Sound symbolism and the perception of luxury versus basic brands

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**SOUND SYMBOLISM AND THE PERCEPTION OF LUXURY
VERSUS BASIC BRANDS**

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NANYANG BUSINESS SCHOOL

2015

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LIST OF ABBREVIATIONS OR SYMBOLS

IPA	International Phonetic Alphabet /Association
BB	Basic Brand name
LB	Luxury Brand name
HBB	Hypothetical Basic Brand name
HLB.....	Hypothetical Luxury Brand name
FAVE	Forced Alignment & Vowel Extraction
ISI.....	Inter Stimulus Interval
SOA.....	Stimulus Onset Asynchrony
ARPA.....	Advanced Research Projects Agency code

EXTENDED ABSTRACT

Globalisation has witnessed a massive surge in consumerism and with it, the rise of global super brands. Brands, which act as shortcuts to consumers, reassuring them of specific qualities and deliverables, are now bigger than ever before in human history. But in this cluttered brand saturated environment, how can manufacturers of new products position and launch their brands in such a way as to immediately attract consumer's attention? One key component is the nomenclature itself, i.e. the novelty and importance of the brand name. Today, most companies recognising the relevance of this employ branding agencies and consultants to create novel brand names derived from the aspirations of the products in question. But not all of these new product launches succeed and some estimate that between 40-90 % of all new products launched fail within their first year (Gourville, 2006), with the brand name identified to be one of the factors behind their failure (for example, Ford Edsel; Klink, 2001). So what is the secret behind the naming of a new product or brand and is there a specific recipe for success? This dissertation explores the use of sound symbolism in luxury and basic brand names to investigate whether there is a phonetic recipe that signals whether brands are either premium or essential and how this might work in consumers' minds.

The sound of a spoken word conveys meaning to the listener. All spoken words are composed of basic sound units called phonemes and past research has shown that an individual phoneme itself, even if embedded within a fictitious word, can influence human emotions. This dissertation has investigated a novel phenomenon: the effect of different phonetic structures on the perception of hypothetical luxury and basic brand names. Specifically, it was hypothesized that the phonetic structures of luxury brand names are distinct from those of basic brand names and that these distinctions help to maintain the perception of exclusivity associated with luxury brands in consumers' minds.

The hypothesis was tested using three approaches- Firstly, phonetic differences in the written form of a set of existing luxury and basic brand names were explored using the International Phonetic Alphabet (IPA) notations; secondly, a spectral analysis of the acoustic wave pattern differences between luxury and basic brand names was carried out and thirdly, in a semantic priming reaction time study, potential differences in the implicit perception of hypothetical luxury and basic brand names (generated using the distinct phonetic patterns associated with luxury and basic brands and identified in Studies 1 and 2) were investigated.

The results indicate that the phonetic structures of luxury and basic brand names differ in their use of back/front vowels, stressed/unstressed vowels, the presence/absence of affricates and their syllabic structure. Results of the semantic priming experiment suggest that the use of these specific phonetic characteristics can enhance the perception of '*luxury-ness*' or '*basic-ness*' in a brand name. Furthermore, as the effect is

demonstrated using an implicit semantic priming paradigm, it is indicative of the automatic and implicit nature of these manifestations.

In the first section, this dissertation demonstrates that despite their premium appeal, luxury brand names tend to use some of the more unconventional patterns of human speech, which deviate from everyday speech patterns and are even considered to evoke negative perceptions. The results suggest that even unfamiliar phonetic patterns such as those contained in a hypothetical name (as opposed to familiar names, naturalistic sounds or words having semantic associations e.g. *doctor-nurse*, *hammer-nail*) can trigger specific semantic associations.

The second section of this dissertation focuses on the methodological aspects of semantic priming in the context of unfamiliar spoken words (such as unfamiliar, novel brand names) and explores the effect of different inter-stimulus intervals (ISI's) (or stimulus onset asynchronies SOA's) between an auditory prime and a visual target on the cross-modal perceptual enhancement. The results suggest that the most effective ISI between an unfamiliar word (such as a hypothetical brand name) and a phonetically congruent visual target (the associated graphical representation) is immediate onset and that as the SOA is reduced (i.e. as the stimuli overlap further), the priming effect too is reduced. These results contribute to the literature on cross-modal semantic priming by exploring the priming effect on spoken *unknown* words and demonstrate a maximal priming effect at an ISI of 0 ms in contrast to previous similar research (which has used known words and naturalistic sounds as primes).

In sum, this dissertation reveals how sound symbolism operates at a phonetic level in the context of brand names and implicitly influences the way in which consumers conceive of a brand and its apparent status as a premium or basic good.

CHAPTER ONE

Sound symbolism and the perception of luxury versus basic brands

Introduction- The importance of brand names

A brand name is said to be the foundation of the brand image (Kohli & LaBahn, 1997). The importance of the brand name is well recognized and researched in the marketing literature and is considered to be an important part of a brand's overall capital (King & Cook, 1990; McNeil, 2003; Spence, 2012; Zinkhan & Martin, 1987). The name of a company or a brand is a key element to any successful business and a creative name helps in providing it with an image and identity (Ozbal, Strapparava & Guerin, 2012). Research has shown that brand names also play an important role in communicating product benefits, brand image, or the identity of a product (Sinn, Milberg, Epstein & Goodstein, 2007). Since brand names are often the first point of interaction between a customer and a brand or company, a catchy, creative or memorable name is typically a key element behind successful brand awareness and product communication (Ozbal et al., 2012). Research has shown that when consumers are exposed to new brands, the expectation of the brand's attributes and the decision to purchase it, are almost entirely derived from the initial impression created by its name (Samu & Krishnan, 2010).

Brand names have been shown to affect the recall, recognition and preference for brands (Luna in Aradhna Krishna, 2010). Indeed, recall itself is thought to be driven by the suggestiveness of the brand name (Keller, Heckler & Houston, 1998), type of name (word versus non-word; Lerman & Garbarino, 2002; sound symbolism (Lowrey & Shrum, 2007) and word frequency (Meyers & Levy, 1989). Brand names have been studied from a variety of perspectives (Fox, 2010) – the process of naming (Kohli & LaBahn, 1995; Kollmann & Suckow, 2007), the impact of names on corporate identity and company reputation (Balmer & Greyser, 2003; Dowling, 2000; Fombrun & Van Riel, 2003; Henderson & Cote, 1998; Schechter, 1993; Treadwell, 2003), names as product/consumers' identities (Bouchikhi & Kimberly, 2007; Mills, Boylstein & Lorean, 2001), names and their relationship with a company's performance (Alashban, Hayes, Zinkham & Balasz, 2002; Leeds, E.M., Leeds, M.A. & Pistolet, 2007; Morris & Reyes, 1992), new brand names and consumers' perception (Josev, Chan & Faff, 2004; Muzellec & Lambkin, 2007), brand names and their relationship with brand-related information (Baker, 2003; Sen, 1999) and brand renaming as a factor of a firm's success (Cooper, Khorana, Osobov, Patel & Rau, 2005; Omar, Williams & Lingelbach, 2009; Wu, 2010).

Brand naming process

Building a brand image is a challenging task for any business process and is usually only achieved over a substantial time period with considerable effort. However a carefully crafted or chosen name can provide an immediate point of connection with consumers and add value to a brand (Kohli & LaBahn, 1997). The brand name is considered to be an

important element for any brand as consumers discuss, describe and ask for a branded product by name; 60 % of brand managers believe that a brand name itself in the absence of any other marketing support can positively influence product sales (Petty, 2007). Brand names are considered a key component of the marketing strategy, have long shelf-lives (Charette, Hooker & Stanton, 2014; Osler, 2004) and in the case of many well-known companies, are valued at billions of dollars, and often far more than the physical assets of the company (Charette et al., 2014).

A meaningful brand name is said to convey either relevant information about the product, or a product attribute, or provides a relevant connection between the product and its category (Keller et al., 1998; Kohli, Harich & Leuthesser, 2005). It has also been shown that meaningful names are evaluated more favorably by consumers and have a higher recall rate than non-meaningful brand names (Kohli et al., 2005). Most of the literature suggests that effective brand names should be simple, memorable, easy to pronounce, and indicative of the product benefits (Brody & Lord, 2007). However, despite the clear importance of brand names, research on the way in which companies go about creating names is limited (Kohli & LaBahn, 1997). For entrepreneurs, the brand name creation process is even more challenging as most of the literature and guidelines on branding focuses on multinational companies and well established firms, and covers topics that are less relevant for new ventures (Bresciani & Eppler, 2012). Thus entrepreneurs will rarely find suitable guidelines for their requirements in the traditional branding literature (Merrilees, 2007). There are many newspaper articles written on the process of brand name creation but they often represent the personal views of authors on

what they feel is the best process for the name creation, or what they feel should have been followed, yet little academic research exists on the way in which companies actually go about creating brand names.

One of the earliest studies on the processes behind brand name creation was by McNeal & Zeren (1981) who surveyed 82 managers among Fortune 500 consumer-goods companies using open-ended questions, but failed to reveal any consistent pattern or detailed insights into the process. In another study by Shipley et al. (1988) it was found that among 112 consumer-goods manufacturers in the UK, most companies realized the importance of branding and commit a substantial amount of resources to the process of brand name creation. However, these authors focused only on the importance of the key steps involved in the naming process *as was thought* to be implemented by managers but they did not measure the actual steps that were in fact taken (Kohli & LaBahn, 1997).

The study by Kohli & LaBahn (1997) is an influential addition in this field (Kollman & Suckow, 2007) as it demonstrates both the importance of the steps *as thought* by the managers and also the steps *actually taken* by the managers in practice irrespective of their knowledge about the formalized name creation process. In this study, the authors empirically tested the process of naming, brand name objectives and brand criteria and also analyzed the way in which managers in these companies actually created names. The criteria specified by Kohli & LaBahn (1997) are given below in which they outline the name creation as a five step process (Charette et al., 2014) -

Step 1- Define clear objectives for the naming process which can be drafted from the marketing strategy

Step 2- Create a reasonable list of sample brand names to make a pool of alternatives. Traditional methods of brainstorming and individual creative thinking are considered most helpful

Step 3- Evaluate and consider the best names which fit and match with the product or brand being introduced

Step 4 - Apply the objectives and criteria specified in the earlier steps in choosing the final brand names

Step 5- Create a final list of recommended names for further patenting and Trademark registration

Kohli & LaBahn, 1997

Research suggests that although most managers believe that brand names are critical to the success of a new product and that a detailed and systematic process should

be followed in their generation, “managers often compromise the objectivity of the task by shortcutting the evaluation process” (Kohli & LaBahn, 1997). So although brand managers understand the importance of the brand naming process, most do not follow recommended procedures primarily due to time pressures (Kohli & LaBahn, 1997). Amongst the most favored ways to create novel names are individual creative thinking (90% of firms) and brainstorming (87% of firms); followed by modification of the existing names of products owned by the same company (58% of the firms) or from an existing pool of names within the company (43% of the firms) or by engaging outside agencies or consultants (50% of the firms); followed by guidance from books (41 % of the firms). Although the process of brand name creation is well-structured and defined, and managers know this process yet most managers rarely follow the guidelines and instead rely on intuition and logic (Kohli & LaBahn, 1997).

In the brand literature, most papers have employed the frameworks of organizational studies and little research has been done to apply the principles of psycholinguistic research (Fox, 2010). Thoughts about good naming practices are prevalent in the psycholinguistic literature with many linguistic theories in place; however the introduction of these in the naming of brands is still new (Fox, 2010) and although all brand names use linguistic elements, the research into brand names from a linguistic perspective is scarce (Hernandez, 2011). Since brand naming lies at the center of most marketing programs, it constitutes a vital decision for most companies (Bao, Shao & Rivers, 2008; Keller, 1993; Lee & Ang, 2003) and as companies spend considerable resources in the creation of effective brand names (Miller, 1999), it is

prudent that they should employ all available resources to generate the most effective brand names. In today's competitive business scenario, where new companies are constantly emerging and many names have been already taken up, the creativity in the naming is an important aspect of the naming process. Even with all the available academic research in the field of brand naming and the professional services of brand consultants, firms still make mistakes. One recent example being of a Belgian chocolate company which named its new brand of chocolates 'Isis', but had to recall the brand once the terrorist organization of similar name starting posting violent YouTube videos (Bartunek, 2014).

Brand naming process is an important one and to aid practitioners and researchers in this creativity process, this dissertation attempts to explore the psycholinguistic elements of the naming process using sound symbolism and identifies phonetic elements more suited for luxury and basic brands. The 'luxury-basic' model was chosen as we feel that '*luxury-ness/basic-ness*' is a continuum and with all the brand names being placed along this continuum, we can see the effect of specific linguistic elements and prosodic features on any brand name.

Another reason for focusing on the luxury brand sector is that luxury brands have grown from a value of US \$ 20 billion in 1985 (Okonkwo, 2009) to over US \$ 260 billion in 2014 and is still expected to grow at a rate of 2-4 % annually (Bain & company, 2012). In fact the major growth for these brands is not happening in traditional markets but in new economies like China, Russia and Asian countries (Krupka et al., 2014) and Asia is now the biggest market for the luxury brands (Chadha & Husband, 2010).

Some scholars suggest that for luxury brands, the name is even more important than the country of origin effect (Han, 1989) and often the sound of a luxury brand name itself links a powerful story with it (Han, 1989; Krupka et al., 2014). However entering the Asian markets brings additional challenges for the firms as each of these countries has different cultures and languages. To quote Lu & Zhang (n.d.), “the luxury market in China is fundamentally different from that of the west. Due to the linguistic and cultural differences, brand communication becomes the first and foremost challenge. Gucci entered the Chinese market in 1997 with its official Chinese name 古驰 [gǔ chí]. The two characters in the name mean ancient (古 [gǔ]) and galloping (驰 [chí]) and its easy for the Chinese to read the name and visualize the image of a horse/wagon galloping, which appears to be more suitable for a luxury car brand, as is used by Mercedes Benz in its Chinese name 奔驰 [bēn chí]”. A similar understanding is required by the firms before entering any different culture and the sound/phonetic symbolism can help firms to create a name which implicitly conveys the message of luxury to the consumer.

Sound symbolism

Sound is one of the basic modes of communication in the animal kingdom and research has shown that many animals can communicate with their own species across large geographical distances without considerable difficulty (Kelly, 2012). Indeed, amongst the human species, many sounds are universally recognizable, for example a cry of pain or the sound of laughter, and these features of sorrow and joy have an evolutionary basis. Research suggests that irrespective of geographical or racial differences, infants even at

birth have the ability to recognize all the basic linguistic sounds (or phonemes) in human speech (Kuhl, 2004) and as the age of a child increases, their ability to distinguish between phonemes diminishes as they start focusing on one or two languages.

These phonemes are the building blocks of communication and are present in all speech sounds, including brand names. How the organization and distribution of phonemes present in brand names affect the way in which consumers perceive brands is the research question explored in this dissertation.

Sound symbolism is the ability of a particular kind of sound or phoneme to convey information and to influence perception (Eysenck, 1979) and is said to be “the direct linkage between sound and meaning” (Hinton, Nichols & Ohala, 1994). It can be described as the linguistic process through which the sounds of a word can provide clues about that word’s meaning. The basic unit of sound is called a phoneme and a phoneme itself, irrespective of the whole meaning of the word, can convey meaning to the listener and can itself be a meaningful unit of communication (Nuckolls, 1999; Sapir, 1929). Recognizing human emotions from speech cues has been studied extensively in linguistics and has also been applied recently by marketing scholars (Klink, 2000; Shrum, 2007; Yorkston & Menon, 2004).

All spoken words have two components; the first is the word form which is a sequence of sounds (also called pronunciation) accompanied by the component letters or characters (also called the written form) and the second is the word meaning. When words convey meaning, the sounds associated with it are interpreted together with its meaning. But researchers report that even when the words are fictitious or unfamiliar,

people are still able to interpret meaning from the sounds of the spoken words themselves (Jacobson & Waugh, 1987; Sapir, 1929). Past research reveals that the semantic associations of sounds are activated earlier than their lexical associations (Cleary, 2002; Cummings et al., 2006; McCauley, Parmelee, Sperber & Carr, 1980; Ozcan & Egmond, 2012), which means that even if a person is not able to identify the lexical correlate of a sound they can still verbalize the psycho-acoustical and structural properties of that sound (Vanderveer, 1979; Ozcan, 2008, 2009). This phenomenon is not exclusive to English speakers and has been documented across many cultures and age groups (Baxter & Lowery, 2011). All humans are born with a biologically endowed ability to appreciate sound symbolism, during which multi modal speech inputs are mapped and integrated (Imai & Kita, 2014; Ramachandran & Hubbard, 2001; Spector & Maurer, 2009).

Researchers report that even children as young as five have well-formed associations between specific sounds and their meaning and thus sounds can convey meaning to humans from an early age. A few studies report that sound symbolism is present in infants very soon after birth (Maurer, Pathman & Mondloch, 2006; Reardon & Bushnell, 1988; Walker et al., 2010) and that infants have the ability to process unfamiliar sounds as if they were real words. This ability leads them to the realization that all sounds have meanings and aids them in establishing word-referent associations from an early age. This emerging ability helps children to relate past learned references to unknown, novel phonetic patterns/words (Imai & Kita, 2014). Research has shown that young children are very sensitive to sound symbolism but as they age, this sensitivity is reduced and reorganized as they become more proficient in their own language/s.

However, humans retain the ability to extract information from words using sound symbolism throughout their lifespan and even as adults, as we age and learn other languages, and as our vocabulary enhances, we also learn many new non sound-symbolic associations of words (i.e. meaning from words which are not sound symbolic). Nevertheless, sound symbolism continues to exert a covert influence on our perception of word meaning in perpetuity (Imai & Kita, 2014; Monaghan, 2014).

Cross-cultural research has shown that the effects of sound symbolism can be found across a variety of languages (Shrum et al., 2011) and that individual sounds can also symbolize specific properties of the world (Crystal, 2005). In the marketing literature, researchers have identified sound symbolism as an important determinant of the way in which people infer specific meaning from unfamiliar brand names (Klink 2000; Shrum, 2007). All spoken brand names are composed of individual phonemes and when these phonemes convey meanings that are perceived to match a product attributes, they can increase preference for both the product and the brand. For example, a study by Heath et al. (1990), found that the front or back vowel sounds in brand names (*Sige*, *Suge*, *Kige*, *Kuge*) could evoke different evaluations of product attributes (e.g. harshness). This is why sound symbolism is now being taken into serious consideration during the brand naming process (Lowrey & Shrum, 2007) and reports suggest that this phenomenon can be observed across brands from multiple sectors from consumer electronics to pharmacological products (Abel & Glinert, 2008; McNeil, 2003).

There are many advantages of using sound symbolism and it can be an important tool for marketers. Many strategies used in marketing are not universal and may change across cultures and nations, whereas sound symbolism is shown to be ubiquitous across cultures (Davis, 1961; Diffloth, 1994; Hinton et al., 1994; Spence, 2012). Research has shown that sound symbolic (phonetically symbolic) brand names are learnt more rapidly and are remembered longer than non-sound symbolic brand names (Kantartzis, Imai, & Kita, 2011; Kovic, Plunkett & Westermann, 2009; Robson, 2011). Not all spoken words are necessarily sound symbolic but research suggests that “sound-symbolic words play an important role in the evolution of human language” (Kita, 2008; Kita, Kantartzis & Imai, 2010; Kantartzis et al., 2011; Ramachandran & Hubbard, 2001). The reasoning behind this is that if an inherent sound-meaning link is shared by all speakers, then any individual listener would be more easily able to identify the referent of a speaker’s novel word, facilitating communication (Kantartzis et al., 2011; Kita, 2008; Ramachandran & Hubbard, 2001). For example, ‘Mott’ is typically associated with a sense of roundness, whereas ‘Riff’ is typically associated with sharpness (Kovic et al., 2009). As adults, we can all learn novel words even if their meaning is not sound symbolic but when they are, learning of the novel name and their subsequent retrieval from the memory is much faster (Kantartzis et al., 2011; Kovic et al., 2009; Robson, 2011). Even English speaking children have been shown to pick up Japanese words faster if they are sound symbolic (Kantartzis et al., 2011).

Sound symbolism can also be used to influence consumer taste preferences as recent studies have demonstrated that the sounds present in a brand name can influence consumers' expectations of product flavour (Robson, 2011; Spence, 2012).

Given the overwhelming evidence of the utility of phonetic symbolism in the marketing domain, the next two sections discuss the theoretical framework in the available literature.

Theoretical background in linguistic literature

Phonemes in a name often have features which make the name feel 'right'. Indeed, phonetic characteristics have been shown to influence political names and brand names and are widely used in Onomastics (the study of the origin, history, and use of proper names (Danesi, 2011; Hernandez, 2013; Smith, 1998). A phonetic pattern in a novel name can be attractive or appealing for a variety of reasons. An assertive sound may not be appreciated as a standalone sound but when associated with a brand or a human being it may convey a different meaning altogether and may not be perceived as assertive (Smith, 1998). In the past, researchers have indicated links between name sounds and essay grades (Harari & McDavid, 1973), name sounds and personality types (Leirer, 1982) and unusual name sounds with poor social development (Harari & McDavid, 1966). Researchers have also documented that emotive values can be evoked by the mere sound of a candidate's name in elections (Smith, 1998). In this study, it was found that 32 out of 44 presidential candidates who had won the election also had a higher 'phonetic' score in

their spoken names. Similar results were reported in the county and judiciary elections where winning candidates had a more likable phonetic name.

Research in linguistics has identified three characteristics of a spoken word which differentiates its phonetic effect – rhythm, vowels and consonants (Smith, 1998). Rhythm measures the number of syllables and their pattern of emphasis; for example, names with two syllables and an initial stress are preferred over other sounds (for example Ren-ault /'ren.ɔ:lt/ compared to Cha-nel /ʃə.'n'æɪ/).

In the vowel category, the most important part is the stressed vowel and the preferred sound is the middle stressed vowel (for example as in Reagan /r'i:ɡən/) whereas the most negative vowel sound is the high stressed back vowel sound (vowel originating in the back of oral cavity with high tongue position; for example in Bush /b'ʊʃ/, Gucci /'ɡ'u:ʃi:/ etc.). One plausible explanation behind this is that back vowels are often used in many expressions of disgust and dislike (Jespersen, 1922; Shrum & Lowrey, 2007; Smith, 1998).

The third category is that of consonants where the preferred sounds are characterized by their emphasis, resonance, nasal patterns etc. The most preferred sound in this category is that of a terminal nasal sound whereas the most negative sound is the one ending in a fricative/affricate or a consonant which creates friction in the sound (for e.g. Xerox /zɛ.r'ɒkz/ compared to Samsung /sæm.sʊŋ/). Based on these three characteristics of a spoken word, Smith (1998) has also developed a 'comfort factor score' for a spoken sound – the higher the comfort score, the more phonetically preferred is that sound to humans (see Table 1- Comfort score). For e.g. the name Xerox /zɛ.r'ɒkz/

has two syllables (+1.5), stressed high vowel /o/ (-1.5), ending fricative (-1.5), special harshness /z/ (-1.0) and more than one fricative (-1.5) giving it a total score of -3.5. Similarly, the name Samsung /sæm.sɒŋ/ has two syllables (+1.5), vowel sequence is from front to back (+0.5), Terminal Nasal (+1.5), schwa before terminal nasal consonant (+0.5) and more than one fricative (-1.5) giving it a total score of + 2.5 (the higher score of a brand name does not mean that it is preferred over the other names, it simply shows its linguistic likability i.e. a high scoring name is said to be linguistically more pleasing as compared to a low scoring name).

