual word recognition, researchers have been seeking to account simultaneously for a multiple of potential influences on reading performance including but not limited to orthography, phonology, morphology, and word frequency (e.g., Coltheart and Rastle, 1994; Jacobs and Grainger, 1994; Massaro and Cohen, 1994; Milota, Widau, McMickell, Juola, and Simpson, 1997). Within these models, "whether phonological information is maintained or suppressed... depends on its overall usefulness for the task" (Milota, Widau,

McMickell, Juola, and Simpson, 1997, p. 333). In the study performed by Schmitt, Pan, and Tavassoli (1994), then, subjects may have relied on visual encoding because 1) the brand names had multiple pronunciations leading subjects to believe, whether consciously or subconsciously, that visual encoding would result in more accurate memory for those brands or 2) the brand names contained letter strings that are unfamiliar in the native language of the subjects (i.e., non-native morphemes) and therefore potentially difficult to pronounce. In either of these cases, phonological recoding would have not necessarily been "useful for the task."

Summary

In summary, brand name processing, like word processing, is subject to a combination of internal and external influences. Internal influences are the lexical tools available to aid in name processing. These tools include lexical entries for morphemes as well as various language rules such as word formation rules and correspondence rules (phoneme-to-grapheme and grapheme-to-phoneme). The external influence of exposure mode (visual or auditory) can help foster or impede such lexical access depending on the familiarity of the verbal stimuli. The next chapter examines the effect of these internal and external influences on the processing of brand names and in doing so, offers a set of hypotheses that predict brand name performance on the various naming criteria deemed important by managers.

CHAPTER 3

HYPOTHESIS DEVELOPMENT

Managers evaluate and choose brand names based on a variety of criteria, most importantly their connotations, distinctiveness, ease of pronunciation, overall liking by consumers, and ease of recognition and recall (Kohli and LaBahn, 1997). Morphemic familiarity of a brand name and the manner in which the name is presented (i.e., visually or auditorily) will likely affect the performance of the name on these criteria. This chapter develops a series of hypotheses that seek to explain the relationship between both brand name morphology and exposure mode and the various naming criteria identified by managers.

Distinctiveness

A morpheme is a unit of language that carries information about meaning or function. Each language has its own set of morphemes although there may be some morphemic overlap between related languages. In both English and French, for example, the letter 's' is a bound morpheme indicating plurality. However, the morphemes to which the 's' will be attached will differ greatly between the languages. For example, in French 's' can be attached to the free morphemes 'maison' (house), 'chat' (cat), and 'ordinateur' (computer). Given that these particular morphemes do not exist in English, an English-speaker would not attach meaning (or at least not the proper meaning) to their letter and/or sound combinations. In this particular case, then, the letter and sound combinations of the French morphemes would be unfamiliar.

The above discussion is not meant to suggest that any particular morphemic combination in one language will be necessarily unfamiliar to a non-speaker of that language. There are, for example, free morphemes or morphemic combinations that are quite similar if not the same across languages. Such commonalities often derive from either a common root (e.g., Latin) or from word borrowing (Hertzler, 1965; Thomas 1991). For example, the word 'car' exists in both French and English. This word refers to a mode of transportation in both languages, although the specific meaning differs slightly (i.e., in French 'car' refers to a coach or tour bus). Given previous exposure to this free morpheme in his native language, an English speaker who is learning French (or a French speaker learning English) would already have a lexical entry for 'car.'

When a morpheme is unfamiliar, it is not represented in the lexicon and has likely never before been seen or heard. As such, a morphemically unfamiliar name should be perceived as more distinctive than a morphemically familiar name. This should be the case regardless of presentation mode. Consider the name *Häagen Dazs*. Visual presentation of this name makes it clear that this name was not generated from English language morphemes. Certainly some of its foreign features, such as the umlaut and the double "a," cannot be detected in auditory exposure. As such, an English speaking consumer who hears this name might expect it to be spelled something like "hagindas." While this name does not appear to violate any English word formation rules, it does not make use of English language morphemes. Relative to a name that does indeed make use of such morphemes, then, this name would be considered more distinctive. As such, it is hypothesized that:

H1: Consumers are more likely to perceive a morphemically unfamiliar brand name as more distinctive than a morphemically familiar brand name.

The previous hypothesis posits that a morphemically unfamiliar brand name will be perceived as more distinctive than a morphemically familiar name regardless of exposure mode. However, it should be the case that exposure mode does influence the perceived distinctiveness of morphemically unfamiliar names. Returning to a previous example, auditory presentation of the name *Häagen Dazs* does not capture many of the distinctive features of this name. In fact, its pronunciation allows for an alternate spelling (e.g., *Hagindas*) which, while morphemically unfamiliar, does not violate English word formation rules. Visual presentation, however, makes explicit the distinctive features of the name. As such, it is hypothesized that:

H2: Consumers are more likely to perceive a morphemically unfamiliar brand name as more distinctive when that name is presented in the visual rather than auditory mode.

In contrast, the perceived distinctiveness of morphemically familiar brand names should not be affected by exposure mode. In this case, the lexicon already contains entries for the morpheme(s) comprising the brand name. These entries contain all graphemic and phonemic information relevant to the morphemes they represent. Given that one lexical entry contains both types of information (i.e., graphemic and phonemic with the appropriate correspondence rules linking the two), the same lexical entry should be

activated upon visual exposure as upon auditory exposure. As such, it is hypothesized that:

H3: Presentation mode will have no effect on the perceived distinctiveness of morphemically familiar brand names.

Ease of Pronunciation

Given that morphemically familiar names can be processed relatively easily and efficiently, consumers are likely to perceive them as easy to pronounce. On the other hand, the effort required to pronounce a morphemically unfamiliar name is likely to result in either an inability, or perhaps a lack of confidence, with regard to properly pronouncing the name (Durso and Shore, 1991). As such, it is hypothesized that:

H4: A morphemically familiar brand name will be easier to pronounce than a morphemically unfamiliar brand name.

When a name is presented auditorily, consumers need only mimic the sounds they hear to properly pronounce the name. In contrast, visual presentation requires grapheme-to-phoneme transcription for pronunciation. For morphemically familiar names, the consumer can apply known grapheme-to phoneme transcription in order to pronounce the name. Such transcription requires minimal effort on the part of the consumer. In fact, some researchers argue that grapheme-to-phoneme transcription occurs both regularly and automatically upon visual exposure to familiar verbal stimuli (Lesch and Pollatsek, 1993; Luo, Johnson, and Gallo, 1998). Given their knowledge base and the ease with which

they can apply this knowledge base to familiar stimuli, a morphemically familiar name is no more or less difficult to pronounce when that name is presented visually than when it is presented auditorily. As such, it is hypothesized that:

H5: Presentation mode should have no effect on the ease of pronunciation of morphemically familiar brand names.

In contrast, the ease of pronunciation for morphemically unfamiliar names will likely depend on exposure mode. Upon visual exposure, the consumer will recognize, whether consciously or subconsciously, that the name does not consist of English language morphemes (Harris, Richard Jackson, Ruth E. Strum, Michael L. Klassen, and John I. Bechtold, 1986). As a result, a consumer who attempts to pronounce the name will likely do so with limited confidence. In other words, he may apply known grapheme-to-phoneme correspondence rules, but doubt their applicability. This lack of confidence may result in hesitation, false starts, or multiple pronunciations, all of which would indicate pronunciation difficulty (Garnham, 1985). In the most extreme scenario, the consumer may not attempt to pronounce the name at all. The risk, of course, is that the consumer searching for the brand in a store may not find it because he is reluctant to communicate his request to a salesperson or is simply unable to communicate it coherently.

Unlike visual exposure, auditory exposure does not require such lexical knowledge for proper pronunciation. More specifically, the consumer need only mimic the pronunciation. It may be the case that the consumer hesitates a bit in pronouncing the

name, particularly if the sound combinations are difficult ones. However, the difficulty in properly pronouncing the name should be dramatically reduced compared to that following visual exposure to the name. As such, it is hypothesized that:

H6: A morphemically unfamiliar brand name will be easier for a consumer to pronounce when it is presented auditorily than when it is presented visually.

Associations

As verbal stimuli, brand names contain a variety of features (e.g., letters, sounds, and meaning) to which the consumer may or may not attend. More specifically, consumers can process any given brand name at a variety of levels. Based on comparative studies of various encoding strategies (e.g., Elias and Perfetti, 1973), semantic processing is considered the deepest level of processing. In semantic processing, the individual focuses on the meaning of the verbal stimulus and typically relates this meaning to the context (e.g., sentence or story) (Chaffin, 1997). When semantically processing a meaningful brand name, then, a consumer would relate the meaning of the name to the brand or product (Durgee and Stuart, 1987; Robertson, 1989). These associations between the name and the brand or product are referred to as product-related thoughts.

At lower levels of processing, individuals do not attend to the semantics of verbal stimuli but rather focus on the surface features such as letters or sounds (Elias and Perfetti, 1973). Such a low level of processing can be induced by the task as when, for example, a teacher instructs an elementary school student to count the number of vowels that are present in a particular word. Surface processing, however, may also be induced

by the verbal stimulus itself. Chaffin (1997) found, for example, that whereas high-familiarity stimuli tend to elicit semantically-based responses, low-familiarity and novel verbal stimuli elicit surface string responses such as same-sound responses (e.g., rhyme), sound-mediated responses (i.e., associates of same-sounding words that act as mediators, e.g., "persimmon" and "spice" are related through the sound-mediator "cinnamon"), similar spelling responses as well as responses with no identifiable relation to the stimulus.

Durso and Shore (1991) obtained similar results with highly unfamiliar stimuli including words mistaken by subjects to be non-words. More specifically, they found that although subjects may extract meaningful information from highly unfamiliar letter strings, they are often unable or unwilling to use it. Within a branding context, these results along with those obtained by Chaffin (1997) suggest that consumers are more likely to verbalize surface feature-related thoughts than product-related thoughts following exposure to a morphemically unfamiliar brand name. As such, it is hypothesized that:

H7: A morphemically unfamiliar brand name is likely to elicit more surface feature-related thoughts than product-related thoughts.

Unlike the morphemes of a morphemically unfamiliar name, those contained in a morphemically familiar name are already represented in the lexicon and are thus fairly easy to process. As such, consumers are likely to engage in semantic processing (Chaffin, 1997). Such processing, however, is also likely to be a function of exposure mode. More specifically, Peca, Reid, and Mason (1982) found that individuals are more likely to engage in semantic processing of verbal stimuli following visual exposure to those stimuli

than following auditory exposure. As such, it is hypothesized that:

H8: A morphemically familiar brand name is likely to elicit more product-related thought than surface feature-related thoughts, particularly following visual exposure to the name.

Attitude Toward the Brand

Robertson (1989) points out that the use of morphemes, which are themselves meaningful units, can result in a brand name with associations that support the desired brand image (Robertson, 1989). Thus, returning to a previous example, the name "Duracraft" suggests that the fans bearing this name are well-made and will last a long-time. Various studies have suggested that consumers hold more positive attitudes toward a brand when its name conveys an attribute or provides other meaning about the brand (Durgee and Stuart, 1987; Robertson, 1989; Zinkhan and Martin, 1987). While it may be the case that a morphemically unfamiliar name induces some sort of association based, for example, on the initial phonemes (see Robertson, 1989 for a review of phonetic symbolism), these associations will be weaker than those generated by a morphemically familiar name. Consumers may also be unwilling to rely on the meaningful information that they extract from a morphemically unfamiliar brand name (Durso and Shore, 1991). As such, it is hypothesized that:

H9: Consumers will have a more positive attitude toward a brand with a morphemically familiar name than a brand with a morphemically unfamiliar

name.

In considering the role of brand name in attitude formation, one must also account for the possible influence of exposure mode. It has already been suggested that consumers are more likely to process the semantic features of a morphemically familiar name when that name is presented visually than when it is presented auditorily. Given the relationship between brand meaning and attitudes, it is hypothesized that:

H10: Consumers will have a more positive attitude toward a brand with a morphemically familiar name when the name is presented in the visual rather than the auditory mode.

If it is the meaning of the brand name that drives brand attitudes as various researchers suggest, then morphemically unfamiliar brand names would appear to be at a disadvantage. Again, however, exposure mode will likely play a role. More specifically, visual exposure to such a name should serve to emphasize the unfamiliarity of the brand name morphemes since consumers tend to process verbal stimuli rather deeply in this mode. In the auditory mode, however, consumers are less likely to focus on the meaning (or lack thereof) of the name. In addition, as pointed out earlier, auditory exposure should also ease any hesitancy or difficulty in pronouncing a morphemically unfamiliar name. As such, it is hypothesized that:

H11: Consumers will have a more positive attitude toward a brand with a morphemically unfamiliar name when the name is presented in the auditory

rather than the visual mode.

Memory

As is the case with any piece of information, memory for a brand name requires that the name be encoded, a process determined by motivation, ability and opportunity (Batra and Ray, 1986; MacInnis, Moorman, and Jaworski, 1990; Petty and Cacioppo, 1986; Roberts and Maccoby, 1973; Schmalensee, 1983; Wright, 1981). Within an advertising context, Keller (1993, p. 14) defines these antecedents as follows:

- Motivation to process refers to a person's willingness or desire to expend mental effort and devote mental resources or capacity to processing information from an ad.
- Ability to process refers to a person's mental resources, which are relevant for processing the information in an ad.
- Opportunity to process... refers to the extent to which external conditions are present in the environment conducive to processing information from an ad.

Encoding within memory will not occur in the absence of any one of these variables. In other words, the consumer must simultaneously be sufficiently motivated and able and have sufficient opportunity to encode a brand name. All else held constant, a consumer will be no less motivated or have no less of an opportunity to encode a brand name when that name is a morphemically unfamiliar one than when it is a morphemically familiar one. In fact, a consumer may be more motivated to encode the morphemically unfamiliar name since the distinctiveness of the name may increase its salience (Eysenck,

1979; Friedman, 1979; Gregg 1976; Schulman and Lovelace, 1970). Such heightened motivation, however, cannot account for the fact that a consumer's ability to encode a name will, at least in part, depend on the morphemic familiarity of the name. More specifically, the ability to comprehend, receive, and encode information is limited by a consumer's knowledge structure (Alba and Hutchinson, 1987). As such, a consumer is likely to have difficulty remembering names comprised of unfamiliar morphemes. On the other hand, he is likely to have a relatively easy time remembering brand names comprised of familiar morphemes since these morphemes are already represented in the lexicon.

A second factor determining consumer memory for brand names is the relationship between exposure and memory modes. Figure 1 depicts four possible scenarios:

Figure 1

EXPOSURE/MEMORY GRID

		Memory	
		Written (Visual)	**Spoken (Auditory)**
Exposure	**Written (Visual)**	Exposure/Memory Match	Exposure/Memory Mismatch
	Spoken (Auditory)	Exposure/Memory Mismatch	Exposure/Memory Match

In a mismatch, two possible scenarios for encoding and retrieval emerge: 1) the consumer encodes the information in both modes upon initial exposure by performing on-line grapheme-to-phoneme or phoneme-to-grapheme transcription and then retrieves the requested information directly from memory or 2) the consumer encodes the information

in the mode presented, retrieves this information, and then performs on-line transcription in order to present the information in the requested memory mode. Although these scenarios differ in the timing of transcription, they both require that transcription be performed. Proper performance in either case, then, requires knowledge of applicable grapheme-to-phoneme and phoneme-to-grapheme correspondence rules, an unlikely scenario in the case of morphemically unfamiliar brand names. Such knowledge is not necessary when exposure and memory modes match, since the consumer is asked to retrieve the brand name as it was originally presented. The varying role of correspondence rule knowledge requires that any investigation of consumer memory for brand names consider the difference between matched and mismatched modes. As such, the forthcoming hypotheses regarding consumer memory for brand names incorporate this distinction.

Memory Tasks: Recall versus Recognition

Information stored in memory may be retrieved in a number of different but related ways. Lynch and Srull (1982) explain that retrieval tasks in a decision making environment can be viewed as a continuum where at one extreme, consumers make pure stimulus-based judgements and at the other extreme, they make pure memory-based judgements. The difference between the two types is the presence or absence of relevant information. Theoretically, three possibilities emerge: 1) consumers are presented with no relevant information and must rely completely on memory, 2) consumers are provided with all relevant information and therefore do not need to rely on memory, and 3)

consumers are provided with some relevant information which is used in conjunction with information contained in memory. Alba, Hutchinson, and Lynch (1991) point out that in reality, consumers are unlikely to make pure stimulus-based judgements, but will often rely on memory to sift through the cluttered and complex cues (e.g., on packaging) which are used in the marketplace to remind consumers of brands and brand information to which they were previously exposed.

Within the social science literature, free recall and recognition tasks are used to evoke memory-based and stimulus-based judgements respectively (Lynch and Srull, 1982). It is generally accepted that free recall is "a two-stage process in which a person must independently retrieve a particular item and then perform some recognition check on whether, in fact, the item was present in the particular context" (Lynch and Srull, 1982, p. 21). Recognition, on the other hand, is thought to bypass the retrieval stage and only involve the single discrimination or recognition check stage (Nedungadi, Mitchell, and Berger, 1993) in which the familiarity strength of the item is compared to some criterion (cf. Mandler, 1980). The differences between the two processes suggest that an item that can be recalled can also be recognized but that the reverse will not necessarily hold. In other words, difficulty with the first stage of the retrieval process will prevent an item from being recalled but would not prevent an item from being recognized since recognition does not require this stage.

The hypotheses offered in the next two subsections draw on the distinction between recognition and recall, thereby incorporating the notion that memory may depend on the required task. More specifically, these sections examine the influences of

morphemic (un)familiarity and the relationship between exposure and memory modes in determining a consumer's ability to recognize and recall brand names.

Exposure/Memory Match

Memory for a particular item often depends on context (Lynch and Srull, 1982). Although context may be operationalized in a variety of ways, the linguistics literature typically refers to the context of novel stimuli as either familiar or unfamiliar. Within this literature, it has been found that novel words capture the attention of subjects when presented among familiar words (Johnston, Hawley, Plewe, Elliott, and DeWitt, 1990). As such, novel words have also been found to encourage deeper processing than familiar words (Friedman, 1979; Loftus and Mackworth, 1978). Based on these findings, one would expect a positive relationship between morphemic unfamiliarity and depth of processing since brand names composed of unfamiliar morphemes are more novel than those composed of familiar morphemes.

According to the literature, such novelty can have a marked effect on memory, particularly recognition. More specifically, the distinctiveness hypothesis posits that unique items, such as absolutely or contextually-novel words (Friedman, 1979; Gregg 1976; Schulman and Lovelace, 1970) are more distinctively encoded than familiar items (Eysenck, 1979), thereby increasing recognition. In a more recent study, Dorfman (1994) found corroborative evidence that the deep processing elicited by novel verbal stimuli can indeed increase recognition, thereby suggesting that consumers may be more likely to recognize morphemically unfamiliar brand names than morphemically familiar brand

names. As such, it is hypothesized that:

H12: When exposure and memory modes match, consumers are more likely to recognize a morphemically unfamiliar brand name than a morphemically familiar brand name.

The relevant literature on recall of novel stimuli predicts a different relationship. More specifically, Meyers-Levy and Tybout (1989) and Meyers-Levy, Louie, and Curren (1994) have shown that within a marketing context extreme incongruity between a stimulus and mental representations held in memory impedes recall. Mandler (1982) reasons that such incongruity requires both cognitive elaboration and cognitive effort in order to resolve the incongruity. A morphemically unfamiliar brand name requires substantial changes in cognitive structure for resolution to occur. More specifically, the consumer would need to create a lexical entry for this name, an unlikely event. Of course, theoretically, a lexical entry could be created upon a single exposure to a morphemically unfamiliar name.[1] However, in this case, the number of linkages within the associative network would be few and the association fairly weak. Given that the number of links and the strength of associations are positively related to recall, the consumer is unlikely to recall a morphemically unfamiliar name.

Unlike morphemically unfamiliar names, the components of a morphemically

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[1] There has been some disagreement in the linguistics literature with regard to whether the lexicon contains entries for words composed of multiple morphemes in addition to the entries for the morphemes themselves. It is fairly safe to assume, however, that consumers likely create one entry for an entire morphemically unfamiliar name since, in this case, they would not necessarily know where one morpheme ends and the next begins.

familiar name are already represented in the lexicon. Given the presence of pre-existing representations for these components and thus, the relative frequency with which these components have been accessed in the past for a variety of verbal tasks, such brand names are likely to be more easily recalled. As such, it is hypothesized that:

H13: When exposure and memory modes match, consumers are more likely to recall a morphemically familiar brand name than a morphemically unfamiliar brand name.

Based on literature within the fields of linguistics, marketing, and psychology, the hypotheses developed thus far suggest that the influence of morphemic (un)familiarity on memory depends on the memory task. More specifically, they suggest that in recall names composed of familiar morphemes hold an advantage over those composed of unfamiliar morphemes whereas the reverse is true in recognition. These hypotheses would seem to suggest that marketers should choose the morphology of their brand names based on the more important memory task for their product categories. However, such a conclusion would be premature at this point since these relationships have only been shown to hold when exposure and memory modes match. The following section examines the relationship between morphemic (un)familiarity and memory when exposure and memory modes do not match.

Exposure/Memory Mismatch

The modern marketplace often requires that consumers use visually-presented

information auditorily and auditorily-presented information visually. A consumer looking to buy a brand she heard advertised on the radio, for example, must visually recall the brand name in order to include it on her written shopping list and then must visually recognize the brand name as it appears on product packaging. Similarly, a consumer interested in purchasing a brand appearing in billboard advertising may have to recall the brand name in order to ask for it in a store or recognize the brand name when said aloud by a store clerk. These scenarios share a common feature; in all cases, the consumer is exposed to the brand name in one mode but needs to remember it in another. When the brand name is composed of unfamiliar morphemes, this mismatch between exposure and memory modes should have a significant effect on the consumer's ability to remember the name. As such, this section examines memory for brand names when exposure and memory modes mismatch.

