

DOKUZ EYLÜL UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF BUSINESS ADMINISTRATION
BUSINESS ADMINISTRATION PROGRAM
DOCTORAL THESIS
Doctor of Philosophy (PhD)

**THE INTERPLAY BETWEEN BRAND NAMES AND
SOUND SYMBOLISM AND ITS INFLUENCE ON THE
PERCEPTION OF CONSUMERS**

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İZMİR-2019

DOCTORAL THESIS
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.../.../.....

İlkin YARAN ÖGEL

ABSTRACT
Doctoral Thesis
Doctor of Philosophy (PhD)
The Interplay between Brand Names and Sound Symbolism and Its Influence
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İlkin YARAN ÖGEL

Dokuz Eylül University
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To reduce product uncertainty against increasing number of new brands launched into the market each year, customers would prefer brand names which convey meaning about the products. In such cases, they might also prefer sound symbolic brand names, which convey meaning about the products through sounds in their names. Initiated from this fact, this study attempts to examine whether sound symbolism is an alternative method for creating brand names conveying meaning about products in Turkish. In this context, this study initially analyzes the interplay between sounds of brand names and consumers' perceptions regarding smallness and thinness dimensions which are regarded as two of the main visual product attributes. Then, it analyzes the effects of sounds on brand name preferences for a small, large, thin and thick product. Two studies were conducted and total of 1085 responses were collected. These responses were analyzed with paired samples t-tests, cross tabulation and Pearson chi square tests. Results revealed that consumers perceive brand names including front vowels (/i/, /e/) and fricatives (/f/, /v/) smaller and thinner than brand names including back vowels (/o/, /u/) and stops (/g/, /k/). Moreover, they would prefer brand names including front vowels and fricatives for smaller and thinner products; and brand names including back vowels and stops for larger and thicker products. In this way, the study contributes to prevailing sound symbolism literature by corroborating the universal sound symbolism effects. Additionally, it contributes to marketing practice by showing that use of sound

symbolism could be a way to create brand names conveying inherent meaning about products in Turkish, as well.

Keywords: Brand Names, Consonant Sounds, Sound Symbolism, Vowel Sounds



ÖZET

Doktora Tezi

Marka İsimleri ve Ses Simgecililiği arasındaki Etkileşim ve Bu Etkileşimin Tüketicilerin Algısı Üzerindeki Etkisi

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Her yıl piyasaya sürülen yeni markalar karşısında ürün belirsizliğini azaltmak için tüketiciler ürünler hakkında bilgi veren marka isimlerini tercih etmektedir. Böyle durumlarda, isimlerinin içindeki sesler aracılığı ile ürünler hakkında bilgi veren ses simgesel marka isimleri tüketiciler tarafından tercih sebebi olabilmektedir. Bu gerçekten hareketle, bu çalışma ses simgecililiğinin Türkçede ürün hakkında anlam ifade eden marka isimleri yaratmak için alternatif bir yöntem olup olmayacağını incelemeyi amaçlamaktadır. Bu kapsamda, çalışmada ilk olarak marka isimlerinde yer alan sesler ve tüketicilerin temel görsel ürün özelliklerinden ikisi sayılan küçüklük ve incelik boyutlarına ilişkin algıları arasındaki etkileşim incelemiştir. Daha sonra, küçüklük, büyüklük, incelik ve kalınlık özelliği vurgulanan ürünlere yönelik tüketicilerin marka ismi tercihlerinde marka ismini oluşturan seslerin etkisi incelenmiştir. Bunun için iki çalışma yapılmış ve toplamda 1085 kişiye ulaşılmıştır. Çalışmanın verileri eşleştirilmiş örneklem t-testi, çapraz tablo, ve Pearson ki-kare testi ile analiz edilmiştir. Çalışmada elde edilen bulgular; içinde öndil ünlüleri (/i/, /e/) ve sürtünmeli ünsüzler (/f/, /v/) bulunan marka isimlerinin içinde arkadil ünlüleri (/o/, /u/) ve patlamalı ünsüzler (/g/, /k/) bulunan marka isimlerine göre daha küçük ve ince algılandığını göstermiştir. Ayrıca, içinde öndil ünlüleri ve sürtünmeli ünsüzler bulunan marka isimlerinin küçük ve ince bir ürün için daha çok tercih edilirken, içinde arkadil ünlüsü ve patlamalı ünsüz bulunan marka isimlerinin büyük ve kalın bir ürün için daha çok tercih edildiği sonucuna ulaşılmıştır. Böylece, bu çalışma evrensel ses simgecililiği etkisini doğrulayarak ses simgecililiği literatürüne katkı sağlamıştır.

Ayrıca, ses simgeçiliğinin, ürün hakkında anlam taşıyan marka isimleri yaratma konusunda Türkçe için de alternatif bir yöntem olabileceğini göstermiştir.

Anahtar Kelimeler: Marka İsimleri, Ses Sembolizmi, Ünlü Sesler, Ünsüz Sesler



**THE INTERPLAY BETWEEN BRAND NAMES AND SOUND SYMBOLISM
AND ITS INFLUENCE ON THE PERCEPTION OF CONSUMERS**

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ABBREVIATIONS

AMA	American Marketing Association
ANMM	Associative Network Memory Model
ANOVA	Analysis of Variance
AoA	Age of Acquisition
CBBE	Customer Based Brand Equity
CMC	Cross-Modal Correspondence
FBP	Feminine Brand Personality
JND	Just Noticeable Difference
KS	Kolmogorov-Smirnov
MBP	Masculine Brand Personality
POD	Points of Difference
SW	Shapiro-Wilk
USPTO	United States Patents and Trademark Office

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INTRODUCTION

It is assumed that a name given to a newborn infant determines his or her personality traits and future life. Particularly, the letters constituting the names provide highly interpretive information about individuals' life and personality. In fact, the act of interpreting the power of letters in one's name is considered as a science, which is called *acrophonology*. In their book *Acrophonology: The Magical Power of Letters*, Bender and Applegate (2013) suggest that each letter in a name has specific vibrations and energies that correlate to the signs and planets of zodiac. So, analyzing the letters in one's name can allow others to unlock the secrets that lie hidden within his or her name, including who they are. In that case, it is normal to think that our name is not an accident of fate.

Since a name is given to a brand, as well, the same reasoning can be made for naming a brand. Simply put, as well as for human being, the name given to a product may determine its characteristics, attributes and future through the letters used in its name. In this context, the coinage of an appropriate brand name to a product can be regarded as the first step to create a personality, an image, an identity and a prospering product life cycle for it (Danesi, 2015). Thus, the letters of a brand name can also be meaningful and give others an insight into the attributes and functions of the product.

Nevertheless, letters are not thought independently from the sounds that they have because each letter has vibrations that travel through the air when they are pronounced. In that case, along with the power of letters, the power of sounds in a brand name can provide interpretive conclusions about the appearance, functions, or attributes of the product. This interplay between sound and meaning has been studied by several scholars and researchers under *sound symbolism* concept in different contexts for a long time (e.g., Baxter and Lowrey, 2011; Klink, 2000; Köhler, 1947; Miron, 1961; Nichols, 1971; Sapir, 1929). Principally, sound symbolism is based on the idea that the relation between the sounds and meaning of a word has some degree of correspondence. Then, particularly to understand what a non-sense brand name convey about the product itself, sound symbolism can be utilized as a possible route.

In the last few decades, several researchers from several disciplines such as psychology, linguistics, and especially marketing have concentrated on the impact of sounds on consumers' product attribute perception (e.g., Klink, 2000); preference for brands whose names include sounds conveying product attributes (e.g., Baxter and Lowrey, 2011; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007); or cross-modal correspondence in which the sounds present a multimodal correspondence to the products' taste, (e.g., Spence, 2012), label, (e.g., Kovick et al., 2010), shape of package (e.g., Fenko et al., 2016; Godinho and Garrido, 2017), and so on. Notably, a review of the prevailing literature reveals that the impacts of sounds have been adapted to several brand name and product interaction context. On the other hand, this interaction has not been empirically validated for directly the appearance of the product.

However, just like sounds, visual characteristics of the product can be influential on shaping consumers' perception about what they exactly buy or consume. A great number academic researchers and marketers also accept that angularity or curvature of the product play a significant role in consumers' product perceptions and preference (e.g., Ghoshal et al., 2015). In that case, it is normal to expect that the fit between visual attributes of a product and meaning conveyed through the sounds in its brand name will strengthen the product perceptions and preference.

The new empirical evidence also presents that shared cross-modal associations may underlie vision and sound symbolism, in particular. Accordingly, the findings of several experimental research have also demonstrated that sounds can convey information about the products' color (e.g. Jacobsen and Waugh, 1987; Klink, 2003; Marks, 1975), shape (e.g., Klink, 2003; Köhler, 1949; Ramachandran and Hubbard, 2001), and size (e.g. Klink, 2000; 2003). In this context, the impact of consistency between sounds in a brand name and product appearance deserves attention for a better understanding of the mechanisms underlying brand name preference and perception, which constitute the key elements of today's brand naming practice.