Smith (1998) developed the scoring mechanism by assuming a zero score to every name and then scores were added or subtracted to each name based on three prominent categories- rhythm, vowels and consonants. In each category and subcategory, the linguistically favorable elements were scored positively from 0.5 to 1.5 and linguistically unfavorable elements were scored negatively from -0.5 to -1.5. The scoring model was developed from linguistic literature and did not involve rating of these features by the subjects.

Table 1- Comfort score

Rhythm	2 Syllables	+1.5
	More than 2 Syllables	+0.5
	Monosyllabic	-0.5
	Initial stress	+1.5
	Medial Stress	-0.5
Vowels	Stressed Vowel is middle vowel	+1.0
	Stressed high vowel	-1.5
	Vowel sequence is higher to lower / Front to back	+0.5
	Terminal 'iy' following a stop	+1.0

	Schwa before terminal nasal consonant	+0.5
	High vowel before terminal fricative	-1.0
Consonants	Terminal Nasal	+1.5
	L or r following initial stop	+1.0
	Initial l or r	+0.5
	Initial fricative	-1.0
	Ending fricative	-1.5
	More than one medial stop	-1.0
	More than one fricative	-1.5
	Special harshness	-1.0
	Tie breaker (Voicing, cluster)	-0.5

Smith, 1998

Phonemes are normally categorized in terms of vowels and consonants. Vowels can further be subcategorized on the basis of front and back tongue sounds. Sounds are produced by different tongue positions in the mouth (high-front, low-back position) resulting in different aural frequencies which in turn generates affective meanings in different acoustic patterns (Klink, 2000; Yorkston & Menon, 2004).

Vowels are often defined by linguists in a vowel- space diagram. They are ordered as per their pronunciation- from the front of the mouth to the back of the mouth (for example, front of the mouth - ‘i’ /ɪ/ as in bid and ‘a’ /eɪ/ as in day; back of the mouth- ‘u’ /u:/ as in food and ‘oy’ /ɔɪ/ in boy). There are twenty such vowel sounds identified in spoken English. Front vowel sounds are also identified by the fact that while pronouncing them, the highest position of the tongue is more towards the front of the mouth like “ee” /i:/ in "three", "i" /ɪ/ in "six" etc. Back vowels are so called because while pronouncing them, highest position of the tongue is more towards the back of the mouth like “o”/u:/ in "two" and u" /ʌ/ in "duck" (Klink, 2000). There is a fair consistency among the

researchers in reporting emotions linked to phonemes. Fernando Dogana (1967), reports that among vowels- ‘a /ɑ:/, o /ɒ/, u /u:/’ convey heaviness, slowness and round shapes, ‘i /ɪ/’ and ‘e /ɛ/’ suggest dynamism and sharp shapes. A majority of researchers in this field have also reported that the back vowels are darker and the front vowels are brighter.

Consonants have been classified as fricatives and stops. Fricatives (/f/, /s/, /v/, /z/) are formed by allowing air to flow past the articulators (lips, teeth, and tongue) which creates a friction. Stops like (/p/, /t/, /k/, /b/, /g/, /d/) are formed from the complete closure of the articulators, which impedes air flow (Klink, 2000). Twenty four different consonant sounds have been identified in linguistics from those pronounced frontally (/b/, /m/) to those pronounced from the back of the mouth (/k/, /g/) and it is generally believed that sounds which come to a full stop (/p/, /t/, /b/, /d/) convey slowness; sounds where the vocal cords vibrate (/g/, /d/, /v/, /z/) convey largeness and are considered more luxurious than sounds which are produced with a burst of air (/t/, /k/, /f/, /s/) (Begley, 2008).

Oral plosives are stop consonants in which the vocal tract is blocked so that all airflow ceases. Different parts of mouth are used to produce these sounds: the lips (/p/, /b/), the space just behind the teeth (/t/, /d/) and the soft palate (/k/, /g/). Nasal sounds are produced in a similar way as plosives but the only difference is that when the mouth is blocked off, the nasal cavity is left open (/m/, /n/, ng /ŋ/) (Auracher et al., 2011). The sounds have also been associated to convey pleasant and unpleasant emotions – /l/, /s/, /v/ are associated with pleasant feelings and /r/, /p/, /t/, /d/ and /k/ with unpleasant ones (Whissell, 1999). Whissell (1999) has also identified the nasal phoneme ‘m (/m/)’ as an active–pleasant sound and the plosive t (/t/) as a passive–unpleasant sound. A recent

study provides evidence that the even ratio of plosive to nasal sounds can alter their emotional meanings (Auracher et al., 2011). Nasals are considered to be very pleasing to the human ear and are considered to add softness, easiness and smoothness to a name (Jenkins, Russell & Suci, 1958; Johnson, Suzuki & Old, 1964; Smith, 1998; Whissell, 1999). Nasals are also reported as the fourth most common word-initial sound in positive English nicknames (De Klerk & Bosch, 1997; Pogacar, Plant, Rosulek & Kouril, 2014). The link between emotions and sounds has also been found to be present in other languages- Hungarian, French, Greek and German (Whissel, 2000).

Stanford University research provides a useful summary of various letter sounds and its connotations (see Table 2- Summary of letter sounds):

Table 2- Summary of letter sounds

Sound	b	d	f	g	k	l	p	r	s	t	v	z
Slowness	+	+					+			+		
Speed			+						+		+	+
Largeness		+		+							+	+
Smallness			+		+				+	+		
Pleasant						+			+		+	
Unpleasant		+			+		+	+		+		

(http://www.stanford.edu/class/linguists34/unit_08blackberry.htm)

Explanation behind the phenomenon

Research has revealed a positive correlation between vocal-tract length and body size, in both humans and non-human animals (Fitch, 1997, 1999; Riede & Fitch, 1999). It has been documented that animals with longer vocal tracts generally have larger body sizes, produce sounds with lower frequencies and have a smaller dispersion (Blake, Pujara, Wolf & Koenigs, 2013; Charlton, Reby & McComb, 2008; Charlton et al., 2011; Fitch,

2000; Fitch & Reby, 2001). Many species, including humans, can judge the body size of other animals by these accompanying acoustic features (Blake et al., 2013; Charlton et al., 2011; Smith et al., 2005; Taylor, Reby & McComb, 2010). Researchers have explained that the phenomenon of sound symbolism is evolutionary and many argue that the human tendency to perceive front vowels as smaller and lighter than the back vowels may be linked to these mental cues through which body size is detected based on the acoustic features of the sound (Blake et al., 2013; Shrum & Lowrey, 2007).

The evidence of sound symbolism can be seen in mimetics (words that resemble their meanings; for example, Japanese use '*goro goro*' for both "thunder" or "stomach rumbling") and in phonesthemes (sound sequences that are used across a range of words having semantically related meanings; for example, use of consonant cluster "gl" for things that shine, glisten, gleam, glitter, glow (Bergen, 2004; Hutchins, 1998; Nygaard, Cook & Namy, 2009; Nygaard, Herold & Namy, 2009). This new evidence emerging with the research points towards a subtler, more pervasive sound-to-meaning relationship in everyday spoken languages which can't be explained by the arbitrariness principle (i.e. the relationship of word-sound and sound-symbolic meaning is arbitrary) (Nygaard et al., 2009).

Theoretical linkages between linguistic and marketing literature

One fundamental assumption in the field of linguistics is that all sound to meaning relationships across all languages are arbitrary (De Saussure, 1959; Hockett, 1977; Nygaard et al., 2009). The linguistic pairing of a sound and its meaning across different

languages is highly variable, even for the same concept. For example, the words “dog”, “chien”, “ferro”, “cane” and “kelb”, all refer to the concept of a ‘dog’ without any seeming relationship to each other (Nygaard et al., 2009). This arbitrariness in language has always been considered important because it provides human beings with a compositional power, i.e., a flexibility and productivity to devise new languages or to improve an existing one (Gasser, 2004; Monaghan & Christiansen, 2006; Nygaard et al., 2009) and allows innovation and novelty to be active in the context of language. Despite the long accepted principle of arbitrariness, recently, researchers have begun to challenge this notion by citing examples of reliable correspondences between word sounds and their meanings (Imai & Kita, 2014; Nygaard et al., 2009). One such example is onomatopoeia (a word that phonetically imitates, resembles or suggests the source of the sound that it describes). For example, some onomatopoeic words such as “spray”, “splash” and “sprinkle” convey a key acoustic feature of water; whereas “glisten”, “gleam” and “glitter” convey the concept of shininess (Bergen, 2004).

Another example of the non-arbitrariness of language is that the sounds of some words do in fact resemble the meaning they convey (also called mimetic). For example, “thump” and “bump” used in the context of a collision, or “whoosh” and “hiss” in the context of air passing through things. Mimetics have been reported universally (Brown, 1991; Pinker, 2002; Ukhrikova, 2013), for example Japanese have a large number of mimetic words (Kanero et al., 2014), similar examples are also abundant in African (Childs, 1994) and in East Asian languages (Diffloth, 1972; Enfield, 2005; Lee, 1992; Mok, 2001; Nuckolls, 1999; Watson, 2001). In the English language, the maximum

onomatopoeic words are found to be in the ‘animal kingdom’ (21.6% of all onomatopoeic words; for example, bark, kroo, oink), ‘hearing and noise’ (17.1% of all onomatopoeic words; for example, klank, squeak, sizzle), ‘striking’ (8.29 % of all onomatopoeic words; for example, knock, smash, ounce; Ukhrikova, 2013). Such examples challenge the ubiquity of linguistic arbitrariness (Nygaard et al., 2009) and together with the principle of iconicity in languages (i.e. in the case where the sound of a word resembles its referred meaning, e.g. zip, cuckoo, hiccup, sizzle etc.), researchers are now coming to the opinion that these two competing forces - arbitrariness and iconicity - shape and progress languages (Imai & Kita, 2014; Pernis, Thompson & Vigliocco, 2010).

One of the most persuasive examples of iconicity within language is the phenomenon of sound symbolism. Sound symbolism is described as “the direct linkage between sound and meaning” in the context of words (Hinton et al., 1994) and provides a referential insight (i.e. reference from sound to word meaning) into the real world usage of languages (Imai & Kita, 2014). Sound symbolism has been shown to be well established in speakers of different languages with grammatically defined classes of sound symbolic words [for e.g. Ideophone (*twinkle* – for something sparkling or shiny, *swish*- for the sound of swift movement and Mimetic (covered earlier)], as well as in languages that do not possess such word classes (Imai & Kita, 2014). It has also been demonstrated that subtle sound symbolism (which people do not consciously detect) is vastly existent in the lexicon and that many form-to-meaning correspondences are not entirely arbitrary (Imai & Kita, 2014; Monaghan, 2014). Sound symbolism has also been shown to be effective in eliciting systematic associations between tastes and sound (e.g.

the acoustic qualities of the food that can be heard during consumption; Simner, Cuskley & Kirby, 2010). Sound symbolism is thought to have an evolutionary basis and has been shown to be present in infants, who have the ability to map sound symbolic information in different modalities in the same way as adults (Imai & Kita, 2014; Walker et al., 2010; Yeung & Werker, 2009). Other research suggests that as we grow older and become more adept in linguistic skills, or as we acquire more languages, our lexicon becomes larger and it becomes more difficult to overtly comprehend the relationship between sound symbolism and word sounds (Monaghan, Mattock & Walker, 2012). However, the subtle tendency of sound symbolism continues to influence our perception of novel words and sounds (Imai & Kita, 2014).

Phonetic symbolism has been explored extensively by linguistic scholars but its application and relevance to the marketing domain, particularly in the context of branding, naming and packaging has only been explored in recent years (Spence, 2012). The integration of such linguistic principles known in phonetics in the generation of brand names can not only increase the semantic richness of a brand name, but can also lower the risk of negative associations and facilitate the cognitive processes involved in its interpretation by consumers (Hernandez, 2011).

Brand names are often the first connection that consumers have with a brand, particularly if it is new. Although brand naming too has received much investigation, most of this research has employed the frameworks popular amongst organizational academics. Very few authors have yet attempted to apply insights from psycholinguistic research and linguistic theory to the process of brand naming (Fox, 2010). However,

several marketing scholars have recently begun to explore how phonetic symbolism might be used in the selection of brand names, to enhance a product's packaging and even how the shape of a label or packaging design can impact on the sub-conscious expectations that consumers have about a brand (Robson, 2011; Spence, 2012). Indeed, phonetic symbolism has been shown to influence consumers' expectations of attributes including the taste, smell and flavor of foods with higher customer satisfaction scores recorded when there is a match between the expectations elicited by phonetic symbolism and the actual product attributes (Schifferstein, 2001; Spence, 2012; Yeomans, Chambers, Blumenthal & Blake, 2008) .

Some of the more commonly known associations between sound symbolism and product features are shown in Table 3 and some known associations between sound symbolism with somato-sensory correspondences are shown in Table 4 below-

Table 3- Sound symbolism and product features

Linguistic Property	Phoneme	Product Perception
Front vs Back vowel sounds	Front: e (bee), I (hit), a (hate), e (test) Back: u (food), o (home), o (caught), ə (dusk), a (father)	Front vowels elicit ideas of - smaller, lighter, milder, thinner, softer, faster, colder, more bitter, more feminine, friendlier, weaker, prettier
Fricative vs Stop consonants	Fricative- f, s, v, z Stop- p, t, b, d, g, k	Fricative elicit ideas of -smaller, faster, lighter, sharper, more feminine
Voiced vs Voiceless Stop Consonants	Voiced stops- b, d, g Voiceless stops- p, t, k	Voiceless Stop elicit ideas of -smaller, faster, lighter, sharper, more feminine
Voiced vs Voiceless Fricative Consonants	Voiced fricative- v, z Voiceless fricative- f, s	Voiceless fricative elicit ideas of -Smaller, softer, more feminine

Klink (2000) in Sensory Marketing by Aradhna Krishna, 2011

Table 4- Sound symbolism with somato-sensory correspondences

Modality	Attribute	Sound Symbolism		Tone-pitch symbolism	Instrument symbolism	Musical parameters	Shape	Color
		Vowels	Consonants				symbolism	symbolism
Oral-somato sensation	Carbonation	Front	Plosives	-	-	-	Angular	Red?
	Creamy, smooth, rich texture	Back		-	-	-	Round	
				-	-	-	-	-
	Thickness	Back	Plosives?	-	-	-	-	-
	Crunchy/Crispy	-	Plosives, voiced?	-	-	-	-	-
Taste		Front?/Back?		Low pitch	Brass	Legato	Angular	Green?
	Bitterness		Plosives?	High pitch			Round	
	Sweetness	Front	Fricatives?		Piano	Softer, slower, and consonant	ed	Red
	Sourness (acidity)	-	Voiceless?	High pitch		Dissonant and fast	Angular	Yellow
	Saltiness	-	-			Staccato and dense in wide musical instruments		White
Flavour	Umami (savory)	-	-	Low pitch		-	-	
	Citrus	-	-	-		Syncopated rhythm and bright, sharp timbre		
	Vanilla	-	-	-	Piano, Woodwind	Slow (adagio), and soft, dull timbre		
	Fruit	-	-	High pitch	Piano, Woodwind			

Spence, 2012

Sound symbolism can be effectively tapped by the marketing practitioners in generating novel brand names as research shows that it provides the learner with a mechanism to link unknown words with objects in a predictable way (Aveyard, 2011). It has also been shown that some spoken words are more deeply encoded than others if they are sound symbolic (Imai & Kita, 2011; Nygaard et al., 2009) and that the learning of unfamiliar words across age groups is faster if they are sound symbolic (Parault & Schwanenflugel, 2006). This may be the reason that an increasing number of marketing

practitioners are now using sound symbolism to generate effective brand names (Abel & Glinert, 2008; Lowrey & Shrum, 2007; Shrum & Lowrey, 2007).

One study found that fifty four percent of the top two hundred brand names started with the letters /s/, /p/, /k/ whereas only nineteen percent of words in the English dictionary began with these letters (Schloss, 1981). Researchers attribute it to the effects of sound symbolism that the letters ‘/s/, /p/, /k/’ bring to the names. Brand names beginning with plosives are thought to have better recognition and recall amongst consumers (Klink, 2000; Vanden Bergh, 1983; Vanden Bergh, Adler & Oliver, 1987) and names beginning with hard consonants (e.g. Kodak or Pepsi) have higher recognition (Vanden Bergh, Adler & Oliver, 1987). Generally it is believed that sounds that come to a full stop (/p/, /b/, /t/, /d/) convey slowness and the letters (/f/, /s/, /v/, /z/) are shown to convey fastness (for example, many drugs such as Prozac, Xyzal etc use ‘/z/’ in their names).

Sound symbolism can convey product related information (Shrum & Lowrey, 2007), brand meaning and brand personality (Klink, 2014) and research shows that the linguistic characteristics of brand names can cognitively effect product evaluations (Lowrey & Shrum, 2003; Yorkston & Menon, 2004). Similar to the findings in linguistics, marketing scholars also report that high-front vowel sounds (e.g. ee /i:/ in flea and i /ai/ in fly) are associated with smaller size and lesser power whereas low-back vowel sounds (e.g. ow /aʊ/ in bout and oo /u:/ in boot) are associated with larger size and greater power (Hinton et al., 1994; Makino, Nakada & Mieko, 1999; Yorkston & Menon, 2004). Researchers suggest that phonemes often provide consumers with cues about

product or brand attributes. Klink (2000) suggests that brand names containing front vowel sounds (e.g. /e/, /ɪ/) are perceived as smaller, lighter, softer, more feminine, friendlier and prettier in contrast to those with back vowel sounds (e.g. /ɑ:/, /ʊ/ and /u:/) which were perceived to be opposite (Klink, 2000; Yorkston & Menon, 2004). Similar to linguistic research, marketing scholars too give importance to vowels and suggest that vowels can convey the brand meaning in a better way than the consonants (Klink, 2014) and research suggests that sound symbolic associations for vowels are much stronger as compared to the consonants (Klink & Wu, 2014).

Similar to linguist scholars, marketing researchers have also identified a link between the position of the tongue and the emotion of the sounds produced. For example, to make the sound of ‘y’ or long ‘ee /i:/’, both the lips and the back of the throat are nearly closed, which connotes diminutiveness; whereas the sound ‘ahhh /ɑ:/’, is generated with an open mouth and throat and thereby conveys largeness and consumers appreciate it if similar traits are present in the product (Ohala, 1994). In other words, these sound patterns set up expectations in consumers’ minds about the nature of the associated product.

Some of the common sound symbolic associations in the marketing literature are – letter ‘/k/’ (e.g. in Kraft) communicates dependability (Anonymous, 2006); letter ‘/v/’ (e.g. in Viagra) communicates energy (Begley, 2002) and letter ‘/z/’ (e.g. in Prozac) communicates efficacy and fast recovery (Erllich, 1995), ‘/e/ and /ɪ/’ (e.g. in names of many crackers) convey thinness and creaminess (Kruulich, 2011). Other commonly proved associations found in the marketing literature are: high, front phonemes (pronounced

from the front of the oral cavity) connote intimacy and back phonemes (pronounced from the rear oral cavity or the throat) connote distance.

Scholars have also used sound symbolism to impact on factors other than brand naming (e.g. in the context of product pricing) (Klink, 2014) including in the financial sector. For example, studies have shown that firms with certain linguistic characteristics (for example better pronunciation and perceived sound in the stock market ticker) outperform firms with names without these characteristics. Importantly, these effects held even after controlling for firm size, industry, growth opportunity, profitability, and firm age (Alter & Oppenheimer, 2006; Bao et al., 2008; Howe & Xing, 2006).

Sound symbolism and luxury brands

Consumers mostly spend on necessities and only indulge infrequently in the purchase of luxury goods (Kivetz & Simonson, 2002, Hansen & Wänke, 2011). In a recent study, researchers suggest that luxury goods usually appear to be psychologically more distant than the necessity goods (Hansen & Wänke, 2011). A similar relationship between luxury brands and exclusivity can be derived from both psychological distance and the abstract mental representations that they elicit (Hansen & Wänke, 2011; Trope & Liberman, 2000, 2003, 2010). Luxury goods are typically defined as “something inessential but conducive to pleasure and comfort” or as “something expensive or hard to obtain”. Luxury goods are typically perceived to be reserved for those in the higher socio-economic class brackets (Miyazaki, Grewal & Goodstein, 2005; Nuemo & Quelch, 1998;

Silverstein & Fiske, 2003) and therefore by association they maintain a certain social distance from the average consumer (Hansen & Wänke, 2011).

Researchers have also said that other dimensions like temporal and spatial distance too apply to luxury brands. For example, consumers often purchase luxury goods after considerable research and time for consideration (temporal dimension) and similarly, a typical luxury vacation involves travelling to an exotic and distant destination (distance dimension) (Hansen & Wänke, 2011). The abstractness of luxury goods may also be perceived as similar to the abstractness of a socially distant high society person. For example, a recent study suggests that a person who uses formal, polite language is perceived to be socially more distant than those who use more colloquial speech (Stephan, Liberman & Trope, 2010). Consumers often perceive luxury as scarce and unique and feel “foreign to the world of luxury” (Dubois, Laurent & Czellar, 2001).

In a related study of brand names (Johnson, 2012), it was found that brand names vary in length, ranging from monosyllabic (e.g. Ford /'fɔ:rd/) to those possessing up to six syllables (e.g. A-me-ri-can Ex-press /ə.'me.rɪkən ɪk.'spres/) and that the majority of brands contain two or three syllables. Syllabic structure plays an important part in identifying and predicting locations of phonetic stress in a name (Johnson, 2012). It is also suggested that among the majority of brand names, the stress is on the penultimate syllable or on the ante-penultimate syllable. But most of the exceptions to these rules tend to be found amongst luxury brand names [Chanel (/ʃə.'næl/), Mercedes Benz (/mər.'si:di:z 'benz/), BMW, Hermès (/hɜ:..m'æz/), Cartier (/ 'kɑ:ri:ə/), Ferrari (/fə.'rɑ:ri:/) etc). One plausible explanation for this is that many luxury brands have

French or European names where the default stress is on the final, full syllable of a word. This deviation from the usual phonetic pattern helps to imbue the luxury brand name with an air of exclusivity associated with the European reputation for high fashion (e.g. in Paris) or superior engineering (e.g. in Germany).

The relevant marketing literature also shows that repetitive sounds in a name evoke pleasant feelings in consumers as well as an enhanced sense of intimacy with the brand (Argo, Popa & Smith, 2010). Yet very few luxury brand names exploit this potential advantage which may well help the brand to maintain psychological distance and a sense therefore of exclusivity.