According to the encoding specificity principle within the literature on memory, "specific encoding operations performed on what is perceived determine what is stored, and what is stored determines what retrieval cues are effective in providing access to what is stored" (Tulving and Thomas, 1973, p. 369). In essence, this principle makes three assertions 1) that consumers can only encode that which they perceive, 2) that consumers can only recall that which they encode, and 3) that reinstatement of the encoding context at the time of retrieval will increase recall (Horton and Mills, 1984). In conducting coordinated marketing campaigns, marketers demonstrate their understanding (whether implicit or explicit) of this principle; repeated use of the same slogans, graphics, and colors in advertising and on promotional materials increases the likelihood that a company's

message regarding a product will be perceived and encoded. The reappearance of these slogans, graphics, and colors on product packaging then serves as a cue to aid recall.

In many cases, a consumer exposed to a brand name perceives both the orthography and phonology of the name regardless of presentation mode. Suppose, for example, that an American consumer is looking at a print ad for Vitabath body lotion. Assuming that the consumer is literate, she will directly perceive the orthography of this brand name since it is provided in the ad for her. This consumer, however, can also perceive the phonology of the brand name by applying English language grapheme-to-phoneme correspondence rules and "sounding out" the name, whether aloud or silently. Barring any sort of language deficiency, this process will result in proper phonological encoding and decoding, particularly since the brand name makes use of letter and sound combinations appearing in legitimate words within the English language.

Proper phonological encoding and decoding of a printed brand name, however, is not limited to brand names making use of obvious word components. Rather, transcription of a brand name from one mode to another (i.e., auditory to visual or visual to auditory) only requires that a consumer rely on the grapheme-to-phoneme and phoneme-to-grapheme correspondence rules contained in her lexicon. Thus, upon first-time visual presentation of a brand name such as "Motrin," English-speaking consumers could apply their stored grapheme-to-phoneme correspondence rules and properly process the phonological properties of the intended brand name. On the other hand, if they had heard an announcer say "Motrin" as a brand name during television or radio commercials, they could have applied their stored phoneme-to-grapheme correspondence rules and

properly process the graphemic properties of the brand name.

In the above example, American consumers can properly process the brand name "Motrin" because it adheres to English word formation rules, but do they? Durso and Shore (1991) found that individuals tend to resist applying their language knowledge to highly unfamiliar verbal stimuli. Consider the case where a consumer hears a radio ad for a brand with a morphemically unfamiliar brand name. Given the reliance on phonology to encode auditorily-presented information, the lexical entry created upon initial auditory exposure for the foreign brand name will likely include only phonological properties. In a spoken recall task, the consumer can rely on this lexical entry whereas in a written recall task, she will have to perform phoneme-to-grapheme transcription based on the correspondence rules of a known language. If these rules do not apply, or if she refuses to apply them, she will not be able to accurately recall the brand name in the written mode.

Visual exposure to a morphemically unfamiliar brand name results in a similar situation when the recall task is auditorily-based. If a consumer perceives her native grapheme-to-phoneme correspondence rules as inapplicable to a morphemically unfamiliar brand name and/or refuses to apply those rules, the lexical entry created for that brand name upon initial visual exposure may only include the orthographic properties of the brand name. For the same reason, this consumer would likely be unwilling to perform on-line grapheme-to-phoneme transcription during a recall task, or at the very least, be unwilling to verbalize the results of such transcription.

Unlike morphemically unfamiliar names, the components of a morphemically familiar name are already represented in the lexicon. Given the presence of pre-existing

representations for these components and thus, the relative frequency with which these components have been accessed in the past for a variety of verbal tasks, such brand names are likely to be easily recalled. In addition, the consumer will be able and willing to perform grapheme-to-phoneme and phoneme-to-grapheme transcriptions having done so before for these morphemes and being confident that the rules she is using do indeed apply. As such, it is hypothesized that:

H14: When memory and exposure modes mismatch, consumers are more likely to recall a morphemically familiar brand name than a morphemically unfamiliar brand name.

Although recognition is a simpler task, requiring only one of the two steps in the recall process (Nedungadi, Mitchell, and Berger, 1993), it too requires knowledge and application of grapheme-to-phoneme and phoneme-to-grapheme correspondence rules. A consumer who hears a radio ad for a brand with a morphemically unfamiliar name, for example, will need at least some understanding of the correspondence between brand name phonemes and graphemes in order to find that product on the shelf. Similarly, a consumer will need to perform grapheme-to-phoneme transcription in order to realize that a brand with a morphemically unfamiliar name recommended by a salesperson during a conversation and a brand with a morphemically unfamiliar name seen in a print ad are indeed one and the same. If consumers are indeed unwilling to apply their language knowledge to unfamiliar stimuli as Durso and Shore (1991) suggest, then the required transcription will not be performed. As such, it is hypothesized that:

H15: When exposure and memory modes mismatch, consumers are more likely to recognize a morphemically familiar brand name than a morphemically unfamiliar brand name.

As suggested by the above hypotheses, the relationship between morphemic familiarity and memory in mismatched modes should differ from that in matched modes, particularly with regard to recognition. Whereas consumers are expected to more easily recognize a morphemically unfamiliar than a morphemically familiar name in matched modes, the reverse is expected in mismatched modes; that is, when exposure and memory modes mismatch, consumers should be more likely to recognize a morphemically familiar name than a morphemically unfamiliar name. Such a reversal, however, is not expected in recall. Rather, recall of the morphemically familiar name is expected to exceed that of the morphemically unfamiliar name in both matched and mismatched modes.

Summary

This chapter examines the relationship between brand name morphology and exposure mode, on the one hand, and brand name performance on various naming criteria on the other hand. More specifically, this chapter develops a set of hypotheses that predict the performance of brand names on six naming criteria: distinctiveness, ease of pronunciation, associations, attitudes, recall, and recognition. In order to better understand the relationships predicted, these hypotheses were tested in an empirical study. The methodology used to test these hypotheses is the subject of the next chapter.

CHAPTER 4

METHODOLOGY

Subjects and Design

104 undergraduate business students participated in the study in exchange for course credit. The study employed a 2 x 2 between-subjects experimental design with morphemic familiarity of the brand name (morphemically familiar, morphemically unfamiliar) as the first factor and exposure mode (visual, auditory) as the second factor. All subjects were exposed to the target name and two fillers. The target name always appeared as the second name. Thus, subjects were first exposed to a filler name, followed by the target name, and then a second filler name. Such placement disguised the target while minimizing fatigue and inattention during exposure and evaluation of the target. Counterbalancing was used to account for any effect of filler exposure on target processing. More specifically, half of the subjects in each condition were visually presented with the first filler and auditorily presented with the second filler; the other half of subjects were auditorily presented with the first filler and visually presented with the second filler. This experimental design is depicted graphically in Table 1 below.

Table 1

EXPERIMENTAL DESIGN

	Imswut	**Plentron**
Visual Target	A: visual-auditory fillers B: auditory-visual fillers	A: visual-auditory fillers B: auditory-visual fillers
Auditory Target	A: visual-auditory fillers B: auditory-visual fillers	A: visual-auditory fillers B: auditory-visual fillers

Recruitment

Subjects were recruited from two undergraduate classes at Baruch College: a freshman-level honors section of Introduction to Business and a junior-level section of Marketing Principles. Given that this study assumes English language fluency, the linguistic diversity of the Baruch College undergraduate population presented a challenge. The honors section was thus chosen in an attempt to maximize the ratio of native English speakers to non-native English speakers. Approximately one half of the subjects came from this honors section.

Facility

The experiment took place in the Baruch College language lab. This facility accommodates 20 students at individual workstations each with the following equipment: 1) a computer connected to both the Internet and a centrally-controlled VCR, 2) an audio tape player connected to a central control, and 3) headphones with a microphone for tape recording. The tape players, head phones, and microphones were used in the experiment. The computers were turned off during the experiment.

Subjects were run in groups of twelve to fourteen across three mornings within a period of eight days. The small group size allowed for full participation even in the event that equipment failed at multiple workstations. All tape players and headsets were tested prior to each session in an attempt to detect equipment failure and malfunction. In listening to the tape recordings, however, it became apparent that some of the equipment used in the experiment did not perform up to par. More specifically, tape recordings for three subjects were either inaudible or otherwise damaged resulting in missing data for the recorded measures. Given that these subjects were each assigned to a different condition, the recording problems should not have adversely affected the results.

Stimuli

"Imswut" served as the morphemically unfamiliar name and "Plentron" served as the morphemically familiar name. The two filler names were "Fasdle" and "Burpaign" respectively. Each of the four names was imbedded within a web site address to make subjects more comfortable evaluating brand names independent of a product category. Thus, for example, "Imswut" was presented as "www.imswut.com."

The web site addresses (or names) were presented visually or auditorily depending on the condition. Each visually-presented name was centered on its own page and printed in large boldface font (see Appendix B). Auditorily-presented names were tape recorded by a male marketing faculty member who teaches upper level courses and likely did not know the subjects at the time of the experiment. This faculty member was instructed to enunciate clearly and to use the same speed and tone for each of the four names.

Brand Name Pretest

The four names used in the experiment (two target, two fillers) were chosen based on a pretest of 28 name candidates identified by Dorfman (1994) as either morphemically familiar, morphemically unfamiliar, or morphemically hybrid, that is, part familiar and part unfamiliar. Two groups of undergraduates each evaluated 14 of the name candidates on a variety of measures including English word likelihood, distinctiveness of the name, associations, attitudes, recall and recognition (see Appendix C). The English word likelihood measure served to test the Dorfman (1994) classification of the name candidates as morphemically familiar, unfamiliar, or hybrid. The remaining dependent measures served as a test of the measures themselves as well as a test of the performance of each name. The surveys also included a series of questions regarding Internet expertise and demographic questions such as gender, age, and native language.

Target names were selected based on their rating strength on the dependent measures, most importantly the word likelihood criterion (low for the morphemically unfamiliar, high for the morphemically familiar) and on a lack of significant differences in word likelihood ratings between native and non-native English speakers. This process yielded seven morphemically familiar brand name candidates and six morphemically unfamiliar brand name candidates. These name candidates were submitted to further pretesting in order to identify those names that sound most like brand names. Based on this pretest, "Plentron" and "Imswut" were selected for the experiment.

The filler names were chosen based on their neutral ratings across all dependent measures, but most importantly the word likelihood criterion, and their lack of significant

differences in word likelihood ratings between native and non-native English speakers. This process yielded seven filler name candidates. "Burpaign" and "Fasdle" were selected at random from among these seven.

Experimental Procedure

Once all session participants were seated, the researcher distributed blank cassette tapes and instructed subjects to put the tape in the tape player and close the tape player door. After checking that all tapes were properly cued, the researcher handed each subject an envelope containing three folders, one containing the visual stimuli, one containing five booklets of measures, and one empty folder for filing completed tasks. Subjects were asked not to open the envelope but to turn their attention to the instruction sheet attached to the front of the envelope. Subjects followed along as the researcher read these instructions aloud (see Appendix D). Reading the instructions, the researcher first thanked the subjects for their participation and explained, for the purpose of a cover story, that their participation will be helpful to marketers in naming their web sites. The researcher then reviewed the instructions for using the required equipment and explained the contents of the envelope.

Following this review, the researcher asked subjects to put on their headsets and then began the experiment. Subjects used the three folders in the envelope for the experimental tasks. The first folder, labeled "Web Sites," contained those web site addresses to be presented visually. The second folder, labeled "Questionnaires," contained five booklets of measures. The third folder, the Completed Tasks folder, started out

empty. Every time that a subject took out and used an item from either the Web Sites or Questionnaires folder, s/he was instructed to put it in the Completed Tasks folder. Subjects were always instructed as to when to retrieve items from the Web Sites and Questionnaires folders and also when to put those items in the Completed Tasks folder.

The web site addresses included in the study were presented one at a time. Subjects were presented with each name only once. Auditory exposure was centrally-controlled and subjects were told to listen closely before names were auditorily-presented. In the visual exposure conditions, subjects were told to take out the next item in the Web Site Addresses folder. As mentioned earlier, each visually-presented name was centered on its own page. Each of these pages was preceded by a cover page informing the subjects that s/he was not to turn the page until instructed to do so. Once they were instructed to turn the page, subjects were told to read the web site address once and then place that item in the Completed Tasks folder. In some cases, these instructions to put the item away had to be repeated. Thus, it is possible that subjects in the visual conditions had a greater opportunity to focus and/or process the names than did subjects in the auditory conditions.

After each name, subjects completed a booklet (Booklets 1, 2 and 3 respectively) containing all of the dependent measures with the exception of recall and recognition. Consistent with the cover story, subjects responded to the same measures following the filler names as they did for the target name (see Appendix E). After evaluation of the third and last name, subjects completed Booklet 4 which contained covariate measures, demographic questions, and two recall tasks, one visual and one auditory (see Appendix

E). After completing this booklet and placing it in the Completed Task folder, subjects began working on Booklet 5 which contained two recognition measures, a manipulation check of morphemic (un)familiarity for the target and filler names, and checks that subjects had never before seen or heard these names (see Appendix E). Typically, twenty minutes elapsed between the start of the experimental session and the completion of Booklet 5.

After all subjects in the session had completed Booklet 5, they were asked to return all of their materials to the envelope. Subjects were thanked and invited to speak with the researcher about the study after all experimental sessions had been run. Subjects were then handed a voucher to redeem for course credit and dismissed.

Measures

Subjects used a seven-point semantic differential scale to evaluate the distinctiveness (very distinctive/not at all distinctive) and ease of pronunciation (very easy /very difficult) of the name. A second more objective measure of ease of pronunciation required subjects to record their pronunciation of the name using the microphone and tape recorder provided. The researcher coded each subject's pronunciation as either completely correct, partially correct, or incorrect. False starts (e.g., "im... ims... imswut") and improper pronunciation of anywhere between one phoneme and one of the name's two syllables (e.g., "imsweet") was coded as partially correct. Improper pronunciations affecting more than one syllable and cases where subjects did not try to pronounce the name were coded as incorrect pronunciation. The recall measures taken in Booklet 4

were coded similarly.

Attitudes were accessed by averaging responses to three seven-point items (like/dislike, positive/negative, and good/bad). Subjects responded first to the attitude toward the brand name measures ($\propto$ = .93) followed by the attitude toward the brand measures ($\propto$ = .95). Intention to visit the web site (a measure comparable to the traditional 'intention to purchase' measure) was measured using a seven-point Likert scale.

Associations were accessed through a thought listing measure. Subjects' thoughts were content analyzed by two coders who were trained in both content analytic procedures and the application of the coding scheme used in this study (see Appendix F for the coding instructions). Coders were instructed to divide responses to the association measure into separate, though possibly related thoughts and apply the most appropriate code from the scheme to each thought. Thus, coders applied one of four broad codes (product-related, surface string-related, evaluative, and miscellaneous) to each thought with subcodes for surface-string related (one of six) and evaluative (positive, negative, neutral) thoughts. The initial agreement rate between coders was 82%. Disagreements were resolved through reconcilation.

Since a subject's interest in and experience with the Internet may have influenced the attention paid to the stimulus names, measures of Internet involvement and expertise were included as potential covariates. Internet involvement was measured using the ten-item involvement scale developed by Zaichkowsky (1994) for use with various product categories ($\propto$ = .90). Responses to these items were averaged in order to achieve a single

Internet involvement score. Internet expertise was measured using three seven-point scaled items, one measuring comfort level (very comfortable/very uncomfortable), one measuring experience (very extensive/not very extensive) and one measuring skill (high level of skill/low level of skill). Due to low correlations with the other two items, the comfort item was dropped and an average was taken across the experience and skill items in order arrive at a single Internet expertise score ($\propto$ = .86).

The 22-item Style of Processing scale developed by Childers, Houston, and Heckler (1985) was included for use as a potential covariate in recognition that a person's visual-verbal orientation may influence their ability to process auditorily and/or visually-presented verbal stimuli. The Childers, Houston, and Heckler (1985) scale was chosen over other published scales for its reported superior reliability ($\propto$ = 0.88), ease of administration, and demonstrated applicability within the field of consumer research. However, the scale did not perform as expected. Although it exhibited a passable reliability of 0.72 (Nunnally, 1978) items intended to measure the same construct were often weakly, and sometimes even negatively, correlated. As can be expected, then, factor analysis yielded an uninterpretable solution. Given the poor results, visual-verbal orientation as measured by the Style of Processing scale was dropped as a potential covariate. Therefore, it is unclear if and how subjects' preferred style influenced their responses to the various dependent measures.

It was thought that one possible explanation for the poor results could be that the scale is not valid for a linguistically diverse population. Given that languages like Chinese, Japanese, and Korean are based on ideographic systems, the distinction between visual and

verbal may not be applicable. Terry Childers, one of three researchers who developed the scale, agreed noting that "...Asian languages, particularly Chinese and Japanese, are more visually oriented in their verbal representations" (see Appendix G). In order to investigate this possibility, the analysis was repeated; this time, however, only the responses from native English speakers were included in the analysis. Although the scale exhibited a higher reliability ($\propto$ = .79), items intending to measure the same construct were still often weakly, and sometimes even negatively correlated. Thus, it appears that the linguistic diversity of the subjects does not account for the poor results.

A second explanation could be that the scale was too complex for the subjects in this sample. Although a pretest did not indicate such a problem, at least four subjects participating in the final study asked the researcher to define a word used in the scale. It is unknown how many more subjects had difficulty understanding the questions. As a third explanation, Childers points out that this scale is particularly sensitive to the time of administration (before or after exposure to the experimental stimuli) as well as to the proximity of its exposure to that of the experimental stimuli.

Summary

This chapter describes the experimental study designed to test the hypotheses developed in Chapter 3. The results of the experiment are reported in the next chapter.

CHAPTER 5

RESULTS

Prior Exposure and Manipulation Check

The two target names were fictitious and to the best of the researcher's knowledge, no brands or web sites had such names up to the time of the experiment. Thus, as expected, the vast majority of subjects reported having never before seen or heard the target names. More specifically, 100% of subjects in the morphemically unfamiliar conditions and 96.2% (2 out of 52 subjects) in the morphemically familiar conditions reported having never seen or heard the target name prior to the experiment. It is unlikely that the two subjects reporting prior exposure to "Plentron" had indeed seen or heard this name. Rather, the morphemic familiarity of the name likely generated false recognition (see Hirshman and Arndt, 1997 for a review of false recognition). As a result, these two subjects were retained and their responses were included in the data analysis.

The success of the morphemic (un)familiarity manipulation was tested by comparing the mean response of subjects in the morphemically unfamiliar conditions on the word likelihood question to that of subjects in the morphemically familiar conditions. With a mean of 3.10 for "Imswut" and a mean of 4.21 for "Plentron," the difference between the two name types on word likelihood was statistically significant ($Z = -3.07$, $p < .01$)[1], thereby offering evidence of a successful manipulation.

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[1] Given the ordinal nature of the experimental data, the medians were compared using the Wilcoxon test instead of the traditional t-test (Cody and Smith, 1991).

Despite such evidence, the word likelihood means indicate a weaker manipulation than that suggested by the pretest. In the pretest, the mean response for "Plentron" on the same word likelihood question was 4.54 whereas the mean response for "Imswut" was 1.81 (t-value = 8.15, $p < .01$).[2] A number of possible explanations exist for this weaker manipulation. One possibility is that exposure mode impacted word likelihood scores. Given that pretest subjects were only exposed to the name candidates visually, a fair comparison of the pretest versus experimental results would require division of the experimental data into two groups based on exposure mode. Among subjects in the visual condition, the mean response for the word likelihood of "Imswut" was 3.50 and the mean response for the word likelihood of "Plentron" was 4.30 ($Z = -1.46$, $p < .16$). Among subjects in the auditory condition, the mean response for the word likelihood of "Imswut" was 2.69 and the mean response for the word likelihood of "Plentron" was 4.12 ($Z = -3.04$, $p < .01$). Thus, it does not appear that exposure mode explains the manipulation strength differences in the pretest versus the experiment.

A second explanation may be that language background may have impacted word likelihood scores. In testing this possibility, analysis of variance (ANOVA) revealed a statistically significant effect of native language ($F(1, 98) = 9.76$, $p < .01$). On average (i.e., across the two name types), native English speakers offered lower word likelihood scores ($\bar{x} = 3.00$) than did non-native speakers ($\bar{x} = 4.08$). However, planned comparisons performed on the statistically significant interaction between name and native

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Given that pretest subjects were exposed to both names, these means were compared using a paired t-test for related samples.

language ($F(1, 98) = 4.83$, $p < .03$) reveal that this effect is primarily driven by differences in word likelihood scores for "Imswut," the morphemically unfamiliar name. More specifically, non-natives gave "Imswut" significantly higher word likelihood scores ($\bar{x} = 3.80$) than did natives ($\bar{x} = 1.95$) ($F(1, 98) = 13.94$, $p < .01$). In contrast, a planned comparison revealed no significant difference ($F(1, 98) = 0.44$, $p < .51$) between native ($\bar{x} = 4.36$) and non-native ($\bar{x} = 4.04$) word likelihood scores for "Plentron," the morphemically familiar name. Thus, it appears that the relatively weak manipulation in the experiment versus the pretest may be at least partially due to differences between native and non-native English speakers.

Other possible explanations are that the results are particular to the sample or that the study conditions influenced the word likelihood scores for "Imswut." Given that pretest subjects evaluated multiple names of each type (morphemically unfamiliar, morphemically familiar, and hybrid) as opposed to one name for a given type as in the final study, it may be that context (or lack thereof as in the final experiment) influenced word likelihood scores, particularly for the morphemically unfamiliar name. Context, then, may have exerted a strong influence on ratings for "Imswut" which appeared as the last of fourteen names on the pretest survey. In contrast, "Plentron" appeared sixth on this list and thus, may have been less influenced by context.

Preliminary Analyses

Five covariates were included in all analyses: age, gender, native language, Internet

involvement, and Internet expertise[3]. Descriptive statistics and other preliminary analyses revealed an imbalance in the distribution of covariate values across conditions thereby posing a statistical problem similar to that of non-orthogonal predictor variables in regression. More specifically, this non-orthogonality can potentially obscure the effects of individual variables of interest. Thus, in cases where the statistical model used to test the hypotheses yielded statistically insignificant results, the backward elimination variable selection procedure was used in order to uncover any such hidden effects (Johnson, 1998). As such, the data analysis represents an iterative learning process of deduction and induction (Box, Hunter, and Hunter, 1978) that is consistent with 'discovery-oriented consumer research' (Wells, 1993). Such an approach is likely to generate greater knowledge and convergence of theory and truth than that generated by theory testing alone (Box, Hunter, and Hunter, 1978; Wells, 1993). Such an outcome is particularly beneficial for our understanding of brand name processing since relatively few empirical studies have been done in this area.