Extant sound symbolism literature shows that the impact of sounds have been studied on number of different contrasts regarding visuality such as; light-dark

(Chastaing, 1958; FoÂnagy, 1963; Gombrich, 1961; Grammont, 1913; Newman, 1933; Klink 2000), soft-hard (Grammont, 1913; Klink, 2000), thin-thick (FoÂnagy, 1963; Grammont, 1913; Klink, 2000), weak-strong (Jespersen, 1933; Klink, 2000), light-heavy (Chastaing, 1958; Klink, 2000), sharp-dull (e.g., Klink,2000), fast-slow (Chastaing, 1958; FoÂnagy, 1963; Klink, 2000), more-less pretty (FoÂnagy, 1963; Klink, 2000), more-less friendly (FoÂnagy, 1963; Klink, 2000), and feminine-masculine (Klink, 2000; 2009). However, initiated by the prevailing literature, it is not wrong to say that the vision related associations or contrasts have not been examined particularly within the context of product appearance yet in marketing context. Obviously, given the scarcity of experimental data, it is assumed that a study of interaction between sounds of the brand name and meaning conveyed about product appearance has much to offer to marketing theory and practice. Additionally, this study addresses and aims to fill the following gaps found in prevailing literature:

- In marketing literature on sound symbolism, some certain sounds are frequently associated with product related information. In this regard, all marketing research on sound symbolism concentrate on two main sound types that occur depending on the nature, place, and level of obstacles that the air moving in respiratory system meets (Özsoy, 2004). These sounds are basically vowels and consonants. However, virtually all research in relevant literature examines the impact of sound symbolism on brand naming only with respect to front/back vowel distinction (e.g., Baxter and Lowrey, 2011; Klink, 2009; Klink and Athaide, 2012; Lowrey and Shrum, 2007). So, few studies address the impact of sound symbolism on brand naming with respect to consonants (e.g, Athaide and Klink, 2012; Klink, 2000; Kuehnl and Mantau, 2013).
- Additionally, there are several marketing studies which examine the sound symbolism effects on brand name preference for specific product category or product attributes on the basis of front/back vowel distinction (e.g., Lowrey and Shrum, 2007). However, there is only one study which used fricatives/stops distinction (Kuehnl and Mantau, 2013). In this context, while brand name preference has been well documented in terms of vowels, it has not been explored within the context of consonants in detail.

- In overall sound symbolism literature, most of the empirical data suggests the existence of universal sound symbolism effect (e.g., Davis, 1961; Koriat and Levy, 1977; Tanz, 1971; Ultan, 1978). To confirm this argument, the effects of sound symbolism have been well documented by many experimental research conducted on different languages like *English* (e.g., Baxter and Lowrey, 2011; Klink 2000; Klink and Athaide, 2012; Lowrey and Shrum, 2007; Yorkston and Menon, 2004), *French* (e.g., Chastaing, 1958; Grammont, 1901; Peterfalvi, 1970), *German* (e.g., Gabelentz, 1891; Hilmer, 1914; Schuchardt, 1897), *Korean* (e.g., Kim, 1977), *Chinese* (e.g., Karlgren, 1962; Klank, Huang, and Johnson, 1971; Lapolla, 1994), *Finnish* (e.g., Austerlitz, 1994), *Modern Greek* (e.g., Joseph, 1994); *Japanese* (e.g., Amanuma, 1974; Hamano, 1986), *Hungarian* (e.g., Fölsényi, 1963), *African languages* (e.g., Samarin, 1967), *Danish* (e.g., Jespersen, 1918), *American Indian* (e.g., Haas, 1969; Nichols, 1971; Sapir, 1929), and *Swedish* (e.g., Abelin, 2015). In recent years, there has been a tiny efforts to explore the impact of sound symbolism in Turkish, as well (e.g., Ay, 2017; Baş and Altunışık, 2015; Batı and Ünal, 2010; Küçükaslan and Ural, 2006). However, the impact of sounds on brand naming was only taken as granted and not empirically validated by these studies.
- Additionally, although there is a growing interest to sound symbolism in marketing research in all over the world, there is almost no attention to the sound symbolism in Turkish marketing literature. Moreover, there is not any dissertation or empirical research on sound symbolism in Turkish literature even in different fields such as linguistics, psycholinguistics and experimental psychology. The only marketing study done in Turkey about sound symbolism by Batı and Ünal (2010) explores the brand naming from the perspective of process that firms follow in creating and selecting brand names. Thus, sound symbolism in Turkish literature has lack of research which explores the sound symbolism from the perspective of customer perception and their responses to structural sound characteristics of brand names.

- As stated above, sound symbolism literature is mostly limited to major European languages, although sound symbolism effects have been observed to exist in native languages in North America, Latin America, Africa, and Asia, as well. Even so, all of these studies show that sound symbolism effects have been tested in different languages coming from different language families such as Indo-European, Bandu, Sino-Tibetan, and Altaic. However, sound symbolism effects have not been empirically tested in Turkish belonging to Turkic language coming from Altaic languages, yet. In this context, to extend the previous findings with regard to sound symbolism effects, Turkish might provide a novel context.
- Additionally, although some specific sound in the brand name is believed to convey some specific meaning about the brand in one language, the meaning might differ from one language to another (Taylor, 1963). It is detected that no study tested the effects of sound symbolism in Turkish. So, whether the effects of sound symbolism can exist in Turkish is controversial. In this context, it can be readily said that the universality of sound symbolism effects in marketing context has not been validated for Turkish till now. Thus, whether the specific sounds in brand names can consistently convey the similar meaning about the brands in Turkish as well as they do in major European languages is a research imperative.
- Notably, marketing research on sound symbolism (e.g., Baxter and Lowrey, 2011; David and Bottomley, 2011; Klink, 2000; 2001; 2003; 2009; Klink and Athaide, 2012; Lowrey and Shrum, 2007; Yorkston and Menon, 2004) have not well-structured methodology. In most of these studies, there are many missing points like how they select specific product category to analyze; how they select their sample; how they define adjectives to test the sound symbolism effect; how they create fictitious brand names; and why they use some specific sounds together in fictitious brand names and so on. Thus, it is important to do a marketing study on sound symbolism with a sound methodology.
- Finally, extant marketing research on sound symbolism has lack of integrative approach which combines sound symbolism knowledge

established by different disciplines particularly linguistic and psychology throughout the centuries.

In this context, in the most general sense, this study aims to provide an overview of the possible function of non-arbitrary interaction between linguistic form and meaning within the context of brand naming. In the study, the linguistic form is determined as the sounds of individual letters that constitute the brand name. Whereas, meaning is examined in terms of information conveyed about the product appearance attributes. In the direction of the gaps found in the relevant literature, this study also aims to examine sound symbolism effects within the context of Turkish by transferring the sound symbolism knowledge from linguistics and psychology to marketing discipline.

Mainly, the non-arbitrariness between sound and meaning is going to be considered from two different perspectives in this study. First, it is intended to support the sound symbolism literature which emphasizes the pervasiveness of non-arbitrary link between sound and meaning in a language. In this way, it is assumed that this study will contribute to universal sound symbolism effect which is suggested by several studies, as well (e.g. Davis, 1961; Ultan, 1978). Second, this study addresses the non-arbitrary link between sound and meaning with respect to product appearance attributes. Thus, with this study, it is planned to provide a new experimental evidence which will show the matching between specific types of linguistic sounds and product appearance characteristics by tying linguistic and experimental evidence together.

Initiated by the objectives of the study and gaps noticed in literature, particular questions, which are going to be answered through the study, are given below. Here, it is important to say that these questions are going to be revisited in the methodology chapter in detail.

- *Do consumers match specific types of sounds with specific visual characteristics?*
- *Do consumers derive meaning about the attributes of the product through the sounds in its brand name?*

- *Do consumers prefer a brand name when the product appearance attributes connoted by vowel and consonant sounds were positive for a product category?*
- *Do the sounds of a non-sense brand name possess inherent meaning in Turkish?*
- *Do the findings of this study contribute to the universal sound symbolism effect?*

To account for all these research questions in a structural way, this thesis is organized into four main chapters. To follow the thesis in an expedient way, an outline of the content is given in the following:

Introduction section is designed to make readers get an insight about the context of the work. So, it serves as an introduction to the thesis. In this section, the objectives of the research are presented along with the gaps in prevailing literature and research questions are addressed.

Chapter 1 is devoted to a detailed review of the literature on brand name in terms of its conceptualization; importance for both companies and customers; desirable characteristics; interaction with brand equity and brand perception, and lastly methods for creating meaningful brand names. Under the methods for creating meaningful brand names, several linguistics methods on creating brand names conveying product related information are discussed particularly on the basis of semantic and sound symbolism. So, this chapter is designed as an introduction to the discussion of sound symbolism concept.

Chapter 2 mainly discusses the sound symbolism phenomena. In order to provide comprehensive understanding to the sound symbolism phenomenon, this chapter starts with speech sounds as the building block of sound symbolism impact. In this context, articulatory description of speech sounds in terms of vowels and consonants serves as an initial step for better understanding of sound symbolism phenomenon. Then, the sound symbolism concept, its typology, its interaction with semiotics and semantic, its development on the basis of several research conducted in different time periods from past to present, and its relations with several different fields are emphasized.

Chapter 3 is particularly devoted to the review of marketing research on sound symbolism. In this way, in what aspects the sound symbolism is adopted in marketing studies are summarized. The studies conducted on sound symbolism in marketing and notably brand naming are given.

The last chapter, *Chapter 4*, is mainly organized around the methodology and findings of the study. So, this chapter discusses the purpose of the study, theoretical framework and hypotheses, research design, and data collection methods with the findings of the studies as undertaken through the approaches given in the methodology. Followingly, contribution and limitations of the study are given along with the recommendations for further studies in the relevant field.



CHAPTER 1

CREATING BRAND NAMES CONVEYING BRAND RELATED INFORMATION

1.1. THE BRAND NAME CONCEPT

Branding is a centuries old phenomenon. The early examples of branding can be traced back to brickmakers in ancient Egypt. At those times, branding was limited to placing “symbols” on the bricks for identification of the products. In medieval Europe, trade guilds required to use “trademarks” for providing legal protection to producer and convincing the customer about the consistent quality of the product, as well. In the early sixteenth century, in order to both identify producer to customers and differentiate the product from its substitutes, whisky distillers started to place “producer’s name” on top of each barrel that they shipped (Farquhar, 1989). Thus, the first well-known use of “brand names” have appeared by the virtue of whiskey distillers in marketing history.

Until 1880s, very few manufacturers have used brand names (Kohli and LaBahn, 1995). Products were often sold unbranded to retailers, and retailers sold them either unbranded or under the store names (Schutte, 1969). However, “brand” concept has continued to expand in time. Along with the name of producer or retailer, “*name*”, “*pictures of animals*”, and “*places of origins*” have started to be used by companies for several purposes from providing ease of recognition to increasing perceived value of the products (Farquhar, 1989:24).