Hypotheses building

“Language acquisition is the process to perceive, produce and use words to understand and communicate and it starts very early in human life. Language development is a complex and unique human quality but yet children seem to acquire language at a very rapid rate with most children's speech being relatively grammatical by age three” (Crain & Lillo-Martin, 1999). Recently Gomez et al (2014) used near infra-red spectroscopy to examine the brain activity of neonates (2-5 days old) in response to some easily pronounceable linguistic combinations like ‘blif’ over some difficult combinations like ‘bdif’ or ‘lbif’ (such linguistic combinations are rare in most languages; Berent, Harder & Lennertz, 2008). The study reports distinct hemodynamic responses in reaction to pronounceable linguistic combinations over unpronounceable combinations. The results provide neural evidence to the notion that humans possess early, experience-independent,

linguistic bias for certain syllable structures and that these biases shape our language perception. Their study provides evidence that not all language is acquired and we may also be *born* with some linguistic preferences.

Similarly, researchers also claim that the clarity or simplicity of a name and certain combinations of its vowels and consonants can enhance or decrease its appeal (Crystal, 1995; Klerk & Bosch, 1997; Smith, 1998). In the context of names, some speech patterns are displeasing and the most prominent of these are frictions (the use of affricates) and the use of back or high vowels (Wrembel, 2010; Folkins & Lenrow, 1966; Klerk & Bosch, 1997; Miron, 1961; Smith, 1998). Affricates (IPA code- dʒ, ʃ, tʃ) cause undue friction and turbulence in the pronunciation of a name and these, together with high and back vowels and particularly those that are stressed, are considered displeasing (Jenkins et al., 1958; Pogacar et al., 2014; Smith, 1998). This is one of the reasons researchers report that frictionless continuants (a continuant speech-sound lacking any friction) are the most frequently used consonants in names, followed by plosives (/p/, /b/, /t/, /d/, /k/) with the least favored being affricates (Klerk & Bosch, 1997). As the overuse of affricates (IPA code- dʒ, ʃ, tʃ) produces undue difficulty in speech, they are generally avoided in proper names (Smith, 1998) and instead smooth, frictionless continuants in names are preferred and one would initially assume this to be especially the case in the generation of a premium name such as those used in the case of luxury brands. Figure 1 below depicts the vowels in oral cavity with the mood they are stated to represent (Wrembel, 2010).

Figure 1- Vowels and moods

Wrembel, 2010

Linguists report that the most preferred sound in a name is a bi-syllabic sound. Indeed, many nicknames referring to close friends or family members tend to be bi-syllabic. This preference for simple two syllable sound structure is found in a variety of languages, not just English [Bermann, 1977 (English & Hebrew); Klammer, 2002 (Indonesian); Nettelblad, 1982 (English & Swedish); Perry et al., 2006 (Mandarin, Cantonese); Shi, 1988 (English and other languages); Smith, 1998; Wauquier & Yamaguchi, 2011 (French)].

A recent study investigated the sound symbolism further and shows that the vowel sounds in a name affects the level at which people represent and evaluate their referents i.e. the front vowel sounds evoke high degree of visual and conceptual precision i.e. the concept of concrete, low-level construal (similar to the concept of basic) and the back vowels evoke the concept of abstract, high-level construal (similar to the concept of luxury) (Maglio et al., 2014). Similar research in psychology, suggests that people adopt a higher level of construal to represent objects outside of their immediate experience (for example luxury goods or similar psychologically distant objects) (Liberman & Trope,

2008; Maglio, Trope, & Liberman, 2013; Maglio et al., 2014). In other words the vowel sounds can change the level of mental construal by changing the processing and evaluation of the targets (Maglio et al., 2014).

Since luxury brands tend to be exclusive and attempt to differentiate themselves from regular basic brands as far as possible, the same exclusivity is desirable in their brand name also. In this dissertation, we test the hypothesis that to acquire this exclusivity, luxury brand names will be found to deviate from the normal linguistic conventions followed by basic brand names (i.e. linguistic patterns observed in a regular name) and will be found instead to adopt unconventional linguistic patterns which are not favored in human speech (characteristics described in the preceding paragraphs).

Specifically it is hypothesized that-

H1: A brand name is perceived to be a luxury brand (basic brand) if it has more back or high vowels (front vowels)

H2: A brand name is perceived to be a luxury brand (basic brand) if it has stressed vowels (unstressed vowels)

H3: A brand name is perceived to be a luxury brand (basic brand) if it has multiple affricates (less affricates)

H4: A brand name is perceived to be a luxury brand (basic brand) if it has multiple syllables (less syllables)

Description of studies for hypothesis testing

Firstly, this dissertation explored the linguistic written form of luxury and basic brand names using the International Phonetic Alphabet (IPA) notation; for example in IPA, Gucci can be written in as /'g'u:.tʃi:/. The IPA expression clearly identifies the phonemes in a word. For example, the IPA notation of Gucci or /'g'u:.tʃi:/has two syllables separated by '·'; the first syllable has a primary stress which is denoted by symbol 'ˈ'; it has two vowels 'u:' and 'i:' and two consonants '/g/' and '/tʃ/'. Each of these symbols is unique to the IPA and a statistical analysis of these was used to explore the differences between luxury and basic brand names.

Secondly, differences in the spoken form of luxury and basic brand names were explored using PRAAT (Boersma & Weenink, 2014; <http://www.praat.org>; Version 5.3.78). PRAAT is freely available acoustic software and is one of the most popular tools used by researchers to analyse sound waves. PRAAT permits analysis of individual phonemic differences between luxury and basic brand names in terms of their frequency, bandwidth, duration, pitch, position of stress, manner of the segment preceding and succeeding a vowel ('voiced or voiceless'), place in the oral cavity from where the segment following a vowel originates and unique linguist code for each vowel. Statistical analysis of each of these was used to explore the differences inherent in a range of luxury and basic brand names.

Thirdly, the phonetic differences that were identified between basic and luxury brand names were then used to guide the generation of a set of hypothetical basic and

luxury brand names which were then used as auditory prime stimuli (details described in Experimental design in Study 3 b) in a cross-modal (auditory-visual) semantic priming experiment to further test the hypotheses.

CHAPTER TWO

Study 1- International Phonetic Alphabet (IPA) Study

Introduction

The International Phonetic Alphabet (IPA) is an alphabetic system of phonetic notation devised by the International Phonetic Association as a standardized representation of the sounds of oral language (International Phonetic Association (IPA), Handbook). The IPA is used worldwide by linguists and researchers to study phonemes. The focus of the IPA is on the qualities of spoken speech represented in the written form in terms of phonemes, intonation, stresses, syllables, separations as well as some additional qualities of speech such as tooth gnashing and lisping (MacMahon, 1996).

IPA symbols are composed of letters and diacritics which are unique depending on the context and the meaning conveyed in the spoken form. Since 2005 there have been 107 letters, 52 diacritics, and four prosodic marks recorded. These are shown in the current IPA chart in the Appendix 1. IPA symbols are considered to be highly accurate and they assist in the learning of speech patterns. Indeed, several textbooks in Russia and China use IPA symbols to teach English (Bankevich, 1975; Parchevsky & Roisenblit, 1995; Vereshagina, Bondarenko & Pritykina, 2007).

Many popular dictionaries including the Oxford English Dictionary, Oxford Advanced Learner's Dictionary and the Cambridge Advanced Learner's Dictionary use

the IPA to represent the correct pronunciation of words ("Phonetics", Cambridge Dictionaries Online, 2002). Since the dictionaries are updated regularly most of the brand names that were used in this study were found to have an IPA notation in the dictionary (Brand names like 'Ferragamo' and 'Bvlgari' which are considered foreign or Italian were transcribed manually after checking the correct pronunciation of these brand names on their respective websites).

Method

For this study and the subsequent study described in Chapter 3, the top fifty luxury brand names in the USA were identified from the websites luxurysociety.com and rankingthebrands.com. All the hotels and acronyms were excluded, leaving a total of 37 luxury brand names for inclusion in this study. Similarly, basic brand names were selected across all the popular categories including Fast-moving consumer goods (FMCG), toiletries, computers, electrical appliances, apparel etc. from rankingthebrands.com and a total of 39 basic brand names were included in the study. Luxury brands were chosen as per their ranking irrespective of their product categories whereas basic brands were chosen across all the common everyday product categories. Since the list for basic products is much longer, products across all the categories were chosen rather than from their ranking in only one product category.

The brand names selected are given in Table 5 below.

Table 5- Selected brands

Luxury brand names		Basic brand names	
Acura	Jaguar	Budweiser	Marlboro
Armani	Lamborghini	Cadburys	Mars
Audi	Lexus	Camel	Mcdonalds
Bentley	Louis Vuitton	Coke	Nescafe
Breitling	Marc Jacobs	Colgate	Nestle
Bugggati	Mercedes	Crest	Nike
Burberry	Mercury	Dell	Nivea
Bvlgari	Mont Blanc	Facebook	Pepsi
Cadillac	Porsche	Ford	Pringles
Calvin Klein	Prada	Gap	Reebok
Cartier	Ralph Lauren	Gillette	Ruffles
Chanel	Ritz	Google	Samsung
Chopard	Rolex	Heinz	Sharp
Christian Dior	Tiffany	Honda	Subway
Coach	Vera Wang	Ikea	Timex
Corvette	Versace	Kellogg'S	Twix
Ferragamo		Kitkat	Virgin
Ferrari		Lays	Visa
Gucci		Lee	Wal-Mart
Hermes		Levis	
Infiniti			

See Appendix 8 for transcribed brand names

The IPA notation of the brand names was studied using PhoTransEdit. PhoTransEdit is a free online transcriber which can translate an English text into its phonetic transcription using IPA symbols and vice versa and can also provide the researcher a detailed statistical analysis of the IPA symbols used in the studied text. It was used to study the phonemes of the selected brand names in terms of attributes like - vowels, stresses, syllables, nasal tones, consonants and affricates.

As explained earlier, syllables comprise a number of different sounds within a word. For example, the name “Ford /'fɔ:rd/” is comprised of a single sound and therefore

contains one syllable whereas the name “IKEA” consists of three sounds ‘/,aɪˈk.i.ə/’ and therefore has 3 syllables. Research suggests that the most preferred sound by humans is a bi-syllabic sound [see Hypotheses building section; Bermann, 1977 (English & Hebrew); Klammer, 2002 (Indonesian); Nettelblad, 1982 (English & Swedish); Perry et al., 2006 (Mandarin, Cantonese); Shi, 1988 (English and other languages); Smith, 1998; Wauquier & Yamaguchi, 2011 (French)]. The difference in the syllabic structure between basic and luxury brand names was hypothesised earlier and will be tested in this section. Research also suggests that stressed vowels, especially high and back vowels (symbols ' and : in IPA) are difficult to pronounce and go against the normality of speech, especially in names and people tend to dislike stresses in a smooth, easy flowing name (Smith, 1998). However, it was hypothesised that the luxury brand names will deviate from this convention and will tend to excessively use stressed vowels compared to the basic brand names (see hypotheses building section); this difference too will be tested in this section.

Results

Smith (1998) suggests that phonemes in a name often have features which make the name feel ‘right’. To test this, the selected luxury and basic brand names were compared against forty of the most popular male and female names in the USA and identified from the website: namesmongabay.com. A high degree of correlation between all the names was found (correlation between basic brand names (BB) and luxury brand names (LB) = 0.79, $p < 0.001$, BB & popular names = 0.68, $p < 0.001$ and LB and popular names = 0.80, $p < 0.001$) (see Figure 2 & 3 below). However, the figures also shows several points

of dissonance whereby luxury and basic brand names differ from each other and also from the conventions used in popular first names and these are discussed further in this section.

Figure 2- Correlation between names (Vowels)

(X Axis – IPA code for vowels (For details of IPA symbols see Appendix 1), Y Axis – no of times it appears in names)

Figure 3- Correlation between names (Consonants)

(X Axis – IPA code for consonants (For details of IPA symbols see Appendix 1), Y Axis – no of times it appears in names)

Differences in affricates, vowels and nasals

This section analysed the affricates (IPA code- dʒ, ʃ, tʃ) and the back and high vowels (IPA code- iː, I, ɪ, ʊ, uː, ɜː, ɔː, ʌ, ɑː, ɒ- see Appendix 1) between the selected basic and luxury brand names. The overall use of back/high vowels, nasals and affricates is depicted in the Figure 4 below. One surprise finding was the excessive use of nasals (IPA code-ŋ, ã, õ) amongst luxury brand names. Nasals are considered to be very pleasing to the human ear and are considered to add softness, easiness and smoothness to a name (Jenkins et al., 1958; Johnson et al., 1964; Whissell, 1999; Smith, 1998) and are reported as the fourth most common word-initial sound in positive English nicknames (De Klerk & Bosch, 1997; Pogacar et al., 2014).

Figure 4 -Vowels, nasals and affricates

(X Axis – Back/high vowels, Nasals, Affricates , Y Axis – no of times it appears in brand names)

A chi square test of independence was performed to examine the relationship between the type of brand and the use of back and high vowels, nasals and affricates. The test revealed significant differences in the use of back and high vowels between basic and

luxury brand names ($X^2(3,76) = 13.53$, $p = 0.004$, $\phi = 0.42$, 2 cells have expected count < 5 , Fisher's exact test $p = 0.002$, Yates chi square value = 9.83, Yates p value = 0.02); significant differences in the use of nasals between basic and luxury brand names ($X^2(1,76) = 6.13$, $p = 0.013$, $\phi = 0.28$, No cells have expected count < 5 , Fisher's exact test $p = 0.018$) and significant differences in the use of affricates between basic and luxury brands names ($X^2(1,76) = 3.95$, $p = 0.047$, $\phi = 0.22$, No cells have expected count < 5 , Fisher's exact test $p = 0.06$). The test revealed a significantly higher use of all these IVs (i.e. affricates, vowels and nasals) amongst luxury brand names as compared to the basic brand names.

A binary logistic regression was then performed using the type of brand (basic or luxury) as the dependent variable and the presence of high/back vowel, nasals and affricates as the independent variable. The overall model fit was found to be significant with $X^2(5) = 25.6$, $p < 0.001$, Nagelkerke $R^2 = 0.38$ and the individual coefficients of all three variables were found to be significantly different between basic and luxury brand names (Back and high vowels- Wald's $X^2(3) = 9.56$, $p = 0.023$, Nasals - Wald's $X^2(1) = 5.93$, $p = 0.015$, Affricates- Wald's $X^2(1) = 3.57$, $p = 0.05$). Results show a preponderance of nasal twangs, (considered pleasing to humans), use of affricates and back/high vowels (considered displeasing to humans).

Differences in syllables (see Appendix 9 for details)

A chi square test of independence performed to examine the relationship between the type of brand and the number of syllables. All brand names possessing one or two syllables were labelled as Group 1 and all the other brand names possessing three or more syllables were labelled as Group 2. The test revealed significant differences in the number of syllables between basic and luxury brand names ($X^2(1,76) = 11.12$, $p = 0.001$, $\phi = 0.38$, No cells have expected count < 5 , Fisher's exact test $p = 0.001$) with basic brand names having a preponderance of mono and bi-syllabic names and luxury brand names having a preponderance of multi-syllabic names. The details are depicted in Figure 5 below-

(X Axis – No of syllables, Y Axis – no of times it appears in names)

Differences in stressed vowels

To test this, all the brands were labelled as 'P' or 'A' depending on the presence or absence of a stressed vowel and a chi square test of independence was then performed to examine the relationship between the type of brand and the use of stressed vowels. The test revealed significant differences in the number of stressed vowels between basic and luxury brand names ($X^2(1,76) = 17.02$, $p < 0.001$, $\phi = 0.47$, No cells have expected count < 5 , Fisher's exact test $p < 0.001$) with basic brand names showing a preponderance for the unstressed vowels and the luxury brand names showing a preponderance for the stressed vowels. The details of the stressed vowels among the brand names are depicted in the Figure 6 below-

[X Axis – Vowels (0- no stressed vowel, 1- One stressed vowel, 2- Two stressed vowels), Y Axis – no of times it appears in names]

An additional and unexpected finding was that among the basic brand names there is a preponderance of the stressed consonants as compared to the luxury brand names. The details of the stressed consonants among the brand names is depicted in the Figure 7 below-

However a chi square test of independence to examine the relationship between the type of brand and the number of stressed consonants revealed that this difference was not significant among the basic and luxury brand names ($X^2 (1,76) = 2.47$, $p = 0.11$, 2 cells have expected count < 5 , Fisher's exact test $p = 0.14$, Yates Chi square value = 1.44, Yates p value = 0.22).

To explore the relationship further, a binary logistic regression was performed with the type of brand (basic or luxury) as the dependent variable and the number of syllables, presence or absence of stressed vowel and stressed consonants as the

independent variables. The overall model fit was found to be significant with $X^2(5) = 22.70$, $p < 0.001$, Nagelkerke $R^2 = 0.34$ and the individual coefficients of two of the three variables (Number of syllables and presence of stressed vowel) were found to be significantly different (Number of syllables- Wald's $X^2(1) = 4.09$, $p = 0.04$, Stressed vowel - Wald's $X^2(1) = 8.28$, $p = 0.004$) however the coefficient of the third variable (stressed consonant), was not found to be different (Stressed consonants- Wald's $X^2(1) = 1.01$, $p = 0.31$).

Discussion

One of the important characteristic of a brand name is its meaningfulness or whether the name can convey its features to the consumer (like size, brightness, heaviness etc.) (Keller et al., 1998; Pavia & Costa, 1993). Some researchers suggest that sounds can even convey hidden hedonic attributes (e.g. luxury); Lageat, Czellar & Laurent (2003) found that certain differences in the closing of a car door sound and in the closing of a lighter can be perceived as more luxurious than other similar sounds. If sound (phoneme) itself, without any semantic associations, can convey a meaning, then it is likely that certain phonetic patterns within a name can be perceived as more 'luxurious' than the others.

This study examined the phonetic differences between the basic and luxury brand names using the IPA notation phonetic transcription approach. Finding support for the hypotheses, many significant differences between basic and luxury brand names were found, a summary of the findings is - 1) a preponderance of the use of affricates, back/high vowels and nasals in the luxury brand names, 2) a preponderance of the use of

stressed vowels in the luxury brand names, 3) a preponderance of the use of multisyllabic names among the luxury brand names 4) a preponderance of the nasals among the luxury brand names.

Till date, the generation of novel brand names has been associated with the creativity of branding specialists for *encoding* the names and with the inferential capacity of potential consumers for the *decoding* of these names (Hernandez, 2011); however Hernandez (2011) show that both brand specialists and consumers are actually implicitly guided by the a limited set of linguistic operations involving the semantic makeup of the words and word-combinations which further suggests that we can find evidence of sound symbolism even in the existing brand names although they were not made using overt sound symbolic principles.

It has also been demonstrated that the subtle sound symbolism (which people do not consciously detect) is vastly existent in the lexicon and such vast form–meaning correspondence is not entirely arbitrary (Imai & Kita, 2014); in fact many sound–meaning relationships are so subtle that people do not consciously detect them under usual circumstances (Monaghan et al., 2014). These findings suggest that if sound symbolism guides the naming process then we should be able to detect the phenomenon in the existing brand names. Study 1 found evidence to support of this hypothesis and found preponderance of some uncommon linguistic patterns in the luxury brand names (which provides these names exclusivity associated with luxury) and at the same time preponderance of common linguistic patterns in the basic brand names (which provide these brands with an everyday appeal). The uncommon linguistic pattern in the luxury

brand names deviate from everyday pattern of speech (followed by the basic brand names) and provide the desired semantic association of exclusivity or rarity to these brands through sound symbolism. One accidental finding was the preponderance of nasals in luxury brand names. This finds support in the literature as nasals are considered to be very pleasing and add to the perceived softness, easiness and smoothness of a name (Jenkins et al., 1958; Johnson et al., 1964; Whissell, 1999; Smith, 1998). This is one the reasons that nasals are reported as the fourth most common word-initial sound in positive English nicknames (De Klerk & Bosch, 1997; Pogacar et al., 2014). However, since the preponderance of nasals was not originally hypothesized, the dissertation will not explore their influence in brand names any further.

The differences between the luxury brand names and basic brand names will be explored further using alternative approach in the next chapter and all the differences found will later be used to generate hypothetical brand names for semantic priming reaction time studies in chapter 4.

CHAPTER THREE

Study 2- Spectral study (Analysis of the spoken brand name)

Introduction

In the previous chapter, we analysed the selected luxury and basic brand names using the IPA notation. One limitation, however, of the IPA is that in real speech, sounds are variable and this variation changes each time the sound is pronounced, even by the same individual. The IPA is able to capture only a part of these individual speech differences (also referred to as an idiolect; Vajda, 2014). These differences become much more meaningful when they are compared in the spoken form {or analysis of a spectrogram described in succeeding paragraphs. A spectrogram is a graphical representation of the dimensions of sounds in terms of their component frequencies}.

Another limitation of the IPA notation is that differences between the same sounds cannot be contrasted against each other. For example, the /g/ sound in the brand names ‘Gucci’ /'g'u:.tʃi:/ and ‘Buggati’ /b'ʊg.'ɑ:ti/ cannot be differentiated from each other using the IPA notation, but can be studied and differentiated using a spectrographic analysis.

Any segment of speech is said to influence the adjacent preceding or succeeding segments (Grosvald & Corena, 2012); for example, a CVCV (consonant –vowel-

consonant–vowel) arrangement in a word when changed to CVVC (consonant –vowel-vowel-consonant) will only affect the IPA notation minutely but can significantly affect the speech pattern readily detected by a spectrogram. Even mannerisms of speech, such as the degree of aspiration of air in the lungs can affect the speech pattern and can also be detected in spectrograms but not in the IPA transcription of brand names.

Similarly, Vowel to vowel co-articulation (V-V co-articulation) is described as the co-articulatory influence of one vowel on another across an intervening consonant (Mok, 2012; Ohman, 1966). Linguists describe that the influence of V-V co-articulation can change due to factors such as vowel stresses (Fowler, 1981), syllable structures (Mok, 2012) and co-articulatory direction (Recasens, 2002). All these are acoustic wave differences and are apparent in a spectrogram but not in the IPA notation. So, the IPA phonetic transcription depicts the discrete graphic units of sounds but only up to a certain degree of precision and beyond that precision, a more complete and coherent information can be provided by a spectrogram described in this chapter.

Research using the recorded speech can be broadly divided in two areas- linguistics and para-linguistics. Linguistics focuses on the language and the content of the speech whereas the para- linguistics focuses on the prosodic features (i.e. how words are spoken, pitch, intensity, temporal aspects of voice) and helps recognize the speakers' traits, uncertainty (Pon-Berry & Shieber, 2011), emotions (Ververidis & Kotropoulos, 2006) and deception (Hirschberg et al., 2005) (Xiao et al. in Malhotra, 2013).