To maximize the potential for uncovering any hidden effects, the initial model incorporated the main effects and all possible two-way interactions among the independent variables and covariates. The effects tested and subsequent results are summarized in tables throughout this chapter. Those main effects and interactions of theoretical interest and managerial relevance are discussed in greater depth. For lack of both degrees of

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Elimination of these covariates does not change the direction of the results reported nor does it make statistically significant effects of interest statistically insignificant (or vice versa).

freedom and theoretical basis, higher order interactions were not included.

In addition to the application of variable selection methods, non-orthogonality also calls for adjustments to correct for the conservative nature of the test statistic. More specifically, Hocking (1996) recommends adoption of a larger alpha than that typically used for inclusion of variables, particularly when using variable selection methods such as backward elimination. Thus, in accordance with this recommendation, the alpha cut-off for acceptance was adjusted to $\propto = 0.15$ from $\propto = 0.05$ for all subsequent analyses.

Distinctiveness

According to Hypothesis 1, consumers should perceive a morphemically unfamiliar name as more distinctive than a morphemically familiar name. Hypothesis 1 therefore predicts a main effect of name. Analysis of covariance (ANCOVA) revealed a statistically significant main effect of name ($F(1, 93) = 2.83$, $p < .10$). However, the analysis also revealed an effect in the opposite direction than that predicted. More specifically, the morphemically familiar name ($\bar{x} = 5.04$) was perceived as more distinctive than the morphemically unfamiliar name ($\bar{x} = 4.61$). Thus, Hypothesis 1 was rejected.

According to Hypothesis 2, consumers will perceive a morphemically unfamiliar name as more distinctive when it is presented in the visual rather than auditory mode. Hypothesis 3 posits, however, that exposure mode will have no effect on the perceived distinctiveness of morphemically familiar names. Taken together, these hypotheses predict a name × exposure interaction. A planned comparison revealed that the morphemically unfamiliar name was indeed perceived as more distinctive when presented visually ($\bar{x} =$

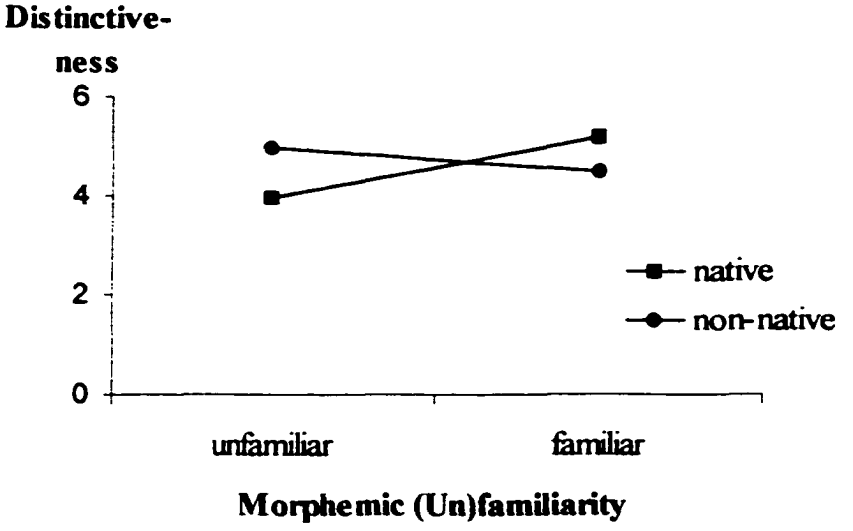
4.81) than when presented auditorily ($\bar{x}$ = 4.41); however, this effect did not achieve statistical significance ($F(1, 93) = 1.22$, $p < .28$). Thus, Hypothesis 2 was rejected. The analysis also revealed a lack of statistical significance ($F(1, 93) = 0.01$, $p < .94$) in perceived distinctiveness for morphemically familiar names when presented visually ($\bar{x}$ = 5.06) as when presented auditorily ($\bar{x}$ = 5.03). Thus, Hypothesis 3 was supported.

Given the difference in direction between the effect predicted by Hypothesis 1 and the observed effect, an attempt was made to further investigate the relationships among the variables. Toward this end, ANCOVA was performed with a model that incorporated the main effects and all possible two-way interactions among the independent variables and covariates. Backward elimination was then used to find the best model.

The results of this procedure revealed an interesting interaction between name and native language ($F(2, 89) = 5.28$, $p < .01$) as depicted graphically in Figure 2 below.

Figure 2

OBSERVED INTERACTION BETWEEN NATIVE LANGUAGE AND MORPHEMIC (UN)FAMILIARITY



Consistent with the results reported above (and inconsistent with Hypothesis 1), native English speakers rated the morphemically unfamiliar name ($\bar{x}$ = 3.97) as less distinctive than the morphemically familiar name ($\bar{x}$ = 5.18) ($F(1, 89) = 10.66$, $p < .01$). However, the opposite occurred among non-native speakers. More specifically, the non-native speakers rated the morphemically unfamiliar name ($\bar{x}$ = 4.96) as more distinctive than the morphemically familiar name ($\bar{x}$ = 4.49). However, a planned comparison revealed that this difference is not statistically significant ($F(1, 89) = 1.84$, $p < .18$)[4].

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[4] Since the backward elimination procedure yielding this model did not contain a main effect of native language, SAS could not perform a planned comparison to test the levels of this interaction. Thus, native language was added back to the model in order to obtain significant levels. This addition reduced the number of degrees of freedom in the numerator but does not affect the means reported.

Planned comparisons used to test the levels of the name × native language interaction also revealed a statistically significant difference between native and non-native on both the morphemically unfamiliar name ($F(1, 89) = 6.76$, $p < .02$) and the morphemically familiar name ($F(1, 89) = 3.44$, $p < .07$). The difference between these two groups suggests that native and non-native speakers use different criteria for rating the distinctiveness of a brand name. For native speakers, it may be that distinctiveness is a function of the strength of identity that a name offers a brand. More specifically, the more concrete (or less abstract) the meaning that can be derived from name, the stronger the identity that the name gives to the brand and thus the more distinctive the name and the brand appear. In this case, morphemically familiar names would hold an advantage over morphemically unfamiliar names. Given past reliance on morphemic knowledge (e.g., to process word semantics), lexical knowledge of morphemically familiar names should be rather well developed, at least in comparison to that of morphemically unfamiliar names. Thus, consumers would be rather confident in using morphemic meaning to draw conclusions about the brand and its identity.

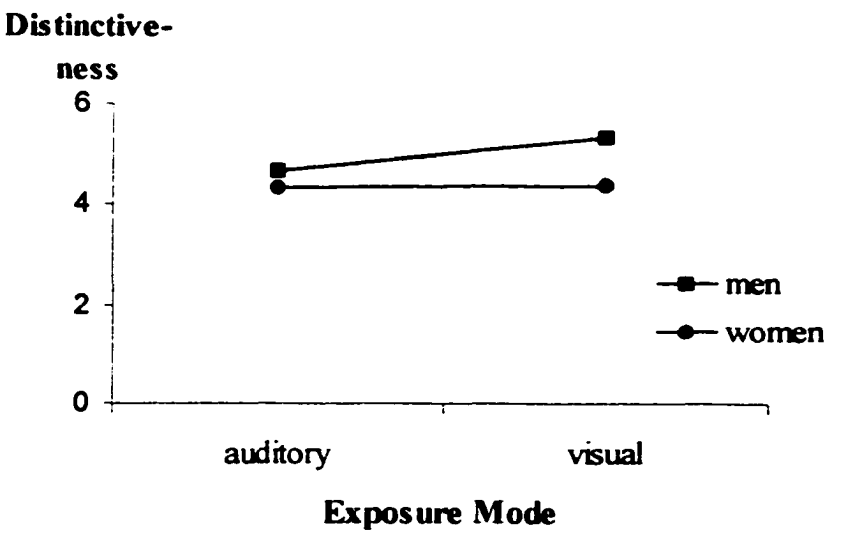
A non-native speaker's lexical knowledge of English, however, is not likely to be as developed as that of a native speaker. Thus, while all English language morphemes may be represented in the lexicon of the non-native speaker, the meanings attached to individual morphemes may be more abstract. Alternatively, the non-native speaker may be less confident than the native speaker in applying morphemic meaning to verbal stimuli and rely instead on a more superficial level of processing, based perhaps on graphemic or phonemic combinations in order to draw conclusions about the brand and its identity.

This finding would confirm, then, that level of processing is not only a function of the task or verbal stimulus (Chaffin, 1997) but also of individual differences. Given the importance of distinctiveness among managers as a naming criteria and the large numbers of non-native consumers in countries like the United States, this finding deserves greater investigation.

The backward elimination ANCOVA also revealed a statistically significant interaction between exposure and sex ($F(3, 89) = 3.64$, $p < .02$) as depicted graphically in Figure 3 below.

Figure 3

OBSERVED INTERACTION BETWEEN SEX AND EXPOSURE MODE



Men gave much higher distinctiveness ratings following visual exposure ($\bar{x} = 5.23$) than following auditory exposure ($\bar{x} = 4.65$). However, a planned comparison revealed that this difference is not statistically significant ($F(1, 89) = 1.03$, $p < .35$). With a mean of 4.38 following visual exposure and a mean of 4.35 following auditory exposure, women's distinctiveness scores would appear less affected by exposure mode. However, the planned comparison revealed that this difference is statistically significant result ($F(1, 89) = 2.54$, $p < .12$)[5].

Planned comparisons used to test the levels of the sex × exposure interaction also revealed a statistically significant differences between men and women following visual exposure ($F(1, 89) = 5.55$, $p < .03$) but a lack of statistical difference following auditory exposure ($F(1, 89) = 0.64$, $p < .45$). Recent research in psychology has demonstrated a relationship between gender and ability to process (e.g., Majeres, 1999; Shaywitz, Shaywitz, Pugh, Constable, et al., 1995). Such findings have been used to explain the differences in conversational skill and style between men and women. The results obtained in this study suggest that such differences are relevant in a consumer context as well.

Summary: ANCOVA was used to test the effect of morphemic (un)familiarity, exposure mode, and a number of covariates on the perceived distinctiveness of a brand

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[5] Since the backward elimination procedure yielding this model did not contain main effect of exposure or sex, SAS could not perform a planned comparison to test the levels of this interaction. Thus, both exposure and sex were added back to the model in order to obtain significance levels. This addition reduced the number of degrees of freedom in the numerator but did not affect the means reported.

name. Table 2 below summarizes the models tested and the results yielded for distinctiveness.

Table 2

SUMMARY OF MODELS TESTED FOR DISTINCTIVENESS

Variables Tested	Initial ANCOVA	Backward Elimination ANCOVA
Name	significant ($p < .01$)	significant ($p < .15$)
Exposure	not significant	not significant
Involvement	not significant	not significant
Expertise	not significant	significant ($p < .09$)
Language	not significant	not significant
Sex	significant ($p < .01$)	not significant
Age	not significant	not significant
Name*Exposure	not significant	not significant
Name*Involvement		not significant
Name*Expertise		not significant
Name*Language		significant ($p < .01$)
Name*Sex		not significant
Name*Age		not significant
Exposure*Involvement		not significant
Exposure*Expertise		significant ($p < .15$)
Exposure*Language		not significant
Exposure*Sex		significant ($p < .04$)
Exposure*Age		not significant
Involvement*Expertise		significant ($p < .09$)
Involvement*Language		not significant

Table 2 continued

Involvement*Sex		not significant
Involvement*Age		significant ($p < .07$)
Expertise*Language		not significant
Expertise*Sex		not significant
Expertise*Age		significant ($p < .10$)
Language*Sex		not significant
Language*Age		not significant
Sex*Age		not significant

Both models reveal a statistically significant effect of brand name morphemic (un)familiarity. However, this effect was opposite in direction to that predicted. Thus, Hypothesis 1 was rejected. The analyses also revealed a lack of statistical significance in perceived distinctiveness following visual versus auditory exposure to the name. Thus, in predicting that consumers will perceive a morphemically unfamiliar name as more distinctive when it is presented in the visual rather than auditory mode, Hypothesis 2 was rejected. Hypothesis 3 predicted that exposure would not affect the perceived distinctiveness of morphemically familiar names and was therefore accepted.

The backward elimination ANCOVA also revealed a variety of effects not tested in the original ANCOVA model. The sex × exposure and name × native language interactions are likely of greatest theoretical interest and managerial relevance. These interactions are discussed above in relative detail.

Ease of Pronunciation

According to Hypothesis 4, a morphemically familiar name should be easier to pronounce than a morphemically unfamiliar name. Hypothesis 4 therefore predicts a main effect of name. ANCOVA on the measure for perceived ease of pronunciation revealed a statistically significant difference ($F(1, 93) = 16.51$, $p < .01$) between perceived ease of pronunciation for the morphemically unfamiliar name ($\bar{x} = 3.47$) and the morphemically familiar name ($\bar{x} = 4.71$) thus supporting Hypothesis 4 for the subjective measure.

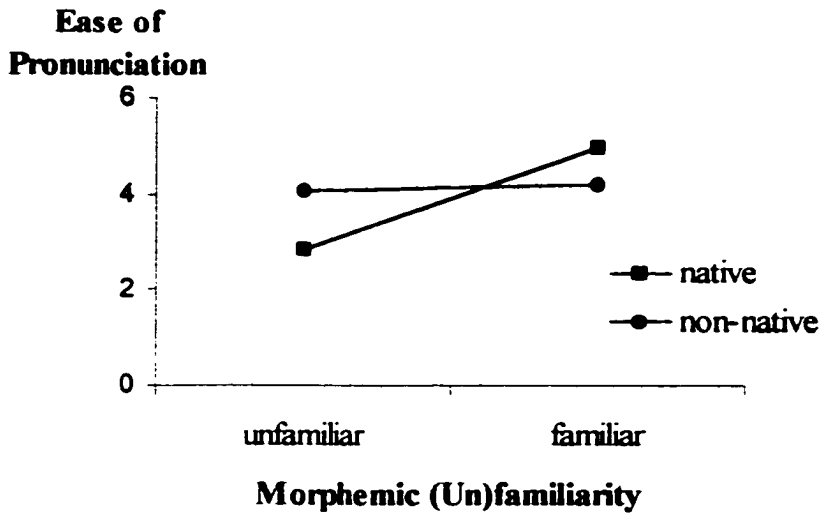
The result for the more objective pronunciation measure is fairly consistent with that for the perceived ease of pronunciation measure. Initial results using logistic regression to predict pronunciation revealed a lack of statistical significance for the effect of name ($\beta = 0.55$, $p < .70$). However, results from logistic regression using backward elimination revealed a significant effect of name ($\beta(1,X) = 1.46$, $p < .01$) thus supporting Hypothesis 4 for the objective measure.

Given the inconsistency in statistical (in)significance of morphemic (un)familiarity between the initial logistic regression on the one hand, and both the ANCOVA model and the logistic regression model obtained via backward elimination on the other hand, further analysis were performed in order to further investigate the effect of this variable. Toward this end, backward elimination ANCOVA was performed on the subjective ease of pronunciation measure. The inclusion of this model served to complete the analysis of the ease of pronunciation data. More specifically, the analysis now included both initial models and backward elimination models for both the subjective and objective ease of pronunciation measures.

The backward elimination ANCOVA revealed a statistically significant name × native language interaction ($F(1, 92) = 11.46$, $p < .01$) as depicted graphically in Figure 4 below.

Figure 4

OBSERVED INTERACTION BETWEEN NATIVE LANGUAGE AND MORPHEMIC (UN)FAMILIARITY



A planned comparison revealed that native speakers perceived the morphemically familiar name ($\bar{x} = 4.97$) as significantly easier to pronounce than the morphemically unfamiliar name ($\bar{x} = 2.85$) ($F(1, 92) = 23.16$, $p < .01$). In contrast, non-native speakers did not perceive a difference between the morphemically familiar ($\bar{x} = 4.21$) and the morphemically unfamiliar ($\bar{x} = 4.10$) names ($F(1, 92, = 0.08$, $p < .80$). Planned comparisons also revealed that the differences between native and non-natives was statistically significant for the morphemically familiar ($F(1, 92) = 8.66$, $p < .01$) but not

the morphemically unfamiliar name ($F(1, 92) = 1.79$, $p < .19$).[6]

In order to test whether these perceptions mimic reality, two separate logistic regressions were run on the objective measure, one for the native speakers and one for the non-native speakers. In accordance with standard statistical practice, the alpha level was adjusted for this analysis of a data subset. Given that $\propto = .15$ was being used as the cut-off for analyses with the full data set, the level applied to the data subsets was $\propto = .08$.[7] Contrary to their perceptions, native speakers had no greater difficulty pronouncing the morphemically unfamiliar name than the morphemically familiar name ($\beta = -1.12$, $p < .75$). Whereas non-native speakers perceived no difference in ease of pronunciation between the two names, they did in fact have an easier time pronouncing the morphemically familiar name than the morphemically unfamiliar name as evidenced by a positive parameter estimate ($\beta = 5.98$). Using the restricted alpha level, this difference was just statistically significant at the alpha cut-off level ($p < .08$).

According to Hypothesis 5, presentation mode should have no effect on the ease of pronunciation of morphemically familiar names. However, Hypothesis 6 posits that a morphemically unfamiliar brand name will be easier to pronounce when it is presented in the auditory rather than visual mode. Taken together, these hypotheses predict a name ×

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Since the backward elimination procedure yielding this model did not contain main effects of name or native language, SAS could not perform a planned comparison to test the levels of this interaction. Thus, both name and native language were added back to the model in order to obtain significant levels. These addition did not affect the means reported.

7

Based on the formula $\propto^* = 1 - (1 - \propto)$ where $\propto^*$ is the original cut-off and $\propto$ is the cut-off for the split data set.

exposure interaction. Contrary to these hypotheses, a planned comparison on the perceived ease of pronunciation measure revealed a statistically significant difference for the morphemically familiar name but not for the morphemically unfamiliar name. More specifically, the morphemically unfamiliar name was perceived as easier to pronounce when it was presented visually ($\bar{x}$ = 3.58) than when it was presented auditorily ($\bar{x}$ = 3.37), but this difference did not achieve statistical significance ($F(1, 93) = 0.25$, $p < .62$). Contrary to prediction, the effect of exposure mode on the perceived ease of pronunciation of morphemically familiar names achieved statistical significance ($F(1, 93) = 6.29$, $p < .01$). As with the morphemically unfamiliar name, the morphemically familiar name was perceived as easier to pronounce when it was presented visually ($\bar{x}$ = 5.27) than when it was presented auditorily ($\bar{x}$ = 4.15). The positive relationships between visual presentation and ease of pronunciation for both name types resulted in the rejection of both Hypotheses 5 and 6.

The logistic regression results for the more objective pronunciation measure show a different picture. Contrary to the perceived ease of pronunciation results, the morphemically familiar name was no easier to pronounce following presentation in one mode versus the other ($\beta = 0.39$, $p < .59$) thus supporting Hypothesis 5. However, consistent with the perceived ease of pronunciation results, the morphemically unfamiliar name was easier to pronounce following visual presentation than auditory presentation ($\beta = -0.29$) although this effect was not statistically significant ($p < .62$).

The inconsistency between the two measures suggests that consumers are not always good judges of their ability to pronounce a brand name. This inconsistency is

perhaps best illustrated by the relatively low correlation (r = 0.25) between the objective and subjective measures (see Appendix H for descriptive statistics including a full matrix of Pearson correlation coefficients).

Summary: In order to test the effect of morphemic (un)familiarity and exposure mode on ease of pronunciation, two types of analyses were performed: ANCOVA and logistic regression. ANCOVA was used to examine the effect on the subjective ease of pronunciation measure whereas logistic regression was used to examine the effect on the objective ease of pronunciation measure. Table 3 below summarizes the models tested and the results yielded for both ease of pronunciation measures.

Table 3

SUMMARY OF MODELS TESTED FOR EASE OF PRONUNCIATION

Variables Tested	Initial Analysis	Backward Elimination
Name	S: significant ($p < .01$) O: not significant	S: not significant O: significant ($p < .01$)
Exposure	S: significant ($p < .04$) O: not significant	S: significant ($p < .02$) O: not significant
Involvement	S: not significant O: not significant	S: not significant O: not significant
Expertise	S: not significant O: not significant	S: not significant O: not significant
Language	S: not significant O: not significant	S: not significant O: not significant
Sex	S: not significant O: significant ($p < .15$)	S: not significant O: significant ($p < .15$)
Age	S: significant ($p < .12$) O: significant ($p < .05$)	S: not significant O: significant ($p < .09$)

Table 3 continued

Name*Exposure	S: not significant* O: not significant	S: not significant O: not significant
Name*Involvement		S: not significant O: not significant
Name*Expertise		S: not significant O: not significant
Name*Language		S: significant ($p < .01$) O: not significant
Name*Sex		S: not significant O: not significant
Name*Age		S: not significant O: not significant
Exposure*Involvement		S: not significant O: not significant
Exposure*Expertise		S: not significant O: not significant
Exposure*Language		S: not significant O: not significant
Exposure*Sex		S: not significant O: not significant
Exposure*Age		S: not significant O: not significant
Involvement*Expertise		S: significant ($p < .06$) O: not significant
Involvement*Language		S: not significant O: not significant
Involvement*Sex		S: not significant O: not significant
Involvement*Age		S: not significant O: not significant
Expertise*Language		S: not significant O: not significant

Table 3 continued

Expertise*Sex		S: not significant O: not significant
Expertise*Age		S: not significant O: not significant
Language*Sex		S: not significant O: not significant
Language*Age		S: significant ($p < .15$) O: not significant
Sex*Age		S: not significant O: not significant

Note a.--'S' indicates subjective measure; 'O' indicates objective measure.

Note b.--An asterisk indicates that planned comparisons revealed a statistically significant result for at least one level of the interaction.

Note c.–Data from the subjective measure was analyzed using ANCOVA. Data from the objective measure was analyzed using logistic regression.