Among all branding purposes, identification and differentiation have still remained important today. However, strategies and purposes of branding have evolved due to the changes in the need of branding in every age. In recent years, one of the biggest changes and challenges that affect the branding strategy of marketers is the staggering number of products being introduced to the marketplace every day. According to the data of United States Patents and Trademark Office (USPTO), applications for trademarks are increasing incrementally in each year (US Patent and Trademark, 2016: 5). However, the challenge is not only the number of new products

but also being the ones which succeed to create positive product associations among many others (Robertson, 1987).

The way of creating positive product associations is more likely to depend on selecting an appropriate “*brand meaning*” and operationalizing it prior to market entry (Gardner and Levy, 1955). Brand meaning is the essence of brand’s identity (Keller, 2013). Accordingly, brand meaning can be the way how the brand defines itself, its function, its values, its personality and so on. In this context, brand meaning can be established by creating tangible and intangible brand associations which are related to the brand performance and brand imagery, respectively (Keller, 2013). In this respect, designing a proper brand meaning may be seen imperative in improving awareness and creating favorable impressions towards the products (Aaker and Keller, 1990). For that reason, smart marketing and brand managers have to put more emphasis on strategic branding decisions for a new product than they did in the past.

Strategic branding decisions start with selecting identifiers for a new product. This is also important to design introductory marketing programs in the product’s early life cycle (Keller et al., 1998; Kotler and Keller, 2012). These different components which constitute the brand as a whole are called “*brand elements*” (Keller, 2013). The brand definition of American Marketing Association (AMA) - “a name, term, sign, symbol, or design, or a combination of them, which is intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competitors” (Kotler, 1991: 442) - provides insight about what can be the brand elements. According to this definition, “*brand name*”, “*logo*”, “*symbol*”, “*package design*” or “*other characteristics*” identifying and differentiating the brand can be considered as brand elements.

Brand elements are accepted as the essential building blocks of a brand (Klink and Athaide, 2012). Therefore, they exist at the center of every marketing activity such as advertising and packaging. The interaction among a variety of marketing activities can also influence the brand meaning (Park et al., 1986). In this respect, brand elements taking place in each marketing activity can contribute to creation of brand meaning, as well. Pertinent literature also supports this argument and suggests that brand meaning can be communicated through two main brand elements: “*brand name*” (Keller et al., 1998; Klink 2003; Robertson 1989) and

“*brand mark*” (Henderson and Cote, 1998; Klink 2003; Robertson, 1989; Vartorella, 1990).

Brand names represent the vocalized part of the brands (Kotler, 1991); whereas brand marks represent the visual elements of the brands (Henderson and Cote, 1998). If the relationship between these elements is strong and consistent, conveying intended brand meaning is more likely to be reinforced, and hence be facilitated. In addition, if messages given by brand names are also consistent with the message conveyed by other brand elements, one can perceive brand meaning more synergistic (Park and Zaltman 1987). Namely, if brand names and all other brand elements convey same meaning consistently, it may be more influential on creating brand meaning than one brand element does alone. For that reason, deciding on brand name and other brand elements can be considered as a must in creating intended brand meaning.

However, among all brand elements, *brand names* have remarkable importance for several reasons. First, brand name is typically the first brand element chosen before other brand elements. Most of the company logo, slogan, and jingle are created depending upon connotata established by the brand name (Danesi, 2011). Second, brand names are the most outstanding brand element which is more frequently associated with marketing offerings of the companies (Keller, 2012). They are often perceived as not only a label but also a main product attribute and a part of what the consumer gets (Davis, 1981). Accordingly, they are also the most difficult brand elements to subsequently change because of their close tie to the product or service (Bao et al., 2008; Keller et al, 1998; Klink, 2001). Lastly, brand names are accepted as a complex symbol which is capable of reflecting many images, ideas, and attributes about the product (Leone, 1981). Thus, they can be considered as one of the most effective communication tools of companies.

In the lights of these arguments on importance of brand names, it can be considered that selecting an effective brand name is a requisite for marketers. However, establishing and testing a brand name is itself a big and difficult task in many aspects (Kohli and LaBahn, 1997). Particularly, over the last few decades, coupled with the increase in the number of brands on shelves each year, the number of advertising messages to which an average individual exposed, increases (Aufreiter

et al., 2003). In addition, media is getting more fragmented today (Kotler and Keller, 2012). This also makes marketers concentrate on different communication tools to contact different customers, effectively (Keller, 2012). So, as well as the increasing number of new products and their advertising messages, the explosion in the ways to communicate with customers has made this process complicated more in recent years (Kohli et al., 2005).

In such a context, one way to move ahead of others in the marketplace in an economic fashion is developing inherently strong brand names which appeal to the customers and serve for companies' purposes (Kohli, 1997). For that reason, contemporary companies have to devote a great deal of effort, time and money to create a new and effective brand name with a favorable brand meaning (Argo et al., 2010). In that case, it is normal to think that if a brand name is either created or selected carefully, and managed effectively, it provides a great deal of advantages to its stakeholders. In this sense, to draw the attention to the strategic importance of brand names, what strong brand names offer to different parties are examined in detail in the following sections.

1.2. THE POWER OF BRAND NAMES

Any dislike for the brand name has been accepted as one of the major reasons of the failure of the product (Hartley, 1992). This makes smart marketers pay more attention not only to creating the best quality product but also to designing the most effective and appropriate brand names. As well as companies, customers also need strong brand names for several reasons. In this respect, particularly two parties, companies and customers, are regarded as the ones who concern about the brand names more. Therefore, why powerful brand names are needed should be discussed in terms of companies and customers, in detail.

1.2.1. The Interplay between Brand Names and Companies

Zaltman and Wallendorf (1979) claim that more than 40% of the success or the failure of a product depends on the brand name given to a new product.

Nowadays, merely such a rate is enough to understand why brand naming decisions for a new product is more critical for companies. However, there are also other several reasons to explain why companies need effective brand names.

First, companies need to use brand names to *identify* and *differentiate* their products (Kotler, 1991). As it is explained, these two have been one of the longstanding purposes for using the brand names. In particular to establish *distinctive brand image* in today's marketplace, companies need to create effective brand names differentiating their products from the offerings of others (Aaker, 1991). Effective brand names also help companies to create unique and favorable brand image which is more likely to contribute to the companies in creating *points of difference* (POD) for their brands (Keller, 2013).

Points of differences are the brand related associations which are perceived as unique to the specific brand (Kotler and Keller, 2012). These differences often make customers believe that benefits or attributes associated with the brand cannot be provided by any brands in the marketplace. In addition, this makes the customers ready to pay price premiums for the brands (Kohli and LaBahn, 1995). Under the light of these claims, as well as increasing the profits of companies, creating a unique, favorable and strong brand image on the basis of effective brand name can increase the competitive advantages of the companies (Keller, 1993).

The extant literature also suggests that brand names are the important part of the brand image, and so the anchor for positioning (Kohli and LaBahn, 1995). In this context, it is easy to say that effective brand names can contribute to the companies by strengthening their competitive positioning relative to their competitors. Moreover, a dominant brand name can enhance the competitive positioning of the companies by creating natural barrier to entry in some markets and providing resistance from attacks of competitors (Farquhar, 1989).

Second, brand names can be considered as one of *the most valuable assets* of the companies (Alashban et al., 2002; Klink, 2003), as well as the brands (Keller and Lehmann, 2006). The value created through associations that customers make with the brand name often turns the brand names into valuable intangible assets (Kohli et al., 2005). Hence, like the other assets in balance-sheet, brand names can result in

better earnings and profit performance, which, in turn, offers greater value to shareholders (Keller, 2013).

Third, effective brand names can be vital to enhance *brand awareness* (Keller, 1993; Keller et al., 1998). Pertinent research has demonstrated that brand awareness is the first stage of buyer readiness (Brassington and Pettitt, 2003; Puth, 2000). In this respect, brand awareness can be regarded as highly influential factor on generating a preference for the specific brand and directing the customers to its closest point of purchase (Harradine and Ross, 2007). In that case, to make customers ready to purchase the brands among the alternatives, companies have to select an appropriate brand name for their products.

Fourth, brand names provide a *foundation* for each marketing communication effort of the companies (Aaker, 1992). They represent the product and the brand on everywhere like product package, television, print advertisements, letterhead, business cards, annual reports, and even product designs (Henderson and Cote 1998). In addition, brand names also represent the company in every platform. For that reason, an effective brand name is required for creating corporate identity, as well (Klink, 2000).

Fifth, effective brand names provide *legal protection* to the companies, if they are protected through registered trademarks (Keller, 2013). Companies often need a title for designating their legal ownership to protect themselves against imitators (Chernatony and Riley, 1997). In many cases, brand names are regarded as a label which signifies the ownership of the companies (Brakus et al., 2009). Thus, as well as identifying and differentiating the brands, brand names offer the companies intellectual property rights. Intellectual property rights enable the companies invest in their brands safely, reap the benefits of these valuable assets (Keller, 2013), and so contribute to the growth of companies (Alashban et al., 2002).

Sixth, corresponding to the growth of companies, strong brand names can provide platform for *licensing*, as well (Farquhar, 1989). In licensing, one entity (licensor) grants the rights of using intangible property (e.g., patents, formulas, copyrights, and trademarks) to another entity (licensee) for a specific period in exchange for a royalty fee (Hill, 2005). In this context, licensing is also one of the modes for entering into foreign markets. Recent years, many companies have

increasingly licensed their strong brand names to several companies. Thus, the stronger the brand names are, the more they can provide a growth opportunity to companies in foreign markets.

Seventh, brand names can contribute to *brand performance*, if they are successfully managed (Pogacar et al., 2015). Brand performance refers to what extend the marketing offerings satisfy the functional needs of customers (Keller, 2013). In this respect, brand names designed to convey product related attributes and benefits can structure the customers' expectations regarding the products because such a brand name may not let down the customers after they either purchase or use the products.

Lastly, as relevant to its previous contribution, brand names, particularly the ones conveying product related information, can also result in successful *brand extension*. Brand extension refers to introducing a new product under the existing name of a brand (Keller, 2013). Today, many companies have increasingly adopted brand extension to enter a completely different product class because of the increase in media, promotion and distribution costs since 1970s (Aaker and Keller, 1990; Kohli, 1997). When companies extend their existing brand names onto different product category, the associations that the brand names carry can also be extended onto different products (Klink, 2001). For instance, in the case of Jeep, not only the brand name was extended onto new product (luggage), but its image (e.g., ruggedness) was extended onto the new product. Thus, existing brand names with already established brand familiarity and knowledge can contribute to companies by decreasing the risks of introducing a new product (Aaker and Keller, 1990).