Scholars in linguistic research have widely studied the speech patterns but use of this resource in marketing domain to infer an acoustic difference is sparse. For e.g. Kim, Shi & Ding (2012) used human speech as an alternate data input format and used the speech prosodic patterns to infer uncertainty, which they claim can improve the accuracy of survey responses (Xiao et al. in Malhotra, 2013); Hobson, Mayew & Venkatachalam (2012) examined the dissonance pattern in speech to evaluate financial misreporting; Wang et al. (2013) examined the accents of call centre executives and consumer satisfaction. But apart from these, we could not find instances in marketing where scholars have used acoustic speech pattern differences, which is surprising because major advertising cues and marketing information is passed on to the consumer using the auditory mode. Potential application of spectrogram in marketing can be- to study the effectiveness of brand taglines, advertising jingles, and introduction of new brand names across cultures, differences in accents etc.

In this study, we used spectral analysis to study the acoustic differences in the luxury and basic brand names. Figure 8 below shows a snapshot of the spectrogram of some of the basic brand names.

Figure 8- Spectrogram

Method

The brand names selected for inclusion in Study 1 were subsequently converted to audio files online using the software package fromtexttospeech.com (sound of ‘Heather’ in US English in medium speed) and two spectrograms, one each for basic and luxury brand names was generated and the analysis was done using PRAAT Version 5.3.78 (Boersma & Weenink, 2014). PRAAT is freely available software and is one of the most popular tools for analysing audio files. Both the spectrograms were properly aligned using FAVE Align (Forced Alignment & Vowel Extraction (FAVE), University of Pennsylvania) and only the vowels in both the type of brand name categories were extracted using FAVE-

extract (fave.ling.upenn.edu). The information extracted from PRAAT and FAVE was very extensive and consisted of the following -

Vowel Formants

In speech, the resonant frequencies of the vocal tract are called formants (Titze, 1994). Formants can be seen as peaks in the spectrogram (Fant, 1960) and there are as many as five formants but the most informative among them are the first three often denoted as F1, F2, and F3. The first two formants are understood to determine the quality of vowels and are said to be sufficient to disambiguate the meaning in the vowel (Ladefoged, 2001, 2006). Linguists claim that the formants often provide most of the meaning of spoken words and are thought to be the main acoustic cue behind the perceived differences amongst words (Katz, 2013). The wave file of any vowel will look like Figure 9 –

Figure 9- Vowel formant

Differences in vowel formants

Linguists claim that F1 and F2 are the most important among all the formants and provide most of the meaning to any vowel quality (Deterding, 1997). The first formant (F1) is inversely related to the vowel height and the higher the vowel, the lower the first formant (and vice-versa). A visual depiction of oral cavity and vowels is given in Figure 10 below (see Appendix 1 for IPA codes)-

Figure 10- Visual depiction of oral cavity & vowels

For example, high Vowels [i, u], may have F1 values $\approx 280\sim 310$ whereas the low vowels [a] may have F1 $\approx 690\sim 710$. Similarly, the second formant (F2) in vowels is related to degree of 'back-ness'. The more *front* a vowel is, the *higher* the second formant. For example, front vowels like [e] may have values of F2 $\approx 2250\sim 2870$ whereas the back vowels like [u] may have values of F2 $\approx 1660\sim 2100$.

The distance between F1 and F2 is a better predictor of the degree of ‘*back-ness*’ between different vowels and the difference between F1 and F2 can be shown on a vowel plot. Vowel plots can visually depict differences between clusters of vowels as found in both the categories of luxury and basic brand names and can also visually depict the place in the oral cavity from where the vowels are originating in both these sets of brand names. More detailed information about formants relevant to this dissertation is given in the appropriate sections below. The aim of this study is to explore the spectral differences in the vowel formant structure (F1, F2, F3) of basic and luxury brand names.

Bandwidth

Bandwidth is related to the rate of energy loss in the vocal tract (B1, B2 & B3; Stevens & Hanson, 1994; Wayland & Jongman, 2003) and is defined as the frequency region in which the amplification differs less than 3 decibels from the amplification at the centre frequency (the frequency where the amplification is maximal” (Lexicon of Linguistics, <http://www2.let.uu.nl/Uil-OTS/Lexicon>). Changes in the bandwidth highlight the rapidity of the change from a vowel to the next part of the speech. PRAAT can be used to find out the ‘*flatness*’ or the ‘*peakness*’ of the energy changes at F1, F2 and F3.

Duration of the vowel sound

PRAAT and FAVE provide detailed information about the duration of vowels contained in both categories of brand names. If there are stresses in the vowels, then the vowel

duration will be prolonged. This information will be used subsequently to test the hypotheses. If there are stresses in the vowels, then the vowel duration will be prolonged.

In this dissertation, only the information directly pertaining to vowels i.e. formant frequency, bandwidth, duration of vowel sound and vowel plot (depiction of vowels visually in the oral cavity) is tested. In addition to these, PRAAT and FAVE also provide information about the preceding and succeeding segments of vowels (which often affect their acoustic perception) along with acoustic features like pitch and intensity. However, only the main findings of all these will be reported here, as an extensive analysis of all the information provided by PRAAT is beyond the scope of this dissertation. The other information which can be gathered from PRAAT and FAVE is –

Fm- Manner of the segment following a vowel (this refers to the characteristic of the sound which immediately follows the vowel, for example in Gucci /'g'u:.tʃi:/, the 'cch' sound /tʃ/ follows the vowel 'u'/u:/)

Fp- Place in the oral cavity from where the segment following a vowel originates (for example, in Gucci, the 'cch' sound is palatal and come from the palate of the mouth)

Fv- Whether the segment following a vowel is 'voiced or voiceless' (for example in Gucci, the 'cch' sound is voiceless as per linguistic convention)

Ps- Provides similar information about the segment preceding the vowel

Cd- Provides a unique linguist code of the vowel. Statistical analysis of these unique codes can reveal further differences between the vowels typically contained within luxury and basic brand names.

PRAAT provides information about each of these variables, however extensive analysis of these is not done in this dissertation; only the main findings provided by PRAAT for these variables is reported below. We are not carrying out the extensive analysis of these variables due to two reasons- firstly, research suggests that there is greater contribution of vowels than the consonants in speech perception (Cole et al., 1996; Fogerty & Kewley-Port, 2009; Fogerty & Humes, 2012) and secondly, we can gather lot of information by studying the vowel differences alone; a complete analysis of the information provided by PRAAT is often too extensive and constitutes a doctoral dissertation project in itself in the field of linguistics and is beyond the scope here.

Results

Differences in vowel formant

To explore the differences in vowel formants, an independent samples t-test between the F1 of basic and luxury brand names was performed. F1 formants were found to be significantly different (marginally) between both the groups (mean F1 in basic brand names (Hz) = 625.51, SD = 165.04; mean F1 in luxury brand names (Hz) = 578.51, SD = 144.64; $t(147) = 1.84$, $p = 0.06$).

To study the '*backness*' of vowels, the difference of F2-F1, was plotted on a vowel plot; Figure 11- Figure 14 below shows the vowel plots of basic and luxury brand names, with distinct clusters highlighting the differences in the origin of these vowels in the oral cavity; Figure 11 and Figure 12 show 'F2 along the X axis and F1 along the Y axis' and whereas Figure 13 and Figure 14 shows 'F2 along the X axis and difference of

F1 & F2 (F2-F1) along the Y axis'. Both the plots convey the same information from two different perspectives –

Figure 11- Basic brand names, Vowel plot 1

(X Axis – F2 Formant, Y Axis – F1 Formant)

Figure 12-Luxury brand names, Vowel plot 1

(X Axis – F2 Formant, Y Axis – F1 Formant)

Figure 13-Basic brand names, Vowel plot 2

(X Axis – F2 Formant, Y Axis – F2 -F1)

Figure 14-Luxury brand names, Vowel plot 2

(X Axis – F2 Formant, Y Axis – F2 -F1)

Differences in bandwidth

As stated earlier, bandwidth is related to the rate of energy loss in the vocal tract (B1) and can reveal the *'flatness' or the 'peak-ness'* of the energy changes at F1 (since B1 is the bandwidth of F1). Since most of the meaning in a vowel is attributed to the first formant (F1), this section will focus on B1 (which is the bandwidth of F1; although B2 and B3 are also significantly different in both the categories of brand names but studying those will not add any extra information). An independent sample t-test on the bandwidths of basic and luxury brand names revealed significant differences (mean B1 in basic brand names (Hz) = 249.68, SD = 198.68; mean B1 in luxury brand names (Hz) = 139.67, SD = 49.89; Levene's test = 22.1, $p < 0.001$, $t(70) = 4.35$, $p < 0.001$).

Differences in duration of vowels (see Appendix 10 for vowel duration)

PRAAT and FAVE provided information about the duration of all the vowels in the both categories of brand names. Since it was hypothesized that stress is preponderant in the luxury brand names and additional stress can prolong the vowel duration, the vowel duration was also subjected to an independent samples t-test.

As expected, the duration of vowels amongst basic brand names was found to be lower than those of luxury brand names overall, but this difference was not significant (mean duration of basic brand names (ms) = 0.12, SD = 0.05; mean duration of luxury brand names (ms) = 0.14, SD = 0.08; $t(147) = -1.62$, $p = 0.10$). The Figure 15 below shows the duration of vowels in both categories of brand names-

Figure 15- Duration of vowels

(X Axis – Number of vowels, Y Axis – Duration in ms)

To explore the relationship further, a binary logistic regression was performed with the bandwidth (B1), formant (F1) and vowel duration as the independent variables and the type of brands (basic or luxury) as the dependent variable. The overall model fit was found to be significant highlighting the importance of all the variables ($X^2(3) = 39.31$, $p < 0.001$, Nagelkerke $R^2 = 0.31$). Among the individual coefficients, the B1 and F1 were found to be significant (Formant F1- Wald's $X^2(1) = 2.98$, $p = 0.08$; Bandwidth B1- Wald's $X^2(1) = 21.09$, $p < 0.001$), whereas the coefficients of vowel duration was not found to be significant (Wald's $X^2(1) = 1.82$, $p = 0.17$). However the vowel duration was found to have the highest odds ratio ($\text{Exp}(B) = 114.27$).

Differences in vowel stress and presence of back or high vowels

PRAAT and FAVE can extract information about vowel stress and can also specify the type of stress i.e. primary or secondary stress. Since the preponderance of stressed vowels and high/ back vowels amongst luxury brand names was hypothesized (as was found and

reported in previous study also), here the information provided by PRAAT in the spoken form of the brand names was examined to test the hypothesis.

The number of vowels with no stress, a primary stress and a secondary stress was subjected to an independent sample t-test. As earlier, a preponderance of primary stress in vowels amongst luxury brand names as compared to basic brand names was found (mean vowels having a primary stress among BB (Number) = 0.97, SD = 0.16; mean vowels having a primary stress among LB (Number) = 1.21, SD = 0.534, Levene's test found to be significant- $F = 43.5$, $p < 0.001$; $t(42) = -2.64$, $p = 0.01$). Also, as reported in the previous section, the number of high and back vowels amongst luxury brand names (Arpabet code= (Advanced Research Projects Agency (ARPA) code) IY, IH,UH, AA, AO, OW, UW, ER, AW, OY, AX, IX and UX (see Appendix 2 and Appendix 3 for codes) was found to be significantly higher as compared to basic brand names (mean occurrence of high/back vowels among BB (Number) = 0.74, SD = 0.75; mean occurrence of high/back vowels among LB (Number) = 1.54, SD = 1.04; Levene's test found to be significant- $F = 9.2$, $p = 0.003$; $t(65) = -3.80$, $p < 0.001$).

Another interesting observation is that among the luxury brand names, the last syllables of most of the names end in a phonetic vowel sound as compared to basic brand names. To test this, a chi square test was performed on the presence or absence of the ending vowel sound (present or absent) and type of brand (luxury or basic). This revealed significant differences between basic and luxury brand names (Pearson $X^2(1,76) = 4.25$, $p = 0.039$). Next, a binary logistic regression was performed with the type of brands (BB or LB) as the DV and the ending vowel (present or absent), number of stressed vowels

and number of high/back vowels as the independent variables. The model was fit found to be significant ($X^2(3) = 19.76$, $p < 0.001$, Nagelkerke $R^2 = 0.305$). The individual coefficients of two variables (vowel stress and presence of high/back vowel) were found to be significantly different in the basic and luxury brand names (Vowel stress- Wald's $X^2(1) = 4.71$, $p = 0.03$, Presence of High/Back vowel - Wald's $X^2(1) = 5.28$, $p = 0.021$), however the coefficient of the third variable 'ending vowel sound' was not found to be significant (Wald's $X^2(1) = 1.00$, $p = 0.31$). The highest odds ratio, was found to be of 'vowel stress', (Exp (B) = 6.32) followed by 'high/Back vowel', (Exp (B) = 2.214) and the 'ending vowel sound', (Exp (B) = 0.54) which highlights the overall importance of the stressed vowels and the high or back vowels in imparting '*luxury-ness*' to a brand name.

Figure 16 and Table 6 below depict the overall differences between luxury and basic brand names-

Table 6- Stressed vowels, high/back vowels & ending vowels

		No of HV/BV	No of vowels with no stress	No of vowels with primary stress	No of vowels with secondary stress	No of brands ending in a vowel
Basic names	Brand	29 (0.4)	7 (0.09)	17 (0.23)	5 (0.06)	11 (0.15)
Luxury names	Brand	57 (0.61)	19 (0.2)	29 (0.31)	7 (0.07)	19 (0.2)

Figures in parenthesis indicate the proportion of vowels

Figure 16- Stressed vowels, high/back vowels & ending vowels

(X Axis – Stress and vowels, Y Axis – Number)

Other differences revealed by FAVE and PRAAT

Since a detailed analysis of all the information provided by PRAAT is beyond the scope for this dissertation, only further overt differences between basic and luxury brand names are reported and depicted visually in charts without further analysis.

Differences in vowels-

Figure 17- Differences in vowels

(X Axis- Vowel code (see Appendix 3) and Y axis - Number of times the vowel is found in the spectrogram)

Results – Preponderance for the following vowels among the luxury brand names (listed are only the vowel codes that are different; for vowel codes please see Appendix 2 and Appendix 3) - 5 – short vowel sound like ‘o’ /ɒ/ in ‘bot’, 7 – ‘u’/ʊ/ sound as in ‘put’, 12- free long vowel like ‘iy’/i:/ in ‘be’, 62 – checked vowel like ‘ow’ /oʊ/in ‘boat ‘, 64 – ‘owr’/ɔər/ sound as in ‘bore’, 72- long vowel like ‘oo’ /u:/ sound in ‘boot’ and 94 – ‘hr’ /ɜr/sound as in ‘bird’

Fm – Manner of articulation of the segment following a vowel

Figure 18- Differences in manner of articulation of succeeding segment

Results – Preponderance of vowel ending sound in luxury brand names and a preference for ‘3’ among the basic brand names (‘3’ is code for a fricative following a vowel for eg ‘iy’/aɪ/ sound in Budweiser is followed by ‘s’).

Fp - Place of articulation of the segment following the vowel

Figure 19- Differences in place of articulation of succeeding segment

[X Axis – place of articulation (1- labial, 2- labiodentals , 3- inter-dental , 4- apical, 5- palatal , 6- velar),Y Axis – no of times it appears in names]

Results– Preponderance of vowel ending sound in luxury brand names; one interesting observation is that the inter-dental sound (code ‘3’ or sound like ‘th’ /ð/ in that) is not found in any of the names among both the basic and luxury brand names.

Fv - Voicing of the segment following a vowel

Figure 20- Differences in voicing of succeeding segment

(X Axis – voicing of the following segment (1- voiceless, 2- voiced), Y Axis – no of times it appears in names)

Results – Preponderance of vowel ending sound among the luxury brand names

Ps- Type of Segment preceding the vowel

Figure 21- Differences in preceding segment

[X Axis – preceding segment (1- oral labial, 2- nasal labial , 3- oral apical, 4- nasal apical, 5- palatal , 6- velar, 7-liquid, 8- obstr + liquid, 9- /w/, /y/), Y Axis – no of times it appears in names]

Results– Preponderance of code ‘7’ or ‘l’ /l/ or ‘r’ /r/ sound preceding the vowels in luxury brand names. For example ‘r’/r/ sound in ‘Ferrari’. The importance and pleasantness of liquids (‘l’ and ‘r’ sounds) has been reported widely in the literature.

Discussion

In the previous chapter we analysed the differences between basic and luxury brand names using the IPA notation and in this chapter we analysed the differences in the same set of selected brand names using a spectral study. The need for this alternative approach was felt as there are some limitations reported in the IPA approach. IPA denotes the *written form of the spoken* speech and permanent, intrinsic problem with the IPA is that real sounds are infinitely variable. Sound spectrograms show that a single sound varies slightly each time it is pronounced. Thus, the IPA could only capture a part of each individual’s unique accent, or way of speaking (called an idiolect)” (Vajda, 2014).

As the spoken speech is a continuous form of the linked phonemes (unlike the discrete phonemes in IPA), the effect of one phoneme on another and the effect of stress on one phoneme on another preceding or succeeding phoneme is readily apparent; so this study analyzed the phonetic differences between basic and luxury brand names based on their acoustic spectra (differences in the spoken/ wave form of the brand names). This alternative approach of testing the key hypotheses is typically considered a more in-depth approach to the analysis of phonetic structure than the IPA method (Study 1) and provides a more complete analysis through the assessment of continuous speech rather than discrete phonetic patterns (as in IPA). As hypothesized, many significant differences

between both the set of basic and luxury brand names were found, a summary of the findings is -1) a preponderance of the use of back/high vowels, affricates, stressed vowels and multi-syllabic names among the luxury brand names and 2) a preponderance of longer duration of vowel sounds in the luxury brand names.

Among the vowel formants, a high F1 value was observed for basic brand names (mean (Hz) = 625.51) which supports the fact that most of the vowels in basic brand name group originate lower in the oral cavity whereas a low F1 value in the luxury brand names (mean (Hz) = 578.51) group highlights the fact that the vowels in that luxury brand name group originate from high in the oral cavity and support the hypothesis. The vowel plots show that the vowels in basic brand names are fairly spread out over the oral cavity with two distinct clusters in the front and central part of oral cavity (see Figure 11 to Figure 14); in contrast vowels in the luxury brand names show clusters that are better demarcated towards the back and low back (back vowels) and also in higher parts of the oral cavity where there is no overlap in representation with vowels contained within basic brand names. For both basic and luxury brand names, vowel clusters can also be seen in the front and center of the oral cavity, which depicts some of the very common front vowels like [e], which are common to both the categories of brand names.

Linguists report that some parts of the oral cavity are used more commonly in every day speech whereas others are rarely used; for example, vowel code 'æ, Low/open front rounded vowel sound' is not reported in English and is rare in known languages (Armstrong, 2009). Another interesting fact reported is that the frequency of vowels follow closely their order from front to back (a, e, i, o, u) in the vowel space (Ladefoged,

2012), i.e. the *most* frequent vowel in *most of the languages* is ‘a’ and the least common vowel is ‘u’ with the other vowels falling in between in the frequency or count (Ladefoged, 2012). This fact can be seen in the vowel plots reported in this study, where the common clusters in both basic and luxury brand names lie in the front and center of the oral cavity. As discussed earlier, the pattern of vowels in luxury brand names (as depicted in the vowel plots) use some vowels spaces in the oral cavity which are uncommon in everyday speech and use of these patterns extend an exclusivity to the luxury brand names which is desirable by these brands.

The relationship between phonemes and their meaning has been reported and accepted in linguistic literature for many decades (i.e. the relationship between the sounds in words and specific physical properties about the referent). However, how these representations are linked and what the mechanisms are behind these relationships has only received sparse investigation (Maglio et al., 2014). A recent study suggests that since vowel sounds are so intricately linked with product attributes and can clearly define the characteristics of an object with a high degree of resolution [including smallness (vs. largeness), sharpness (vs. bluntness), brightness (vs. dimness)], front vowels lead to greater precision of interpretation as they can induce a sense of concrete construal (Maglio & Trope, 2011) whereas the back vowels can induce an abstract construal (Maglio et al., 2014). These authors manipulated the front and back vowels to show that front vowels were more closely associated with low level construal (objects *within* the reach of subjects, akin to the basic brands in this research) and back vowels were more closely associated with abstract, high level construal (objects that are psychologically

distant from the current state of subjects (Liberman & Trope, 2008; Maglio, Trope, & Liberman, 2013), akin to the concept of luxury in this research). This is a probable explanation behind the linkage between vowels and sound symbolism provided in the psychology literature but aside from this paper there is hardly any evidence providing the mechanism behind the phenomenon (Maglio et al., 2014).

Apart from vowel location (i.e. front or back), other differences identified between basic and luxury brand names in this study were in vowel stress, bandwidth, syllables and duration of the vowels. A lower B1 in the bandwidth among the luxury brand names was found which signifies the abruptness of the change in the resonance compared to the basic brand names; one reason for this may be the higher stress in the vowels in the luxury brand names, which may lead to a sudden abruptness and peak in the F1 formant. Vowel duration too was found to be prolonged for the luxury brand names as compared to the basic brand names. It is difficult to dissect these apart (i.e. stress, duration and bandwidth) because they all are intricately linked with each other (i.e. whenever a stress in a vowel is introduced the duration too will increase).

Stressed vowels are uncommon in spoken names (as they make the speech difficult) and provide the luxury brand names a differentiating feature which helps in providing an exclusivity to their names and act as a differentiating factor from the everyday speech (and thereby from the basic brand names). In any language, vowels play an important role as they are the most noticeable and central sound of syllables (Al- Eisa, 2003) and this study shows key differences between the vowel structures of the luxury and basic brand names.

Luxury brand names were also found to be multisyllabic in contrast to basic brand names that tend to be monosyllabic or bi-syllabic. In a monosyllabic or bi-syllabic name sound, the only way a vowel can be adjusted is in the middle of a syllable to give a proper structure to the name. But in a multi-syllabic sound, the possibilities for vowel placement increases. This may be the reason for the preponderance of ‘vowel sound ending’ among the luxury brand names as compared to the basic brand names. For example, the basic brand name ‘Lays’ is monosyllabic and has one vowel in the center. If the vowel placement is changed and the vowel is shifted towards the end, (while keeping the name as monosyllabic) as in ‘Lsya’ then the brand name becomes unpronounceable. This may be a possible explanation for the lack of vowel ending sound in many monosyllabic basic brand names. Syllable is supposed to be the most relevant sub lexical unit in the recognition and production of a word (Adi-Bensaid & Most, 2012; Aichert & Ziegler, 2005) but only a few studies have investigated word-length effects (i.e. the number of syllables) on the speech perception (Adi-Bensaid & Most, 2012).

In this research the luxury brand names were found to be mostly multi-syllabic with stressed vowels and affricates whereas the basic brand names were found to be mostly mono and bi-syllabic without vowel stresses or affricates. This is also reflected in the past research where the most common syllable structure is reported to be bi-syllabic (Francis, Lam & Walls, 2001). Polysyllabic words are processed more accurately (Adi-Bensaid & Most, 2012) and are easier to be perceived as compared to shorter words (Frauenfelder & Peeters, 1990) (i.e. better perception of luxury brand names as compared to the basic brand names). Similarly, the affricates and vowel stresses produce undue

friction and pauses in a luxury brand name which provides a distinction and exclusivity to these names which these brands aspire to; whereas the basic brand names tend to refrain from the use of vowel stresses, affricates and multiple syllables which makes them more similar to common everyday words and help these brands in maintaining that everyday basic outlook.