According to Hypothesis 4, a morphemically familiar name should be easier to pronounce than a morphemically unfamiliar name. Results from both the initial ANCOVA model for the subjective measure and the backward elimination logistic regression model for the objective measure support this hypothesis. However, neither the initial logistic regression model on the objective measure nor the backward elimination ANCOVA offer similar support. This inconsistency appears to be due to differences between native and non-native speakers. More specifically, the backward elimination ANCOVA revealed a name × native language interaction. Native speakers perceived the morphemically familiar name as significantly easier to pronounce than the morphemically unfamiliar name whereas non-native speakers did not perceive any difference in the ease of pronunciation of these two names. In reality, however, the native speakers did not have any more difficulty in pronouncing the morphemically unfamiliar name than in pronouncing the morphemically

familiar name. In contrast, the non-native speakers did experience greater difficulty in pronouncing the morphemically unfamiliar name than in pronouncing the morphemically familiar name.

The analyses also revealed inconsistencies regarding the effect of exposure mode on the pronunciation of the morphemically familiar name. Consistent with Hypothesis 5, logistic regression on the objective measure reveals that the morphemically familiar name was no easier to pronounce following exposure in one mode versus the other mode. Yet, subjects perceived the morphemically familiar name to be easier to pronounce following visual exposure than following auditory exposure. In contrast, the results of both the subjective and objective measures indicate that the morphemically unfamiliar name was no easier to pronounce following visual exposure than following auditory exposure. Given that Hypothesis 6 predicts superior pronunciation accuracy following auditory exposure, this hypothesis was rejected.

Associations

Hypothesis 7 posits that a morphemically unfamiliar brand name is likely to elicit more surface feature-related thoughts than product-related thoughts regardless of exposure mode. The morphemically unfamiliar name generated a product-related or surface string-related thought for only 8 of the 52 subjects exposed to this name. A frequency distribution revealed that the first thought for 3 of these 8 was product-related whereas the first thought for the other 5 was surface-string related. Three of these 8 subjects offered a second thought. In all cases, the second thought was surface string-related. Although these results offer directional support for Hypothesis 7, the cell size is

too small for meaningful statistical analysis. Not surprisingly, then, a chi-square test of subjects' first thought and exposure mode revealed a lack of statistical significance and offered a warning by SAS that since 100% of cells have expected counts of less than 5, chi-square may not be a valid test.

In contrast to Hypothesis 7, Hypothesis 8 posits that a morphemically familiar brand name is likely to elicit more product-related thoughts than surface feature-related thoughts, particularly following visual exposure. The morphemically familiar name generated a product-related or surface-string related thought for 27 out of 52 subjects exposed to this name. A frequency distribution revealed that the first thought for 10 of these 27 subjects was product-related whereas for the other 17 it was surface-string related. Six of these 27 subjects offered a second thought, 4 of which were product-related and 2 of which were surface string-related. Five of these thoughts (3 of the product-related thoughts and the 2 surface string-related thoughts) were generated following visual presentation. Again, given the small sample size, it is difficult to draw meaningful conclusions from the data. Not surprisingly, a chi-square test of subjects' first thought and exposure mode revealed a lack of statistical significance and offered a warning by SAS that chi-square may not be a valid test. A chi-square test of subject's second thought and exposure mode revealed a lack of statistical significance and offered a similar warning by SAS. Although this test comparing the type of thoughts generated by morphemically familiar names was inconclusive, it does not appear that subjects thoughts were more likely to be product-related than surface string-related as predicted by Hypothesis 8.

Additional analyses were performed in an attempt to draw more meaningful conclusions from the data. ANCOVA revealed a significant main effect of name on the number of thoughts overall ($F(1, 93) = 7.92$, $p < .01$) with morphemically familiar names generating both more product-related thoughts ($F(1,93) = 6.21$, $p < .02$) and more surface feature-related thoughts ($F(1, 93) = 2.75$, $p < .10$) than morphemically unfamiliar names. These results provide partial support for Hypotheses 7 and 8 which together suggest that a morphemically familiar name is more likely than a morphemically unfamiliar name to elicit product-related thoughts.

The effect of exposure was tested using a planned comparison in the ANCOVA described above. The results revealed that product-related thoughts were more likely following visual ($\bar{x} = 0.33$) than auditory ($\bar{x} = 0.15$) exposure ($F(1, 93) = 2.69$, $p < .10$) for the morphemically familiar name, thus supporting the effect of exposure predicted by Hypothesis 8. Exposure did not have an effect on the number of surface feature-related thoughts generated by morphemically familiar name ($F(1, 93) = 1.61$, $p < .30$). As predicted by Hypothesis 7, exposure mode did not have any effect for the morphemically unfamiliar name ($F(1, 93) = 0.03$, $p < .90$).

Summary: In order to test the effect of morphemic (un)familiarity and exposure mode on associations, two types of analyses were performed: chi-square frequency distributions and ANCOVA. The frequency distributions were used to examine the effects on the type of association generated: either product-related thoughts or surface string-related. Table 4 below summarizes the frequency of product-related and surface feature-related thoughts across name types and exposure modes.

Table 4

NUMBER OF ASSOCIATIONS ACROSS NAME TYPES

	Morphemically Familiar (Plentron)			Morphemically Unfamiliar (Imswut)		
	Thought 1	Thought 2	Total	Thought 1	Thought 2	Total
Product-Related	V: 7	V: 3	V: 10	V: 1	V: 0	V: 2
	A: 3	A: 1	A: 4	A: 2	A: 0	A: 4
Surface String-Related	V: 10	V: 2	V: 12	V: 3	V: 1	V: 4
	A: 7	A: 0	A: 7	A: 2	A: 2	A: 4

Note a. -- "V" indicates visual exposure; "A" indicates auditory exposure.
Note b. -- Given low counts, test statistics are not valid and therefore not indicated.

ANCOVA was used to examine the number of thoughts generated. Table 5 below summarizes the ANCOVA models tested and the results yielded for the number of thoughts.

Table 5

SUMMARY OF ANCOVA MODELS TESTED FOR ASSOCIATIONS

Variables Tested	Number of Product-Related Thoughts	Number of Surface String-Related Thoughts	Number of Thoughts Overall
Name	significant ($p < .02$)	significant ($p < .1$)	significant ($p < .01$)
Exposure	not significant	not significant	not significant
Involvement	not significant	not significant	not significant
Expertise	not significant	not significant	not significant
Language	not significant	significant ($p < .15$)	significant ($p < .15$)
Sex	not significant	not significant	not significant
Age	not significant	not significant	not significant
Name*Exposure	not significant*	not significant	significant ($p < .13$)

Table 5 continued

Note.---An asterisk indicates that planned comparisons revealed a statistically significant result for at least one level of the interaction.

Hypothesis 7 posits that a morphemically unfamiliar brand name is likely to elicit more surface feature-related thoughts than product-related thoughts regardless of exposure mode. In contrast, Hypothesis 8 posits that a morphemically familiar brand name is likely to elicit more product-related thoughts than surface feature-related thoughts, particularly following visual exposure. The low number of thoughts generated by subjects limited the statistical analyses performed.

Despite this limitation, further analyses were useful in shedding some light on the associations elicited by morphemically familiar and morphemically unfamiliar names. The results reported in both Tables 3 and 4 indicate that the morphemically familiar name elicited both more product-related and surface feature-related thoughts than did the morphemically unfamiliar name. However, given that the relative number of product-related versus surface feature-related thoughts could not be tested, these results remain inconclusive.

A planned comparison revealed that product-related thoughts were more likely following visual than auditory exposure to the morphemically familiar name, thus supporting the effect of exposure predicted by Hypothesis 8. In contrast exposure mode did not have any effect on the number of surface feature-related thoughts generated by the morphemically familiar name. As predicted by Hypothesis 7, exposure mode did not have any effect on the thoughts elicited by the morphemically unfamiliar name. Thus, this data did support the effect (or lack thereof) of exposure as predicted by both Hypotheses 7 and

8.

Attitude Toward the Brand (Web Site)

According to Hypothesis 9, consumers will have a more positive attitude toward a brand with a morphemically familiar name than toward a brand with a morphemically unfamiliar name. Hypothesis 9 therefore predicts a main effect of name on brand attitudes. In support of Hypothesis 9, ANCOVA revealed that attitudes were indeed more positive toward the morphemically familiar name ($\bar{x}$ = 4.26) than the morphemically unfamiliar name ($\bar{x}$ = 3.94) but that the difference is marginally significant (F(1, 89)1.87, p < .18). This result thus offers weak support for Hypothesis 9.

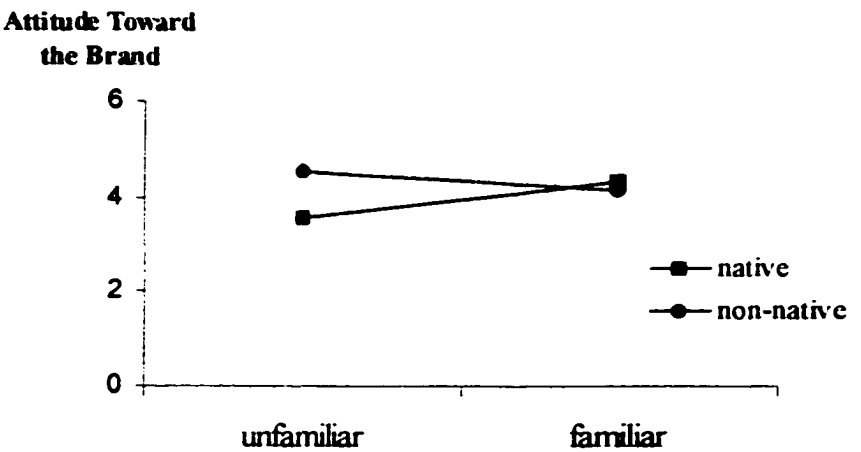
Hypothesis 10 posits that consumers will have a more positive attitude toward a brand with a morphemically familiar name when the name is presented in the visual rather than auditory mode. In contrast, Hypothesis 11 posits that consumers will have a more positive attitude toward a brand with a morphemically unfamiliar name when the name is presented in the auditory rather than visual mode. Taken together, these hypotheses predict a name × exposure interaction.

As predicted by Hypothesis 10, subjects had a more positive attitude toward the morphemically familiar name when it was presented visually ($\bar{x}$ = 4.38) than auditorily ($\bar{x}$ = 4.12). However, a planned comparison revealed that this difference was not statistically significant (F(1,89) = 0.46, p < .51). Thus, Hypothesis 10 was rejected. A second planned comparison revealed that, contrary to expectation, exposure mode had no effect on attitudes toward the morphemically unfamiliar name (F(1, 89) = 0.46, p< .83). Thus, Hypothesis 11 was also rejected.

Given the lack of support for Hypotheses 10 and 11, further analyses were performed in an attempt to better understand the relationships among the variables. Toward this end, ANCOVA was performed with a model that incorporated the main effects and all possible two-way interactions among the independent variables and covariates. Backward elimination was then used to find the best model. The results of this procedure revealed an interesting interaction between name and native language ($F(2, 91) = 3.76$, $p < .03$) as depicted graphically in Figure 5 below.

Figure 5

OBSERVED INTERACTION BETWEEN NATIVE LANGUAGE AND MORPHEMIC (UN)FAMILIARITY



Native English speakers had a more positive attitude toward the brand with the morphemically familiar name ($\bar{x} = 4.35$) than toward the brand with the morphemically unfamiliar name ($\bar{x} = 3.54$) ($F(1, 91) = 5.72$, $p < .02$). In contrast, non-native speakers

had a more positive attitude toward the brand with the morphemically unfamiliar name ($\bar{x}$ = 4.55) than the name with the morphemically familiar name ($\bar{x}$ = 4.16). However, the mean difference between the two name types for non-native speakers was not statistically significant ($F(1, 91) = 1.79$, $p < .19$)[8].

Planned comparisons used to test the levels of the name × native language interaction revealed a statistically significant difference between native and non-native on both the morphemically unfamiliar name ($F(1, 91) = 2.32$, $p < .13$) and the morphemically familiar name ($F(1, 91) = 7.92$, $p < .01$)[9]. These results mimic the effects observed on distinctiveness, suggesting perhaps a relationship between distinctiveness and brand attitudes.

Summary: ANCOVA was used to test the effect of morphemic (un)familiarity, exposure mode, and a number of covariates on attitude toward the brand. Table 6 below summarizes the models tested and the results yielded.

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[8] Since the backward elimination procedure yielding this model did not contain a main effect of name, SAS could not perform a planned comparison to test the levels of this interaction. Thus, name was added back to the model in order to obtain significant levels. This addition did not affect the means reported.

[9] Since the backward elimination procedure yielding this model did not contain a main effect of name, SAS could not perform a planned comparison to test the levels of this interaction. Thus, name was added back to the model in order to obtain significant levels. This addition did not affect the means reported.

Table 6

SUMMARY OF MODELS TESTED FOR BRAND ATTITUDES

Variables Tested	Initial ANCOVA	Backward Elimination ANCOVA
Name	not significant*	not significant
Exposure	not significant	not significant
Involvement	significant ($p < .15$)	significant ($p < .06$)
Expertise	not significant	not significant
Language	significant ($p < .06$)	significant ($p < .03$)
Sex	not significant	not significant
Age	not significant	not significant
Name*Exposure	not significant	not significant
Name*Involvement		not significant
Name*Expertise		not significant
Name*Language		significant ($p < .03$)
Name*Sex		not significant
Name*Age		not significant
Exposure*Involvement		not significant
Exposure*Expertise		not significant
Exposure*Language		not significant
Exposure*Sex		not significant
Exposure*Age		not significant
Involvement*Expertise		not significant
Involvement*Language		not significant
Involvement*Sex		not significant
Involvement*Age		not significant

Table 6 continued

Expertise*Language		significant ($p < .03$)
Expertise*Sex		not significant
Expertise*Age		not significant
Language*Sex		not significant
Language*Age		not significant
Sex*Age		not significant

Note.-- An asterisk indicates a marginally significant result.

According to Hypothesis 9, consumers will have a more positive attitude toward a brand with a morphemically familiar name than toward a brand with a morphemically unfamiliar name. Given the marginally significant effect of name, the results offer weak support for Hypothesis 9. Results of the backward elimination ANCOVA reveal that this weak support is due to differences between native and non-native speakers. More specifically, native speakers had a significantly more positive attitude toward the morphemically familiar name than toward the morphemically unfamiliar name. In contrast, non-native speakers had a less positive, though statistically insignificant, attitude toward the morphemically familiar name than toward the morphemically unfamiliar name. These results offer support for Hypothesis 9 among native speakers but not among non-native speakers.

Hypothesis 10 posits that consumers will have a more positive attitude toward a brand with a morphemically familiar name when it is presented in the visual rather than auditory mode. In contrast, Hypothesis 11 posits that consumers will have a more positive attitude toward a brand with a morphemically unfamiliar name when the name is

presented in the auditory rather than visual mode. However, given the lack of statistical support for the name × exposure interaction (as well as for the levels of the interactions as tested using planned comparisons), both Hypotheses 10 and 11 were rejected.

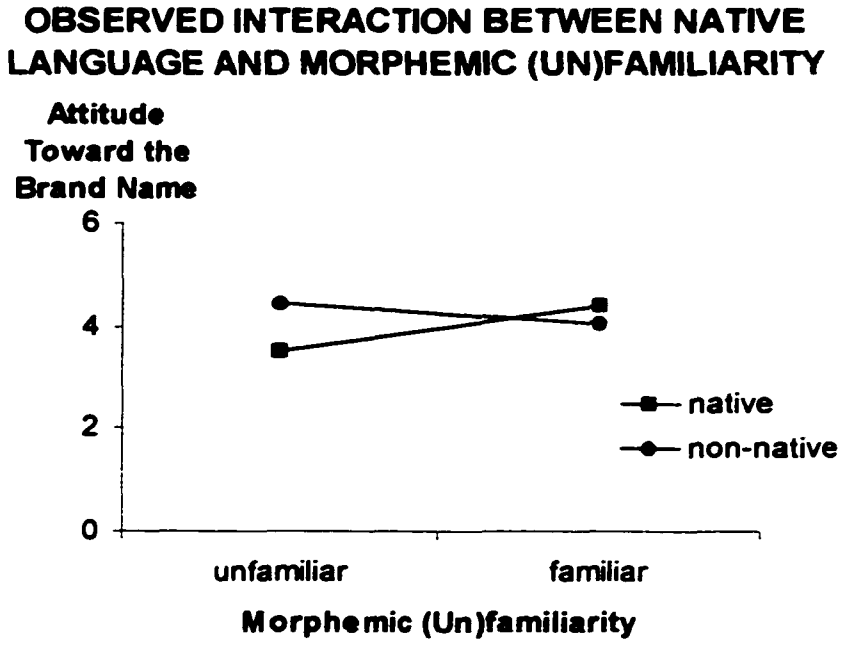
Attitude Toward the Brand Name (Web Site Address)

The same analysis was performed on the attitude toward the brand name measures. Research has shown that attitude toward the brand and attitude toward the brand name should be similar in direction if not in magnitude (Zinkhan and Martin, 1987). Thus, consistent with the results for brand attitudes, subjects had a more positive attitude toward the morphemically familiar name ($\bar{x}$ = 4.30) than the morphemically unfamiliar name ($\bar{x}$ = 3.88) ($F(1, 92) = 2.85$ $p < .10$). Likewise, subjects had a more positive attitude toward the morphemically familiar name when it was presented visually ($\bar{x}$ = 4.54) than when it was presented auditorily ($\bar{x}$ = 4.06). In this case, however, this difference was marginally significant ($F(1, 92)1.76$ $p < .19$). As in the case of brand attitudes, exposure mode had no effect on attitude toward the morphemically unfamiliar name ($F(1, 92) = 0.29$ $p < .60$).

Backward elimination ANCOVA revealed a statistically significant effect of morphemic (un)familiarity ($F(1, 91)4.88$, $p < .03$). Consistent with Hypothesis 9, subjects had a more positive attitude toward the morphemically familiar name ($\bar{x}$ = 4.24) than toward the morphemically unfamiliar name ($\bar{x}$ = 3.99). The backward elimination ANCOVA also revealed the same name × native language interaction ($F(1, 91) = 7.80$ $p < .01$) where native speakers had a more positive attitude toward the morphemically familiar ($\bar{x}$ = 4.42) than the morphemically unfamiliar ($\bar{x}$ = 3.51) ($F(1, 91) = 2.47$, $p < .12$) and non-native speakers had a more positive attitude toward the morphemically unfamiliar ($\bar{x}$

= 4.46) than the morphemically familiar ($\bar{x}$ = 4.06) (F(1, 91) = 7.79), p < .01). This interaction is depicted graphically in Figure 6 below.

Figure 6



Planned comparisons on the name × native language interaction revealed statistically significant differences between natives and non-natives on both the morphemically unfamiliar name (F(1, 91) = 2.13, p < .15) and the morphemically familiar name (F (1, 91) = 7.23, p < .01).

Summary: ANCOVA was used to test the effect of morphemic (un)familiarity, exposure mode, and a number of covariates on attitude toward the brand name. Table 7 below summarizes the models tested and the results yielded.

Table 7

SUMMARY OF MODELS TESTED FOR BRAND NAME ATTITUDES

Variables Tested	Initial ANCOVA	Backward Elimination ANCOVA
Name	significant ($p < .1$)	significant ($p < .03$)
Exposure	not significant	not significant
Involvement	significant ($p < .05$)	significant ($p < .06$)
Expertise	not significant	significant ($p < .01$)
Language	significant ($p < .10$)	significant ($p < .04$)
Sex	significant ($p < .09$)	significant ($p < .05$)
Age	not significant	not significant
Name*Exposure	not significant*	not significant
Name*Involvement		not significant
Name*Expertise		significant ($p < .02$)
Name*Language		significant ($p < .01$)
Name*Sex		not significant
Name*Age		not significant
Exposure*Involvement		not significant
Exposure*Expertise		not significant
Exposure*Language		not significant
Exposure*Sex		not significant
Exposure*Age		not significant
Involvement*Expertise		not significant ($p < .01$)
Involvement*Language		not significant
Involvement*Sex		not significant
Involvement*Age		not significant

Table 7 continued

Expertise*Language		significant ($p < .02$)
Expertise*Sex		not significant
Expertise*Age		not significant
Language*Sex		not significant
Language*Age		not significant
Sex*Age		not significant

Note.-- An asterisk indicates a marginally significant result for one level of the interaction.

Consistent with the results for brand attitudes, both models reveal that subjects had a more positive attitude toward the morphemically familiar brand name than toward the morphemically unfamiliar brand name. However, as was the case for attitude toward the brand, the backward elimination procedure revealed differences between native and non-native speakers. More specifically, native speakers had a significantly more positive attitude toward the morphemically familiar name than toward the morphemically unfamiliar name. In contrast, non-native speakers had a significantly more positive attitude toward the morphemically unfamiliar name than toward the morphemically familiar name. Thus, the backward elimination ANCOVA results offer support for Hypothesis 9 (as applied to brand names) among native speakers but not among non-native speakers.

Consistent with Hypothesis 10, consumers should have a more positive attitude toward a morphemically familiar name when it is presented in the visual rather than auditory mode. In contrast, Hypothesis 11 would suggest that consumers should have a more positive attitude toward a morphemically unfamiliar name when the name is

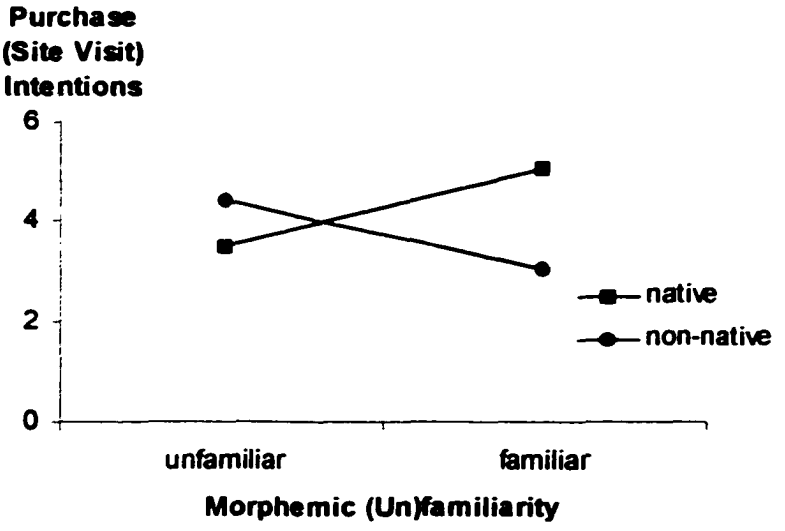
presented in the auditory rather than visual mode. Results from the initial ANCOVA model offer weak support for Hypothesis 11 but do not support Hypothesis 12.