As well as for companies, brand names can provide several benefits to customers. For instance, they can minimize the risk associated with new product purchase for customers, and increasing their product liking and trial (Smith and Park, 1992). In this respect, it is difficult to think brand names without customers because they are designed for appealing to the customers (Keller, 2013). Therefore, the interplay between brand names and customers is also discussed in detail in the following section.

1.2.2. The Interplay between Brand Names and Customers

Consumers believe that brand names are not created in a random way but designed by marketers to reflect a specific image and product attributes (Wänke et al. 2017). For that reason, brand name itself can provide a cue for customers to form conclusion about a brand (Zinkhan and Martin, 1987). Especially for some markets in which information is imperfect, brand names can be used by customers heuristically to infer meanings from the products (Chen et al., 2015; Erdem and Swait, 1998). Dawar and Parker (1994) suggest that brand name signals are more reliable for many consumers in evaluating quality of the product than any other product related signals such as price or physical appearance. Pertinent literature also offers that brand names frequently communicate the consistent quality of the marketing offerings (de Chernatony and McWilliam, 1989). Thus, brand names can serve for consumers as the *signal of quality* (Keller, 2013).

In this context, brand names can also provide *functional value* to customers by protecting them against functional risks (Teas and Grapentine, 1996). Functional risks occur if the product does not perform as it is expected (Kotler and Keller, 2012). Extant research suggests that there is a significant relationship between perceived product quality and perceived product performance (Bolton and Drew, 1991; Sweeney et al., 1999). Hence, brand names signifying quality can promise customers to decrease perceived functional risks.

In addition, brand names can offer customers *social and psychological value* by protecting them against social and psychological risks (Teas and Grapentine, 1996). Social risks occur if the product creates embarrassment in the society; whereas psychological risks occur if the product influences the mental well-being of its users (Jacoby and Kaplan, 1972; Kotler and Keller, 2012). In this context, it can be thought that through the meanings imbued in brand names, consumers can identify themselves and communicate their social-identity and self-image with the others (Wattanasuwan, 2005). Hence, brand name can also be used as *symbolic devices* (Keller, 2013).

Some part of meanings imbued in brand names comes from *brand personalities*. As well as humans, brands have personalities which characterize them

(Aaker, 1997). However, traits of brand personality are not inborn but acquired. Through direct and indirect contacts that consumers have with the brands, marketers can establish specific personality traits for brands (Plummer, 1985b). For instance, personality traits of individuals can be transferred to brands directly by associating human characteristics of *the brand's typical users, the employee of the companies, and the product endorsers of the brand* (Aaker, 1997). On the other hand, through *attributes of product, promotion style, pricing and distribution channel strategy, and brand elements (e.g., symbol, logo or brand name)*, human related personality traits can be associated with the brands indirectly (Batra et al., 1993).

Within the context of indirect contacts, brand name is mostly regarded as essential to create brand personality (Aaker, 1997), and brand personality is often regarded as must to create brand image (Aaker, 1997; Keller, 1993; Plummer, 1985a). In that case, it is not wrong to say that there is strong interplay between brand names, brand personality, and brand image. Brand names reflecting brand personality and brand image are more likely to elevate the appeal of brands to their respective customers, if consumers identify any congruence between their self-concept(s), meanings, values or images conveyed by brand names (Aaker, 1999). Extant research also suggests that customers mostly prefer a brand which reflects their either *actual* or *ideal self* (Aaker, 1997;1999; Escalas and Bettman, 2003; Sirgy, 1982; Swaminathan et al., 2009). Thus, brand name can help consumers communicate different aspects of their self (Aaker, 1997; Swaminathan et al., 2009).

In addition, favorable brand image and brand personality attributed to the brand can often result in development of favorable attitudes toward the brands (Biel, 1993; Sung and Kim 2010). As it is explained before, these favorable associations can be created through brand names. Accordingly, as well as favorable attitudes, brand names have a significant influence on customers' brand judgments on products' attributes (Argo et al., 2010) and their purchase intentions (Grewal et al., 1998). Therefore, it can be concluded that brand names, particularly communicating information about the product attributes, are more frequently preferred by customers (Keller, 2013).

Brand names can also affect the attitudes of customers through several ways: *its literal meaning, the way how it sounds, associations established as a result of*

promotion activities of companies or individual usage experience (Leone, 1981), or *its certain meaning to people it has* - which is independent from any promotion efforts or usage experience - (Zinkhan and Martin, 1987). Previous research also suggests that consumers are in tendency of relating a certain word or a certain sound in a word to certain product categories (Peterson and Ross, 1972). This fact has also been adapted to brand naming context in recent years to help consumers think certain relationships between the name of a product and its categories.

The brand name also serve for consumers in their first time purchases. Consumers trust and prefer well-known brand names when they purchase a product for the first time to minimize the first time purchase risks (Montgomery and Wernerfelt, 1992). In many cases, associating a certain word or sound with certain product category can make a brand name preferential because it encourages consumers to give rapid purchase decisions for new brands (Alashban et al., 2002). Hence, customers can respond to new brands more positively, as an expected result of their positive inferential beliefs towards the new brand name (Klink, 2001).

In particular, brand names conveying information about the product can motivate customers a lot in purchase of new products by reducing the product uncertainty (Klink, 2001). In such a case, consumers can decide on either buying or not buying the product on the basis of information derived from its names. Along with mitigating the first time purchase risks, brand names can also identify the producer of the product and let customers to assign responsibility to the specific manufacturer or distributor when they experience negative consequences regarding the products (Keller, 2013).

Brand names can also be vital for customers as well as for companies in brand extension. There is a direct relationship between the success of brand extension and some certain assumptions on consumer behavior such as: (i) consumers have “positive beliefs and favorable attitudes” toward the established brand in their memory, and (ii) these already established positive associations result in “positive beliefs and favorable attitudes toward the brand extension” (Aaker and Keller, 1990: 28). In this respect, to form beliefs and attitudes toward extended new products, customers can use already established brand names.

Consequently, effective brand names which communicate intended brand image in harmony with brand personality and other product related information are important for customers, as well as companies. In this respect, marketers should design a brand name for their new products very carefully to communicate with their customers properly. There are several desirable brand name characteristics which should be taken into consideration in brand naming design. These characteristics are discussed in detail in the following section.

1.3.DESIRABLE BRAND NAME CHARACTERISTICS

New things require new names. Therefore, companies are often in tendency to create a new brand name for their new products (Adidam, 2007). This approach results in proliferation of brand names in the marketplace, in particular when the number of products introduced to marketplace is taken into consideration. In such an atmosphere, the slightest marketing advantage like choosing an appealing brand name for new marketing offerings can well lead to success (Vanden Bergh et al., 1987).

Appealing brand names are frequently far from negative connotations, and create relevant emotional impact on consumers. To create such a brand name, companies are ready to sacrifice a great deal of money (Abelin, 2015). Empirical evidence suggests that efficacy of brand naming practices has come into prominence more than ever as standard naming fees have gradually increased (Pogacar et al., 2015). For instance, for automobiles, a per-letter price of a new brand name has varied from \$5,000 to \$10,000 at the beginning of the 2000s (Hoffman, 2008).

No matter how costly it is, brand naming is in the middle of any branding strategy (Fan, 2002). Thus, the task of naming brands has to be carried out by marketing managers quite a lot over time (Robertson, 1989). However, the task itself is undoubtedly complex and difficult (Shrum and Lowrey, 2007). In addition, needless to say that current market condition makes developing new brand names discernable from the others tougher (Arora et al. 2015; Klink, 2001). For that reason, companies have to attach more importance to design of their brand names.

Characteristics of and criteria for an effective brand name have been studied extensively throughout the years (Aaker and Joachimsthaler, 1999; Bao et al., 2008; Bogart and Lehman, 1973; Boyd, 1985; Collins, 1977; Keller and Lehman, 2006; Keller et al., 1998; Klink, 2000; Kohli and LaBahn, 1995; McCharthy and Perreault, 1987; McNeal and Zeren, 1981; Peterson and Ross, 1972; Robertson, 1989; Stern, 1983; 1997; Zinkhan and Martin, 1987). So, it is not surprising that both marketing scholars and practitioners emphasize the significance of creating effective brand names. However, they are often at a loss about what characteristics constitute an effective brand name (Kohli et al., 2005).

In the prevailing marketing literature, there is a consensus among scholars (e.g., Armstrong et al., 2009; Baines et al., 2011; Jobber, 2010; Kotler and Keller, 2012; Robertson, 1989) regarding to what an effective brand name should be. This consensus offers that brand name should be (i) *simple*; (ii) *protectable*; (iii) *transferable*; (iv) *adaptable*; (v) *translatable*; (vi) *memorable*; (vii) *evocative*; (viii) *distinctive*; (ix) *likeable*; and (x) *meaningful* (Keller, 2008; Medway and Warnabi, 2014; Robertson, 1989).

In the direction of consensus, first, a brand name should be *simple*. As the basic psychological principle, the simpler the bit of information is, the more easily to learn and recall it (Solomon, 2013). In this respect, simplicity of the brand names can often be associated with *easy to read*, *easy to spell*, *easy to pronounce*, *easy to understand* and *easy to recall the brand names* (Medway and Warnabi, 2014; Perreault and McCarthy, 1996; Robertson 1989). In that case it is normal to think that brand names which are difficult to pronounce are difficult to remember. The difficulty in pronunciation can make consumers less likely to ask for the brands by their names, less likely to discuss the brands with others, and less likely to buy the brands (Alashban et al., 2002). Thus, for better brand management, a brand name should be designed as simple as possible.