While speech is an efficient information carrier, listeners do not wait for all the acoustic information to be collected but rather, start the interpretation process as the stream of information contained in the name sounds is received (Warner, 2014). This chapter showed that different pieces of the information contained in a name sound i.e. vowel stress and number and type of vowels, symbolically convey a specific and different meaning to the listener.

In the next chapter, the pattern of differences identified so far between luxury and basic brand names will be used to generate novel, hypothetical brand names for use in an implicit semantic priming reaction time task.

CHAPTER FOUR

Study 3- Semantic priming reaction time study

Introduction

While evaluating the acoustic form of spoken brand names, the data can be assessed along three dimensions – from the perspective of *speaker*, from the perspective of *listener* and from the perspective of the *medium* (through which the sound waves propagate). In the previous two chapters, differences among the brand names were explored from the perspective of the *speaker*. The *medium* (i.e. air, background noises, ultrasounds etc.) itself is a vast area of research which is beyond the scope of this dissertation. This chapter focuses on the phonetic differences in the perception of brand names from the perspective of the *listener*. If the hypothesis that luxury and basic brand names are both distinct in terms of their phonetic structure and that these differences impart meaning as to whether or not they are premium or basic products, then listeners should be able to accurately categorise novel brand names generated using these distinct patterns into luxury or basic based purely on how the names sound.

To validate this assumption, this chapter reports the results of two studies- firstly, the results of an explicit approach where subjects listened to the brand names and answered some questions and secondly, through an implicit semantic priming reaction

time study where subjects listened to the hypothetical brand name primes and responded to visual target words by pressing some keys on the computer key board (for details see Experimental design in Study 3 b).

Forty seven hypothetical brand names- 22 basic brand names and 25 luxury brand names were generated using the phonetic differences explored. The brand names were then converted to audio files using <http://www.fromtexttospeech.com> (sound of ‘Heather’ in US English in medium speed). The names are given in Table 7 below-

Table 7- Hypothetical brand names

Hypothetical Basic brand names		Hypothetical Luxury brand names	
Blate	Nillem	Avenzio	Neezaa
Brist	Phittle	Buxxor	Naezaelez
Clent	Savvor	Cizara	Sacava
Hemti	Sesem	Cruza	Tloubas
Jensi	Tenli	Estrava	Ulivosa
Jifsy	Trabe	Felashae	Uloxo
Kellem	Venbe	Galdiae	Uvoni
Keltin	Vevete	Granduro	Vacuaar
Kleptik	Vipity	Iouzy	Vessinia
Karpade		Izari	Volaen
Mensy		Jovien	Volaza
Navim		Lorez	Zanzia
Nekmet		Montanu	

(IPA notations in Appendix 11)

Study 3a- Explicit approach

Method

Before testing the hypothesis using a semantic priming reaction paradigm, in a preliminary study, subjects answered four questions concerning hypothetical brand

names. A total of 32 subjects, aged between 18-70 years participated in this study. All subjects were US citizens and were recruited using Amazon Mechanical Turk. One of the subjects had many missing responses and was therefore removed from the analysis. Out of the 31 subjects, 12 were females and 19 were males. Subjects were informed that they were participating in a research study on the mental processes involved in the naming of brands and they would be asked to answer 4 questions while listening to different brand names. The experiment was run using Inquisit 4.0.05 and subjects were instructed to wear headphones throughout as the task involved listening to brand names. The subjects had to rate four questions on a Likert scale while each hypothetical brand name (22 Basic brand names and 25 luxury brand names) played continuously in the background till the time subject responded.

The questions asked were following - (before responding to the second question, subjects read a short description of what is meant by 'basic and luxury brands' - "*By basic brand we mean a brand which people use on a daily basis like a can of soda.*" and "*By luxury brand we mean a brand which people aspire to like an expensive handbag*")

Q1 - "You are hearing a new brand name. Does it sound similar to any other brand known to you?" (Rating Scale 1- 7 - 1 = Definitely yes & 7 = Definitely no)

Q2 - "You are hearing a name. Do you feel it is a basic brand name or a luxury Brand name?"

(Rating Scale 1- 7 - 1 = Strong basic brand name & 7 = Strong luxury brand name)

Q3 - "If I use a product having this brand name, it will make me feel important"

(Rating Scale 1- 7 - 1 = Strongly disagree & 7 = Strongly agree)

Q4 - "I like this name so much that I don't mind paying a little extra for a product having this name" (Rating Scale 1- 7 - 1 = Strongly disagree & 7 = Strongly agree)

The subjects then rated the hypothetical brand names.

Results and discussion

A paired sample t-test revealed that hypothetical brand names were perceived as novel and did not bear any similarity with existing brand names. There was no difference in novelty ratings between basic and luxury brand names (HBB group mean = 5.43, SD = 1.22; HLB group mean = 5.47, SD = 1.09; $t(60) = -0.13$, $p = 0.89$) (see Appendix 4 and 5 for individual ratings of all the questions). This test revealed that the hypothetical brand names were not confused explicitly with the other existing brands that subjects may be aware of and also, since the mean ratings in both the category of brands are well above the midpoint (in a scale from 1-7; HBB group mean= 5.43, HLB group mean = 5.47) it can be ascertained that the hypothetical brand names created and used here are novel and suitable for further study.

The test also revealed that brand names in the basic brand group were perceived as more 'basic' whereas those in the luxury brand group which were perceived as more 'luxury' (HBB group mean = 3.48, SD = 0.51; HLB group mean = 4.61, SD = 0.60; $t(60) = -7.92$, $p < 0.001$). This result provides support to the hypothesis that the phonetic structures of basic and luxury brand names are distinct. Since all the brand names were hypothetical and were devised purely on the basis of the phonetic differences identified in the first two studies, the results provides further support to the hypothesis that the

phonetic differences in a brand name sound alone can influence the listener in terms of its “luxurious” appeal.

To further test the hypotheses we analyzed the differences between brand names which are considered to be *most basic* and *most luxurious* by the subjects. Among individual brand names, the most *basic* appeal was found in ‘Phittle and Clent’ and the brand name with the most *luxurious* appeal was ‘Cizara’. The differences exist in syllables (‘Phittle’ has a bi-syllabic sound and ‘Clent’ has a mono syllabic sound whereas ‘Cizara’ is tri-syllabic), Vowels (‘Phittle and Clent’ have CVCC (Consonant-Vowel- Consonant- Consonant) and CCVCC structures respectively), whereas ‘Cizara’ has CV-CV-CV structure with three vowels, with two vowels (both /a/) having a prolonged duration and also an ending vowel sound) and affricates (both ‘Phittle and Clent’ have smooth flow in pronunciation whereas Cizara has an affricate /dʒ/ causing friction in the name). A more detailed analysis of individual brand names is provided in section- Analysis of individual brand names on page 94.

Test also revealed that the use of brand names from the HLB group made subjects ‘feel more important’ as compared to the brand names from the HBB group (HBB group mean = 3.08, SD =1.10; HLB group mean = 4.12, SD =1.21; $t(60) = -3.51$, $p = 0.001$). Subjects also indicated that they were willing to pay extra for a brand name belonging to hypothetical luxury brand names when compared to the hypothetical basic brand names (HBB group mean = 2.64, SD = 1.10; HLB group mean = 3.50, SD =1.42; $t(60) = -2.65$, $p = 0.010$).

In the past the researchers have shown fair amount of correlation between the explicit and implicit measures [for example Implicit association test (IAT) reveals more positive associations to flowers than to insects, similar to the subjects' self-reports measures (Greenwald, McGhee & Schwartz, 1998); IAT scores and self-reported preferences regarding math versus arts and regarding the presidential candidates (Nosek, Banaji & Greenwald, 2002). In this study we tested the hypotheses using an explicit approach; since this study is on non-controversial subject of brand names (unlike controversial topics like race, gender where social desirability bias is a factor) we found good support to the hypotheses using explicit approach also. Since sound symbolism is an automatic phenomenon, the next study shows that the perception of phonetic patterns as 'basic or luxury' can also be shown using implicit measures.

Study 3 b - Implicit approach

Introduction

Following the explicit survey on the hypothetical brand names, an implicit approach was adopted to determine the extent to which the phonetic structure of luxury and basic brands names convey meaning at an implicit or automatic level of processing. Sound symbolism has been shown to work as at an implicit level of consciousness (McNeil, 2003) and is automatic and effortless (Yorkston & Menon, 2004) and the advantage of which is that consumer may not reject a seemingly semantic congruent information or message presented through a sound symbolic brand name. The basic premise is that if the phonemes present in the luxury brand name are congruent with the meaning of 'luxury'

then the response latency on the presentation of a semantically congruent auditory prime with the target word ‘luxury’ will be shorter than with the target word ‘basic’. Similarly, if the phonemes present in the basic brands are semantically congruent with the meaning of ‘basic’ then the response latency on the presentation of a semantically congruent auditory prime with the target word ‘basic’ will be shorter than with the target word ‘luxury’.

In Study 3a, we show the support to the hypotheses using an explicit approach. In explicit approach, the information retrieval is from the explicit memory whereas priming relies on the retrieval from the implicit memory and is therefore said to be due to an involuntary and unconscious phenomenon (Gulan & Valerjev, 2010). Since sound symbolism too is a subconscious phenomenon, we should be able to show support to the hypotheses using an implicit approach also, hence the necessity of this study.

The phenomenon of priming is observed due to increased sensitivity to certain stimuli due to prior experience and occurs outside of the conscious awareness. In affective priming the valence of the prime (for example pleasant or unpleasant) can influence the response latency of a congruent visual target due to facilitation of matched target processing (Klauer & Musch, 2003; Steinbeis & Koelsch, 2011). Uni-modal priming (for example visual prime–visual target) is well established in psychology literature and priming has also been observed across various sensory modalities like audio-visual (Schneider, Engel & Debener, 2008) and olfactory–visual (Gottfried & Dolan, 2003) [for example, priming effect is observed when a semantically congruent

naturalistic sound and a visual image are presented simultaneously (Chen & Spence, 2010; Iordanescu et al., 2008, 2010)].

Some research suggests that sounds can also convey hidden hedonic attributes (for example luxury) ; Lageat et al. (2003) found that certain type of sounds in the closing of a car door sound and in the closing of a lighter can be perceived as more luxurious than the other similar sounds. If sound (phoneme) itself, without any semantic associations, can convey a meaning, then is it likely that some hypothetical (unknown) brand names will be implicitly perceived as more luxurious (as name-sound itself will convey perception of luxury) as compared to other brand names. Since we created the brand names using sound symbolic phonetic patterns, we should be able to show the same differences in the perception of luxury vs basic through a semantic priming study.

Experimental apparatus and stimuli for study 3b

The study was designed and managed using Inquisit 4 by Millisecond.com. Subjects were instructed to use headphones through which auditory prime stimuli were delivered. Subjects were frequently asked to respond to oral instructions which ensured that the subjects listened to the auditory primes throughout the experiments. All the target stimuli were presented in black Verdana font in the centre of a green background (colour code 0,134,139). Each trial consisted of the presentation of an auditory prime (hypothetical brand name sound) and a visual target (words ‘basic’ or ‘luxury’) displayed in the centre of the screen. Subjects were instructed to press the ‘E’ key on the keyboard when the

word ‘luxury’ appeared on the screen and the ‘I’ key when the word ‘basic’ appeared on the screen (‘E’ and ‘I’ keys were counterbalanced between the subjects. The audio files of 30 hypothetical brand names (15 each for basic and luxury brand names) were randomly selected from the 47 brand names created earlier and the study was conducted online. The basic brand name duration varied from 626 ms to 940 ms with a mean of 774.4 ms and the luxury brand name duration varied from 783 ms to 1123 ms with a mean of 891.4 ms (for details of individual brand name duration see Appendix 6). The names from both these groups differed from each other in duration (mean of HBB = 774.4 ms, SD = 0.750; mean of HLB = 891.4 ms, SD = 0.1123; $t(28) = 3.355$, $p = 0.002$).

Experimental design

The design was a 2 type of Brand (‘basic brand’ or ‘luxury brand’) x 2 target word (‘basic’ or ‘luxury’) repeated-measures design. The response latencies were measured in the congruent blocks – ‘basic brand auditory prime with the target word ‘basic’ and ‘luxury brand auditory prime with the target word ‘luxury’ as well as in the incongruent blocks - ‘basic brand auditory prime with the target word ‘luxury’ and ‘luxury brand auditory prime with the target word ‘basic’. There were four blocks presenting 60-80 trials each, making a total of 240- 320 trials per subject. Before the commencement of the first block, subjects were presented with a practice block of 30 trials during which a generic sound ‘baba’ was presented prior to target words ‘basic or luxury’ to make the practice block appear as close to the real test. The practice block aimed to train the

subjects to associate the key press (E or I) with the attributes shown on top of the screen (Calvert et al., 2014). On top of the screen, 'E- Luxury' and 'I - Basic' was displayed on the corresponding sides to remind the subjects of the keys and their associated attributes (counterbalanced between the subjects; Calvert et al., 2014).

Before the commencement of the test blocks, there was timer of six seconds which enabled a subject to get ready to place the fingers at respective keys on the keyboard. An orange rectangle flashed around the words 'luxury or basic' for 600 ms and the subjects were told to respond before the rectangle disappeared (Calvert et al., 2014). The rectangle did not have any association with the response latencies, but served to cue subjects to respond within the required time window and prevented elaborative processing of the attributes seen in a slower reaction time response (Calvert et al., 2014). If a subject responded after 700 ms on three consecutive trials, a 'Too slow' message flashed in red at the bottom of the screen for 500 ms which reminded the subjects to respond faster. The entire study lasted for approximately 15-17 minutes. The sequence of stimulus presentation is as follows –

Figure 22- Semantic priming experimental design

Method

A total of 36 subjects were recruited from the US through Amazon Mechanical Turk to take part in this study. Five subjects who had high errors rates and accounted for 33.36 % of the total errors were excluded from the analysis. The response latencies of the remaining 31 subjects were analysed. Out of 31 subjects, 15 were females and 16 were males. A total of 8640 response latencies were collected. Only the correct responses were analysed and the response latencies less than 200 ms and more than 1200 ms were excluded from the analysis. These latencies constituted about 0.9 % of the data. All the remaining 7439 response latencies were subjected to a 2x2 repeated measures ANOVA with the factors of type of brand (basic vs luxury) and target word (basic vs luxury). If the hypothesis is correct, then the phonemes in the brand names will act as a prime and there will be significant interaction of the prime and the target word type on the response latencies. Specifically, the accessibility of target words will be faster when it is preceded by a congruent phonetic prime.

To illustrate the priming effect clearly, a priming score was also calculated (Anderson, Benjamin & Bartholow, 1998) which denotes the separation (in ms) between the basic brand name phonetic prime condition and the luxury brand name phonetic prime condition. The priming score was calculated by subtracting the average response latency of the congruent blocks in both basic and luxury brand names (for e.g., congruent and incongruent blocks for basic brand is 'basic brand name prime paired with target word 'basic' and 'basic brand name' prime paired with target word 'luxury' respectively). Thus a higher score indicates a relatively stronger priming effect and a

stronger association of those phonemes with the respective basic and luxury concept (see Table 8 below for a clear understanding). The results are described using- 1) repeated measures ANOVA of response latencies, 2) repeated measures ANOVA of log transformed latencies, 3) d prime approach (technique described with the results) and 4) individual brand name analysis.

Results of ANOVA of response latencies

The mean response latencies found were – for the congruent block- basic brands = 424.45 ms, luxury brands = 418.36 ms; incongruent block- basic brands = 428.48 ms, luxury brands = 423.74 ms; Δ (Priming effect) - basic brands = 4.04 ms, luxury brands = 5.38 ms. The main effect of brand was found to be significant $F(1,30) = 10.86$, $p = 0.003$, observed power = 0.89, $\eta_p^2 = 0.26$; the other main effect was not found to be significant $F(1,30) = 0.03$, $p = 0.85$. Of most interest is the interaction as it will uncover the relevance of the respective phoneme as a prime. The interaction of brand and target word was found to be significant $F(1,30) = 6.29$, $p = 0.018$, observed power = 0.68, $\eta_p^2 = 0.17$ (see Table 8, Figure 23 & Figure 24 below).

Table 8- Results of study 3b

Prime stilmulus	Target Word				Priming effect
	Basic		Luxury		
	Mean	SD	Mean	SD	
Hypothetical basic brand-name(HBB)	424.45	77.21	428.49	78.39	4.04
Hypothetical luxury brand-name (HLB)	423.75	75.45	418.36	72.92	-5.38
Priming score					9.42
Priming score = Priming effect for the HBB minus the priming effect of HLB conditions. The test of whether priming score is significant is identical to the test of the Prime Stimulus * Target word inteaction					

Figure 23- Study 3b- Priming score (interaction of brand & target word-1)

Figure 24-Study 3b- Priming score (interaction of brand & target word- 2)

The results of this study suggest that the phonemes present in the hypothetical basic and luxury brand names are implicitly associated with the concept of ‘basic and luxury’ respectively.

Results of ANOVA of log transformed latencies

The response latencies were also analysed using log transformation latencies as many researchers recommend log transformation of the latencies due to right-sided skew-ness of the reaction time data (Fazio, 1990; Ratcliff, 1993). The advantage of this method is that it reduces the impact of both long as well as short latencies and at the same time does not allow any loss of data based on cut-off time of the latencies (Ratcliff, 1993). Similar results were found even with log- transformed latencies (main effect of Brand was found

to be significant $F(1,31) = 4.39$, $p = 0.044$, observed power = 0.52, $\eta_p^2 = 0.12$; the other main effect was not found significant $F(1,31) = 0.37$, $p = 0.54$. The interaction of brand and target word was found to be significant $F(1,31) = 5.82$, $p = 0.022$, observed power = 0.64, $\eta_p^2 = 0.15$ (see Figure 25 & Figure 26 below); mean log transformed latencies- for the congruent block- basic brands = 2.61, SD = 0.07; luxury brands = 2.60, SD = 0.07; for the incongruent block- basic brands = 2.61, SD = 0.07; luxury brands = 2.61, SD = 0.07).

Figure 25- Study 3b- Log transformed (interaction of brand & target word- 1)

Figure 26-Study 3b- Log transformed (interaction of brand & target word- 2)

The results of ANOVA using log transformed data also provide similar information that the phonemes present in hypothetical basic and luxury brand names are implicitly associated with the concept of 'basic and luxury' respectively.

Results of d Prime approach

An alternative way of analysing the data is by using the 'd prime' method used in signal detection theory. Signal detection theory gives better insight into how sensitive a person is to the stimulus, which in part is decided by the nature of the stimulus, by the sensitivity of the person and by the semantic congruency of the signal and stimulus. The premise is

that a person should be able to readily detect a more intense stimulus than a less intense stimulus (psychology.jrank.com). Researchers report that the presence of a semantically congruent prime or stimulus can enhance the detection of a target when compared to a semantically incongruent prime (Dagenbach & Wilhelmsen, 1989; Vermeiren & Cleeremans, 2012). The accuracy with which the subjects responded to the target words (basic or luxury) represented their ‘hit rate’ and the ‘error rates’ represented their ‘false alarm (FA)’ rate. The hit and FA rates were then transformed to z scores and the detectability (d' prime) for the signal present or absent conditions was calculated using the following equation (Green & Swets, 1966; Macmillan & Creelman, 2005). A higher ‘ d' prime’ typically will signify a stronger detection.

$$D' (D \text{ prime}) = z (\text{Hit rate}) - z (\text{FA rate})$$

If the subject had a hit rate of hundred percent or had an FA rate of zero percent then the values were adjusted as $1-(1/2N)$ or as $1/2N$, where N is the number of trials in that condition (Macmillan & Creelman, 2005; Spence & Chen, 2011).

Results

Results reveal that both basic and luxury brand names have higher d' when the brand name sound is congruent with the target word shown on screen. (for the target word ‘basic’ - d' for congruent group mean = 1.03, SD = 0.05; d' for incongruent group mean

= 1.00, SD = 0.05; $t(30) = 3.26$, $p = 0.03$); for the target word 'luxury' - d' for congruent group mean = 0.98, SD = 0.03; d' for incongruent group mean = 0.99, SD = 0.05; $t(30) = 1.75$, $p = 0.09$).

Results show that the detection of target words 'basic or luxury' is enhanced if they are preceded by a semantically congruent brand name sound. The result provide further support to the hypotheses and by using the d' prime approach, demonstrate that the phonemes present in hypothetical basic and luxury brand names have a semantic congruence with the concept of '*basic-ness and luxury-ness*' among the subjects.

Analysis of individual brand names

Having demonstrated that phonetic differences in the brand names could lead to the perception of '*basic-ness*' or '*luxury-ness*', in this section we analyse the individual brand names and their perception of '*basic-ness*' or '*luxury-ness*'. This approach may help practitioners identify some key phonetic features or names that have the maximal impact while designating the product names as basic or luxury.

For each brand name, the response latency of all the individual trials was compared with the average response latency for that particular block. For example the average latency for the congruent block of 'BB with the target word basic' was found to be 424.45 ms. This average latency was compared with the latency of each trial in this block [modified from a similar approach described in Calvert et al.(2014)]. The null hypotheses for the analysis is that fifty percent of the total number of trials for any brand

name in this block will have a shorter latency than the block average and the other fifty percent will have a response latency longer than the block average. The advantage of this analysis is that it can identify the individual brand names which have the strongest association with the target word ‘basic or luxury’ and these may help in identifying and using such brand names.

Basic brand names

The overall response latencies for all the basic brand names in the congruent block (basic brand name paired with target word ‘basic’) is depicted in Figure 27 below (shorter latency means stronger association)–

Figure 27- Response latencies- BB with target word 'basic'

Among all the basic brand names, seven brand names were found to have strongest semantic association with the target word 'basic' in the congruent block [brand name (p value) = Brist (0.0049), Clent (0.0047), Jifsy (0.01), Kleptik (< 0.001), Nillem (0.001), Trabe (0.001), & Vipty (< 0.001)]. Figure 28 below shows the numbers of trials as a percentage where response latency is shorter than the block average latency [brand name (percentage) = Brist (61.3), Clent (57.6), Jifsy (60.5), Kleptik (64), Nillem (63.4), Trabe (63.5) & Vipty (64.3)].

Figure 28- Strongest semantic association- BB with target word 'basic' (percentage)

Figure 29 below shows the average priming effect for these individual brand names in this block (in ms) [brand name (priming effect in ms) = Brist (77.3), Clent (83.1), Jifsy (78.2), Kleptik (72.7), Nillem (81.2), Trabe (64.3), & Vipty (85.3)].

Figure 29- Strongest semantic association- BB with target word 'basic' (priming effect)

Luxury brand names

The overall response latencies for all the luxury brand names in the congruent block (luxury brand name paired with target word luxury) is depicted in Figure 30 below (shorter latency means stronger association)-

Figure 30- Response latencies- LB with target word 'luxury'

Among all the luxury brand names, seven brand names were found to have strongest semantic association with the target word 'luxury' in the congruent block [brand name (p value) = Cizara (0.007), Iouzy (0.08), Izari (0.001), Lorez (< 0.001), Naezaelez (< 0.001), Uloxo (0.006), & Volaza (0.06)].