Purchase (Site Visit) Intentions

Researchers studying attitudes often include a measure of purchase intentions as a behavioral measure that is expected to mimic attitudes (e.g., Barnes and Dotson, 1989). Given this relationship, the effects reported above for attitudes toward the brand and attitude toward the brand name should also exist for purchase intentions. The results revealed a lack of significant difference ($F(1, 92) = 0.00$ $p < .96$) between the morphemically familiar name ($\bar{x} = 3.66$) and the morphemically unfamiliar name ($\bar{x} = 3.68$). Similarly the interaction between the morphemic (un)familiarity of the name and exposure mode was not statistically significant ($F(1, 92) = 0.03$ $p < .86$). However, as seen earlier for attitudes, backward elimination ANCOVA revealed a statistically significant interaction between morphemic (un)familiarity of the name and native language ($F(2, 91) = 10.15$, $p < .01$) as depicted graphically in Figure 7 below.

Figure 7

OBSERVED INTERACTION BETWEEN NATIVE LANGUAGE AND MORPHEMIC (UN)FAMILIARITY



Consistent with previous results, native speakers had higher purchase intentions for the brand with the morphemically familiar name ($\bar{x}$ = 5.06) than for the brand with the morphemically unfamiliar name ($\bar{x}$ = 3.50) ($F(1, 91) = 11.37$, $p < .01$). In contrast, the non-native speakers had higher purchase intentions for the brand with the morphemically unfamiliar name ($\bar{x}$ = 4.41) than the brand with the morphemically familiar name ($\bar{x}$ = 3.05) ($F(1, 91) = 10.05$, $p < .01$). Planned comparisons on the name × native language interaction also revealed a statistically significant difference between native and non-native speakers on the morphemically familiar name ($F(1, 91) = 9.88$, $p < .01$) but a lack of statistical significance on the morphemically unfamiliar name ($F(1, 91) = 1.75$, $p < 19$).[10]

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[10] Since the backward elimination procedure yielding this model did not contain a main effect of name or native language, SAS could not perform a planned comparison to test the levels of this interaction. Thus, both name and native language were added back to the model in order to obtain significant levels. This addition did not affect the means

Summary: ANCOVA was used to test the effect of morphemic (un)familiarity, exposure mode, and a number of covariates on purchase intentions. Table 8 below summarizes the models tested and the results yielded.

Table 8

SUMMARY OF MODELS TESTED FOR PURCHASE INTENTIONS

Variables Tested	Initial ANCOVA	Backward Elimination ANCOVA
Name	not significant	not significant
Exposure	not significant	not significant
Involvement	significant ($p < .05$)	significant ($p < .14$)
Expertise	not significant	significant ($p < .06$)
Language	not significant	not significant
Sex	not significant	not significant
Age	not significant	significant ($p < .11$)
Name*Exposure	not significant	not significant
Name*Involvement		not significant
Name*Expertise		not significant
Name*Language		significant ($p < .01$)
Name*Sex		not significant
Name*Age		not significant
Exposure*Involvement		not significant
Exposure*Expertise		not significant
Exposure*Language		not significant

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reported.

Table 8 continued

Exposure*Sex		not significant
Exposure*Age		not significant
Involvement*Expertise		significant ($p < .02$)
Involvement*Language		not significant
Involvement*Sex		not significant
Involvement*Age		not significant
Expertise*Language		not significant
Expertise*Sex		not significant
Expertise*Age		significant ($p < .07$)
Language*Sex		not significant
Language*Age		significant ($p < .04$)
Sex*Age		not significant

Unlike in the case of brand and brand name attitudes, neither model used to predict purchase intentions supports the effect of morphemic (un)familiarity on purchase intentions. However, the backward elimination ANCOVA did reveal a statistically significant name × native language interaction. Consistent with brand and brand name attitudes, native speakers had higher intentions for the brand with the morphemically familiar name than the brand with the morphemically unfamiliar name. In contrast, non-native speakers had higher intentions for the brand with the morphemically unfamiliar name than that with the morphemically familiar name. Thus, as before, the backward elimination ANCOVA results offer support for Hypothesis 9 (as applied to intentions) among native speakers but not among non-native speakers.

Consistent with Hypothesis 10, consumers should have a higher intentions for the

brand with the morphemically familiar name when it is presented in the visual rather than auditory mode. In contrast, Hypothesis 11 would suggest that consumers should have a higher intention for the brand with a morphemically unfamiliar name when the name is presented in the auditory rather than visual mode. However, given the lack of statistical support for the name × exposure interaction (as well as for the levels of the interactions as tested using planned comparisons), both Hypotheses 10 and 11 were rejected with regard to intentions.

Recognition

Hypothesis 12 posits that when exposure and memory modes match, consumers are more likely to recognize a morphemically unfamiliar brand name than a morphemically familiar brand name. In order to test this hypothesis, two separate logistic regressions were run, one for the subjects in the visual exposure conditions and one for the subjects in the auditory exposure conditions. In accordance with standard statistical practice, the alpha level was adjusted for these and all subsequent regression analyses performed on a data subset. Given that $\propto = .15$ was being used as the cut-off for analyses with the full data set, the level applied to the data subsets was $\propto = .08$.[11]

In both cases, no statistically significant difference existed in the recognition rates of subjects exposed to the morphemically unfamiliar name versus those exposed to the morphemically familiar name. This result is consistent with the high recognition rates

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[11] Based on the formula $\propto^* = 1 - (1 - \propto)$ where $\propto^*$ is the original cut-off and $\propto$ is the cutoff for the split data set.

observed. In the case of a visual match, 49 of 52 subjects recognized the name ($p < .95$) and in the case of auditory match, 43 of 50 subjects recognized the name ($p < .53$). Negative parameter estimates ($\beta = -11.88$ for visual match and $\beta = -0.63$ for auditory match), however, provide directional support for Hypothesis 12.

In contrast to Hypothesis 12, Hypothesis 14 predicts the opposite effect in cases where exposure and memory modes mismatch. More specifically, it posits that when exposure and memory modes mismatch, consumers are more likely to recognize a morphemically familiar brand name than a morphemically unfamiliar brand name. Again, two logistic regressions were run, one for auditory-visual mismatch (auditory exposure, visual recognition) and one for the visual-auditory mismatch (visual exposure, auditory recognition). As before, $\propto = .08$ represents the cut-off level for acceptance.

Consistent with the high recognition rate (45 of 50) no statistically significant difference existed in the visual recognition rates of subjects auditorily exposed to the morphemically unfamiliar name versus those visually exposed to the morphemically familiar name ($p < .91$). However, the positive parameter estimate ($\beta = 24.69$) offers directional support for Hypothesis 14. In the case of visual-auditory mismatch, however, subjects were more likely to recognize the morphemically unfamiliar name than the morphemically familiar name, a marginally significant result ($\beta = -1.39$, $p < .09$).

These results suggest that the processes underlying recognition may not be as different in matched versus mismatched modes as originally expected. Based on the findings of previous research (e.g., Durso and Shore, 1991), it had been argued that consumers are either unwilling or unable to use their learned correspondence rules to

transcribe morphemically unfamiliar names from one mode to another. It appears, however, that an inability or hesitancy to apply correspondence rules only impedes recognition in the case of auditory-visual mismatch. Perhaps, then, consumers find it easier (or are more willing) to apply grapheme-to-phoneme correspondence rules to unfamiliar stimuli than to apply phoneme-to-grapheme correspondence rules. Thus, when they do apply such rules, recognition would be driven by novelty, absolute or contextual, (Friedman, 1979; Gregg,1976; Schulman and Lovelace, 1970) as in the case of matched modes.

Summary: In order to test the effect of morphemic (un)familiarity and exposure mode on recognition in matched and mismatched modes, separate logistic regressions were run for each of the four exposure-memory combinations: 1) visual-visual match, 2) auditory-auditory match, 3) visual-auditory mismatch, and 4) auditory-visual mismatch. Table 9 below summarizes the results yielded by these procedures.

Table 9

RESULTS OF LOGISTIC REGRESSION ON RECOGNITION

Variables Tested	Exposure-Memory Match	Exposure-Memory Mismatch
Name	V-V: not significant A-A: not significant	V-A: marginally significant ($p < .95$) A-V: not significant
Involvement	V-V: not significant A-A: not significant	V-A: not significant A-V: not significant
Expertise	V-V: not significant A-A: not significant	V-A: not significant A-V: marginally significant ($p < .10$)
Language	V-V: not significant A-A: not significant	V-A: not significant A-V: not significant

Table 9 continued

Sex	V-V: not significant A-A: not significant	V-A: not significant A-V: significant ($p < .03$)
Age	V-V: not significant A-A: not significant	V-A: not significant A-V: not significant

Note. –"V" indicates visual and "A" indicates auditory. Thus, for example, "V-V" indicates visual exposure and visual memory match.

Hypothesis 12 posits that when exposure and memory modes match, consumers are more likely to recognize a morphemically unfamiliar brand name than a morphemically familiar brand names. In contrast, Hypothesis 14 predicts the opposite effect when exposure and memory modes match. More specifically, it posits that when exposure and memory modes mismatch, consumers are more likely to recognize a morphemically familiar brand name than a morphemically unfamiliar brand. Consistent with the high recognition rates among subjects, the analysis did not yield statistically significant results. In one case, however, the analysis did reveal a marginally significant result; subjects were more likely to recognize the morphemically unfamiliar name than the morphemically familiar name in the case of visual-auditory mismatch. This result thus offers weak support for Hypothesis 12. Otherwise, the findings are inconclusive with respect to recognition.

Recall

Taken together, Hypotheses 13 and 15 posit that consumers are more likely to recall a morphemically familiar name than a morphemically unfamiliar name regardless of whether exposure and memory modes (mis)match. To test these hypotheses, four logistic

regressions, two for the matched scenarios (visual-visual and auditory-auditory) and two for the mismatched scenarios (visual-auditory and auditory-visual). Again, the alpha cut-off was adjusted to $\propto = .08$ for the analysis of data subsets.

In the case of visual-visual match, the analysis revealed a negative but statistically insignificant relationship between morphemic familiarity and recall ($\beta = -0.72$, $p < .25$). In contrast, auditory-auditory match resulted in a positive relationship ($\beta = 1.17$) between morphemic familiarity and recall. This effect is marginally significant ($p < .09$) when there exist three recall response categories (correct, partially correct, incorrect). However, the positive effect of morphemic familiarity ($\beta = 2.88$) does become statistically significant ($p < .04$) when partially correct responses are grouped with incorrect responses, thereby resulting in two response categories: correct and incorrect. This latter result thus offers support for Hypothesis 13.

In the case of a visual-auditory mismatch, the analysis revealed a negative though statistically insignificant relationship between morphemic familiarity and recall ($\beta = -.71$, $p < .26$). In contrast, auditory-visual mismatch resulted in a positive and statistically significant relationship between morphemic familiarity and recall ($\beta = 1.48$, $p < .04$). Thus, the latter result offers support for Hypothesis 15.

Whereas Hypotheses 13 and 15 predicted that consumer are more likely to recall a morphemically familiar name than a morphemically unfamiliar name, it appears that morphemically familiar names may only hold this advantage following auditory exposure. Failure to find a similar effect following visual exposure is curious indeed. It is possible that these results are due to the weaker than expected morphemic (un)familiarity

manipulation. An alternative explanation could be that an overwhelming number of subjects were visually-oriented and were thus particularly adept at processing any type of visually-presented name. Given that the Style of Processing data collected as part of this study was uninterpretable, it is unclear whether this is a plausible explanation.

Summary: In order to test the effect of morphemic (un)familiarity and exposure mode on recall in matched and mismatched modes, separate logistic regressions were run for each of the four exposure-memory combinations: 1) visual-visual match, 2) auditory-auditory match, 3) visual-auditory mismatch, and 4) auditory-visual mismatch. Table 10 below summarizes the results yielded by these procedures.

Table 10

RESULTS OF LOGISTIC REGRESSION ON RECALL

Variables Tested	Exposure-Memory Match	Exposure-Memory Mismatch
Name	V-V: not significant A-A: marginally significant ($p < .09$)*	V-A: not significant A-V: significant ($p < .04$)
Involvement	V-V: not significant A-A: not significant	V-A: not significant A-V: significant ($p < .08$)
Expertise	V-V: significant ($p < .04$) A-A: not significant	V-A: not significant A-V: not significant
Language	V-V: significant ($p < .06$) A-A: not significant	V-A: not significant A-V: significant ($p < .06$)
Sex	V-V: not significant A-A: not significant	V-A: not significant A-V: significant ($p < .07$)
Age	V-V: not significant A-A: not significant	V-A: not significant A-V: not significant

Note a.–"V" indicates visual and "A" indicates auditory. Thus, for example, "V-V" indicates visual exposure and visual memory match.

Table 10 continued

Note b.–An asterisk indicates that the result is statistically significant when incorrect and partially correct responses are collapsed into a single category resulting in a two category response: correct and incorrect.

Taken together, Hypotheses 13 and 15 posit that consumers are more likely to recall a morphemically familiar name than a morphemically unfamiliar name regardless of whether exposure and memory modes (mis)match. However, the results suggest that morphemically familiar names only hold this advantage following auditory exposure. In contrast, recall results following visual exposure were directionally opposite of those predicted. They were, however, statistically insignificant.

General Summary

This chapter reports the results of the experimental study designed to test the hypotheses developed in Chapter 3. These results are summarized in Table 11 below.

Table 11

RESULTS OF HYPOTHESIS TESTING

	Hypotheses	Results
H1	Consumers are more likely to perceive a morphemically unfamiliar brand name as more distinctive than a morphemically familiar brand name.	Not supported*
H2	Consumers are more likely to perceive a morphemically familiar brand name as more distinctive when that name is presented in the visual rather than auditory mode.	Not supported
H3	Presentation mode will have no effect on the perceived distinctiveness of morphemically familiar brand names.	Supported
H4	A morphemically familiar brand name will be easier to pronounce than a morphemically familiar brand name.	Supported

Table 11 continued

H5	Presentation mode will have no effect on the ease of pronunciation of morphemically familiar brand names.	Supported
H6	A morphemically unfamiliar brand name will be easier for a consumer to pronounce when it is presented auditorily than when it is presented visually.	Not supported
H7	A morphemically unfamiliar brand name is likely to elicit more surface feature-related thoughts than product-related thoughts.	Partially supported
H8	A morphemically familiar brand name is likely to elicit more product-related thoughts than surface feature-related thoughts, particularly following visual exposure to the name.	Partially supported
H9	Consumers will have a more positive attitude toward a brand with a morphemically familiar name than toward a brand with a morphemically unfamiliar name.	Weakly supported
	Consumers will have a more positive attitude toward a morphemically familiar brand name than toward a morphemically unfamiliar brand name.	Supported
	Consumers will have more positive intentions with regards to a brand with a morphemically familiar name than with regards to a brand with a morphemically unfamiliar name.	Supported
H10	Consumers will have a more positive attitude toward a brand with a morphemically familiar name when the name is presented in the visual rather than auditory mode.	Not supported
	Consumers will have a more positive attitude toward a morphemically familiar brand name when the name is presented in the visual rather than auditory mode.	Weakly supported
	Consumers will have more positive intentions with regard to a brand with a morphemically familiar name when the name is presented in the visual rather than auditory mode.	Not supported

Table 11 continued

H11	Consumers will have a more positive attitude toward a brand with a morphemically unfamiliar name when the name is presented in the auditory rather than visual mode.	Not supported
	Consumers will have a more positive attitude toward a morphemically unfamiliar brand name when the name is presented in the auditory rather than visual mode.	Not supported
	Consumers will have more positive intentions with regard to a brand with a morphemically unfamiliar name when the name is presented in the auditory rather than visual mode.	Not supported
H12	When exposure and memory modes match, consumers are more likely to recognize a morphemically unfamiliar brand name than a morphemically familiar brand name.	Not supported
H13	When exposure and memory modes match, consumers are more likely to recall a morphemically familiar brand name than a morphemically unfamiliar brand name.	Partially supported
H14	When memory and exposure modes mismatch, consumers are more likely to recall a morphemically familiar brand name than a morphemically unfamiliar brand name.	Partially, but weakly supported
H15	When exposure and memory modes mismatch, consumers are more likely to recognize a morphemically familiar brand name than a morphemically unfamiliar brand name.	Not supported

Note. – An asterisk indicates a statistically significant result in the opposite direction.

In addition to the results reported in Table 8 above, the analysis revealed a series of unexpected interactions, most notably between morphemic (un)familiarity and native language. These results as well as the results of hypothesis testing are discussed further in Chapter 6. More specifically, Chapter 6 discusses the theoretical and managerial implications of these results, limitations of the experimental study, and directions for further research.

CHAPTER 6

GENERAL DISCUSSION

The previous chapter reports the results of an experimental study designed to test the hypotheses presented in Chapter 3. More specifically, the data demonstrated the effects of morphemic (un)familiarity and exposure mode on distinctiveness, ease of pronunciation, associations, attitudes, recall and recognition. As part of the iterative learning process, however, the analysis also uncovered a variety of effects that were not included in the original set of hypotheses (Box, Hunter, and Hunter, 1978) As such, the interest in the results transcends the support, or lack thereof, of various hypotheses to what may be considered two greater findings.

The first greater finding concerns the rather stark differences between native and non-native English speakers in perceptions of and attitudes toward morphemically familiar and unfamiliar names. For example, morphemically familiar names appear more distinctive and more likeable than morphemically unfamiliar names among natives. In contrast, the reverse seems to be true among non-natives; that is, morphemically unfamiliar names appear more distinctive and more likeable than morphemically familiar names. This chapter discusses the variety of theoretical and managerial implications related to this finding.

The second greater finding concerns the role of phonological recoding in brand name processing. Linguists have long debated whether visually-presented verbal stimuli, such as brand names appearing in a print ad, access the lexicon directly or whether they are phonologically recoded. The results seem to suggest that the visually-presented

morphemically unfamiliar name, but not necessarily the visually-presented morphemically familiar name, was phonologically recoded by subjects. This processing difference has a variety of implications as discussed in this chapter.

The next section discusses the theoretical implications of the results with an emphasis on the two greater findings identified above. The chapter then proceeds with a discussion of managerial implications, limitations of the current study, and directions for further research.

Theoretical Implications

Brand name consultants have long understood the underlying morphemic structure of brand names (Gershman, 1986). As a recognized building block of language and important component of brand name building, morphemic structure is an area ripe for academic study. For the most part, however, consumer researchers have not taken great interest in morphemic structure per se. LeClerc, Schmitt, and Dubé (1994), for example have studied foreign-sounding names and both Keller, Heckler, and Houston (1998) and Zinkhan and Martin (1987) have examined suggestive names. Whereas the former provides an example of a morphemically unfamiliar name type, the latter offers an example of a morphemically familiar name type. However, none of the authors discussed these broader categories from which the names types were drawn. Given this history, the current research on morphemic (un)familiarity adds to the literature by offering both a theoretical framework for the study of brand names and empirical evidence for the effect of morphemic (un)familiarity on brand name performance. In addition, the study

uncovered different effects following visual versus auditory exposure, the two contexts in which brand name processing might occur.

Perceptions, Attitudes, and Intentions

The findings reported in Chapter 5 seem to suggest that morphemically familiar names are superior to morphemically unfamiliar names in eliciting positive attitudes and perceptions. Morphemically familiar names appear more distinctive, easier to pronounce, and more likeable than morphemically unfamiliar names. They also elicit more associations. This summary of findings, however, obscures the observed differences between native and non-native speakers. While native language was not of initial interest here, the analysis did reveal some interesting and indeed important effects.

Native Versus Non-Native Speakers: Among native speakers, morphemically familiar names appear more distinctive and more likeable but no easier to pronounce than morphemically unfamiliar names. This latter finding contradicts native speakers' perception of pronunciation ease for morphemically (un)familiar names. More specifically, native speakers appear to perceive morphemically unfamiliar names as more difficult to pronounce than morphemically familiar names. Yet, in reality, the native speakers demonstrated comparable pronunciation ability for the morphemically unfamiliar name as for the morphemically familiar name. Despite this comparable ability, the results indicate a clear advantage of morphemically familiar names over morphemically unfamiliar names among native speakers.

In contrast, morphemically unfamiliar names appear to perform better than

morphemically familiar names on distinctiveness, attitudes, and purchase intentions among non-native speakers. They also appear more difficult to pronounce despite a perception that they are no more or less difficult to pronounce than morphemically familiar names. Overall, then, morphemically unfamiliar names appear more advantageous than morphemically familiar names among non-native speakers except perhaps in cases where the consumer must ask for the brand by name.

It was suggested in the previous chapter that the differences in perception, attitudes, and intentions between native and non-native speakers may be a function of lexical knowledge or perhaps the degree to which native and non-native speakers rely on or feel confident relying on their lexical knowledge in judging brands and their names. It is also possible that the differences could be a function of the structure or organization of the lexicon. Linguists have long debated how the organization of lexical knowledge might differ between the monolingual and bilingual speaker. Within this debate, linguists have developed essentially two competing models of bilingual lexical knowledge, one based on the premise that bilinguals have separate and distinct lexicons for each language spoken, and the other based on the premise that they have only one lexicon containing lexical knowledge for all known languages (Grosjean, 1982).

One attractive feature of the single lexicon model is its consistency with various types of language interference including, for example, unconscious code-switching where a speaker holding a conversation in one language temporarily switches into another language, perhaps not realizing that s/he has done so (Grojean, 1995; Milroy and Muysken, 1995). It is possible that a similar type of interference took place among the

non-native speakers in this study. In other words, the brand names presented may have been activating lexical information relating to other languages spoken thus eliciting different effects for native versus non-native speakers.