Second, a brand name should be *protectable*. This requirement can also be regarded as one of the reasons to explain why companies need to use brand names. Generally, through trademarks or other methods of legal protection, brand names are protected against trademark infringement (Keller, 2013; Kohli, 1997; Medway and Warnabi, 2014). Additionally, to increase protectability of the brand name,

marketing managers often prefer to use arbitrary or coined brand names (Kohli et al., 2005). Such brand names are non-meaningful inherently. However, they can acquire their meaning over time on the basis of consumers' associations with the brand names (Collins, 1977).

Third, a brand name should be *transferable*. Transferability refers to the ability of being adapted to other products within either existing or new product categories (Medway and Warnabi, 2014). As it is explained, many companies have launched new products into new product categories by using their existing brand names (Keller, 2013). This strategy is called "*brand extension*". As well as brand extension, companies can adopt *line extension*. Line extension refers to use of existing brand names for a new product in existing product category (Kotler and Keller, 2012). In this respect, the more the brand names are transferable to different products, the more companies introduce new products in a cost efficient way in terms of branding expenditure.

Fourth, a brand name should be *adaptable*. Quote by Heraclitus says that the only thing that is constant is change. Initiated by this quote, it can be said that values, views and opinions of customers can change, as well. These changes in customers are more likely to influence their expectations regarding the products and brands. Accordingly, in order to remain contemporary, companies have to select brand elements which are easily updated (Keller, 2013). Among all the brand elements, providing adaptability to brand name is the most difficult task but not impossible. So, like any brand elements, brand names are also designed as flexible and adaptable to provide ease for updating (Keller, 2008).

Fifth, a brand name should be *translatable* (Kotler and Keller, 2012). Most of the brand name characteristics make sense only within the context of local languages in which the brand names were originally created (Usunier and Shaner, 2002). For that reason, linguistic content of a brand name affects its verbal, auditory and intellectual meaning and interpretation by only local consumers not the global consumers. If translatable brand name is not selected for a product, translation of a brand name for different markets can more likely to be problematic.

To protect the same meaning in different languages, companies operating in different markets sometimes literally translate the original brand name into different

languages without considering its idiomatic meanings (Alashban et al., 2002). For instance, in the case of Jolly Green Giant of Pillsbury, the original brand name was translated literally as “intimidating green ogre” in Saudia Arabia (Hill and Still, 1984:100). This shows that in the case of foreign expansion, marketers have to select translatable brand names for their products to satisfy the polyglot demands of a global market (Wänke et al., 2007). This also contributes to protecting desired brand image and strengthening brand awareness in different markets.

Sixth, a brand name should be *memorable*. The degree of memorability of a brand is evaluated on the basis of two basic dimensions: (i) “the inherent ability of the brand name to be easily encoded into, retained in, and retrieved from memory”, and (ii) “the extent to which the name supports or enhances the planned strategic positioning or image of the product” (Robertson, 1989:62). In this respect, memorability of the brand names can be associated with other desirable brand name characteristics such as evocativeness (Medway and Warnaby, 2014), distinctiveness (Eysenck, 1979; Gregg 1976), and meaningfulness (Klink, 2009).

By following the memorability characteristics, seventh, a brand name should be *evocative*. Evocative brand names generally bring to mind the experience and knowledge of a brand through appropriate associations created in the minds of consumers (Medway and Warnaby, 2014). Therefore, the degree of memorability of a brand name can affect the extent of which it connotes. In addition, the more the brand names are evocative, the more they can evoke emotions and generate good feelings (Jobber, 2010). Feelings are extremely influential on not only current interactions but also future interactions of customers with the brands (Abelin, 2015). Thus, to maintain a good relationship with customers, marketers pay attention to create evocative brand names revealing good feelings (Keller, 2012).

Eight, a brand name should be *distinctive*. Distinctiveness refers to the degree of uniqueness of one feature in relation to other features (Higgins, 1996). People frequently detect stimuli which differ from the others around them (Solomon, 2013). From this standpoint, degree of uniqueness of a brand name can turn the name into a stimulus selection factor to which people attend. Correspondingly, distinctiveness can generate ease in encoding and retrieval, and so contribute to memorability of

brand names (Eysenck, 1979; Gregg 1976). For that reason, marketers often need to create novel brand names to get attention of customers at first sight.

Ninth, a brand name should be *likeable*. In general, people are in tendency to remember the good things that they like (Robertson, 1989). Therefore, likeability of the brand names is one of the functions of memorability of the brand names (Keller, 2008). Moreover, while a good brand name contributes to success of the brand, a poor brand name leads to failure in the marketplace. Marketing history is full of brand name failures as in Ford Edsel and Chevrolet Nova cars. These failures have demonstrated that how pervasive dislike for the brand names has been headed for a fall (Klink, 2001). Therefore, in order not to confront with such problems, marketers have to pay attention to the likeability of the brand names.

Along with its connection with memorability, likeability of the brand name can also be related to meaningfulness of the brand names. Pertinent literature also suggests that brand names connoting positive associations about the brand or the product can more likely to be found favorable by consumers (Klink, 2000; 2001; Lowrey and Shrum, 2007). For instance, as a result of one study, brand name “Alustar” was rated more for aluminum household foil than the other projected alternatives because the name “Alustar” was more associated with some expected product’s attributes such as cleanliness and shining (Chisnall, 1974).

Then, lastly, a brand name should be *meaningful*. If a brand name reflects the benefits or attributes of a given product, it is regarded as meaningful (Medway and Warnabi, 2014). In brand naming process, marketers have to consider the extent to which a brand name communicates *descriptive* or *persuasive meaning* (Keller et al., 1998). Descriptive meaning is based on brand names’ suggestions about product category; whereas persuasive meaning is based on brand names’ suggestions about key attributes and benefits of the product (Keller, 2012). In terms of descriptive meaning, effectiveness of brand names increases, if they are *appropriate to product category* (Kanungo, 1968). On the other hand, in terms of persuasive meaning, effectiveness of brand names increases, if they *semantically suggests product benefits or attributes* (Keller et al., 1998).

With regard to communicating information about the products, meaningfulness has become the most wanted brand name characteristics in recent

years (e.g., Keller et al., 1998; Klink, 2000; 2001; Lowrey and Shrum, 2007; Pavia and Costa, 1993; Yorkston and Menon, 2004). Its attention getting features can be explained by its role on creating favorable brand attitudes and behaviors (Kohli et al., 2005; Smith and Park, 1992). As well as to generate positive customer response, creating meaningful brand names is imperative for marketing practitioners for several reasons. Relevant literature suggests that meaningful brand names can increase brand recall, provide a desirable brand image and better product positioning (Aaker, 1996; Athaide and Klink, 2012), and decrease marketing communication expenditures (Keller et al., 1998; Pavia and Costa, 1993).

Sometimes, companies would prefer brand names that do not seem meaningful at first sight. However some of the linguistic qualities like semantic associability or the way how a word evokes imagery (Lowrey et al 2003; Pavio, 1971; Pavio and Begg 1981) or the use of some specific sounds in a word can make a nonmeaningful word meaningful. In this context, along with the given characteristics, “*the sound*”, “*spelling*” and “*meaning*” of a brand name can influence its effectiveness in terms of meaningfulness (Ang, 1997: 220). However, in particular the past anecdotal evidence presented that linguistic criteria was not consciously adopted by marketing managers in naming brands (Vanden Bergh et al., 1987). For today, it can be readily said that marketers intentionally use several linguistic criteria to create inherently meaningful brand names.

Having all these brand name characteristics in mind, it can be concluded that a unique, novel, and meaningful brand name makes the brand name more readily recognized because of its attention getting feature (McArthur, 1981); easier to recall (Lockhart and Craik, 1990); and create more *favorable brand associations* (Keller, 2013). In other words, creating a meaningful brand name is essential to provide memorability to brand names (Klink, 2009). In that case it can be readily concluded that the more the brand name make customer recognize the brand name and retrieve it from their minds, the more it will result in strong brand equity against competitors (Leahey and Harris, 1996; Tarpy and Mayer, 1978). Consequently, all of these brand name characteristics but in particular distinctive, memorable and meaningful brand names may more contribute to establishing strong brand equity in terms of creation of brand recall, brand recognition, and brand image. For that reason, the interaction

between brand names and creating strong brand equity is discussed in the following section.

1.4. INTERACTION BETWEEN BRAND NAMES AND BRAND EQUITY

1.4.1. Brand Equity

Brand equity is one of the recent popular marketing concepts. It is also naturally important because brand equity has enhanced the importance of brand and branding in marketing strategy (Keller, 2013). Today, the extent of the success of a brand is frequently measured with how well its brand equity is managed. Hence, creating a strong brand equity is also regarded as one of the strategic tasks in branding process.

In the most general sense, *brand equity* emphasizes the added value endowed on marketing offerings (Farquhar, 1989). This added value principally comes from the interaction between brands and customers (Kotler and Keller, 2012). From this point of view, brand equity can be evaluated from the perspective of customers. This is called *customer based brand equity* (CBBE). Customer based brand equity is based on the notion that the power of brand comes from what customers have seen, read, heard, learned, thought, felt, and experienced about the brand over time (Keller, 2013). Thus, the main idea behind customer based brand equity is to understand the brand itself in the eyes of consumers.

Customer based brand equity is defined with three important components: *differential effects*, *brand knowledge*, and *customer response*. Thus, in a more structural way, customer based brand equity is defined as “differential effect of brand knowledge on consumer response to the marketing of the brand” (Keller, 1993:1). Simply put, if consumers confront marketing of the brand that they have already known, this can create a differential effect on their responses regarding the brand. The more these responses are positive, the more the customer based brand equity is positive (Keller, 2013). In many cases, this positiveness leads to more consumer preferences and loyalty with regard to the brand (Kotler and Armstrong, 2006).

As it is seen in its definition, in customer based brand equity, the differential effect comes from the “added value” that brand knowledge has on responses of the customers to marketing of a brand (Aaker, 1991; Keller, 1993). This makes understanding the brand knowledge imperative. *Brand knowledge* is conceptualized as “a brand node in memory to which a variety of associations are linked” from the perspective of *associative network memory model* (ANMM) (Keller, 2013: 72). This model views “semantic memory or knowledge as consisting of a set of nodes and links” (Keller, 1993:3).