Figure 31 below shows the numbers of trials as a percentage where the response latency is found to be shorter than the block average latency [brand name (percentage) = Cizara (61), Iouzy (55.7), Izari (63.5), Lorez (65.1), Naezaelez (66.3), Uloxo (61) & Volaza (56.7)].

Figure 31- Strongest semantic association- LB with target word 'luxury' (percentage)

Figure 32 below shows the average priming effect for these individual brands in this block [brand name (priming effect in ms) = Cizara (78.1), Iouzy (70.4), Izari (93), Lorez (78.1), Naezaelez (87.9), Uloxo (74.8) & Volaza (96.5)].

Figure 32-Strongest semantic association- LB with target word 'luxury' (priming effect)

Discussion for individual brand name analysis

Hypothetical brand names used in this dissertation were created using a pool of phonetic differences found in the previous two studies and to avoid monotony and similarity in names, all the phonetic features were not included in each brand name and only some of features were used in each name. Individual brand name analysis was not originally planned in this dissertation because for such detailed analysis, the hypothetical brand names need to be created with specific differences in only one of the attributes per name (for example, ‘Brist’ vs ‘Brest’ and ‘Cizara’ vs ‘Citara’ etc); However still some interesting insight gained by this section is summarized below, which needs to be substantiated by further research, but can help practitioners in the current form.

Out of all the hypothetical basic brand names created, seven were found to have strongest association with the concept of *basic-ness* (Brist, Clent, Jifsy, Kleptik, Nillem, Trabe & Vipty). It was found that all the preferred basic brand names had a non- vowel ending phoneme (except for ‘Vipty’ and Jifsy), four of the names were bi-syllabic and rest two were monosyllabic. This suggests a strong implicit preference of the association of *basic-ness* with a bi-syllabic name having a front vowel in the middle of the brand name.

The trend in the luxury brand names is found to be better demarcated. Out of all the hypothetical luxury brand names, seven were found to have strongest association with the concept of *luxury-ness* (Cizara, Iouzy, Izari, Lorez, Naezaelez, Uloxo & Volaza). Out

of these seven brand names, six are tri-syllabic and one is bi-syllabic; since there were many multi-syllabic names (> than 3 syllables) which were not found in this final list of seven names, tri-syllabic name seems to be the preferred and optimal length for a luxury brand name. This finds support in recent literature too. One widely known old law in the linguistic literature is that frequent words tend to be short (Piantadosi, Tily & Gibson, 2010; Zipf, 1936). Recent evidence in this field confirms this finding across 10 languages and shows that both the information content and the frequency of a word in a language predict the word length (Piantadosi, Tily & Gibson, 2010; Zipf, 1936). This principle suggest suggests that a novel word/brand name intending to provide basic information about a frequently used basic brand will tend to be shorter whereas a novel word/brand name providing comprehensive/exclusive information about an infrequently used luxury brand will tend to be longer. A name longer than three syllables will take a much longer time to be processed and it is likely that the results reported here (i.e. smaller effect with longer multi-syllabic names) are due to insufficient priming in these multi-syllabic brand names. It is difficult conclude it here and more research is needed to find out the optimal length for the luxury brand name but the pattern reported here and in previous two studies suggest a preponderance and liking for tri-syllabic names.

It was also found that all luxury brand names have affricates (/dʒ/ and /ʃ/) and four luxury brand names were found to have a vowel ending phoneme. Affricate seem to be important in providing the implicit concept of *luxury-ness* as only two out of the 29 luxury brand names had an affricate ending (/ʃ/; Lorez and Naezaelez) and both these names are found in the final seven preferred names shown in this section. Although an

ending affricate is considered to be particularly unpleasant, especially in the name ending, as it disrupts the smooth flow of a name (Smith, 1998) this distinction helps in providing a distinctive and exclusive appeal to the luxury brand names which further provide cues to the listener about the luxurious appeal of a brand name.

The results reported here should be of interest to the practitioners looking for practical advice in product naming and may also be of interest for future research on the phonetic differences between individual brand names within the basic or luxury name categories and the way in which they are perceived.

Discussion

Language is arguably the most unique feature of humans that distinguishes them from any other living species (Shanawaz, n.d.) but the linguistic debate on whether the acquisition of languages is an outcome of nature (i.e. genetically coded) or of nurture (i.e. environmental and other stimuli) is still unsettled (Servellen, 2011; Shanawaz, n.d.). It is a fundamental assumption that all the languages are arbitrary (De Saussure, 1959; Hockett, 1977) and there is no intrinsic relationship between the linguistic signs and their referents. Two competing forces enhance the vocabulary and lexicon in any language—arbitrariness (i.e. randomness) and iconicity [i.e. resemblance between the properties of a linguistic form and the sensori-motor or affective properties of referents (Imai & Kita, 2014; Pernis et al, 2010)]. Arbitrariness is important because it provides the humans a compositional power, a flexibility and productivity to devise a new language or to improvise an existing one (Gasser, 2004; Monaghan & Christiansen, 2006; Nygaard et

al., 2009). However, new evidence from sound symbolism suggests the existence of naturally biased mappings between phonological properties of a word and its perception (Maurer, Pathman & Mondloch, 2006). Recent studies provide evidence that infants are born with certain linguistic preferences and that not everything in the process of linguistic acquisition is influenced by the environment and external stimuli (Berent, Harder & Lennertz, 2011; Gomez et al., 2014). One of such iconic (sound to referent) relationship suggested in the literature is that of sound symbolism.

“Sound symbolism, the linguistic process in which the sounds of a word provide cues about the word’s meaning” (Yorkston & Menon, 2004). Sound symbolism is handed over to us by evolution and studies using this phenomenon have suggested that the relationship between the sound and meaning in any language is not entirely arbitrary and this has been shown across the languages; for example a recent study shows that participants learned the actual English equivalents and antonyms for Japanese words more accurately and responded faster than the randomly paired meanings. The word’s antonym was found to have a high degree of conceptual similarity with the respective word (Keysar & Bly, 1995; Murphy & Andrew, 1993; Nygaard et al., 2009) which is suggestive of the fact that languages contain non-arbitrary links between sounds of a word and its meaning and the listeners are sensitive to these non-arbitrary (sound symbolic) relationships (Nygaard et al., 2009). Sound symbolism has also been supported by neurophysiologic evidence where a recent study used EEG-waveforms to show sensitivity to sound-symbolic label–object associations (Kovic et al., 2010).

Sound symbolism provides a referential insight into the real world through the sounds contained in words (Imai & Kita, 2014) and studies suggest that even when an individual's lexicon becomes large and it is therefore difficult for the language to maintain the relationship between sound symbolism and the word sounds [as it can impede the growth of lexicon and vocabulary; Monaghan et al. (2012)], still in modern languages the subtle tendency of sound symbolism, which may not be detected even by native speakers, persists (Imai & Kita, 2014). Since sound symbolism is evolutionary, is often useful in adult life in resolving ambiguities in the comprehension of speech and in predicting the meaning of unfamiliar words as well as for generating novel words like brand names (Aveyard, 2011). It can be thought of as machinery, working automatically in guiding us in a new word or name generation, hence its relevance to linguistics and marketing.

Although the literature on sound symbolism in linguistics is vast, its application by marketing scholars started mostly from the last decade onwards. Indeed, marketing scholars now believe that sound symbolism is an effective tool which, when integrated with other multi-sensory approaches, can increase the likelihood of brand success (Klink, 2001; Spence, 2012; Vanden Bergh et al., 1987). Hernandez (2011) suggests that the integration of linguistic principles during the generating of brand names- can increase its semantic richness, can lower the risk of negative associations and can facilitate the cognitive processes in its interpretation by consumers. To date, the generation of novel brand names has been associated with the creativity of branding specialists for *encoding* the names and with the inferential capacity of potential consumers for the *decoding* of

these names (Hernandez, 2011); however, research suggests that both brand specialists and consumers are actually implicitly guided by the a limited set of linguistic operations involving the semantic make up of words and word-combinations (Hernandez, 2011). Research in the marketing domain has shown that consumers can recognize the phonetic meaning of a name and can connect it to a product's attributes (Klink, 2000; Lowrey, Shrum & Dubitsky, 2003). The importance of the phonological features in a brand name cannot be underestimated as often the brand name is the first connection between a consumer and the brand.

In the preceding section, sound symbolism was used to investigate the phonetic structures of basic and luxury brand names. In the first two studies, systematic differences between these two categories of brand names were explored using IPA and spectral analysis. The results show that luxury and basic brand names differ in terms of the use of stressed vowels, number of stresses, number of syllables, use of back/high vowels, use of affricates and use of name-ending vowel sounds. It is interesting that despite the fact that many of these features are not considered to be pleasing to the ear, they are nonetheless predominant amongst luxury brand names. It was found that luxury brands, despite their premium appeal, tend to over use some of the non-conventional patterns of human speech (as stresses, affricates, back vowels), many of which deviate from everyday speech patterns. Earlier, this dissertation hypothesized that use of such unconventional linguistic features helps luxury brands to communicate an association of exclusivity and distinction via their names. In contrast, the use of more commonly used

speech patterns by basic brand names increases the feeling of closer intimacy with consumers. These hypotheses were supported by the findings of our first two studies.

Having explored the brand names using IPA and spectral study, the third study used the phonetic differences discovered in the previous two studies to generate hypothetical brand names. These hypothetical brand names were then used in an explicit categorization task and an implicit semantic priming reaction time task to demonstrate that indeed these linguistic characteristics convey implicit associations of '*basic-ness or luxury-ness*'. Since this association was demonstrated implicitly as well, it is suggestive of automatic semantic associations of certain phonetic features with certain concepts ('basic vs luxury').

One important contribution of this study is to show that even unknown phonetic patterns, which are sound symbolic, can induce a priming effect. The phenomenon of priming has been studied for over a century (Harley, 2005) and it has been shown to both facilitate stimulus processing, or impede it [due to inhibition; a phenomenon called as negative priming; Gulan & Valerjev (2010)]. Priming has been categorized broadly into- 1) Semantic (commonest form, where priming is produced due to the relationship in meanings between a prime and target. Semantic priming can be further differentiated into associative (for example chair – sitting) and non-associative (for example run- walk) 2) Mediated priming – the facilitation between pairs of words connected through intermediaries (Gulan & Valerjev, 2010; Harley, 2005) for example. “dog” primes “cat” which primes “mouse”) 3) Form based priming- also known as orthographic priming, this type of priming is elicited due to orthographic similarities between the prime and

target (for example choir-chair) and 4) Repetition priming –elicited when the target word recognition is enhanced due to the repetition of the prime (Neely, 1991) [the “main logic behind repetition priming is that once you have seen the word, it is easier to recognize it when you see it again” (Gulan & Valerjev, 2010)].

All these methods of priming have been demonstrated using familiar stimuli, for example, a known word prime (for example, doctor-nurse), a known sound prime (for example, dog barking), a non-word prime which shares an orthographic similarity with another known word (for example, Choir- Chair, Nale-Nail) or a word prime bearing phonological similarity (for example ate – 8, pencil- stencil).

This dissertation, on the other hand, uses only the phonetic patterns as primes (which are predominant among luxury and basic brand names) and shows that certain phonetic patterns (for example, back vowels and stressed vowels) can have an implicit association with certain semantic concepts (for example luxury and basic). The important distinction is that none of the hypothetical brand names used in this study bear any phonological similarity, orthographic similarity or contextual similarity to existing brand names. The only feature common to all our hypothetical brand names is that they were constructed from a pool of phonetic features (for example, syllabic, vowel and stress predominance), many of which are common in both basic and luxury brand names, yet these hypothetical unknown brand names have been shown to effectively induce the semantic priming effect.

In sum, this section of the dissertation has explored an interesting way in which to investigate multisensory marketing cues (e.g. auditory brand names and visual logos) and will be of interest to practitioners, as well as academics, interested in understanding how integrated auditory and visual cues can shape consumer perception. These data potentially provide marketing practitioners with a phonetic recipe for the future creation of basic and luxury brand names, as well as methodology by which newly generated options can be tested.

The next section of this dissertation will focus on methodological issues surrounding the optimal stimulus onset asynchrony (SOA) in the context of unfamiliar audio visual stimuli and the semantic priming effect.

CHAPTER FIVE

Section 2- Stimulus onset asynchrony (SOA) in a cross-modal priming task

Introduction

There is considerable interest in understanding how brand owners can boost consumers' awareness and retention of novel brands reaching the market. Recently, marketers have become interested in adopting a multisensory approach when introducing unfamiliar brand names and products, in view of the known facilitation to perception and comprehension of presenting information across more than one modality (Calvert, 2001; King & Calvert, 2001). And while previous audio-visual priming experiments have shown that priming effects work in the case of naturalistic sounds and stimuli (e.g. a dog barking and sight of its image), much less is known about the optimal conditions for cross modal enhancement in the context of unfamiliar linguistic stimuli (e.g. novel brand names). Furthermore, unlike many naturalistic examples studied to date, the integration of an acoustic speech stimulus with a static visual (written) cue may be dependent on different stimulus onset asynchronies (SOA- the amount of time between the onset of prime and target), which take into account that the speech stimulus unfolds over a longer temporal duration than its visual counterpart. In this section of the dissertation, we

investigated whether a static visual written word could enhance the perception and semantic categorization of a novel proper noun (hypothetical brand name) and systematically manipulated the SOA to identify the optimal temporal onset.

Semantic priming is a well-established method used by cognitive and social psychologists to study automatic valence processing and attitude activation (Degner, 2011; Fazio et al., 1986). While uni-modal semantic priming is well-established, research in cross-modal evaluative priming is still evolving (Scherre & Larsen, 2011). Cross-modal priming is observed when the information contained in an auditory prime interacts with that contained in a visual target. Some studies in cross modal priming (audio-visual) have shown that semantically congruent prime sounds can enhance the detection of simultaneously presented visual targets (Lippert, Logothetis & Kayser, 2007; Noesselt et al., 2008, 2010; Odegaard, Ariei & Marks, 2003; Stein et al., 1996; Van der Burg et al., 2008) and reduce the response latencies (Schneider, Engel & Debener, 2008). However, unlike visual-to-visual semantic priming tasks, auditory-visual versions are complicated by differing information processing speeds of the visual and auditory stimuli (Spence & Chen, 2011). Specifically, processing of a visual stimulus is much faster ($< 100\text{ms}$) (Potter, 1975; Thorpe, Fize & Marlot, 1996) than that of an auditory stimulus, particularly if the auditory stimulus occurs over some time duration (De Lucia, Clarke & Murray, 2010; Murray et al., 2006; Murray & Spierer, 2009; Schneider et al, 2008). Thus, maximally effective cross-modal priming is observed only when *sufficient* time has elapsed after the presentation of auditory prime and before the presentation of the visual target. This section uses novel hypothetical brand names (discovered and described in the

previous studies) to show that in a cross-modal priming task (audio-visual), the priming effect can decrease significantly as the SOA is reduced.

Study 4a and b

Experimental design

Forty-seven hypothetical basic and luxury brand names generated in the previous studies were used as auditory primes. The experimental design used in this section is the same as that described in Study 3 b - Implicit approach, with one salient difference; across two studies reported here, the target words ('basic or luxury') were displayed with an overlap of 25% or 50% before the end of the auditory prime (i.e. the presentation time of the target word was manipulated across Studies 3b, 4a and b; see Figure 33 below). The visual target word was displayed at 3 different Inter Stimulus Intervals (ISI's) across the studies- Study 3b (N = 36) - no inter-stimulus interval (ISI) i.e. 0 ms, Study 4a (N = 64) - 25% overlap between auditory prime and target, Study 4b (N = 34) - 50% overlap between prime and target (see Figure 33 below).

The overlap of an auditory prime and visual target in this section shortens the SOA and aims to discover the optimal presentation time of the visual target that would result in the most effective priming score (see Table 8). The results of both the studies 4a and 4b were compared with Study 3b (with 0 ms Inter stimulus interval (ISI)).

Figure 33- Study 4a & b experimental design

Results

As in Study 3b, all the correct response latencies within 200-1200 ms were subjected to a 2 (type of brand ‘basic vs luxury’) x 2 (target word ‘basic vs luxury’) repeated measures ANOVA and a priming score was calculated (see Table 8, Table 9). A higher score indicates a relatively stronger priming effect. The results suggest that as the visual target is moved closer to the auditory prime (i.e. as SOA is decreased) the priming score decreases (Study 3b = 9.42 ms, Study 4a = 7.54 ms and Study 4b = 6.17 ms). Results also show that as SOA is reduced, so do both the effect size (Study 3b, 4a & 4b - $\eta_p^2 = 0.173, 0.079$ & ns) and the observed power (Study 3b, 4a & 4b - observed power = 0.68, 0.59 & ns). Further, the interaction of auditory prime and the target-word shift from exhibiting a significant to non-significant statistical interaction (**Study 3b**- Response latencies (RL)– congruent block– HBB = 424.45 ms, HLB = 418.36 ms; incongruent block– HBB = 428.48 ms, HLB = 423.74 ms; Δ (Priming effect)- HBB = 4.04 ms, HLB = 5.38 ms;

main effect of brand found to be significant $F(1,30) = 10.86$, $p = 0.003$, observed power = 0.89, $\eta_p^2 = 0.26$; main effect of target word not significant- $F(1,30) = 0.03$, $p = 0.85$; interaction of brand and target word found significant- $F(1,30) = 6.29$, $p = 0.018$, observed power = 0.68, $\eta_p^2 = 0.173$ (see Table 8, Figure 23, Figure 24); **Study 4a** - Response latencies – congruent block – HBB = 451.47 ms, HLB = 464.86 ms; incongruent block – HBB = 458.46 ms, HLB = 465.41 ms; Δ (Priming effect) – HBB = 6.99 ms, HLB = 0.55 ms; main effect of brand found to be significant $F(1,58) = 17.89$, $p < 0.001$, observed power = 0.98, $\eta_p^2 = 0.23$; main effect of target word not significant- $F(1,58) = 1.52$, $p = 0.22$; interaction of brand and target word found significant $F(1,58) = 5.00$, $p = 0.029$, observed power = 0.59, $\eta_p^2 = 0.079$ (see Table 9, Figure 34, Figure 35 below). The data was also analysed using log transformed response latencies and revealed similar results (See Appendix 7 for results of log transformed latencies of Study 4a).

Table 9- Results of study 4a

Prime stilmulus	Target Word				Priming effect
	Basic		Luxury		
	Mean	SD	Mean	SD	
Hypothetical basic brand-name(HBB)	451.479	56.76	458.469	58.573	6.99
Hypothetical luxury brand-name (HLB)	465.415	61.24	464.868	64.993	-0.547
Priming score					7.537
Priming score = Priming effect for the HBB minus the priming effect of HLB conditions. The test of whether priming score is significant is identical to the test of the Prime Stimulus * Target word inteaction					

Figure 34- Study 4a Priming score (interaction of brand & target word-1)

Figure 35- Study 4a Priming score (interaction of brand & target word-2)

Study 4b- Response latencies– congruent block – HBB = 453.16 ms, HLB = 454.27 ms; incongruent block – HBB = 456.83 ms, HLB = 456.75 ms; Δ (Priming effect) - HBB = 3.68 ms, HLB = 2.48 ms; none of the main effects, nor the interaction was found significant- all $F(1,29) < 2$, all $p > 0.15$).

Discussion

In contrast to an experimental scenario, in the real world, often more than one sensory modality is engaged for effective communication and this is increasingly the case for current marketing communications. The same multisensory advantage is also true in the case of many non-verbal environmental events in which cross-modal (vs uni-modal) cues have also been shown to influence information processing (Orgs et al., 2006, 2007; Steinbeis & Koelsch, 2011; Van Petten & Rheinfelder, 1995). In both cases, the different streams of information entering via different sensory organs are seamlessly integrated by the brain into a unified coherent percept (Donohue et al., 2013). One peculiar aspect of human cognition is the rapid, automatic integration of cross-modal stimuli into a single mental representation using stored mental semantic associations (Anderson et al., 2011; Huettig, Olivers & Hartsuiker, 2011; Huettig, Mishra & Olivers, 2012; Lupyan, 2012a, 2012b; Mcqueen & Huettig, 2013). A rapidly expanding body of research is now investigating the way in which these differing sensory inputs are fused (De Gelder & Bertelson, 2004; Doehrmann & Naumer, 2008; Donohue et al., 2013).

A cross-modal approach has been used previously to study semantic priming (Holcomb & Anderson, 1993) and affective priming (Schirmer, Kotz & Friederici, 2002, 2005; Schirmer & Kotz, 2003). Cross-modal priming has also been observed across many different combinations of sensory modalities including audio-visual (Chen & Spence, 2010; Iordanescu et al, 2008, 2010; Schneider, Engel & Debener, 2008); audio-tactile (Kitagawa, Zampini & Spence, 2005; Kitagawa & Spence, 2006), and olfactory-visual integration (Gottfried & Dolan, 2003).

In the marketing domain, practitioners and scholars are increasingly using multisensory approaches to target consumers. While the previous literature has commented on the phenomenon of audio-visual priming, most known research has used *familiar* stimuli [for example naturalistic sounds as stimuli (a dog barking) or known words]. Little is known about the optimal conditions for cross modal enhancement in the context of unfamiliar linguistic stimuli (e.g. novel brand names).

In this chapter we used novel hypothetical brand names in a cross-modal priming task (audio-visual), to explore the strongest priming effect and the optimum SOA and the results of this study suggest that the most effective ISI between an unfamiliar word and a phonetically congruent visual target is 0 ms and as the SOA is reduced (i.e. as stimuli overlap further), the priming effect too reduces. This happens because an auditory stimulus takes some time to access the associated semantic representations (Potter, 1975; Spence & Chen, 2011; Thorpe et al., 1996) and therefore will need sufficient time to induce priming effect of a visual target (Schneider et al., 2008).

In contrast to auditory primes, the static visual primes can be fully presented and processed in a very short neural timeframe (Daltrozzo et al., 2011) and two factors are said to influence auditory primes- the ISI and the presentation modality; neither of which have been adequately investigated (Carter, 2011). While selecting auditory primes, the researcher can choose three types of primes- naturalistic sound primes, known word and unknown word primes. In the case of naturalistic sound primes, the advantage is that the prime and target can even be presented simultaneously (i.e. SOA of 0 ms) to induce sufficient priming. Same is true for the known word auditory primes, but an unknown novel word prime will need a longer time to access its semantic associations (for e.g. 600-1100 ms i.e. the duration of auditory primes in this study). This is in contrary to Speelman et al. (2013) who found that as the SOA is shortened i.e. as the stimuli overlap, the priming effect gets stronger. We also argue that since an auditory prime unfolds over some time duration, the individual initial phoneme in the word itself can lead to a priming even before the entire auditory stimulus is presented (for example, brand name ‘Vac-u-u-ar’ is one of the longest name in this study which unfolds over 1100 ms. During its auditory presentation, the first phoneme /vac/ can trigger the associations of ‘vacuum, vacant, vaccination, vacation etc which is difficult to control in an unknown name). In future research, it will be interesting to investigate this further i.e. the effect of brand name familiarization on the SOA; specifically, if we are able to show that the optimal SOA for the priming is reduced after subjects are familiarized with a brand name (i.e. a stronger priming effect when the audiovisual stimuli overlap and when the subject is only familiar with the hypothetical brand name but not with its semantic category i.e. luxury or

basic), then it will provide stronger support for this argument that with *unknown* primes or novel words a longer SOA is needed than with the *known* sounds or *known* words and also that the familiarization of the novel brand name or word makes the processing faster (akin to a known naturalistic sound). Similarly, the differences in the priming effect of brand names with same initial phonemes also need to be researched (for example, Blitz, Blate, Blezz etc).