Exposure Mode: For the most part, exposure mode did not affect brand name perceptions or attitudes. There were, however, a few exceptions. Visual exposure of both the morphemically familiar and unfamiliar names, for example, resulted in the perception that brand names are relatively easy to pronounce. However, subjects could pronounce the morphemically familiar name just as well following auditory exposure as visual exposure. In the case of the morphemically unfamiliar name, visual exposure did indeed aid pronunciation. This finding seems to offer some support for the notion that phonological recoding may be used for learning new words and pronouncing non-words (Harley, 1995). The phonological recoding hypothesis, however, might be refined to account for the degree of non-word novelty since in this case, recoding was not useful, or at least not beneficial in the case of the morphemically familiar name.

The interaction between exposure and sex as a predictor of perceived distinctiveness was unexpected. This finding could have been the result of the associations related to the morphemically familiar name. More specifically, the morphemically familiar name tended to elicit associations related to science and/or technology. Men may have found this more appealing than women, particularly when they had the opportunity to focus on the semantic features of the name as typically occurs during visual processing (Peca, Reid, and Mason, 1982). It may seem curious that a similar interaction was not statistically significant for predicting attitudes. However, it is indeed plausible for a

particular brand name to stand out but not to be liked.

Memory

Recognition: Failure to find statistically significant results is consistent with the high brand name recognition rates among subjects. The findings do offer directional support for the idea that a morphemically unfamiliar name may be more recognizable than a morphemically familiar name. As discussed in the previous chapter, this finding suggests that the processes underlying recognition may not differ in matched versus mismatched modes as originally expected. Based on the findings of previous research (e.g., Durso and Shore, 1991), it had been argued that consumers would either be unwilling or unable to use their learned correspondence rules to transcribe morphemically unfamiliar names from one mode to another. Thus, it was expected that the novelty of the name would not aid recognition as is usually the case, but would rather serve to impede it.

Contrary to expectations, it appears that an inability or hesitancy to apply correspondence rules may only impede recognition in the case of auditory-visual mismatch. Perhaps, then, consumers find it easier, or are at least more willing to apply grapheme-to-phoneme correspondence rules to unfamiliar stimuli than to apply phoneme-to-grapheme correspondence rules. This ability or willingness could be related to the number of lexical access routes. Whereas auditorily-presented verbal stimuli can only gain access directly, visually-presented verbal stimuli may gain lexical access either directly or via phonological recoding. This flexibility in the visual case may aid grapheme-to-phoneme transcription. When such transcription occurs, recognition would be driven by

novelty, absolute or contextual, (Friedman, 1979; Gregg, 1976; Schulman and Lovelace, 1970) as in the case of matched modes.

Recall: Whereas the distinction between matched and mismatched modes may influence recognition, it seems to have little or no bearing on recall. The morphemically familiar name was more likely to be recalled following auditory exposure than visual exposure. In contrast, the morphemically unfamiliar name was more likely to be recalled following visual exposure than auditory exposure. In both cases, the same results were obtained regardless of whether exposure and recall modes matched or mismatched. Thus, exposure mode appears more influential than retrieval mode in the recall of both morphemically familiar and morphemically unfamiliar names.

The superior recall of the visually-presented morphemically unfamiliar name to the visually-presented morphemically familiar name is curious indeed. Again, phonological recoding may provide a theoretical explanation. Harley (1995) suggests that phonological recoding may only be used for learning new words and pronouncing non-words. However, it was suggested above that the phonological recoding hypothesis might be refined to account for the degree of non-word novelty. More specifically, it was suggested that phonological recoding may have occurred following visual exposure to the morphemically unfamiliar name but not to the morphemically familiar name. If this is indeed the case, the effort involved in recoding may have resulted in a stronger memory trace than that induced by direct access. The morphemically unfamiliar name would then be better recalled than the morphemically familiar name when both names are presented visually. This explanation is consistent with the Hirshman and Jackson (1997) argument

that distinctive orthographic-to-phonological mapping but not phonological-to orthographic mapping enhances recall by providing discriminative cues during retrieval.

Managerial Implications

The overall superiority of the morphemically familiar would seem to suggest that managers may want to think twice before using a morphemically unfamiliar name. This suggestion may be particularly useful to Internet marketing managers seeking to name web sites. With at least 98% of words in the Webster's English dictionary already registered as domain names by year 2000, Internet managers find that they must be increasingly creative in naming web sites (Wessel, 2000). Given the deluge of newly created products, companies and services in today's economy, marketing managers of more traditional products are finding themselves in a similar situation (Egan, 2000). One alternative, of course, is to choose non-word names. The findings of the current study suggest that in pursuing such a strategy, managers would be better off choosing morphemically familiar non-word names than morphemically unfamiliar non-word names.

Nonetheless, managers do choose morphemically unfamiliar names, particularly when they want to elicit a country-of-origin effect. Although this study found that such names elicit few associations relative to morphemically familiar names, other studies have suggested that morphemically unfamiliar names, particularly foreign sounding ones, can elicit desirable associations (Domzal, Hunt, and Kernan, 1995; Harris, Richard Jackson, Ruth E. Strum, Michael L. Klassen, and John I. Bechtold,1986). For some managers, then, desirable associations may be reason enough to use such names.

If managers do choose a morphemically unfamiliar name, they might overcome the corresponding pronunciation disadvantage with advertising. The higher pronunciation accuracy for the morphemically unfamiliar name following visual exposure as compared to auditory exposure suggests that managers should use print advertising rather than radio advertising for brands with such names. Higher recognition and recall rates for morphemically unfamiliar following visual exposure compared to auditory exposure provide further support for this recommendation.

Visual exposure to morphemically familiar names may be advantageous as well. However, given the different effects of exposure on recognition versus recall, managers may wish to identify the more important memory process for product purchase in their category before choosing an advertising medium. For example, in product categories where multiple brands are presented side-by-side, as is the case for many packaged goods, consumers need only recognize their brand of choice. This paper suggests that print advertising would be the better choice in this case. If, however, brands do not appear on the shelf and the consumer must ask for the brand (e.g., cosmetics or other categories where brands are kept behind the counter) or generate a consideration set (e.g., for restaurants or web sites) radio advertising might be the better choice since consumers are more likely to recall the name following auditory exposure than visual exposure. In such cases, managers might want to balance their use of radio and print advertising in order to get the recall benefit of auditory exposure without sacrificing the perceived ease of pronunciation benefit of visual exposure. It seems plausible that television advertising would have the same effect since it can be used for visual and auditory presentation of the

name in the same exposure. Dual exposure, however, is beyond the scope of this study. Thus, it is unknown whether or not it tends to have this additive effect.

The differences in perception and attitudes among native and non-native speakers present additional challenges for companies operating in bilingual communities. Previous research suggests that the use of a consumer's native versus non-native language in advertising can influence attitudes toward the ad and toward the corporate sponsor (Koslow, Shamdasani, and Touchstone, 1994). The present study offers evidence for such (non)native language effects on brand and brand name attitudes as well as distinctiveness, ease of pronunciation, and purchase intentions. Thus, the findings suggest that if both native and non-native speakers comprise a brand's target market, managers may want to market that brand under two names, one that is morphemically familiar and another that is morphemically unfamiliar. The benefit of such a strategy, however, would likely be outweighed by the cost of increased packaging and marketing expenses as well as the potential for both consumer confusion and brand equity dilution, particularly if the brand appears on the Internet. As such, marketers may want to determine, if possible, whether native or nonnative consumers have greater sales potential and then choose a name. Alternatively, they may consider using a morphemically hybrid name, one that is part familiar and part unfamiliar. Before such a strategy is adopted, however, further research is needed to determine if morphemically hybrid names are indeed advantageous in this regard.

Limitations

Despite the variety of managerial implications discussed above, it should be pointed out that this research offers a starting point for examining the effects of morphemic (un)familiarity, native language, and exposure mode on brand name processing. As such, it should not be interpreted as reporting irrefutable and conclusive results. Moreover, the research and its findings are subject to a variety of limitations that may impact their applicability to the marketplace.

First, it is unclear whether the findings reveal true effects (or lack thereof) of exposure mode or whether failure to find the effects predicted was due to methodological limitations. For example, subjects in the visual exposure conditions were instructed as to when to look at and when to put away experimental stimuli. In contrast, the researcher controlled auditory exposure to experimental stimuli. Thus, it may the case that exposure time may have varied from the auditory to visual exposure conditions despite attempts to minimize such effects by the provision of detailed instructions. The task required for visual exposure may have also interfered with name processing. Future studies can address this limitation by using a computer for visual exposure. Computer programming could then be used to control both the time and the timing of the exposure and relieve the subjects from engaging in a procedural task.

Failure to find a greater effect of exposure mode could also be due to a confounding influence of visual-verbal orientation. As reported earlier, visual-verbal orientation was dropped as a potential covariate due to the poor performance of the Style of Processing Scale intended to measure such orientation. It is therefore unclear if and

how subjects' preferred style influenced their responses to the various dependent measures. A number of potential explanations for the poor performance were offered in Chapter 4. One possible explanation is that the time of administration (after exposure to the experimental stimuli) as well as the proximity of the exposure to the experimental stimuli adversely affected scale performance. In future studies, researchers might consider including the scale but further separating the time of its administration from the time of stimuli exposure. In addition, they might consider using the revised Style of Processing scale (Heckler, Childers, and Houston, 1993) instead of the earlier version administered in this study.

In addition to limitations surrounding the exposure manipulation, it should be pointed out that the reported effects were tested using a single brand name under artificial conditions. More specifically, subjects saw only one morphemically familiar or one morphemically unfamiliar name, immediately evaluated the name following exposure, and were tested for recall and recognition after a short time lag. In addition, morphemic (un)familiarity was tested within the context of one particularly type of brand name, namely the web site address. Future studies can address these limitations by testing other names, providing more complex information for each brand, encouraging deeper processing of ad information (perhaps by distinguishing between high and low involvement situations), and increasing the time lag between exposure and memory testing. Such extensions would shed light on the generalizability of the results presented here and offer managers important guidance in the brand naming process.

Directions for Further Research

In addition to addressing the methodological limitations of this study, researchers might pursue a variety of theoretical and managerial issues raised by the present research. The observed differences between native and non-native consumers provide theoretical challenges to our understanding of brand name processing and are managerially relevant for today's marketplace. Researchers might try to understand how and why native language affects brand name performance on the various naming criteria. As suggested earlier, literature on the bilingual lexicon and/or code-switching would likely offer both direction and guidance to researchers in this area.

The current research uncovered differences between native and non-native speakers with regard to perceived distinctiveness, ease of pronunciation, brand and brand name attitudes, and purchase intentions. However, tests for differences between natives and non-natives were not performed on associations, recognition, and recall. Unfortunately, the samples size of the current data set is not adequate for such analysis.[1] The high recognition rates and the low numbers of thoughts expressed by subjects in the thought-listing task present similar challenges. Additional data would therefore need to be collected in order to test for differences between native and non-native speakers on these measures. Such an effort is crucial for rounding out our knowledge of the impact of native language on brand name performance.

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The reader may recall that data subsets were used to test the effects of morphemic (un)familiarity, exposure mode, and memory mode on both recall and recognition in matched and mismatched modes. Testing for differences between native and non-native speakers would require further subsetting thereby resulting in an inadequate sample size.

In addition to drawing a distinction between native and non-native language, researchers might consider delving more deeply into language background by considering specific native languages or language families. It was pointed out in Chapter 2 that each language has its own unique set of morphemes but that individual morphemes may be shared by languages in the same family. Clearly, then, language, or language family, will impact whether a brand name is morphemically familiar or morphemically unfamiliar to a given consumer. A greater understanding of the relationships among languages would therefore be useful in shedding light on how brand names can be expected to perform across linguistic communities.

Cross-linguistic studies growing out of the current research might also consider the processing requirements of various languages. The current study examines morphemic (un)familiarity in English, a rules-based language. Other languages, like Chinese for example, are governed by much looser orthographic-phonemic correspondence. These structural differences are likely to have a marked effect on consumer processing particularly in matched versus mismatched modes and likely impacts the performance of brand names on a variety of naming criteria, most notably ease of pronunciation, recognition, and recall.

A related avenue for further research would consider the various types of writing systems with which consumers might be accustomed. All writing can be categorized as either primarily logographic or primarily phonographic (O'Grady, Dobrovolsky, and Aronoff, 1993). A logographic system is one which symbols represent morphemes and/or entire words. In contrast, symbols represent syllables or segments in a phonographic

system. As such, each system has its own processing requirements; whereas phonographic systems require relatively heavy reliance on phonological coding, logographic systems require relatively greater visual encoding and allow for direct meaning transfer. Such processing differences might account for the relative superiority of brand name performance following visual exposure in the present study, particularly given the high number of non-native Asian subjects in the sample.

Consumer researchers have already begun to take an interest in the distinction between phonographic and logographic writing systems and the related implications for marketing theory and practice. The result is a series of comparative studies of the logographic Chinese system and the phonographic English system[2]. Schmitt, Pan, and Tavassoli (1994) have demonstrated, for example, the manner in which differences in Chinese versus English can have a marked effect on memory. Similarly, Pan and Schmitt (1996) demonstrated differential effects on brand attitudes. In both of these studies, the authors examined brand name processing within the native language of the consumer. That is, they compared American subjects processing English letters with Chinese subjects processing Chinese characters. The current research suggests that differential effects may also exist between two such groups when processing the same set of graphemes. In other words, a native Chinese speaker who also speaks English may process and respond differently to a brand name than does a native English speaker. The degree of this second

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[2] Researchers in this area of marketing typically refer to Chinese as ideographic and English as alphabetic. The terms "ideographic" and "alphabetic" refer to subsystems of the logographic and phonographic systems respectively.

language fluency may also have an impact on the extent of processing differences between native and non-native speakers.

The specific language(s) spoken by consumers is also a likely determinant of the ease or difficulty with which they can pronounce brand names, particularly those held by foreign brands. In this case, both language structure and linguistic experience would play a role. Human languages display a wide variety of phones, or speech sounds. However, no one language makes use of all phones. Rather, the inventory of any given language contains only a subset of all speech sounds (O'Grady, Dobrovolsky, and Aronoff, 1993). While it appears that humans are born with an innate ability to recognize and produce a wide range of speech contrasts (Eimas, 1975, Holmberg, Morgan, and Trehub, 1977, Morse 1974), research has shown that by the age of four, children start to lose the ability to discriminate non-native speech sounds (Werker and Tees, 1983). This developmental decline progresses with age as well as with experience with the sounds of a particular language (Werker and Tees, 1983).

The developmental decline in discriminating speech contrasts poses a variety of challenges to marketers looking to bring their brands oversees or to those seeking to develop names that can be used globally. For example, consumers abroad may mispronounce a name due to an inability to discriminate and/or produce a given speech sound. Such mispronunciation may be nothing more than an annoyance to marketers of the brand; alternatively, mispronunciation could tarnish the brand's image if, for example, the name sounds like a native word with a negative connotation.

Despite these risks, developmental decline may not be a relevant issue for all

consumers within a given market. Researchers have found that training and experience can result in perceptual flexibility, that is, the maintenance or recovery of the ability to discriminate non-native speech sounds (Tees and Werker, 1984). As such, consumers with diverse linguistic experience, as would be the case for a bilingual, for example, should be better equipped to discriminate speech sounds and thus, properly pronounce foreign names. It should also be the case, then, that marketers can teach consumers proper brand name pronunciation through advertising. Consumer researchers might therefore explore both the feasibility and potential benefits of such instruction.

Future research might also investigate other aspects of brand name morphology including the processing of morphemically hybrid names and the effect of (in)congruency between morphemic associations and product schemata. Research in the area of brand name morphology might also consider the morphological requirements of various languages. Huang and Chan (1997), for example, point out that English language morphology constrains the length of brand names whereas Chinese morphology tends to lengthen brand names. Such contrasting morphemic structure raises issues with regard to brand name processing as well as to the processing of loanwords that are used across a variety of marketing communication vehicles including, for example, advertising and packaging (Sherry and Camargo, 1987).

Our understanding of exposure mode as either an aid or impediment to brand name processing could also benefit from elaboration within other contexts as well as from investigations of the effects of repetition and dual exposure (i.e., both visual and auditory exposure) as in the case of television advertising. Tavassoli (1998) found that such dual

exposure can direct processing, influence elaboration, and increase recognition. Such research would be useful for in the development of effective advertising campaigns, particularly for brands with morphemically (un)familiar names.

Finally, researchers might develop and test a model to understand the relationships among the various naming criteria. Such a model would be useful for further understanding brand name processing and could therefore be helpful to managers in streamlining the brand naming process.

Summary

This dissertation offers a theoretical framework as well as empirical evidence for understanding the effects of brand name morphology and exposure mode on brand name performance. The data revealed mixed results with respect to the relationships predicted. However, the analysis uncovered a number of greater findings, namely differences in the perceptions and attitudes of native versus non-native speakers and the role of phonological recoding in brand name processing. Thus, like most research, the results of the experimental study raise many new questions and open new avenues for research. Pursuit of the types of studies suggested in this chapter would serve to help guide managers in the naming of their products and in refining promotion techniques for their brands.

APPENDIX A

GLOSSARY OF LINGUISTIC TERMS

Grapheme: orthographic units (Herdman and Beckett, 1996) such as the letters used in alphabetic languages.

Grapheme-to-phoneme correspondence rules: rules dictating letter-sound associations in a given language.

Letter string: series of consecutive letters.

Lexicon: mental dictionary containing a variety of information about words including phonology, orthography, semantics, word formation rules, grapheme-to-phoneme correspondence rules and phoneme-to-grapheme correspondence rules (Harley, 1995).

Morpheme: the smallest unit of language that carries information about meaning or function (O'Grady, Dobrovolsky, and Aronoff, 1989).

Morphology: the system of categories and rules involved in the creation and interpretation of complex words (O'Grady, Dobrovolsky, and Aronoff, 1989).

Non-word: permissible letter string according to the word formation rules of a given language which happens not to be a word in that language.

Orthography: the written representation of language (i.e., in letters or symbols).

Phoneme: a member of the set of smallest speech units that serves to distinguish one utterance from another in a given language (e.g., the /p/ in "pin" and /f/ in "fin" are two different phonemes in English).

Phoneme-to-grapheme correspondence rules: rules dictating sound-letter associations in a given language.

Phonetic Symbolism: the relationship between sound and meaning (DeVito and Civikly, 1972).

Phonological recoding: A process whereby upon presentation of visual material, a person.

Phonology: the speech sounds of a language.

Semantics: the meaning of words and sentences within a language.

Word Formation Rules: rules that specify permissible letter and/or sound combinations or how to form one class of words out of another (O'Grady, Dobrovolsky, and Aronoff, 1989).

Word Frequency: the frequency with which a word is used in a given language.

APPENDIX B

SAMPLE EXPERIMENTAL STIMULUS[1]

When instructed to do so, please turn the page.

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1 The actual stimuli used a slightly larger font. In addition, the pages were presented in portrait format.

APPENDIX C

PRETEST SURVEYS

Thank you for agreeing to participate in this survey. Your answers will help marketing researchers design future studies. You need not spend too much time on any of the survey questions. However, please answer each question completely and honestly. Your responses will be kept completely anonymous and confidential. No one will be able to trace your responses back to you.

Thank you again for your participation!

Please indicate on the 1 to 7 scale below how **likely it is that each of the following is a word in English**.

		Very Unlikely						Very Likely	
1.	Rovas	1	2	3	4	5	6	7	(1)
2.	Fasney	1	2	3	4	5	6	7	(2)
3.	Gimnal	1	2	3	4	5	6	7	(3)
4.	Ufpiln	1	2	3	4	5	6	7	(4)
5.	Burpaign	1	2	3	4	5	6	7	(5)
6.	Dantral	1	2	3	4	5	6	7	(6)
7.	Comflect	1	2	3	4	5	6	7	(7)
8.	Fasdle	1	2	3	4	5	6	7	(8)
9.	Kerfle	1	2	3	4	5	6	7	(9)
10.	Curish	1	2	3	4	5	6	7	(10)
11.	Ikbli	1	2	3	4	5	6	7	(11)
12.	Pilcur	1	2	3	4	5	6	7	(12)
13.	Mabsco	1	2	3	4	5	6	7	(13)
14.	Jyshia	1	2	3	4	5	6	7	(14)

For each of the following please write down **any <u>thoughts or associations</u> that come to mind including what would you expect to find at each one of the following websites.** You may skip those that do not immediately prompt any thoughts or associations.

1. www.rovas.com_____
2. www.fasney.com_____
3. www.gimnal.com_____
4. www.ufpiln.com_____
5. www.burpaign.com_____
6. www.dantral.com_____
7. www.comflect.com_____
8. www.fasdle.com_____
9. www.kerfle.com_____
10. www.curish.com_____
11. www.ikbli.com_____
12. www.pilcur.com_____
13. www.mabsco.com_____
14. www.jyshia.com._____

Distinctiveness refers to the degree to which a website address is unique and stands out relative to other addresses. Please rate the **distinctiveness of each of the following website addresses** on the 1 to 7 scale below.

		Not At All Distinctive						Very Distinctive	
1.	www.rovas.com	1	2	3	4	5	6	7	(1)
2.	www.fasney.com	1	2	3	4	5	6	7	(2)
3.	www.gimnal.com	1	2	3	4	5	6	7	(3)
4.	www.ufpiln.com	1	2	3	4	5	6	7	(4)
5.	www.burpaign.com	1	2	3	4	5	6	7	(5)
6.	www.dantral.com	1	2	3	4	5	6	7	(6)
7.	www.comflect.com	1	2	3	4	5	6	7	(7)
8.	www.fasdle.com	1	2	3	4	5	6	7	(8)
9.	www.kerfle.com	1	2	3	4	5	6	7	(9)
10.	www.curish.com	1	2	3	4	5	6	7	(10)
11.	www.ikbli.com	1	2	3	4	5	6	7	(11)
12.	www.pilcur.com	1	2	3	4	5	6	7	(12)
13.	www.mabsco.com	1	2	3	4	5	6	7	(13)
14.	www.jyshia.com	1	2	3	4	5	6	7	(14)

How **easy or difficult does it appear to <u>pronounce</u>** each of the following website addresses?