Brand knowledge has two main components: *brand awareness* and *brand image*. Brand awareness is related to strength of the brand node or trace in memory to identify the brand under different conditions (Rossiter and Percy, 1987); whereas *brand image* is related to the favorability, strength, and uniqueness of the brand associations in the memory of consumer (Keller, 2013). Among these two components, brand awareness has also its own sub-dimensions: *brand recognition* and *brand recall*.

Brand recognition is defined as the ability of consumer to recognize the brand, when the brand is given as a cue. On the other hand, brand recall is defined as the ability of consumers to retrieve the brand from their memory, when the product category, need satisfied by product category or purchase or usage situation are given as a cue (Keller, 1993). In many cases, achieving brand recall is more important than brand recognition because buying decisions of consumers are mostly given far away from the point of purchase (Keller, 2013).

To create brand awareness and brand image, several brand elements can be used by marketers (Aaker and Keller, 1990). However, among all brand elements, brand name is emphasized more because of being “a part of a brand which can be vocalized” (Kotler, 1991: 442). This also makes the brand name as one of the most outstanding brand elements which are mostly associated with brand awareness (Keller, 1993). In terms of whether brand names can come into mind and the extent of the ease in this process, brand recognition and brand recall can also be related to brand name recognition and brand name recall. Having all these in mind, it can be useful to continue with examining the relationship between strong brand equity and brand names.

1.4.2. The Relationship between Strong Brand Equity and Brand Names

Brand building process generally starts with selection of an effective brand name identifying the brand (Keller, 1993). In this naming process, marketers should be careful about characteristics of brand names. Many inherent brand name characteristics can affect memorability of a brand name (Robertson, 1987), its image, positioning (Robertson, 1989), and accordingly brand equity (Keller, 1993). In addition, it is important to remember that the world's most successful brand names belong to the brands which have strong brand equity, as well (Keller, 2013). In this relation, the role of the associations that customers make with the successfully designed and managed brand names is extremely important (Keller, 1991; Kohli et al. 2005; Meyers-Levy et al. 1994). In that case, it is not wrong to say that there is a pretty much unignorable interaction between strong brand names and strong brand equity.

Brand names generally take their own meaning over time by symbolizing meanings and images embodied by the products (Levy, 1978). Then, through the meaning they acquired, they contribute to building of brand related associations. For that reason, the more carefully the brand names are designed and selected, the more they bring inherent strength to the brands (Kohli and LaBahn, 1995).

In addition, brand name is central to creating strong "*brand identity*". Brand identity is the "visual picture and meaning derived from the visual impact of the brand" (Zaichkowsky, 2010:548). Thus, in the interplay between brand names and brand equity, brand identity supported by a good brand name has also a significance because it is one of the major components of brand equity.

In this interplay, the differentiation function of brand name has a role in creating brand equity, as well. The more a brand name differentiates the brand, the more distinct consumer perceptions it creates. These perceptions are more likely to shape the positive attitudes of consumers towards the brands. In this respect, brand name can also be regarded as one of the sources of *brand knowledge* which creates differential effects on consumer responses (Keller, 1993).

As it is explained previous sub-section, brand knowledge is constituted by *brand awareness* and *brand image* (Keller, 2013). So, there is also an

interdependence between brand names and components of brand knowledge. Aaker (1991) also presents that an effective brand name increases brand memorability, enhances brand awareness, and creates a favorable brand image for the product. Initiated by this statement, to contribute to building of brand knowledge, brand names can be designed as brand names (i) “*that are inherently memorable*”, and/or (ii) “*whose inherent meanings increase strong, favorable and unique brand associations*” (Keller et al., 1998: 49).

In relation to that, many psycholinguistic researches also suggest that particularly some desirable characteristics of brand names are highly influential on creating brand knowledge (Kohli and LaBahn, 1995). For instance, type of sound which the brand name begins or comprises or whether the brand name fits the function of product can provide memorability to brand names, which in return generate brand awareness (Lowrey et al., 2003). Research on creating brand names also verify that brand names created with several linguistic devices can be more interesting and memorable (Vanden Bergh et al., 1987). In that case, by any means, the way how brand names are easily encoded into, retained in, and retrieved from the mind are more likely to create brand awareness, as well (Lowrey et al., 2003).

As it is given the previous sub-section, brand awareness comprises the brand recall and brand recognition (Keller, 2013). Accordingly, memorability of brand names can also facilitate the brand recall and brand recognition in several settings (Keller et al., 1998). Therefore, a *memorable brand name* is regarded as essential to create brand equity in terms of brand awareness. Pertinent literature suggests that as well as memorability, *likeability* and *distinctiveness* of the brand names are effective on providing inherent ease in encoding of the brand name into, retaining it in, and retrieving it from memory (Leclerc et al., 1994; Park et al., 1986; Robertson, 1989). However, different from memorability, likeability and distinctiveness have a role on positioning of the product, as well (Robertson, 1989). Since brand names are used by customers as a cue in creating brand associations, it is normal to think that likeable and distinctive brand names are more likely to pave the way for favorable and unique brand image, respectively (Keller, 1993; 2013).

The degree of semantic suggestiveness of a brand name can also contribute to brand knowledge development from the customer’s first encounter with the brand

name (Sen, 1999). As noted previously, meaningful brand names frequently convey relevant information about the product or establish a connection between the product and the product category (Keller et al., 1998). Accordingly, meaningful brand names make consumers remember the product or brand in different times and under different situations. In this respect, it can readily concluded that meaningful brand names enhance memorability of the brand names for consumers (Leahey and Harris, 1996; Tarpy and Mayer, 1978). This also explains why they are preferred more by both customers and companies than non-meaningful brand names (Klink, 2001; Kohli et al., 2005).

Meaningful brand names also enable customers retrieve the brand names from their memories when the product category, purchase situation or usage situation are given as a cue. By supporting this argument, Keller et al. (1998) purport that brand names explicitly conveying messages about product benefits promote higher brand recall of advertised benefits as in the case of brand name, “PicturePerfect”, for television. In that case, it is not wrong to say that meaningful brand names are frequently easier to recall than non-meaningful ones (Kanungo, 1968; Klink, 2009).

In this context, the more brand name reflects the product benefits (e.g., Die Hard batteries); fits the product class (e.g., Bizinet); generates a visual referent in minds of consumers (e.g., Dove); connotes good feelings, arouses pleasant emotions, and has pleasant sounding (e.g., Joy, and Caress), the more it provides memorability in terms of brand recall (Robertson, 1989). Along with brand recall, memorable, distinctive and particularly meaningful brand names have also impact on brand recognition (Collins, 1977; Keller, 2013; Lowrey et al., 2003). Empirical research indicated that the higher meaningfulness the brand names have, the better they are retained in memory than those having low meaningfulness (Kanungo, 1968).

Meaningful brand names also help marketers to create proper brand image in the mind of consumers. In this context, a meaningful brand name is a need for better positioning. Through the information that they convey about the products (Klink, 2000); associations and images that they elicit (Perreault and McCarthy, 1996); and differentiating the brand (Arora et al., 2015), they strengthen the brand associations in the minds of customers (Keller et al., 1998; Klink, 2001; Pavia and Costa, 1993). Robertson (1987) also suggests that brand names with high imagery may also

provide higher brand recall and recognition scores than low imagery ones. In addition, the extent of the linguistic qualities of brand names (e.g., “Lean Cuisine”, “Odor-Eaters”, and “Sunkist”) can be determinative on strategic positioning of the products (Robertson, 1989:65). Thus, through several linguistic methods, brand names can be rendered to convey some meaning designating their positioning, as well (Lowrey et al., 2003).

The other important issue for better strategic positioning and favorable, unique and strong brand image is to create *brand personality* (Plummer, 1985a; Keller 1993; Aaker, 1997). Pertinent literature suggests that brand personality increases consumer preferences and usage (Aaker, 1999; Biel, 1993); creates brand loyalty and trust (Fournier, 1998); and evokes desirable brand related emotions (Sung and Kim, 2010). In that case, it can be said that brand personality also contributes to building of brand equity (Biel, 1993; Ogilvy, 1988).

Brand personality can be affected by various number of product-related and non-product related factors (Aaker, 1997). As the elemental building block of brand, brand name is also considered as the potential antecedent of brand personality (Batra et al., 1993; Yorkston et al., 2010). Research also suggests that brand name has a direct influence on brand personality (Wu et al., 2011; 2013). Hence, creating an effective brand name can be the starting point of creating brand personality for stronger brand image and brand equity in return.

As well as brand awareness and brand image, consumer perceived ethicality is regarded as one of the drivers of brand equity (Rust et al., 2000). Since consumer perceived ethicality can influence attitudes of consumers toward the brand and so their buying behaviors, it leads to differential customer response which is one of the components of brand equity (Brunk, 2010). In this sense, it can be readily said that the more a meaningful brand name conveys ethicality of the brand, the more it contributes to building of ethical brand image (Klink and Wu, 2017).

Consequently, a good brand name can contribute to brand equity more than estimated. In that case, brand names must be designed as much as memorable, distinctive, likeable and meaningful. However, understanding not only the way how the effective brand names are created by marketers but also the way how they are

perceived by customers is extremely important. For that reason, the interplay between brand names and perception is discussed in detail in the next section.

1.5. INTERACTION BETWEEN BRAND NAMES AND BRAND PERCEPTION

Brand can also be defined as “an identifiable marketing offering augmented in such a way that the buyer or user perceives relevant and unique added values which match their needs most closely” (Harradine and Ross, 2007: 190). Starting from this definition, the effect of perception is not denied in brand related issues, particularly such as brand naming. Perception towards brand names often affect the attitudes, feelings, and behaviors of consumers towards the brands, and result in the formation of either positive, neutral or negative beliefs (Zinkhan and Martin, 1987). Therefore, perception is deserved to be examined initially to understand consumers’ responses to brand names better.

1.5.1. Perception

Perception, in its most general sense, can be defined as the primary form of cognitive contact of humans with the world around them (Efron, 1969). In this interaction with the environment, the *five sensory organs* (eyes, ears, nose, tongue, and skin), which are called *sensory receptors*, play an important role (Kardes et al., 2011). The “immediate response of these sensory receptors to basic stimuli such as light, color, sound, odor, and texture” generate *sensations* (Solomon, 2013:70). In perception process, these sensations make individuals interpret and understand their surrounding world.