In sum, in this chapter we investigated the issue using unfamiliar novel brand names as primes and our results differ from similar previous research in demonstrating that the priming effect using spoken words and written visual stimuli (as opposed to naturalistic sound and visual images) exhibits a maximal priming effect with an ISI of 0 ms. This technique presents a novel way of investigating multisensory marketing messages (for example auditory brand names and visual brand logos) using hypothetical sound symbolic brand names and provides some principles by which maximal cross modal enhancement can be achieved in these contexts.

CHAPTER SIX

The results of this dissertation indicate that the phonetic structures of luxury and basic brand names differ in their use of back/front vowels, stressed/unstressed vowels, the presence/absence of affricates and their syllabic structure. Results suggest that the use of these specific phonetic characteristics can enhance the perception of “*luxury-ness*” or “*basic-ness*” in brand names. Since the results are demonstrated using an implicit semantic priming paradigm, it is indicative of the automatic and implicit nature of these manifestations. This dissertation therefore reveals that despite their premium appeal, luxury brand names tend to use some of the unconventional patterns of human speech to sound more luxurious and exclusive. The results also suggest that even unfamiliar phonetic patterns, such as those contained in a hypothetical name (as opposed to familiar names, naturalistic sounds or words) can trigger semantic associations of certain concepts (e.g. *doctor-nurse*, *hammer-nail*).

Besides the perception of luxury and basic brand names, the dissertation also explored the methodological aspects of semantic priming in the context of unfamiliar spoken words (such as unfamiliar, novel brand names) and explored the effect of different inter-stimulus intervals (ISI's) (or stimulus onset asynchronies: SOAs) between an auditory prime and a visual target on the cross-modal perceptual enhancement. The results suggest that the most effective ISI between an unfamiliar word (such as a

hypothetical brand name) and a phonetically congruent visual target (the associated graphical representation) is an immediate onset and that as the SOA is reduced (i.e. as the stimuli overlap further), the priming effect too is reduced. The dissertation demonstrated that a maximal priming effect can be achieved at an ISI of 0 ms in contrast to previous similar research (which has used known words and naturalistic sounds as primes). The results will be of interest to scholars using the audio-visual priming experimental paradigm.

Theoretical contribution

This dissertation draws from theoretical foundations in the linguistic and marketing literature to formulate the hypothesis that the phonetic structures of basic and luxury brand names are different from each other and specifically, that luxury brand names, despite their premium appeal and status, tend to employ some unconventional phonetic features which run contrary to the linguistic conventions characteristic of everyday, colloquial speech.

To the best of my knowledge, this is the first research showing the link between phonetic patterns in a brand name and their semantic associations with the concept of luxurious appeal. I hypothesized that the information conveyed by the phonetic structure of luxury brand names is distinct from that conveyed by their basic regular brand name counterparts and that this distinction helps in maintaining the perceived exclusivity of luxury brands. Results from studies 3a & 3b consistently show that a sound symbolically

matched brand name can provide an enhanced perception of '*luxury-ness*' thus adding to the extant knowledge about the way brand names get processed in the human brain and the way they can implicitly evoke a positive consumer perception using sound symbolic principles. Interestingly, I observed a somewhat counterintuitive phenomenon i.e. that the phonetic features which pose a challenge to natural speech production and are not favored in everyday speech, nevertheless imbue luxury brand names with an air of exclusivity and psychological distance, which is precisely what such brands wish to communicate to consumers.

This research contributes to the branding, linguistic literature and psychological literature in the following ways-

In this dissertation I have demonstrated the sound symbolic association of brand names by explicit as well as implicit means. Since sound symbolism is thought to operate below conscious awareness, the use of implicit tools to investigate this subconscious phenomenon provides a more credible empirical approach and minimizes potential confounds inherent in explicit methods. One such potential confound was reported in prior studies in which subjects were asked to explicitly match the sound attributes of a hypothetical name with a set of known sensory attributes (for e.g. ice-cream hypothetical ice cream brands 'Frisch' or 'Frosch' with the attribute of smoothness; Yorkston & Menon, 2004; Spence, 2012). It could be argued that in these studies, subjects explicitly matched brand name sounds with those linked to the product attributes (for example, in comparing hypothetical names 'bloop' and 'bilad', the latter was considered to be more bitter (Klink, 2000) and it is likely that this was due to the fact that the sound of 'bi' in

‘bilad’ is more similar to ‘bitter’ whereas the sound ‘ool’ in ‘blood’ is more similar to the sound of ‘cool’). In such an example it is likely that subjects are matching the sound in a name with the sound present in an attribute rather than matching the name sound with an imagined physical (or sensory) attribute (Simner, Cuskley & Kirby, 2010; Spence, 2012). This dissertation addresses this potential confound and contributes to the literature by showing the phenomenon both explicitly and implicitly. This distinctive implicit/subconscious approach is noteworthy and more meaningful to marketers because a consumer is less likely to reject an implicit semantically congruent message presented via a sound symbolic brand name.

I have also demonstrated that even hypothetical words bearing distant similarity to certain phonetic patterns (for example stresses, back vowels, multiple syllables etc. in luxury brand names) and which are common to some known semantic concepts (in this case, the concepts of luxury and basic) can be implicitly used to evoke the semantic associations of that concept and can be effectively used as primes. This is noteworthy and distinct because the priming literature has traditionally used only phonologically/orthographically or contextually linked stimuli as primes whereas this research provides evidence that even phonetic patterns (which are not linked phonologically/orthographically/contextually) can evoke association of some semantic concepts and can act as primes.

In this dissertation, I have used the *spoken* forms of brand names; the audio-visual presentation paradigm adopted in this dissertation represents a novel approach and is more ecologically relevant as most current marketing messages tend to be in the form of

audio-visual campaigns or audio-visual-olfactory messages designed to engage multiple sensory modalities. This is especially true in the case of hypothetical brand names as a new brand name can be read in different ways by different subjects since the pronunciation is unknown to them. Using spoken brand names controls for this potential confound as *spoken* stimuli are consistent for all subjects and since a bi-modal sensory engagement is used in this research, the results are more reflective and generalizable to real life advertising experiences.

I have highlighted the importance of the sound symbolic attributes of prosodic features (such as stress, syllable, intonation of voice or rhythm) in brand names and have demonstrated that these prosodic features *themselves* can prime listeners; specifically it is demonstrated that certain common prosodic features present even in phonologically different words (for e.g., ‘Blate /blæt/ and Pepsi /'pep.si/’ in basic brands and ‘Cizara /'sɪ.dʒ'ɑ:.r 'ɑ:/ and Gucci /'g'u:.tʃi:/’ in luxury brands) can evoke associations with the concepts of basic or luxury respectively. To date, research on sound symbolism has focused mostly on vowels (as vowels are thought to be the most important component in providing meaning to a word) and consonants. Very few studies have focused on the role of prosodic features in brand names (i.e. stress, rhythm, syllabic structures, and stressed vowel/consonant). This dissertation contributes to the literature by establishing the importance of prosodic features in the context of sound symbolism.

Lastly, in this research I have addressed a potential limitation of past studies. Prior studies have mainly used student samples in an experimental setting whereas the participants in this research (recruited from Amazon Mechanical Turk) are drawn from

the general population pool across a wide age band (18-70 years) and involved a non-experimental setting to test these hypotheses. The Mechanical Turk users are seen as more representative of the population than traditional panels or college undergraduates in terms of race, gender, age and education (Paolacci, Chandler & Panagiotis, 2010) and therefore, the findings of this research are more generalizable, which is hard to maintain in the case of student samples (Henrich, Heine & Norenzayan, 2010; Jones, 2010; Spence, 2012).

Methodological contribution

In this research, I used three distinct approaches to test my prediction- *firstly*, by interrogating the International Phonetic Alphabet notation of a set of existing luxury and basic brand names, which demonstrated the phonetic differences in the written patterns of luxury and basic brand names; *secondly*, by conducting a spectral analysis, which demonstrated that the acoustic wave patterns and place of origin of the phonetic sounds in the oral cavity discriminate luxury and basic brand names; and *thirdly*, by carrying out a semantic priming reaction time task using hypothetical brand names created using the identified differences in the two prior stages above, which confirmed that these phonetic differences are indeed responsible for the implicit conveyance of ‘luxury’ and ‘basic’ when subjects were instructed to categorise them explicitly. The semantic priming task specifically demonstrated the implicit and automatic associations of these phonetic patterns with the perception of ‘*luxury-ness*’ and ‘*basic-ness*’ in consumers’ minds.

Although, some papers in marketing literature have addressed the phenomenon of sound symbolism, to the best of my knowledge, none have explored implicit tools as a methodology by which to study this phenomenon.

Similarly, very few scholars in the marketing domain have used acoustic differences to infer results. For example, Kim, Shi & Ding (2012) used human speech as an alternate data input format to claim that it can improve the accuracy of survey responses (Xiao et al in Malhotra, 2013); Hobson, Mayew & Venkatachalam (2012) examined the dissonance pattern in speech to evaluate financial misreporting; Wang et al. (2013) examined the accents of call center executives and consumer satisfaction. Aside from these three studies, to the best of my knowledge, none have used spectral analysis as a method for study marketing messages which is surprising given that consumers are invariably engaged via the use of bi-modal (audio-visual) advertising cues and marketing campaigns in real life scenarios. The potential future application of this methodology (spectral studies) in marketing is considerable. For example, it could be used to study the effectiveness of brand taglines, advertising jingles, the introduction of new brand names in different accents across cultures and many other marketing activities.

Another methodological contribution that will be useful in future research is the exploration of optimal SOA's in audio-visual semantic priming tasks. The results of this research show that the most effective presentation in a cross-modal task involving novel words (hypothetical brand names) is an ISI of 0 ms and that as the SOA is reduced further (i.e. as stimuli overlap), the priming effect reduces. This finding is in contrast with the existing literature on audio-visual priming and provides interesting directions for the

future researchers who use cross-modal priming paradigms to investigate multisensory marketing messages (for e.g. using auditory brand names and visual brand logos).

Managerial implications

The failure of a brand cannot be attributed to its name alone, as there are many complex co-existing factors which eventually lead to a brand failure. However, the brand name is certainly one of them (a prominent example being that of Ford Edsel, where among many factors, the name itself was marked as poor and considered to be a major cause of the brand's failure). Although past research has shown that brand managers are aware of the importance of brand names and are also aware of the process of the brand name creation, in practice, very few managers actually follow this prescribed process and most new brand names are based on practitioner intuition (Kohli & LaBahn, 1997).

Firms are spending millions of dollars on a good brand name (for example, Lexicon has created 15 billion-dollar brand names, including BlackBerry, Dasani, Febreze, OnStar, Pentium, Scion and Swiffer; Heath & Heath, 2011; Pogacar et al., 2014). It's also reported that consultants charge as much as US \$10,000 per letter price (Hoffman, 2008; Pogacar, 2014) for creating new names yet the methods used by consultants in the name generation process often lack scientific evidence (Pogacar et al, 2014). Given this backdrop, the findings of this dissertation can meaningfully contribute towards a more scientific and effective name generation process. One advantage of using the principles behind phonetic sound symbolism in creating a brand name is that it can lead marketers to create names that are globally acceptable which allows them to be

easily reproduced in all media communications and will stand out in both spoken and written forms (“Science of Giving Names”, 2010).

Given this backdrop, the current research is important from the point of view of marketing practice where managers are looking for practical and specific advice from brand consultants or academics on the issue of brand naming. The findings from this research provide a ‘phonetic recipe’ for creating names best suited for communicating whether a brand is luxury or basic. Specifically, the following elements should be incorporated into a novel brand name if the intention is for the brand to sound exclusive or luxurious (and the opposite characteristics for a basic brand name) – use of affricates (/z/, /ch/sound in the brand name or at the name end ; use of high/back vowels (/u/, /o/) ; use of stresses in vowels ; use of nasal twangs ; use of names ending in a vowel sound ; use of three syllables in a name (for e.g. – Izari /'i:ʃ 'ɑ:ri:/, Naezaelez /n'æ.ʃə.læʃ/ and Volaza /v'oo.l'a:ʃ 'a:/); by using the phonetic patterns reported in this dissertation, companies can create brand names with a high symbolic match to the desired positioning of the brand.

The following table provides an illustration to practitioners in using the findings of this dissertation to increase the luxurious appeal of any brand name –

Hypothetical name	Proposed amended name for better luxurious appeal (by addition of ending vowel and syllable length)	Proposed amended name for better luxurious appeal (by increasing number of syllables)
Star	Stara	Sitara
Czar	Czara	Cizara
Plat	Plata	Pilata
Spek	Speka	Spieka
Konic	Konica	Kionika
Kron	Karon	Karonia
Rolz	Rolza	Riolza

Directions for future research

One interesting area for research would be to tease apart certain intricately linked phonetic patterns. For example, in a *stressed* vowel, its duration is also *prolonged* (for e.g. in Praa-da, the /aa/ sound is stressed and prolonged; in Gu-cci /'g'u:.tʃi:/, the /u/ sound is stressed and prolonged). In such an intricately mixed phonetic pattern (i.e., when the vowel is both emphasized and has a long duration), it is difficult to attribute the results specifically to the 'stress' or to the 'prolonged duration'. Future research can focus on discovering the individual associations of each of these features, and although such auditory name stimuli are difficult to generate and control, they can be instrumental in uncovering the sound symbolic importance of specific individual phonetic patterns.

In addition, this research demonstrated the importance of affricates in providing the perception of luxury. However, these were found to be intricately linked with other phonetic patterns in this study. A possible future extension could be to examine *just* the effect of affricates. If affricates alone can provide the perception of luxury, then hypothetical brand names (*without* the affricates – for e.g. 'Avenio, Biea and Boscoa') should be perceived as 'basic' and hypothetical brand names (*with* the affricates- for e.g. 'Mixli, Plinza, Mondenzo') should be perceived as luxury. Similarly, the addition or deletion of an affricate in the same set of names should reverse the perception of luxury/basic (i.e. the 1st set of brand names will now be *with affricates*- 'Aveznio (/ʃ/), Bixshea (/ʃ/) and Boscoza (/ʃ/)' and be perceived as luxury and the 2nd set of brand names will now be *without affricates* - 'Avenio, Biea and Boscoa' and be perceived as basic).

Future research could also explore the role of accent as a potential moderator in the perception of the concept of luxury. This line of research can provide unique insight into the link between *foreign accents* with *luxury brand*. Consumers generally show a more positive attitude towards foreign luxury brands as compared to local luxury brands (Phau & Leng, 2008). A similar bias may also arise when a hypothetical brand name is perceived as more ‘luxurious’ when spoken in a foreign accent as compared to when spoken in a local dialect. For example, the perception of the hypothetical brand name ‘Cizara’ spoken in an Italian versus an American accent might be perceived as more luxurious by US consumers. Past studies have shown that a name can evoke not only a belief about a brand but also the country associated with it (Khan & Bamber, 2008) and that consumers automatically associate the perceived country of origin with any foreign name (Kinra, 2006). This is especially true in cases of unfamiliar hypothetical brand names where consumers can form associations about the brand based on the image of its’ *perceived* country of origin (Krupka, Ozretic-Dosen & Previsic, 2014). If accent can alter the perception of ‘*luxury-ness*’, then even basic brand names when spoken in a foreign accent should be perceived as more luxurious (due to the *perceived* distant country of origin). This dissertation could not test this potential interaction because the creation of matched auditory name stimuli is a difficult challenge in that changing the accent is also likely to change the phonemes present in the stimuli. For example, the hypothetical brand name ‘Blate’ will sound as ‘Blaat’ in a Spanish accent, changing the phoneme /a/ to an /aa/ sound, which is undesirable. Future researchers should take note of this potential

confound and should use a bi-lingual speaker to create such stimuli in two different accents (instead of text to speech conversion software that was used in this study).

Although sound symbolism has been shown across many languages, there is a likelihood that culture acts as a potential moderator in categorizing the brand as basic and luxury. Could this mean that sound symbolic understanding of the brand names depends on culture? Or is it possible that sound symbolic meanings are culturally acquired? The present dissertation cannot answer these questions and future research can look on these perspectives. For example, French language is different from that of English language in many ways [“French language doesn’t have interdental fricatives ‘th /θ/ sound in thin’ and ‘th /ð/ sound in this’ and French pronounce these words as ‘sin’ and ‘zis” (Finegan, 2014)]. So, with the current data collected in this dissertation, I can’t comment on the generalization of these findings across different cultures but culture can act as potential moderator and needs to be examined in future research.

Further, the research into consonant sound symbolism is even sparser than vowel sound symbolism (Aveyard, 2011). Future researchers may wish to focus on the sound symbolic relationship of consonants in brand names, and particularly on prosodic features such as stresses on consonants. Past research has shown many differences between consonant and vowels (Delle-Luche et al., 2012) - consonants are shorter and are perceived more categorically than vowels; there is more variability in the production of vowels than consonants; and vowels are often harmonized within words while consonants are not (Repp, 1984). Similarly, it has been also shown that vowels and consonants are processed differently in the human brain (Caramazza et al., 2000; Carreiras & Price,

2008; Carreiras, Vergara & Perea, 2009; Ferreres, López, & China, 2003; Vergara-Martínez et al, 2011). Since vowels and consonants both are inseparable elements of a brand name, this highlights the potential importance of further research on the sound symbolic relationships of the consonants in brand names. I explored the importance of stressed vowels in this research, a similar extension can be made for stressed consonants; since both vowels and consonants are understood to be processed differently in brain, such a study can reveal interesting insights into brand naming (for e.g. perception of brand names with same set of vowels but different set of consonants). The study of consonants will be of particular interest to brands venturing into foreign markets where there is a very real need for brand name translation because they become susceptible to the changes in prosodic features inherent to speakers of any foreign language (for e.g. pronounced intonation in Chinese and its sound symbolic effects on a known brand name).

Future research on cross modal priming (visual brand logos and audio name sounds) may also explore the methodological issue of SOA tested in section 2 of this dissertation. For example, a sound is said to facilitate the perception of a visual target (Bolognini et al., 2005; Sheth & Shimojo, 2004). In everyday life too, policy makers use signs such as the ‘fasten your seat belt’ sign typically presented with a voiceover which is shown to increase compliance. Such use of multi-sensory modalities is understood to be perceived more effectively by consumers and this practice is therefore also very common in advertising whereby consumers are targeted using visual, auditory and other sensory cues, although little research has been done to discover the optimal mix of such multi-

sensory cues. Other possible extensions of these priming studies could address questions including:- (1) Is it just the sound of a novel brand name that can enhance the perception of a visual brand logo when co-presented, or could other, unrelated auditory stimuli have a similar priming effect? (For example, testing the perception of a Pepsi brand logo in visual modality with an unrelated ‘Ping’ sound in auditory modality simultaneously) (2) Are there any differences in the perception of a brand logo when *different but semantically linked* audible brand names are co-presented (For example, testing the perception of Pepsi logo in visual modality and Coke in auditory modality simultaneously)? (3) Are there any differences in the perception of a brand logo when *semantically different* brand names are co-presented (For example, the perception of the visual Pepsi logo in the presence of the spoken stimulus Nike)? These situations are common in everyday scenarios when, for example, consumers may be viewing a print ad in a supermarket while being simultaneously exposed to an acoustic commercial for another brand being played over the internal sound system. The exploration of optimal SOA’s revealed in this research could be explored in similar future extension studies.

In addition, in this dissertation I found a preponderance of stressed consonants amongst basic brand names (although this was a non-significant trend). This is another under-researched area of sound symbolism. A recent study used sound symbolism to show the importance of syllabic stress in human names and their perceived sexual desirability (Pitcher, Mesoudi & McElligott, 2013). These results can be extended to study the link between brand personality traits (masculine vs feminine) and prosodic/phonetic features in brand names.

There is little research available on the possible causal mechanisms behind the sound symbolism. Much has been written about the sound symbolism from psychological and phenomenological perspectives but there could be certain neuro-psychological mechanisms behind the phenomenon. For example the concept of ‘processing fluency’ may be the reason behind the effects found in this dissertation i.e. is it possible that the less fluent names by the nature of being ‘costly’ to be pronounced and processed are associated with ‘higher valuation’ and therefore are more ‘luxurious’ as compared to more fluent names. Similar causal mechanisms of the sound symbolism can be explored in the future research.

This dissertation has examined only one semantic concept relating to products - luxury versus basic brand names. However, there are other potential concepts in brand names that can be explored in future (for example, color symbolism and brand logos; the concept of ‘rich-poor’ amongst brand names of financial firms; the concept of ‘music-brand logos’ i.e. brand jingles and their semantic appropriateness).

Conclusion

In conclusion, this dissertation investigated a novel concept - the differences in the phonetic structures of basic and luxury brand names and uncovered key phonetic differences between these two classes of brand names. It demonstrated that the presence of certain phonetic patterns contained in existing and hypothetical brand names can

enhance or decrease the perception of a brand as luxurious while other phonetic patterns can modulate the extent to which a brand is perceived as ‘basic’ or ‘essential’.

Every year many novel brands are introduced into local markets, many existing brand names are modified and re-launched and many brands enter new, foreign markets which makes the process of brand name creation extremely dynamic and important for brand success. The findings from this dissertation can be used to guide marketers and brand consultants in the selection of optimal sound symbolic brand names in order to enhance consumer acceptability, liking and ultimately uptake of both new and existing products.