		Very Difficult						Very Easy	
1.	www.rovas.com	1	2	3	4	5	6	7	(1)
2.	www.fasney.com	1	2	3	4	5	6	7	(2)
3.	www.gimnal.com	1	2	3	4	5	6	7	(3)
4.	www.ufpiln.com	1	2	3	4	5	6	7	(4)
5.	www.burpaign.com	1	2	3	4	5	6	7	(5)
6.	www.dantral.com	1	2	3	4	5	6	7	(6)
7.	www.comflect.com	1	2	3	4	5	6	7	(7)
8.	www.fasdle.com	1	2	3	4	5	6	7	(8)
9.	www.kerfle.com	1	2	3	4	5	6	7	(9)
10.	www.curish.com	1	2	3	4	5	6	7	(10)
11.	www.ikbli.com	1	2	3	4	5	6	7	(11)
12.	www.pilcur.com	1	2	3	4	5	6	7	(12)
13.	www.mabsco.com	1	2	3	4	5	6	7	(13)
14.	www.jyshia.com	1	2	3	4	5	6	7	(14)

On the 1 to 7 scale below, please indicate the degree to which you expect to **like or dislike the website at each of the following addresses**?

		Dislike Very Much						Like Very Much	
1.	www.rovas.com	1	2	3	4	5	6	7	(1)
2.	www.fasney.com	1	2	3	4	5	6	7	(2)
3.	www.gimnal.com	1	2	3	4	5	6	7	(3)
4.	www.ufpiln.com	1	2	3	4	5	6	7	(4)
5.	www.burpaign.com	1	2	3	4	5	6	7	(5)
6.	www.dantral.com	1	2	3	4	5	6	7	(6)
7.	www.comflect.com	1	2	3	4	5	6	7	(7)
8.	www.fasdle.com	1	2	3	4	5	6	7	(8)
9.	www.kerfle.com	1	2	3	4	5	6	7	(9)
10.	www.curish.com	1	2	3	4	5	6	7	(10)
11.	www.ikbli.com	1	2	3	4	5	6	7	(11)
12.	www.pilcur.com	1	2	3	4	5	6	7	(12)
13.	www.mabsco.com	1	2	3	4	5	6	7	(13)
14.	www.jyshia.com	1	2	3	4	5	6	7	(14)

Please answer the following demographic questions. Keep in mind that your responses are both anonymous and confidential and cannot be traced back to you.

1. How comfortable are you using the Internet?

1	2	3	4	5	6	7
Very Uncomfortable						Very Comfortable

2. How extensive do you consider your experience with the Internet?

1	2	3	4	5	6	7
Not Very Extensive						Very Extensive

3. At what level would you rate your Internet skills?

1	2	3	4	5	6	7
Very Low Level of Skill						Very High Level of Skill

4. Approximately how many hours per week do you spend on the Internet? _____

5. Have you ever bought anything on the Internet?
__ Yes
__ No

6. Is English your native language?
__ Yes (if yes, skip to question 5)
__ No (If no, please indicate native language_____)

7. At what age did you start to speaking English on a regular basis? _____

8. What country were you born in? _____

9. How long have you lived in the United States? _____years

10. What is your ethnic group? _____

11. Are you
__ male __ female

12. What is your age? _____

Without turning back to any of the previous pages, please write down any and all of the **website addresses you remember** appearing on this survey.

PLEASE PROCEED

TO THE NEXT AND LAST PAGE

Without turning back to any of the previous pages, please **circle those website addresses you remember** appearing on this survey.

www.rovas.com	www.curide.com
www.fasney.com	www.imswut.com
www.genvive.com	www.gimnal.com
www.neogen.com	www.plentron.com
www.mabfei.com	www.plenical.com
www.pildom.com	www.ufpiln.com
www.burpaign.com	www.jaforp.com
www.dantral.com	www.hapsel.com
www.comflect.com	www.fasdle.com
www.gyrant.com	www.kerfle.com
www.curish.com	www.ikbli.com
www.pilcur.com	www.mabsco.com
www.pyayis.com	www.jyshia.com
www.balyon.com	www.hirnegna.com

THANK YOU FOR YOUR PARTICIPATION!

Thank you for agreeing to participate in this survey. Your answers will help marketing researchers design future studies. You need not spend too much time on any of the survey questions. However, please answer each question completely and honestly. Your responses will be kept completely anonymous and confidential. No one will be able to trace your responses back to you.

Thank you again for your participation!

Please indicate on the 1 to 7 scale below how **likely it is that each of the following is a <u>word in English</u>**.

		Very Unlikely						Very Likely	
1.	Curide	1	2	3	4	5	6	7	(1)
2.	Genvive	1	2	3	4	5	6	7	(2)
3.	Neogen	1	2	3	4	5	6	7	(3)
4.	Plentron	1	2	3	4	5	6	7	(4)
5.	Mabfei	1	2	3	4	5	6	7	(5)
6.	Pildom	1	2	3	4	5	6	7	(6)
7.	Jaforp	1	2	3	4	5	6	7	(7)
8.	Hapsel	1	2	3	4	5	6	7	(8)
9.	Gyrant	1	2	3	4	5	6	7	(9)
10.	Pyayis	1	2	3	4	5	6	7	(10)
11.	Balyon	1	2	3	4	5	6	7	(11)
12.	Hirnegna	1	2	3	4	5	6	7	(12)
13.	Plenical	1	2	3	4	5	6	7	(13)
14.	Imswut	1	2	3	4	5	6	7	(14)

For each of the following please write down **any <u>thoughts or associations</u> that come to mind including what would you expect to find at each one of the following websites.** You may skip those that do not immediately prompt any thoughts or associations.

1. www.curide.com_____
2. www.genvive.com_____
3. www.neogen.com_____
4. www.plentron.com_____
5. www.mabfei.com_____
6. www.pildom.com_____
7. www.jaforp.com_____
8. www.hapsel.com_____
9. www.gyrant.com_____
10. www.pyayis.com_____
11. www.balyon.com_____
12. www.hirnegna.com_____
13. www.plenical.com_____
14. www.imswut.com_____

Distinctiveness refers to the degree to which a website address is unique and stands out relative to other addresses. **Please rate the <u>distinctiveness</u> of each of the following website addresses** on the 1 to 7 scale below.

		Not At All Distinctive						Very Distinctive	
1.	www.curide.com	1	2	3	4	5	6	7	(1)
2.	www.genvive.com	1	2	3	4	5	6	7	(2)
3.	www.neogen.com	1	2	3	4	5	6	7	(3)
4.	www.plentron.com	1	2	3	4	5	6	7	(4)
5.	www.mabfei.com	1	2	3	4	5	6	7	(5)
6.	www.pildom.com	1	2	3	4	5	6	7	(6)
7.	www.jaforp.com	1	2	3	4	5	6	7	(7)
8.	www.hapsel.com	1	2	3	4	5	6	7	(8)
9.	www.gyrant.com	1	2	3	4	5	6	7	(9)
10.	www.pyayis.com	1	2	3	4	5	6	7	(10)
11.	www.balyon.com	1	2	3	4	5	6	7	(11)
12.	www.hirnegna.com	1	2	3	4	5	6	7	(12)
13.	www.plenical.com	1	2	3	4	5	6	7	(13)
14.	www.imswut.com	1	2	3	4	5	6	7	(14)

How **easy or difficult does it appear to pronounce** each of the following website addresses?

		Very Difficult						Very Easy	
1.	www.curide.com	1	2	3	4	5	6	7	(1)
2.	www.genvive.com	1	2	3	4	5	6	7	(2)
3.	www.neogen.com	1	2	3	4	5	6	7	(3)
4.	www.plentron.com	1	2	3	4	5	6	7	(4)
5.	www.mabfei.com	1	2	3	4	5	6	7	(5)
6.	www.pildom.com	1	2	3	4	5	6	7	(6)
7.	www.jaforp.com	1	2	3	4	5	6	7	(7)
8.	www.hapsel.com	1	2	3	4	5	6	7	(8)
9.	www.gyrant.com	1	2	3	4	5	6	7	(9)
10.	www.pyayis.com	1	2	3	4	5	6	7	(10)
11.	www.balyon.com	1	2	3	4	5	6	7	(11)
12.	www.hirnegna.com	1	2	3	4	5	6	7	(12)
13.	www.plenical.com	1	2	3	4	5	6	7	(13)
14.	www.imswut.com	1	2	3	4	5	6	7	(14)

On the 1 to 7 scale below, please indicate the degree to which you expect to **like or dislike the website at each of the following addresses**?

		Dislike Very Much						Like Very Much	
1.	www.curide.com	1	2	3	4	5	6	7	(1)
2.	www.genvive.com	1	2	3	4	5	6	7	(2)
3.	www.neogen.com	1	2	3	4	5	6	7	(3)
4.	www.plentron.com	1	2	3	4	5	6	7	(4)
5.	www.mabfei.com	1	2	3	4	5	6	7	(5)
6.	www.pildom.com	1	2	3	4	5	6	7	(6)
7.	www.jaforp.com	1	2	3	4	5	6	7	(7)
8.	www.hapsel.com	1	2	3	4	5	6	7	(8)
9.	www.gyrant.com	1	2	3	4	5	6	7	(9)
10.	www.pyayis.com	1	2	3	4	5	6	7	(10)
11.	www.balyon.com	1	2	3	4	5	6	7	(11)
12.	www.hirnegna.com	1	2	3	4	5	6	7	(12)
13.	www.plenical.com	1	2	3	4	5	6	7	(13)
14.	www.imswut.com	1	2	3	4	5	6	7	(14)

Please answer the following demographic questions. Keep in mind that your responses are both anonymous and confidential and cannot be traced back to you.

1. How comfortable are you using the Internet?

1	2	3	4	5	6	7
Very Uncomfortable						Very Comfortable

2. How extensive do you consider your experience with the Internet?

1	2	3	4	5	6	7
Not Very Extensive						Very Extensive

3. At what level would you rate your Internet skills?

1	2	3	4	5	6	7
Very Low Level of Skill						Very High Level of Skill

4. Approximately how many hours per week do you spend on the Internet? _____

5. Have you ever bought anything on the Internet?
__ Yes
__ No

6. Is English your native language?
__ Yes (if yes, skip to question 5)
__ No (If no, please indicate native language_____)

7. At what age did you start to speaking English on a regular basis? _____

8. What country were you born in? _____

9. How long have you lived in the United States? _____years

10. What is your ethnic group? _____

11. Are you
__ male __ female

12. What is your age? _____

Without turning back to any of the previous pages, please write down any and all of the **website addresses you remember** appearing on this survey.

PLEASE PROCEED

TO THE NEXT AND LAST PAGE

Without turning back to any of the previous pages, please **circle those website addresses you remember** appearing on this survey.

www.rovas.com	www.curide.com
www.fasney.com	www.imswut.com
www.genvive.com	www.gimnal.com
www.neogen.com	www.plentron.com
www.mabfei.com	www.plenical.com
www.pildom.com	www.ufpiln.com
www.burpaign.com	www.jaforp.com
www.dantral.com	www.hapsel.com
www.comflect.com	www.fasdle.com
www.gyrant.com	www.kerfle.com
www.curish.com	www.ikbli.com
www.pilcur.com	www.mabsco.com
www.pyayis.com	www.jyshia.com
www.balyon.com	www.hirnegna.com

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX D

PROCEDURAL INSTRUCTIONS FOR THE EXPERIMENT

Study Overview and General Instructions

Overview

The purpose of this study is to help marketers develop names for their web sites. As part of this study, you will see or hear the names of web sites and answer a number of questions about each one. You will also be asked a number of questions regarding yourself as a consumer. These questions are for marketing research purposes only. Your responses are both anonymous and confidential. No one will be able to trace your responses back to you so please answer all questions as honestly and completely as possible.

With the exception of a pencil or pen, everything that you will need during this study is at your workstation. This includes this envelope containing three folders, a cassette player loaded with a cassette, and a set of headphones with an attached microphone. The cassette player will be operated by a central control. You will not need to operate any of this equipment yourself.

Procedure

It is extremely important that you do not disturb fellow participants (for example, by talking) and that you follow all written and oral instructions. Failure to do so will require us to discontinue your participation in this study. If at any time you have a problem with the equipment or have a question, please raise your hand and the

administrator will come to your workstation to help you.

After we finish reviewing these general instructions, the administrator will ask you to put on your head sets and begin the study. The web site addresses included in this study will be presented one at a time. After each one, you will be asked to answer a number of questions about the web site address presented. You will use the three folders in this envelope for these tasks. Each folder is labeled and should only be opened when you are instructed to open that particular folder. The first folder, labeled "Web Sites," contains web site addresses and should only be opened when you are told to open the Web Site Folder. The second folder, labeled "Questionnaires," contains the surveys included in this study and should only be opened when you are told to open the Questionnaires folder. The third folder, the Completed Tasks folder, is now empty. Every time that you take out and use something from either the Web Sites or Completed Tasks folder, you are to put it in the Completed Tasks folder when you are done. You will always be instructed as to when to retrieve items from the Web Sites and Questionnaires folders and also when to put those items in the Completed Tasks folder.

There may be times when you complete a questionnaire and put it in the Completed Tasks folder before the other participants have done so. When this happens, you are asked to sit quietly and wait for the next set of instructions. It is extremely important that you do not go back or look ahead to other web sites or other questionnaires while you are waiting.

Final Comments

Thank you for participating in this study. Your time and effort are greatly appreciated!

APPENDIX E

BOOKLET OF MEASURES

Booklet 1

1. Using the 1 (very difficult) to 7 (very easy) scale below, please indicate **how easy or difficult you think it would be to pronounce** this web site address?

Very Difficult						Very Easy
1	2	3	4	5	6	7

2. Please **say this web site address aloud in the microphone**. If you do not remember the address, please say "skip."

3. Distinctiveness refers to the degree to which a web site address is unique and stands out relative to other web site addresses. Please rate the **distinctiveness of this web site address** on the following 1 to 7 scale where 1 means'not at all distinctive' and 7 means 'very distinctive'.

Not At All Distinctive						Very Distinctive
1	2	3	4	5	6	7

4. In the space provided, please write down any **thoughts or associations** that come to mind regarding this web site or its address. If no thoughts or associations come to mind, you may skip to the next question.

_____

_____

_____

_____

5. Please rate this **web site <u>address</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

6. Please rate this **web <u>site</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

7. Assuming that you were connected to the Internet, how likely would you be to visit this web site?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

Have you completed all the questions in this booklet? If so, please place this booklet in your Completed Tasks Folder. Do not look back at completed materials or look ahead at future materials that are part of this study. Please sit quietly and wait for further instructions.

Booklet 2

1. Using the 1 (very difficult) to 7 (very easy) scale below, please indicate **how easy or difficult you think it would be to pronounce** this web site address?

Very Difficult						Very Easy
1	2	3	4	5	6	7

2. Please **say this web site address aloud in the microphone**. If you do not remember the address, please say "skip."

3. Distinctiveness refers to the degree to which a web site address is unique and stands out relative to other web site addresses. Please rate the **distinctiveness of this web site address** on the following 1 to 7 scale where 1 means 'not at all distinctive' and 7 means 'very distinctive'.

Not At All Distinctive						Very Distinctive
1	2	3	4	5	6	7

4. In the space provided, please write down any **thoughts or associations** that come to mind regarding this web site or its address. If no thoughts or associations come to mind, you may skip to the next question.

_____

_____

_____

_____

5. Please rate this **web site <u>address</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

6. Please rate this **web <u>site</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

7. Assuming that you were connected to the Internet, how likely would you be to visit this web site?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

Have you completed all the questions in this booklet? If so, please place this booklet in your Completed Tasks Folder. Do not look back at completed materials or look ahead at future materials that are part of this study. Please sit quietly and wait for further instructions.

Booklet 3

1. Using the 1 (very difficult) to 7 (very easy) scale below, please indicate **how easy or difficult you think it would be to pronounce** this web site address?

Very Difficult						Very Easy
1	2	3	4	5	6	7

2. Please **say this web site address aloud in the microphone**. If you do not remember the address, please say "skip."

3. Distinctiveness refers to the degree to which a web site address is unique and stands out relative to other web site addresses. Please rate the **distinctiveness of this web site address** on the following 1 to 7 scale where 1 means 'not at all distinctive' and 7 means 'very distinctive'.

Not At All Distinctive						Very Distinctive
1	2	3	4	5	6	7

4. In the space provided, please write down any **thoughts or associations** that come to mind regarding this web site or its address. If no thoughts or associations come to mind, you may skip to the next question.

_____

_____

_____

_____

5. Please rate this **web site <u>address</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

6. Please rate this **web <u>site</u>** on the criteria below:

Dislike Very Much						Like Very Much
1	2	3	4	5	6	7
Very Bad						Very Good
1	2	3	4	5	6	7
Negative						Positive
1	2	3	4	5	6	7

7. Assuming that you were connected to the Internet, how likely would you be to visit this web site?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

Have you completed all the questions in this booklet? If so, please place this booklet in your Completed Tasks Folder. Do not look back at completed materials or look ahead at future materials that are part of this study. Please sit quietly and wait for further instructions.

Booklet 4

Part I

The aim of this exercise is to determine the style or manner you use when carrying out different mental tasks. Your answers to the questions in this section should reflect the manner in which you typically engage in each of the tasks mentioned. There are no right or wrong answers; we only ask that you provide honest and accurate answers. Please answer each question by circling one of the four possible responses. For example, if you see the statement "I seldom read books" and this is your *typical* behavior, even though you might read, say, one book a year, you would circle the "ALWAYS TRUE" response.

		Always True	Usually True	Usually False	Always False
1.	I enjoy doing work that requires the use of words.	1	2	3	4
2.	There are some special times in my life that I like to relive by mentally 'picturing' just how everything looked.	1	2	3	4
3.	I can never seem to find the right word when I need it.	1	2	3	4
4.	I do a lot of reading.	1	2	3	4
5.	When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it.	1	2	3	4
6.	I think I often use words in the wrong way.	1	2	3	4
7.	I enjoy learning new words.	1	2	3	4
8.	I like to picture how I could fix up my apartment or a room if I could buy anything I wanted.	1	2	3	4
9.	I often make written notes to myself.	1	2	3	4
10.	I like to daydream.	1	2	3	4
11.	I generally prefer to use a diagram rather than a written set of instructions.	1	2	3	4

		Always True	Usually True	Usually False	Always False
12.	I like to 'doodle.'	1	2	3	4
13.	I find it helps to think in terms of mental pictures when doing many things.	1	2	3	4
14.	After I meet someone for the first time, I can usually remember what they look like, but not much about them.	1	2	3	4
15.	I like to think of synonyms for words.	1	2	3	4
16.	When I have forgotten something I frequently try to form a mental 'picture' to remember it.	1	2	3	4
17.	I like learning new words.	1	2	3	4
18.	I prefer to read instructions about how to do something rather than have someone show me.	1	2	3	4
19.	I prefer activities that don't require a lot of reading.	1	2	3	4
20.	I seldom daydream.	1	2	3	4
21.	I spend very little time attempting to increase my vocabulary.	1	2	3	4
22.	My thinking often consists of mental 'pictures' or images.	1	2	3	4

Part II

For each of the items on this page, please mark what the Internet means to YOU. Evaluate each item separately and independently and work at fairly high speed through these questions. Do not worry or puzzle over individual items. It is your first impressions, the immediate feelings about the items, that we want. On the other hand, please do not be careless because we want your true impressions.

To me the Internet is:

1.	important						unimportant
	1	2	3	4	5	6	7
2.	boring						interesting
	1	2	3	4	5	6	7
3.	relevant						irrelevant
	1	2	3	4	5	6	7
4.	exciting						unexciting
	1	2	3	4	5	6	7
5.	means nothing						means a lot to me
	1	2	3	4	5	6	7
6.	appealing						unappealing
	1	2	3	4	5	6	7
7.	fascinating						mundane
	1	2	3	4	5	6	7
8.	worthless						valuable
	1	2	3	4	5	6	7
9.	involving						uninvolving
	1	2	3	4	5	6	7
10.	not needed						needed
	1	2	3	4	5	6	7

Part III

1. How comfortable are you using the Internet?

Very Uncomfortable						Very Comfortable
1	2	3	4	5	6	7

2. How extensive do you consider your experience with the Internet?

Not Very Extensive						Very Extensive
1	2	3	4	5	6	7

3. At what level would you rate your Internet skills?

Very Low Level of Skill						Very High Level of Skill
1	2	3	4	5	6	7

4. Is English your native language?
___ Yes (If yes, please skip to question 6.)
___ No (If no, please indicate native language _____)

5. If English is not your native language, at what age did you start speaking English on a regular basis? _____

6. What country were you born in? _____

7. How long have you lived in the United States? _____ years

8. Are you
___ male
___ female

9. What is your age? ____

Part IV

1. In the space provided, please write down the **web site addresses <u>included in this study</u>**. If you do not remember any of these web site addresses, you may leave this space blank.

_____

_____

_____

2. Please **say** into your microphone the **web site addresses <u>included in this study</u>**. If you do not remember any of the web site addresses, please say 'skip'.

Have you completed all the questions in this booklet? If so, please place this booklet in your Completed Tasks Folder. Do not look back at completed materials or look ahead at future materials that are part of this study. Please sit quietly and wait for further instructions.

Booklet 5

Part I

You are about to hear the addresses for four web sites. **Please circle the number(s) of the web site(s) you remember being included in this study.**

web site number: 1 2 3 4

Please turn to the next page and complete the final two pages of questions. Once you have completed these final questions, please place this booklet in your Completed Tasks Folder. Do not look back at completed materials or look ahead at future materials that are part of this study. Please sit quietly and wait for further instructions.

Part II

Please circle the web site addresses you remember being included in this study.

1. www.burpaign.com
2. www.fasdle.com
3. www.imswut.com
4. www.plentron.com

Part III

1. Think back to the **first web site address** (www.burpaign.com) presented in this study in order to answer the next two questions.

   a. A stem refers to that part of the web site address between the "www." and ".com". How likely is it that the stem of this web site address is a word in English?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

   b. Had you seen or heard of this web site address before participating in this study?