In this context, it can be concluded that perception is the process of adding more to the raw sensations to make the world meaningful. For that reason, perception is usually accepted as the beginning of all human interactions with the world. In that case, it is not wrong to say that perception is “our only window to the world” and in the case of absence of perception mechanism, “we could know nothing about what goes on around us” (Kim, 1996: 28). Hence, perception can be considered as a

process which provides a fundamental mechanism to individuals to get information from the environment.

However, the way how individuals select, obtain and interpret the information depends on their unique past experiences, personal biases, beliefs and judgments about external world (Solomon, 2013). Then, individual differences can make perception of the same stimulus different from person to person due to several conceptual processes: *selective attention*, *selective distortion*, and *selective retention* (Harradine and Ross, 2007). *Selective attention* is the tendency of eliminating most of the stimuli to which is exposed; whereas *selective distortion* is the tendency of interpreting information on the basis of what is already believed. Lastly, *selective retention* can be defined as the tendency of retaining information consistent with the one's attitudes and beliefs. These conceptual processes can explain why individuals can perceive the same stimulus differently (Kotler and Armstrong, 2006).

Having all these in mind, perception can be summarized as a process of *selecting*, *organizing*, and *interpreting* information to make the experience of the world meaningful (Dibb et al., 1994). In this respect, as it is said before, perception provides an information processing mechanism like the functioning of the computer (Hawkins et al., 2004). In this process, human brains get sensory inputs from the external environment, and these raw data detected by the five senses start the perceptual process which leads to internal sensory experience (Solomon, 2013).

In this information processing, individuals in the most general sense undergo three stages which make up the perceptual process. These stages are “*exposure*”, “*attention*”, and “*interpretation*” (Solomon, 2013). The stages in perceptual process do not follow each other in a sequential way every time but interact with each other continuously (Kardes et al., 2011). In order to understand perception as a whole, it is better to discuss each stage in detail in the following parts.

1.5.1.1. Exposure

In order to be influenced by any type of stimulus, individuals must be exposed to it initially. For that reason, exposure is regarded as the first stage in the perception process. Starting from this fact, *exposure* can be defined as the process by

which an individual “comes into a physical contact with a stimulus” (Hoyer and MacInnis, 2008: 70). In this stage of perception, a stimulus in the environment gets within range of sensory receptors of the individual either in a deliberate or a random way (Solomon, 2003).

However, every stimulus in the environment cannot be received by individuals (Kardes et al., 2011). Simply put, while some individuals can select sensory information in their surrounding world, some others cannot due to disability or age which makes the functioning of sensory receptors diminish. *Psychophysics* - the branch of psychology that examines the interaction between physical stimuli and the responses to them - provides understanding “how the physical environment is integrated into the subjective world of the individuals” (Solomon, 2013:81).

Along with physical characteristics, sometimes the level of the intensity of stimulus can determine whether they come within the range of sensory receptors of individuals (Barlow, 1956). The lowest intensity of stimulus that the brain can detect through sensory receptors is called as *threshold* (Solomon, 2013). Thus, in order to be exposed to stimuli, the stimulation must be detectable through the given sensory receptor (Hoyer and MacInnis, 2008). The minimum amount of stimulation a person can detect on a given sensory channel” is called “*absolute threshold*” (Solomon, 2013:81). Absolute threshold is critical to sensation because only the stimuli beyond sensory absolute threshold will be noticed by individuals through their sensory receptors.

Another critical threshold is the “*differential threshold*”. Differential threshold is defined as “the ability of a sensory system to detect differences between two stimuli” (Solomon, 2013: 81). Therefore, in order to detect a difference between two stimuli, there must be at least “*just noticeable difference*” (JND) between them (Hoyer and MacInnis, 2008).

Just noticeable difference was firstly suggested by psychophysicist Ernst Weber in the middle of the nineteenth century. According to his suggestion, the magnitude of the noticeable difference between two stimuli is systematically related to the intensity of the original stimulus (Kardes et al., 2011). Simply put, this suggestion, which is known as *Weber’s Law*, states that if the initial stimulus is stronger, the change must also be greater to detect it (Solomon, 2013). After the

stimuli go beyond the thresholds in some way, the next stage waiting the individuals will be attention.

1.5.1.2. Attention

Individuals are frequently bombarded with much more stimuli than their brains can process. For that reason, they can selectively attend only small portion of the stimuli available in their surrounding world as an expected result of perceptual selection (Hawkins et al., 2004). Starting from this fact, it is normal to say that “attention is highly selective in nature” (Kardes et al., 2011: 64). Hence, attention can be defined as a process, in which “the extent to which processing activity is devoted to a particular stimulus” is determined (Solomon, 2013:87).

In this process, the stimuli the individuals select to pay attention to often depend on two factors: *personal factors* and *stimulus related factors*. Personal factors include the *experience*, *perceptual filters*, *perceptual vigilance*, and *perceptual defense*. Among these factors, experience is the outcome of getting and processing stimulation over time. Accordingly, experience influences the extent of a particular stimulus exposure that the individual accepts to attend (Solomon, 2013). In addition, experience provides perceptual filters to individuals because individuals select the stimuli that they are going to attend on the basis of their past experiences (Hoyer and MacInnis, 2008).

Perceptual vigilance is also one of the other personal selection factors in this process because individuals are in tendency of detecting stimuli related to their current needs (Bolfing, 1988). For instance, if you go to the shopping center when you are hungry, you can detect the restaurants more among the others. Lastly, since individuals are more likely to see what they want to see and to ignore or to distort the rest, perceptual defense is considered as one of the factors that affect perceptual selection process (Krugman, 1965).

Along with the personal selection factors, there can also be stimulus related factors which help individuals to decide on which stimulus to attend (Hawkins et al., 2004). Consistent with the Weber’s Law, it can be concluded that individuals can detect some stimuli easier than the others, if these stimuli are more different than the

others in the same environment. Therefore, stimulus characteristics such as size, color, intensity, contrast and the way how it appears can be influential on individuals when they select stimuli to attend (Solomon, 2013).

In perceptual selection process, the other important factor related to sensory threshold is the *adaptation*. Adaptation is the “degree to which individuals continue to notice a stimulus over time” (Solomon, 2013: 90). In general, individuals can no longer pay attention to a stimulus as it is becoming familiar to them over time (Kardes et al., 2011). There are many factors which pave the way for adaptation. For instance, *the low intense stimuli* such as soft sounds or dull colors; *the simple stimuli* which do not require high involvement for details; *frequently imposed stimuli* (Kardes et al., 2011); and *personally irrelevant or unimportant stimuli* can lead to adaptation which will make individuals ignore these stimuli over time (Solomon, 2013).

Consequently, it can be concluded that there are many factors influencing the attention process of individuals. All of these factors can also explain why individuals have differences in their attention processes. Anyway, when the attention process finishes, interpretation process starts.

1.5.1.3. Interpretation

Interpretation is the last stage of perception in which individuals assign meanings to sensory stimuli in their surrounding (Solomon, 2013). As well as the other stages, interpretation stage depends on personal characteristics. Thus, the meanings assigned to the stimuli can change from individual to individual.

In general, when individuals interpret a stimulus, the meaning that they assign to it is based on *schema*. Schema constitutes the set of beliefs. If a stimulus evokes a schema because of its certain properties, *priming* process is starting. This makes individuals compare the stimulus with the similar ones that they were exposed before (Solomon, 2013). In this way, they assign the meaning to stimuli around them.

In that case, the way how individuals interpret a stimulus depends on how they associate it with other sensations or images already in their memory (Kardes et al., 2011). When the brain relates incoming sensations to other sensations in

memory, it uses some fundamental *organizational principles* that derive from *Gestalt psychology* (Solomon, 2013). *Gestalt perspective* is based on the understanding that “the whole is greater than the sum of its parts” (Solomon, 2013: 94). For that reason, according to this perspective, focusing on each component of the stimuli separately does not give the whole picture.

Gestalt perspective offers several principles for stimulus organization. One of the principles that help the brain to organize stimuli is the *closure principle*. Closure principle signifies that individuals can perceive an incomplete part as complete by filling the blanks on the basis of their past experiences (Solomon, 2013). Another principle to organize stimuli is *similarity principle*. Similarity principle states that individuals are in tendency of grouping objects which have visually similar characteristics (Peterson and Berryhill, 2013). The other principle, *figure-ground principle*, asserts that thanks to its dominant position, individuals can perceive one part of a stimulus (that is to say figure), more than the other parts of the stimulus, (that is to say ground), which recede into the background (Solomon, 2013).

In a nutshell, together with the exposure and attention, interpretation make up the perceptual process. Although, perceptual process can vary from individual to individual, there is one fact that perception can influence the attitudes and behaviors of individuals in a kind of way. In this sense, understanding how brand names as marketing stimuli interact with the notion of perception and influence the behaviors of customers towards brands is a must. For that reason, the interaction between perception and brand names as marketing stimuli is discussed in the below section.

1.5.2. The Relationship between Brand Names and Brand Perception

Stimulus can be anything which evokes a sensory response. In this respect, any information about products or brands that consumers are exposed at buying, using or disposing stages of consumption can be considered as marketing stimuli (Hoyer and MacInnis, 2008). Initiated by this perspective, brand names may be regarded as one of the marketing stimuli, as well, because they can provide both sight-related and sound-related sensory stimuli which can be detected by sensory receptors of consumers, and result in sensory responses.

In that case, it can be readily said that through their several sensory characteristics, brand names can influence the brand perception, that is to say *selective brand perception* (Solomon, 2013). Selective brand perception can be defined as “a process whereby a consumer can differentiate between very similar brands” (Bolfing, 1988: 50). Then, differentiating one brand from another as one of its longstanding function, brand names enable to structure the customer perception of brands. Extant research has also presented that brand name can create associations and expectations about the product and the brand, and this makes consumers deliberately rely on brand names for brand perception (Wänke et al., 2007). However, this sometimes makes too dangerous to create a name for a product which might pave the way for high expectations from the product, in particular if the product does not satisfy promise of the brand name.