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APPENDICES

Appendix 1- IPA codes

Consonants	
IPA	Examples
b	buy, cab
d	dye, cad, do
ð	thy, breathe, father
dʒ	giant, badge, jam
f	fan, caff, phi
g (g) ^[1]	guy, bag
h	high, ahead
j ^[2]	yes, hallelujah
k	sky, crack
l	lie, sly, gal
m	my, smile, cam
n	nigh, snide, can
ŋ	sang, sink, singer
θ	thigh, math
p	pie, spy, cap
r	rye, try, very ^[3]
s	sigh, mass
ʃ	shy, cash, emotion
t	tie, sty, cat, atom
tʃ	china, catch
v	vie, have
w	wye, swine
hw	why ^[4]
z	zoo, has
ʒ	equation, pleasure, vision, beige ^[5]
Marginal consonants	
x	ugh, loch, Chanukah ^[6]
ʔ	uh-oh /ʔʌʔos/

Vowels			
IPA	Full vowels	... followed by R ^[7]	
ɑ:	PAUM, father, bra	ɑr	START, bard, barn, snarl, star (also /ɑ:r./)
ɒ	LOT, pod, John ^[8]	ɒr	moral, forage
æ	TRAP, pad, shall, ban ^[9]	ær	barrow, marry ^[10]
ai	PRICE, ride, file, fine, pie ^[11]	aiær	Ireland, hire (/aɪr./)
		ai.ær	higher, buyer ^[12]
au	MOUTH, loud, foul, down, how	auær	flour (/aʊr./)
		au.ær	flower ^[13]
ɛ	DRESS, bed, fell, men ^[13]	ɛr	error, merry ^[13]
ei	FACE, made, fail, vein, pay	ɛær	SQUARE, mare, scarce, cairn, Mary (/eɪr./) ^[14]
		ei.ær	mayor ^[12]
i	HIT, lid, fill, bin	ir	mirror, Sirius
i:	FLEECE, seed, feel, mean, sea	iær	WEAR, beard, fierce, serious (/iːr./) ^[15]
		i:.ær	freer
ɔ:	THOUGHT, Maud, dawn, fall, straw ^[16]	ɔr	WORTH, born, war, Laura (/ɔːr./) ^{[17][18]}
		ɔ:.ær	sawer
ɔi	CHOICE, void, foil, coin, boy	ɔiær	loir (/ɔɪr./)
		ɔi.ær	lawyer ^[12]
oʊ	GOAT, code, foal, bone, go ^[19]	oær	FORCE, more, boar, oral (/oʊr./) ^{[17][18]}
		oʊ.ær	mower
ʊ	FOOT, good, full, woman	ʊr	courier
u:	GOOSE, food, fool, soon, chew, do	ʊær	boor, moor, tourist (/uːr./) ^{[17][18]}
		u:.ær	truer
ju:	cued, cute, mule, tune, queue, you ^[20]	jʊær	cure
		ju:.ær	fewer
ʌ	STRUT, mud, dull, gun ^[21]	ʌr	borough, hurry
		ʒr	NURSE, word, girl, fern, furry
Reduced vowels			
ə	Rosa's, a mission, quiet, focus	ər	LETTER, perceive
ɪ	roses, emission ^[22] (either ɪ or -)	ən	button
ə	omission ^[23] (either ɒ or -)	əm	rhythm
ɪ	beautiful, curriculum (/juː/) ^[24] (either ɪ or -)	əl	bottle
i	HAPPY, serious ^[25] (either ɪ or I)	ə, i	(vowel is frequently dropped: nasturtium)

Stress		Syllabification	
IPA	Examples	IPA	Examples
ˈ	intonation /ˈɪnteˈneɪʃən/, ^[26] battleship /ˈbætlɪʃp./ ^[27]	ˌ	moai /ˌmoʊ.əˈzi/, Windhoek /ˌvɪnt.həʊk/ Vancouveria /ˌvæn.kuːˈviəri.ə/ Mikey /ˌmaɪki/, Myki /ˌmaɪkiː/ ^[28]

IPA Key (http://en.wikipedia.org/wiki/Help:IPA_for_English)

Appendix 2- ARPABET

ARPABET (from <http://en.wikipedia.org/wiki/Arpabet>)

Stress

Value	Description
0	No stress
1	Primary stress
2	Secondary stress

Vowels

Monophthongs

Arpabet	IPA	Word examples
AO	ɔ	off (AO1 F); fall (F AO1 L); frost (F R AO1 S T)
AA	ɑ	father (F AA1 DH ER), cot (K AA1 T)
IY	i	bee (B IY1); she (SH IY1)
UW	u	you (Y UW1); new (N UW1); food (F UW1 D)
EH	ɛ	red (R EH1 D); men (M EH1 N)
IH	ɪ	big (B IH1 G); win (W IH1 N)
UH	ʊ	should (SH UH1 D), could (K UH1 D)
AH	ʌ	but (B AH1 T), sun (S AH1 N)
	ə	sofa (S OW1 F AH0), alone (AH0 L OW1 N)
AX	ə	discus (D IH1 S K AX0 S); note distinction from discuss (D IH0 S K AH1 S)
AE	æ	at (AE1 T); fast (F AE1 S T)

Diphthongs

R-colored vowels

Arpabet	IPA	Word Examples
ER	ɝ	her (HH ER0); bird (B ER1 D); hurt (HH ER1 T), nurse (N ER1 S)
AXR	ɝ	father (F AA1 DH ER); coward (K AW1 ER D)
EH R	ɛr	air (EH1 R); where (W EH1 R); hair (HH EH1 R)
UH R	ʊr	cure (K Y UH1 R); bureau (B Y UH1 R OW0), detour (D IH0 T UH1 R)
AO R	ɔr	more (M AO1 R); bored (B AO1 R D); chord (K AO1 R D)
AA R	ɑr	large (L AA1 R JH); hard (HH AA1 R D)
IH R or IY R	ɪr	ear (IY1 R); near (N IH1 R)
AW R	ɑʊr	<i>This seems to be a rarely used r-controlled vowel. In some dialects flower (F L AW1 R; in other dialects F L AW1 ER0)</i>

Consonants- Stops

Arpabet	IPA	Word Examples
P	p	pay (P EY1)
B	b	buy (B AY1)
T	t	take (T EY1 K)
D	d	day (D EY1)
K	k	key (K IY1)
G	g	go (G OW1)

Affricates

Arpabet	IPA	Word Examples
CH	tʃ	chair (CH EH1 R)
JH	dʒ	just (JH AH1 S T); gym (JH IH1 M)

Fricatives

Arpabet	IPA	Word Examples
F	f	for (F AO1 R)
V	v	very (V EH1 R IY0)
TH	θ	thanks (TH AE1 NG K S); Thursday (TH ER1 Z D EY2)
DH	ð	that (DH AE1 T); the (DH AH0); them (DH EH1 M)
S	s	say (S EY1)
Z	z	zoo (Z UW1)
SH	ʃ	show (SH OW1)
ZH	ʒ	measure (M EH1 ZH ER0); pleasure (P L EH1 ZH ER)
HH	h	house (HH AW1 S)

Nasals

Arpabet	IPA	Word Examples
M	m	man (M AE1 N)
EM	ɱ	keep 'em (K IY1 P EM)
N	n	no (N OW1)
EN	ɳ	button (B AH1 T EN)

NG	ŋ	sing (S IH1 NG)
ENG	ŋ	Washington (W AO1 SH ENG T EN)

Liquids

Arpabet	IPA	Word Examples
L	ɫ	late (L EY1 T)
EL	ɫ	bottle (B AO1 DX EL)
R	r or ɹ	run (R AH1 N)
DX	r	wetter (W EH1 DX AXR)
NX	ɹ	wintergreen (W IY2 NX AXR G R IY1 N)

Semivowels

Arpabet	IPA	Word Examples
Y	j	yes (Y EH1 S)
W	w	way (W EY1)
Q	ʔ	glottal stop (uh-oh - ʔʌʔoo)
(missing)	hw or ʍ	"when" etc. in some dialects

Appendix 3- ARPABET used by FAVE

C The ARPAbet

Vowels			Consonants		
Phoneme	Example	Transcription	Phoneme	Example	Transcription
AA	bot	B AA T	B	be	B IY
AE	bat	B AE T	CH	cheese	CH IY Z
AH	but	B AH T	D	day	D EY
AO	bought	B AO T	DH	that	TH AE T
AW	bout	B AW T	F	fee	F IY
AY	bite	B AY T	G	go	G OW
EH	bet	B EH T	HH	he	HH IY
ER	bird	B ER D	JH	just	JH AH S T
EY	bait	B EY T	K	key	K IY
IH	bit	B IH T	L	late	L EY T
IY	beat	B IY T	M	me	M IY
OW	boat	B OW T	N	knee	N IY
OY	boy	B OY	NG	sing	S IH NG
UH	put	P UH T	P	pay	P EY
UW	boot	B UW T	R	read	R IY D
			S	sea	S IY
			SH	she	SH IY
			T	tea	T IY
			TH	thanks	TH AE NG K S
			V	vain	V EY N
			W	we	W IY
			Y	yes	Y EH S
			Z	zoo	Z UW
			ZH	pleasure	P L EH ZH ER

Example:

Stress is indicated by digits following the stressed vowels. There are three levels of stress:

Value	Level of stress
0	no stress
1	primary stress
2	secondary stress

in	AH0 N, IH1 N
the	DH AH0, DH AH1, DH IY0
dictionary	D IH1 K SH AH0 N EH2 R IY0
stress	S T R EH1 S
is	IH1 Z, AH0 Z
indicated	IH1 N D AH0 K EY2 T AH0 D
by	B AY1
digits	D IH1 JH AH0 T S
following	F AA1 L OW0 IH0 NG
stressed	S T R EH1 S T
vowels	V AW1 AH0 L Z

fave.ling.upenn.edu/downloads/ARPAbet.pdf

Appendix 4- Ratings individual questions (hypothetical luxury brand names)

Q1 - "You are hearing a new brand name. Does it sound similar to any other brand known to you?" (Rating Scale 1- 7 – 1- Definitely Yes & 7 - Definitely No)

Q2 - "You are hearing a name. Do you feel it is a Basic brand name or a Luxury Brand name?"

(Rating Scale 1- 7 -- 1 - Strong Basic brand name & 7 - Strong Luxury brand name)

Q3 - " "If I use a product having this brand name, it will make me feel important"

(Rating Scale 1- 7 -- 1 - Strongly Disagree & 7 – Strongly Agree)

Q4 - " I like this name so much that I don't mind paying a little extra for a product having this name" (Rating Scale 1- 7 -- 1 - Strongly Disagree & 7 – Strongly Agree)

Appendix 5- Ratings individual questions (hypothetical basic brand names)

Q1 - "You are hearing a new brand name. Does it sound similar to any other brand known to you?" (Rating Scale 1- 7 -- 1 - Definitely yes & 7 is Definitely No)

Q2 - "You are hearing a name. Do you feel it is a Basic brand name or a Luxury Brand name?"

(Rating Scale 1- 7 -- 1 - Strong Basic brand name & 7 - Strong Luxury brand name)

Q3 - " "If I use a product having this brand name, it will make me feel important"

(Rating Scale 1- 7 -- 1 - Strongly Disagree & 7 – Strongly Agree)

Q4 - " I like this name so much that I don't mind paying a little extra for a product having this name" (Rating Scale 1- 7 -- 1 - Strongly Disagree & 7 – Strongly Agree)

Appendix 6- Details of brand name duration

The durations of all the individual hypothetical brand name sounds used are depicted below-

Appendix 7- Results of log transformed latencies, study 4a

Appendix 8- Transcribed brand names for Table 5

Basic Brands	IPA Notation	Luxury Brands	IPA Notation
Budweiser	/ˈbʊ.dwaɪ.zər/	Acura	/ˈæ.kjə.rə/
Cadburys	/kæd.bə.riːz/	Armani	/ɑːr.ˈmaː.ni/
Camel	/ˈkæ.məl/	Audi	/ˈb.di/
Coke	/kɒk/	Bentley	/ˈbɑt.li/
Colgate	/ˈkɒl.get/	Breitling	/ˈbrʰaɪ.təl.ɪŋ/
Crest	/ˈkrest/	Burberry	/ˈbʰɜː.bə.riː/
Dell	/ˈdel/	Cadillac	/ˈkæ.də.ˈlæk/
Facebook	/ˈfés.bʊk/	Calvin Klein	/ˈkæl.vən.ˈklaɪn/
Ford	/ˈfɔːrd/	Cartier	/ˈkɑːr.tiːə/
Gap	/ˈgæp/	Chanel	/ʃə.ˈnʰæl/
Gillette	/dʒə.ˈlet/	Coach	/kɒtʃ/
Google	/ˈgʰuː.gəl/	Corvette	/kɔːr.ˈvet/
Heinz	/ˈhaɪnz/	Ferrari	/fə.ˈrɑː.riː/
Honda	/ˈhɔ̃.də/	Gucci	/ˈgʰuː.tʃiː/
Ikea	/aɪˈk.ˈiːə/	Hermes	/ˈhɜː.mʰæz/
Kellogg's	/ˈke.lɒgz/	Infiniti	/ɪ.ˈfɪ.nəti/
Kitkat	/ˈkɪt.kæt /	Jaguar	/ˈdʒæ.ɡwʰɑːr/
Lays	/ˈleɪz/	Lexus	/ˈlek.səs/
Lee	/ˈliː/	Louis Vuitton	/ˈluːəs.ˈvʰuː.t ʊ/
Levis	/ˈliː.vaɪz/	Marc Jacobs	/ˈmɑːrk.ˈdʒeɪ.kəbz/
Marlboro	/ˈmʰɑːl.bə.rəʊ/	Mercedes	/mər.ˈsɪː.diːz/
Mars	/ˈmɑːrz/	Mercury	/ˈmɜː.kʰjə.ri/
McDonalds	/mæk.ˈdaː.nəldz/	Mont Blanc	/mɔ̃t.ˈblæŋk/
Nescafe	/ˈnɛs.ˈkə.fé/	Porsche	/ˈpʰɔːr.ʃə/
Nestle	/ˈnes.l/	Prada	/ˈprʰɑː.də/
Nike	/ˈnaɪk.iː/	Ralph Lauren	/ˈrælf.ˈlɔː.rʰä/
Nivea	/ˈniv.ˈiːɑː/	Ritz	/ˈrɪts/
Pepsi	/ˈpep.si/	Rolex	/ˈrol.eks/
Pringles	/ˈprɪŋ.gls/	Tiffany	/ˈtɪ.fə.ni/
Reebok	/ˈrɪː.bak/	Vera Wang	/ˈve.rə.ˈw ɔ̃g/
Ruffles	/ˈrʌf.lz/	Versace	/vər.ˈsɑː.tʃə/
Samsung	/ˈsæm.ˌsəŋ/	Christian Dior	/ˈkrɪs.tʃiˈä. ˈDiór/

Sharp	/ʃɑ:rp/	Lamborghini	/lām.bər.'g'i.ni/
Subway	/sʌ.b.we/	Bugggati	/b'ʊg.'ɑ:ti/
Timex	/'taɪm.eks/	Ferragamo	/fɜ:.'r'ɑ:.'g'ɑ:mou/
Twix	/'tviks/	Bvlgari	/'b'əl'.gə'ri:/
Virgin	/'vɜ:..dʒən/	Chopard	/ʃ'ɒ.pa:/
Visa	/'v'i:..zə/		
Wal-Mart	/'wɒl.,mɑ:rt/		

Appendix 9 –Number of syllables

Basic Brands	Syllables	Luxury Brands	Syllables
Budweiser	3	Acura	3
Cadburys	3	Armani	3
Camel	2	Audi	2
Coke	1	Bentley	2
Colgate	2	Breitling	3
Crest	1	Burberry	3
Dell	1	Cadillac	3
Facebook	2	Calvin Klein	3
Ford	1	Cartier	2
Gap	1	Chanel	2
Gillette	2	Coach	1
Google	2	Corvette	2
Heinz	1	Ferrari	3
Honda	2	Gucci	2
Ikea	3	Hermes	2
Kellogg's	2	Infiniti	3
Kitkat	2	Jaguar	2
Lays	1	Lexus	2
Lee	1	Louis Vuitton	3
Levis	2	Marc Jacobs	2
Marlboro	3	Mercedes	3
Mars	1	Mercury	3
McDonalds	3	Mont Blanc	2
Nescafe	3	Porsche	2
Nestle	2	Prada	2
Nike	2	Ralph Lauren	3
Nivea	2	Ritz	1
Pepsi	2	Rolex	1
Pringles	1	Tiffany	3
Reebok	2	Vera Wang	3
Ruffles	2	Versace	3
Samsung	2	Christian Dior	3

Sharp	1	Lamborghini	4
Subway	2	Buggati	3
Timex	2	Ferragamo	4
Twix	1	Bvlgari	2
Virgin	2	Chopard	2
Visa	2		
Wal-Mart	2		

Appendix 10- Vowel duration

Type of vowel	Basic Brand name	Duration (sec)	Type of vowel	Luxury Brand name	Duration (sec)
AH	BUDWEISER	0.15	AE	ACURA	0.12
AY	BUDWEISER	0.13	ER	ACURA	0.18
ER	BUDWEISER	0.161	AH	ACURA	0.08
AE	CADBURY'S	0.12	AO	AUDI	0.14
AH	CADBURY'S	0.05	IY	AUDI	0.24
IY	CADBURY'S	0.129	AA	ARMANI	0.1
AE	CAMEL	0.17	IY	ARMANI	0.25
AH	CAMEL	0.05	EH	BENTLEY	0.11
OW	COKE	0.13	IY	BENTLEY	0.18
OW	COLGATE	0.15	AY	BRIETLING	0.15
EY	COLGATE	0.16	AH	BURBERRY	0.11
EH	CREST	0.15	IY	BURBERRY	0.109
EH	DELL	0.09	AE	CADILLAC	0.12
EY	FACEBOOK	0.15	AE	CADILLAC	0.199
UH	FACEBOOK	0.09	AE	CALVIN	0.09
AO	FORD	0.12	AH	CALVIN	0.05
AE	GAP	0.16	IY	KLIEN	0.07
AH	GILLETTE	0.051	AA	CARTIER	0.1
EH	GILLETTE	0.07	IY	CARTIER	0.289
UW	GOOGLE	0.12	EH	CHANEL	0.1
AY	HEINZ	0.23	OW	COACH	0.18
AO	HONDA	0.09	EH	CORVETTE	0.18
AH	HONDA	0.09	ER	FERRARI	0.14
AY	IKEA	0.11	AA	FERRARI	0.16
IY	IKEA	0.18	IY	FERRARI	0.209
EH	KELLOGGS	0.1	UW	GUCCI	0.11
AO	KELLOGGS	0.18	IY	GUCCI	0.209
IH	KITKAT	0.12	ER	HERMES	0.1
AE	KITKAT	0.05	IY	HERMES	0.23
EY	LAYS	0.18	IH	INFINITI	0.12
IY	LEE	0.23	IH	INFINITI	0.05
EH	LEVIS	0.08	AH	INFINITI	0.05
AH	LEVIS	0.09	IY	INFINITI	0.171
AA	MARLBORO	0.14	AE	JAGUAR	0.16
ER	MARLBORO	0.129	AA	JAGUAR	0.1
OW	MARLBORO	0.171	EH	LEXUS	0.13

AA	MARS	0.12	AH	LEXUS	0.09
AH	MCDONALDS	0.05	UW	LUIS	0.12
AA	MCDONALDS	0.13	IY	LUIS	0.069
EH	NESCAFE	0.06	UW	VUITTON	0.171
AH	NESCAFE	0.09	AA	MARC	0.09
EY	NESCAFE	0.28	EY	JACOBS	0.12
EH	NESTLE	0.07	AH	JACOBS	0.15
AY	NIKE	0.13	EY	MERCEDES	0.15
IY	NIKE	0.21	IY	MERCEDES	0.149
IH	NIVEA	0.09	ER	MERCURY	0.09
IY	NIVEA	0.109	ER	MERCURY	0.07
AA	NIVEA	0.051	IY	MERCURY	0.19
EH	PEPSI	0.13	AA	MONT	0.11
IY	PEPSI	0.19	AE	BLANC	0.05
IH	PRINGLES	0.05	AO	PORSCHE	0.11
IY	REEBOK	0.15	AH	PORSCHE	0.11
AA	REEBOK	0.2	AA	PRADA	0.13
AE	RAFFLES	0.06	AH	PRADA	0.15
AE	SAMSUNG	0.13	AE	RALPH	0.12
AH	SAMSUNG	0.171	AO	LAUREN	0.129
AA	SHARP	0.06	IH	RITZ	0.17
AH	SUBWAY	0.07	OW	ROLEX	0.15
EY	SUBWAY	0.209	EH	ROLEX	0.12
AY	TIMEX	0.18	IH	TIFFANY	0.07
EH	TIMEX	0.07	IY	TIFFANY	0.239
ER	VIRGIN	0.13	EH	VERA	0.14
IY	VISA	0.1	AH	VERA	0.05
AH	VISA	0.1	AE	WANG	0.119
AA	WALMART	0.12	ER	VERSACE	0.1
			AA	VERSACE	0.139
			IY	VERSACE	0.27
			IH	CHRISTIAN	0.06
			IY	DIOR	0.079
			AO	DIOR	0.221
			AE	LAMBORGHINI	0.11
			ER	LAMBORGHINI	0.149
			IY	LAMBORGHINI	0.13
			IY	LAMBORGHINI	0.261
			UH	BUGATTI	0.15
			AA	BUGATTI	0.169

IY	BUGATTI	0.171
AA	FERRAGAMO	0.14
AA	FERRAGAMO	0.091
OW	FERRAGAMO	0.199
UH	BVLGARI	0.15
AH	BVLGARI	0.731
OW	CHOPARD	0.08
AA	CHOPARD	0.159

Appendix 11- IPA notations of hypothetical brand names

Hypothetical Basic Brand		Hypothetical Luxury Brand	
Name	IPA notation	Name	IPA notation
			/ˈɑːˈven.tʃ/
Blate	/blæt/	Avenzio	ˈiːəʊ/
Brist	/brɪst/	Buxxor	/ˈbæk.ʃˈəʊr/
Clent	/klent/	cizara	/ˈsɪ.dʒˈɑː.rˈɑː/
Hemti	/hemp.ti/	cruza	/krˈuː.ʃˈɑː/
Jensi	/jɛn.si/	Estrava	/æʃ.trə.vˈɑː/
Jifsy	/jɛf.si/	Felashae	/fe.lə.ʃˈɑː/
Kellem	/keˈlem/	Galdiae	/ɡɔːl.diˈɑː/
Keltin	/ˈkel.tɪn/	Granduro	/ɡræn.dʒʊ.rˈoʊ/
Kleptik	/ˈklep.tɪk/	louzy	/ˈiː.ʊ.ʃˈiː/
Karpade	/ˈkær.pæd/	Izari	/i.ʃˈɑː.riː/
Mensy	/ˈmen.si/	Jovien	/dʒˈoʊ.viː.en/
Navim	/ˈnə.vɪm/	Lorez	/ˈoʊ. reʃ/
			/ˈmoʊn.tˈɑː.nˈjʊ
Nekmet	/ˈnæk.met/	Montanu	/
Nillem	/ˈnəˈlem/	Neeza	/nie.ʃˈɑː/
Phittle	/ˈfiˈtəl/	Naezaelez	/nˈæ.ʃə.læʃ/
Savvor	/ˈsæˈvər/	Sacava	/ʃə.kˈɑː.vɑː/
Sesem	/ˈsæˈsəm/	Tlouba	/tˈlʊː.bɑː/
Tenli	/ten.lə/	Ulivosa	/ˈuː.lɪ.vou.ʃˈɑː/
Trabe	/ˈtræb/	Uloxo	/ˈoʊlˈɔːk.ʃou/
Venbe	/venbə/	Uvoni	/ˈuː.vˈoʊ.niː/
Vevete	/vi.vet/	Vessinia	/ve.ʃiː.niˈɑː/
Vipty	/vi.ptɛ/	Vacuaar	/ve.tʃˈuːˈeər/
		Volaen	/vou.lˈæn/
		Volaza	/ˈvʊlˈɑːʃˈɑː/
		Zanzia	/tʃˈɑːn.ʃiˈɑː/