   ___ Yes ___ No

2. Think back to the **second web site address** (www.imswut.com) presented in this study in order to answer the next two questions.

   a. A stem refers to that part of the web site address between the "www." and ".com". How likely is it that the stem of this web site address is a word in English?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

   b. Had you seen or heard of this web site address before participating in this study?

   ___ Yes ___ No

3. Think back to the **third web site address** (www.fasdle.com) presented in this study in order to answer the next two questions.

   a. A stem refers to that part of the web site address between the "www." and ".com". How likely is it that the stem of this web site address is a word in English?

Very Unlikely						Very Likely
1	2	3	4	5	6	7

   b. Had you seen or heard of this web site address before participating in this study?

   ___ Yes ___ No

APPENDIX F

INSTRUCTIONS TO CODERS

Coding Instructions

Introduction

Thank you for agreeing to participate in this content analysis project as a coder. Content analysis is procedure used to quantify qualitative data. In order to perform content analysis, a researcher must collect qualitative data, develop a coding scheme for classifying the data into meaningful categories, and train coders who perform the classification by assigning appropriate codes from the coding scheme to the data. These codes can then be entered into the computer and be used in statistical analysis.

These pages were written as instructions for this specific coding project. Please read these instructions thoroughly and ask any questions that arise before beginning the coding process.

Thanks again for your help!

Coding Material

You will be categorizing subjects' responses to the following question: "In the space provided, please write down any thoughts or associations that come to mind regarding this web site or its address." The web site address concerned can be 1 of 4 possibilities as explained later. Responses to this question are often referred to as 'texts' throughout these instructions.

Each text is assigned an identification number. This ID number appears in the

upper right-hand corner of each page and is made up of two parts. The first part is a 3-digit number identifying the subject. The second part is a letter identifying the web site address that the subject is evaluating. These letters and their corresponding addresses (or names) are as follows:

B www.burpaign.com

F www.fasdle.com

I www.imswut.com

P www.plentron.com

Subjects answered questions about all of these names but not everyone had a response for each name and thus sometimes left this question unanswered. Since you will only be coding responses on question 4, you are only being given those pages with responses for this item. As such, there are some subjects for whom who do not have any pages because they did not respond to question 4 for any name (e.g., subjects 007 and 008), some subjects for whom you have one page because they only responded to question 4 for one name (e.g., subjects 001 and 002), and subjects for whom you have multiple pages since they responded to question 4 for multiple names (e.g., 005 and 006). As a result, the first 7 sheets represent responses by 5 subjects across 3 names as follows:

ID #	Subject #	Name
001B	Subject 1	Burpaign
002F	Subject 2	Fasdle
003B	Subject 3	Burpaign

004F	Subject 4	Fasdle
005B	Subject 5	Burpaign
005I	Subject 5	Imswut
005F	Subject 5	Fasdle

Why do you need to understand this identification system? There are two reasons. Firstly, you need to know the name that the subject is referring to in order to assign a code properly. Secondly, it may be helpful to know when you are reading a group of responses by the same person. It may the case that you have to figure out what a person was thinking in writing a given response in order to asign a code. Knowing that the previous two responses came from the same person in responding to other names may be helpful in this regard. For this reason, it is recommended that you code the texts in numerical order as opposed to grouping them by name first (i.e., coding all Bs, then all Fs, etc...).

Coding Scheme

After reading each text, you are to assign one of the following four codes:

Code	Category
P	Product-related response including features and/or benefits of the product/ web site, what the product does for the consumer (e.g., gives information, searches for things) or represents, and what one might expect to find at the site. In short, a semantic or meaning-based response.
S	Surface string-related responses such as giving a word that rhymes or has the same sound(s) (e.g.., *paramour:paramount*), breaking the word into smaller

linguistic components, adding, deleting, or reordering the letters to come up with a more meaningful letter string or word (e.g., *paramour:armor*), giving a sound-mediated response (e.g., *persimmon:spice* are related through the similar sounding mediator *cinnamon* which is a kind of spice) and giving a response with no identifiable relation (e.g., *justice:cat*). In short, a non-semantic response. For surface string-related responses please indicate the type of response as follows:

S1 giving a word that rhymes or has the same sound(s) (e.g.., paramour:paramount)

S2 breaking the word into smaller linguistic components (e.g., skyscraper: sky scraper)

S3 adding, deleting, or reordering the letters to come up with a more meaningful letter string or word (e.g., paramour:armor)

S4 giving a sound-mediated response (e.g., persimmon:spice are related through the similar sounding mediator cinnamon which is a kind of spice)

S5 giving a response with no identifiable relation (e.g., justice:cat)

S6 other surface-string related response

E Evaluative judgment including references as to how easy the name is to remember or pronounce, how unique or boring the name is, and whether or not the subject likes the name.

For the evaluative judgments, please indicate the valence of the response as follows:

E+ Positive evaluative judgment

E- Negative evaluative judgment

E Neutral evaluative judgment

M Miscellaneous response including illegible or non-sensical responses and responses that do not fit any other category. This category should be used very sparingly.

The code you assign depends on the subject's response in relation to the name to which the response refers. It is thus crucial that you pay close attention to the letter (B, F, I, or P) in the ID number. See **Coding Material** for more information about these codes and the names to which they refer.

Most texts will require a single code. However, in some cases, a subject may have expressed multiple thoughts. If these thoughts seem independent of one another, you may split the text and code each thought separately. A train of thought, however, should be assigned one code and one code only.

Coding Procedure

1. Read all instructional materials and familiarize yourself with the coding categories.
2. Categorize sample texts keeping track of questions and/or problems that arise. Each coder is to work independently of one another. Before assigning a code, remember to identify the name to which the subject is responding through the ID number.
3. Meet with second coder (over the phone is okay too) to review categorization of sample texts, assess agreement rate between coders, reconcile coding differences,

and raise questions and/or problems that arose during sample categorization.

4. Contact Dawn with any problems or questions not addressed in #3 above. If the agreement rate of sample text codes is lower than 80%, contact Dawn immediately and do not continue with coding until the sources of disagreement have been identified and eliminated.

5. Categorize texts of interest assigning one code to each text. It is possible that some texts contain multiple independent thoughts. In such cases, you may split the text and code each independent thought separately. A train of thought, however, should be assigned one code and one code only. Each coder is to work independently of one another. Before assigning a code, remember to identify the name to which the subject is responding through the ID number.

6. Upon completion of categorization task, meet with the second coder to assess your agreement over the categorization of each text. Coders should attempt to resolve any disagreement over assigned codes through discussion keeping track of both the disputed codes as well as the end result.

Contact Information

If you have any questions, contact Dawn via e-mail or telephone.

APPENDIX G

E-MAIL FROM STYLE OF PROCESSING SCALE AUTHOR

Subject: Re: Request for Opinion and/or Advice

Date: Mon, 1 May 2000 07:54:09 -0700

From: TChilders@csom.umn.edu

To: dawn_lerman@baruch.cuny.edu

Dawn,

There are several possibilities, but I might need more info. First, how did you factor the scale? I always recommend a principal axis with oblimin and not principal components.

Another issue is when the scale was administered. I find that the administration of experimental materials can affect responses to the scale. The scale should be separated as much as possible. If the scale is administered before the stimuli then you can get carryover to the stimuli. The most effect on the scale is when you administer stimuli first and then in the same session administer the scale. The task of the experiment can make stimuli of one form (visual or verbal) more salient and this affects how individuals respond to the scale. In effect their processing tendencies can be altered by the salience of the experimental materials.

Your explanation is also plausible. From reading the Schmidt research in JCR on linguistic processing its possible that there is a disassociation for verbal processors, since Asian languages, particularly Chinese and Japanese are more visually oriented in their

verbal representations.

There is also a latter version of the scale. It is published in the Journal of Mental Imagery, 1993. vol 3&4, p. 119-132. titled, On the Construct Validity of the SOP scale, Heckler, Childers, and Houston.

If you would like to talk further give me a call.

Terry Childers

APPENDIX H

DESCRIPTIVE STATISTICS

Abbreviations for variable names are used in this Appendix. Please refer to the legend below for an explanation of all abbreviations.

Abbreviation	Variable
Distinct	Distinctiveness
Pro (S)	Ease of Pronunciation - Subjective Measure
Pro (O)	Ease of Pronunciation - Objective Measure
Thoughts	Number of Thoughts
Product	Number of Product-Related Thoughts
Surface	Number of Surface String-Related Thoughts
Attname	Attitude Toward the Name
Attbrand	Attitude Toward the Brand
Intention	Purchase/Site Visit Intentions
Recog (A)	Recognition - Auditory
Recog (V)	Recognition - Visual
Recall (A)	Recall - Auditory
Recall (V)	Recall - Visual
Age	Age of Subject
Sex	Sex of Subject
Language	Native Language

Abbreviation	Variable
Invlvmnt	Internet Involvement
Expertise	Internet Expertise

Basic Statistics

Variable	N	Mean	Std Dev	Minimum	Maximum
Distinct	104	4.70	1.31	1.00	7.00
Pro (S)	104	4.36	1.69	1.00	7.00
Pro (O)	98	1.48	0.66	0.00	2.00
Thoughts	104	1.91	0.64	0.00	3.00
Product	104	0.17	0.38	0.00	1.00
Surface	104	0.26	0.54	0.00	2.00
Attname	103	12.36	3.82	3.00	21.00
Attbrand	100	12.54	3.49	3.00	21.00
Intention	103	3.71	1.77	1.00	7.00
Recog (A)	104	0.82	0.39	0.00	1.00
Recog (V)	104	0.92	0.27	0.00	1.00
Recall (A)	95	0.98	0.88	0.00	2.00
Recall (V)	101	0.94	0.85	0.00	2.00
Age	104	0.14	0.35	0.00	1.00
Sex	103	0.54	0.50	0.00	1.00
Language	102	0.54	0.51	0.00	1.00

Variable	N	Mean	Std Dev	Minimum	Maximum
Invlvmnt	103	5.82	0.85	3.40	7.00
Expertise	103	5.09	1.21	1.50	7.00

Pearson Correlations

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho = 0 /
Number of Observations

	Name	Exposure	Distinct	Pro(S)	Pro(O)
Name	1.00	-0.02	0.14	0.35	0.34
	0.00	0.85	0.16	0.01	0.01
	104	104	104	104	98
Exposure	-0.02	1.00	-0.12	-0.24	-0.02
	0.85	0.00	0.25	0.01	0.88
	104	104	104	104	98
Distinct	0.14	-0.12	1.00	0.26	0.19
	0.16	0.25	0.00	0.01	0.06
	104	104	104	104	98
Pro(S)	0.35	-0.24	0.26	1.00	0.25
	0.01	0.01	0.01	0.00	0.01
	104	104	104	104	98
Pro(O)	0.34	-0.02	0.19	0.25	1.00
	0.01	0.88	0.06	0.01	0.00
	98	98	98	98	98
Thoughts	0.30	-0.14	0.06	0.31	0.26
	0.01	0.14	0.55	0.01	0.01
	104	104	104	104	98
Product	0.25	-0.14	0.07	0.25	0.14
	0.01	0.15	0.51	0.01	0.18
	104	104	104	104	98

	Name	Exposure	Distinct	Pro (S)	Pro (O)
Surface	0.20	-0.80	0.03	0.22	0.24
	0.05	0.42	0.78	0.03	0.02
	104	104	104	104	98
Attname	0.15	-0.16	0.46	0.69	0.16
	0.13	0.10	0.01	0.13	0.01
	103	103	103	103	97
Attbrand	0.14	-0.07	0.50	0.60	0.10
	0.16	0.49	0.01	0.01	0.35
	100	100	100	100	95
Intention	0.01	-0.09	0.46	0.45	0.06
	0.90	0.37	0.01	0.01	0.55
	103	103	103	103	98
Recog (A)	-0.17	0.12	0.06	-0.08	-0.04
	0.08	0.24	0.52	0.43	0.73
	104	104	104	104	98
Recog (V)	0.07	-0.08	-0.01	0.06	0.16
	0.47	0.43	0.92	0.54	0.11
	104	104	104	104	98
Recall (A)	0.05	-0.46	0.10	0.10	0.11
	0.641	0.01	0.35	0.364	0.30
	95	95	95	95	95
Recall (V)	0.05	-0.50	0.15	0.10	0.11
	0.65	0.01	0.13	0.32	0.27
	101	101	101	101	95
Age	-0.08	-0.02	0.01	-0.14	0.10
	0.41	0.84	0.09	0.17	0.32
	104	104	104	104	98
Sex	0.05	0.11	-0.26	-0.10	-0.08
	0.62	0.27	0.01	0.34	0.42
	103	103	103	103	97

	Name	Exposure	Distinct	Pro (S)	Pro (O)
Language	-0.10	0.01	-0.04	0.04	-0.05
	0.33	0.99	0.68	0.68	0.66
	102	102	102	102	96
Invlvmnt	-0.03	-0.08	0.05	0.17	0.08
	0.80	0.45	0.63	0.10	0.43
	103	103	103	103	97
Expertise	-0.06	-0.02	0.09	0.05	0.12
	0.55	0.86	0.37	0.63	0.26
	103	103	103	103	97

	Thoughts	Product	Surface	Attname	Attbrand
Name	0.30	0.25	0.20	0.15	0.14
	0.01	0.01	0.05	0.13	0.16
	104	104	104	103	100
Exposure	-0.15	-0.14	-0.08	-0.16	-0.07
	0.14	0.15	0.42	0.10	0.49
	104	104	104	103	100
Distinct	0.06	0.07	0.03	0.46	0.50
	0.56	0.15	0.78	0.01	0.01
	104	104	104	103	100
Pro (S)	0.31	0.25	0.22	0.69	0.60
	0.01	0.01	0.03	0.01	0.01
	104	104	104	103	100
Pro (O)	0.26	0.14	0.24	0.16	0.10
	0.01	0.19	0.02	0.13	0.35
	98	98	98	97	95
Thoughts	1.00	0.61	0.83	0.27	0.15
	0.00	0.01	0.01	0.01	0.14
	104	104	104	103	100

	Thoughts	Product	Surface	Attname	Attbrand
Product	0.61	1.00	0.06	0.26	0.14
	0.01	0.00	0.53	0.01	0.18
	104	104	104	103	100
Surface	0.83	0.06	1.00	0.16	0.09
	0.01	0.53	0.00	0.10	0.37
	104	104	104	103	100
Attname	0.27	0.26	0.16	1.00	0.85
	0.01	0.01	0.10	0.00	0.01
	103	103	103	103	99
Attbrand	0.15	0.14	0.09	0.85	1.00
	0.14	0.18	0.37	0.01	0.00
	100	100	100	99	100
Intention	0.08	0.00	0.10	0.67	0.71
	0.04	0.97	0.31	0.01	0.01
	103	103	103	102	100
Recog (A)	0.156	0.15	0.09	0.02	0.07
	0.12	0.13	0.37	0.87	0.47
	104	104	104	103	100
Recog (V)	-0.03	-0.06	0.01	-0.06	-0.05
	0.77	0.55	0.96	0.56	0.62
	104	104	104	103	100
Recall (A)	0.27	0.23	0.17	0.02	-0.09
	0.01	0.03	0.09	0.85	0.40
	95	95	95	94	92
Recall (V)	0.18	0.19	0.10	0.09	0.05
	0.07	0.06	0.32	0.38	0.65
	101	101	101	100	97
Age	-0.14	-0.12	-0.10	-0.02	-0.05
	0.15	0.24	0.33	0.86	0.65
	104	104	104	103	100

	Thoughts	Product	Surface	Attname	Attbrand
Sex	-0.10	-0.14	-0.03	-0.16	-0.05
	0.32	0.15	0.81	0.11	0.59
	103	103	103	102	99
Language	-0.18	-0.09	-0.17	0.15	0.20
	0.07	0.38	0.10	0.15	0.06
	102	102	102	101	98
Invlvmnt	0.07	0.14	-0.01	0.24	0.17
	0.50	0.17	0.91	0.01	0.09
	103	103	103	102	99
Expertise	-0.01	0.02	-0.03	0.03	0.01
	0.89	0.867	0.77	0.80	0.95
	103	103	103	102	99

	Intention	Recog (A)	Recog (V)	Recal (A)	Recall (V)
Name	0.01	-0.17	0.07	0.05	0.05
	0.90	0.080	0.47	0.64	0.65
	103	104	104	95	101
Exposure	-0.09	0.12	-0.08	-0.46	-0.50
	0.37	0.24	0.43	0.01	0.01
	103	104	104	95	101
Distinct	0.46	0.06	-0.01	0.10	0.15
	0.01	0.52	0.92	0.35	0.13
	103	104	104	95	101
Pro (S)	0.45	-0.08	0.06	0.10	0.10
	0.01	0.43	0.54	0.36	0.32
	103	104	104	95	101
Pro (O)	0.06	-0.04	0.16	0.11	0.11
	0.55	0.73	0.11	0.30	0.27
	98	98	98	95	95

	Intention	Recog (A)	Recog (V)	Recal (A)	Recall (V)
Thoughts	0.08	0.16	-0.03	0.27	0.18
	0.41	0.12	0.77	0.01	0.07
	103	104	104	95	101
Product	0.00	0.15	-0.06	0.23	0.19
	0.97	0.13	0.55	0.02	0.06
	103	104	104	95	101
Surface	0.10	0.09	0.01	0.17	0.10
	0.31	0.37	0.96	0.09	0.32
	103	104	104	95	101
Attname	0.67	0.02	-0.06	0.02	0.09
	0.01	0.87	0.56	0.85	0.38
	102	103	103	94	100
Attbrand	0.71	0.07	-0.05	-0.09	0.05
	0.01	0.47	0.62	0.40	0.65
	100	100	100	92	97
Intention	1.00	0.09	-0.05	0.07	0.04
	0.00	0.36	0.63	0.53	0.67
	103	103	103	95	100
Recog (A)	0.09	1.00	0.24	-0.04	0.03
	0.36	0.00	0.02	0.68	0.80
	103	104	104	95	101
Recog (V)	-0.05	0.24	1.00	0.12	0.11
	0.63	0.02	0.00	0.23	0.27
	103	104	104	95	101
Recall (A)	0.07	-0.04	0.12	1.00	0.83
	0.53	0.68	0.23	0.00	0.01
	95	95	95	95	92
Recall (V)	0.04	0.03	0.11	0.83	1.00
	0.67	0.80	0.27	0.01	0.00
	100	101	101	92	101

	Intention	Recog (A)	Recog (V)	Recal (A)	Recall (V)
Age	0.02	-0.09	-0.19	-0.13	-0.10
	0.86	0.37	0.05	0.22	0.31
	103	104	104	95	101
Sex	0.01	0.17	0.03	-0.11	-0.18
	0.90	0.09	0.80	0.29	0.07
	102	103	103	94	100
Language	0.16	0.01	-0.05	-0.22	-0.24
	0.12	0.90	0.62	0.03	0.01
	101	102	102	93	100
Invlvmnt	0.19	0.15	0.03	0.05	0.11
	0.06	0.12	0.79	0.63	0.28
	102	103	103	94	101
Expertise	-0.04	0.11	0.22	0.12	0.13
	0.69	0.27	0.03	0.25	0.19
	102	103	103	94	101

	Age	Sex	Language	Invlvmnt	Expertise
Name	-0.08	0.05	-0.10	-0.03	-0.06
	0.41	0.62	0.33	0.81	0.55
	104	103	102	103	103
Exposure	-0.02	0.11	0.00	-0.08	-0.02
	0.84	0.27	0.99	0.45	0.86
	104	103	102	103	103
Distinct	0.01	-0.26	-0.04	0.05	0.09
	0.92	0.01	0.68	0.63	0.37
	104	103	102	103	103
Pro (S)	-0.14	-0.10	0.04	0.17	0.05
	0.17	0.34	0.68	0.10	0.63
	104	103	102	103	103

	Age	Sex	Language	Invlvmnt	Expertise
Pro (O)	0.10	-0.08	-0.05	0.08	0.15
	0.32	0.42	0.66	0.43	0.26
	98	97	96	97	97
Thoughts	-0.14	-0.10	-0.18	0.07	-0.01
	0.15	0.32	0.07	0.50	0.89
	104	103	102	103	103
Product	-0.12	-0.14	-0.09	0.14	0.02
	0.24	0.15	0.38	0.17	0.86
	104	103	102	103	103
Surface	-0.10	-0.03	-0.17	-0.01	-0.03
	0.33	0.81	0.10	0.91	0.77
	104	103	102	103	103
Attname	-0.02	-0.16	0.15	0.24	0.03
	0.86	0.11	0.15	0.01	0.80
	103	102	101	102	102
Attbrand	-0.05	-0.05	0.20	0.17	0.01
	0.65	0.59	0.06	0.09	0.95
	100	99	98	99	99
Intention	0.02	0.01	0.16	0.19	-0.04
	0.86	0.90	0.12	0.06	0.69
	103	102	101	102	102
Recog (A)	-0.09	0.17	0.01	0.15	0.11
	0.37	0.09	0.90	0.12	0.27
	104	103	102	103	103
Recog (V)	-0.19	0.03	-0.05	0.03	0.22
	0.06	0.80	0.62	0.79	0.03
	104	103	102	103	103
Recall (A)	-0.13	-0.11	-0.22	0.05	0.12
	0.22	0.29	0.03	0.63	0.25
	95	94	93	94	94

	Age	Sex	Language	Invlvmnt	Expertise
Recall (V)	-0.10	-0.18	-0.24	0.11	0.13
	0.31	0.07	0.01	0.28	0.19
	101	101	100	101	101
Age	1.00	0.21	0.20	-0.04	-0.11
	0.00	0.03	0.05	0.69	0.26
	104	103	102	103	103
Sex	0.21	1.00	0.29	-0.10	-0.12
	0.03	0.00	0.00	0.33	0.24
	103	103	102	103	103
Language	0.20	0.29	1.00	0.11	-0.06
	0.05	0.00	0.00	0.26	0.56
	102	102	102	102	102
Invlvmnt	-0.04	-0.10	0.11	1.00	0.46
	0.69	0.33	0.26	0.00	0.01
	103	103	102	103	103
Expertise	-0.11	-0.12	-0.06	0.46	1.00
	0.26	0.24	0.56	0.01	0.00
	103	103	102	103	103

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