In recent years, particularly companies with smart marketers have started to pay more attention to use sensory systems of their consumers to make their brands stand out from similar offerings in the marketplace (Keller, 2013). Accordingly, they have increasingly used sensory elements such as sight, scents, touch, taste and sound to evoke feelings, and influence perceptions. While they have been playing the sensory elements, they have mostly adopted cross-modal correspondence which is based on multisensory perception.

Cross-modal correspondence (CMC) is defined as “the tendency for a feature, or attribute, in one sensory modality to be associated with a sensory feature, or attribute in another sensory modality” (Spence, 2012b:37). Cross-modal correspondence has been studied by cognitive scientist approximately for more than a century. For that reason, it has been labeled by variety of terms such as “*cross-modal similarities*”, “*synaesthetic associations*”, “*synaesthesia*”, and lastly in linguistics context, “*sound symbolic associations*” (Parise and Spence, 2012).

Particularly, within the context of synesthesia, cross-modality occurs “when stimulation of one sensory modality automatically triggers a perception in a second modality, in the absence of any direct stimulation to this second modality” (Harrison and Baron-Cohen, 1997:3). For instance, sound can trigger the perception of vision such as color automatically (Klink, 2003), or visual figures can trigger the perception of sounds (Ramachandran and Hubbard, 2001). Wide range of psychological and

psycholinguistic studies also suggest that individuals spontaneously relate specific speech sounds to specific shapes (e.g., Köhler, 1949; Boyle and Tarte, 1980; Ramachandran and Hubbard, 2001), and specific shapes and texture to specific sounds (Abelin, 2015).

This type of interaction between different sensory stimuli and perception has also been explored by many marketing scholars under the framework of cross modal correspondence in recent years (e.g., Doyle and Bottomley, 2011; Klink, 2000; Parise and Spence, 2012). The findings of these studies have substantially encouraged marketers to use sensory stimuli to influence perception of consumers toward the brands in different aspects (Stach, 2015). Among the several sensory stimuli, sound and visual forms are frequently adopted by marketers in brand naming context because both visual forms and sounds can be regarded as two prominent channels in reading the brand name (David and Bottomley, 2011).

Marketing scholars have also accepted that visual brand elements such as shape, size and color of a brand logo (Henderson and Cote, 1998; Klink, 2003) and sounds of a brand name (Klink, 2000) can convey consistent meaning to consumers. Several marketing research has also demonstrated that particular sounds convey specific information about the product and brand (e.g., Klink, 2003; Lowrey and Shrum, 2007; Yorkston and Menon; 2004). In addition, prevailing literature has demonstrated that the more the brand names and brand marks are designed consistently in terms of the meaning that they convey, the better the positioning the brand has in the minds of consumers (e.g., Klink, 2003; Klink and Athaide, 2014). Thus, all of these efforts show that adequately designed sensory modalities of brands and brand elements can create more efficient synergistic effects in brand communication than the traditional ways (Lindstrom, 2005).

In addition, it is important to remind that visual forms and sounds are not related with only brand elements. Visual forms frequently may refer the visual appearance of the products and brands, and sounds may cover the sounds which occur during the use of products. These type of sensory stimuli can also convey consistent meaning about the product and brand. For instance, through the sounds that you hear when you consume the product, you can decide on whether it is crispy

or not (e.g., Zampini and Spence, 2004) or through the color of the product or its package, you can decide on whether it is natural or not (Mahnke, 1996).

Consequently, perception is a process of interpreting, in which individuals assign meanings to sensory stimuli. In that case, it can be readily concluded that any sensory marketing stimuli which per se convey meaning can directly influence the perception of individuals towards products and brands. Accordingly, since expressiveness of sound is accepted (Sapir, 1929), sounds of a brand name may directly influence the brand perception of consumers. Pertinent literature also indicates that sound is mostly associated with sight in branding context under cross-modal correspondence (e.g., Athaide and Klink, 2012; Baxter and Lowrey, 2011; Klink, 2000; 2001; 2003; Kuehnl and Mantau, 2013). For that reason, it is useful to continue with the interaction between sound and sight in the following section.

1.5.3. The Interaction between Sound and Sight in Brand Naming Context

In recent years, several marketing researchers have highlighted the effects of using particular sounds in a brand name for conveying meaning about the product, and how they influence brand perceptions (e.g., Baxter and Lowrey, 2011; Klink, 2000; 2001; 2003; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). This fact has also encouraged many marketers to create favorable brand names, which provides a fit between perceived meanings of the sounds in brand names and visual product attributes (e.g., Klink, 2000; 2003). In that case, understanding what are visual elements and how sound triggers the perception of sight related aspects of brands are imperative.

Visual elements are principally related to each other and all of them are perceived as a whole during the visual experience (Wong, 1993). In this sense, “line”, “shape”, “volume”, “color”, and “texture” can be all regarded as main visual elements. Among these elements, line is defined as a point in motion (Lauer and Pentak, 2005). It can be either straight or curved, or vertical or horizontal. Shape is the other visual elements which can be either a simple geometric form such as a rectangular, or amorphous. Shape may also be classified as angular or rounded

during the visual assessment of the product (Köhler, 1949). Accordingly, shape is two-dimensional, flat, or limited to height and width; whereas volume, the other visual element, is three dimensional. Therefore, along with height and width, volume includes depth, as well (Lauer and Pentak, 2005).

Color is the another and also one of the most effective visual elements that leads to direct change in people's emotions and behaviors (Mahnke, 1996). Color may be classified in terms of the name of colors such as red; the value of colors such as darkness and lightness; and intensity of colors such as brightness and dullness (Lauer and Pentak, 2005). Lastly, although it is a tactile element, texture is also included in visual elements because it can be perceived by sight. As surface characteristics of shape, texture can be smooth or rough (Wong, 1993). Along with these visual elements, size such as smallness and largeness, movement such as fastness and slowness, styling such as feminine and masculine, and materials such as heavy or weak can also be perceived through eyes. In marketing activities, marketers rely heavily on these visual elements in product appearance, and convey meanings on visual channel through a product's color, size, shape, styling, and so on.

Existent research supports that names including specific sounds can trigger the perception of visual stimuli. For instance, words with higher frequency sounds (e.g., "e", "i", "f", "v") are mostly associated with *lighter colors* and *lighter shades of same color* (e.g., Chastaing, 1958; Fónagy, 1963; Gombrich, 1961; Grammont, 1913; Jacobsen and Waugh, 1987; Klink, 2000; Klink, 2003; Marks, 1997; Newman, 1933); *smaller objects* (e.g. Klink, 2000); and *angular shapes* (e.g., Köhler, 1947).

Additionally, brand names conveying meaning through their sound structure can influence consumers' perception of different physical attributes such as thinness, heaviness, softness, fastness, and coldness of products (Klink, 2000). Along with the physical attributes of the products, brand name can also convey information about the quality of the product. Research suggests that there is a positive and statistically significant relationship between brand names and perceived quality (Rao and Monroe, 1989).

Having all these in mind, it can be concluded that brand names conveying product related information can be the drivers of customer perception related to products' characteristics. In that case, it is normal to think that brand names which

are not successful to communicate information about the product may lead to many problems. For instance, consumers may perceive information or association about the brands weaker and possibly less favorable. Second, since consumers do not get insight about the product, existing brand associations of consumers may change easily depending on actions of competitors. Lastly, some relevant brand associations which influence the decision making process of consumers positively may be ignored by consumers (Keller, 1993).

Herewith, to positively influence the consumer perception about the brand, creating brand names conveying meaning about the product or brand is one of the crucial and initial tasks of the marketers. In that case, understanding the methods for creating meaningful brand names is becoming a must for marketers more than ever. For that reason, next section is reserved to discuss the methods for creating brand names conveying meaning about the products.

1.6. CREATING BRAND NAMES CONVEYING MEANING

Brand name can act as “*shorthand means*” of brand communication. For that reason, it should capture “the central theme of key associations of a product in a very compact and economical fashion” (Keller, 2003:182). This frequently constrains marketers to use just one or two words to constitute their brand names (Robertson, 1989). This also puts a constraint on the information that can be conveyed through brand names because the fewer the words are used in brand names, the less the information may be conveyed (Kohli, 1997). For that reason, marketers have to be attentive enough in selecting proper words for their brand names which will be potentially the basis of their brands’ image.

To decide on the appropriate words, companies mostly adopt a formal brand name selection system which generally includes; deciding on branding strategy, setting brand name selection criteria, hiring outside experts, and using consumer responses towards projected brand names (McNeal and Zeren, 1981). In addition, as it is mentioned, a number of desirable brand name characteristics, which have been suggested to marketers to support the brand naming process, can be used (Collins, 1977; ; Keller, 2008; Robertson, 1989). However, these conventional brand naming

guidelines are mostly tactical and lacking theoretical and empirical justification (Robertson, 1987; 1989; Sen, 1999).

The extant literature also presents that marketing scholars and practitioners look at the brand names from very different perspectives. For instance, marketing scholars have typically emphasized the link between brand name characteristics (such as distinctiveness, meaningfulness and linguistic characteristics) and factors such as brand recognition, brand recall and brand liking (e.g., Heath et al., 1990; Pavia and Costa, 1993; Vanden Bergh et al., 1987;). However, marketing practitioners are often affected by brand name classification particularly determined by the courts (Kohli et al., 2005). The courts have classified the brand names in a hierarchy of five categories: generic, descriptive, suggestive, arbitrary, and coined (Melton, 1979).

- *Generic brand names* are constituted by using general terms for the products; for example, “Aspirin” (Keller, 2013).
- *Descriptive brand names* are formed by words that describe the products, such as “*Laser Jet*” for a laser printer (Kohli et al., 2005:1507).
- *Suggestive brand names* include words that recall the benefits of the products, such as “*Diehard*” batteries (Kohli et al., 2005:1507). Accordingly, descriptive brand names are mainly associated with brand awareness; whereas suggestive brand names are mainly associated with brand image (Fetscherin et al., 2015).
- *Arbitrary brand names* are created by using words that has no direct relation to the product category, such as “*Apple*” for a laptop (Kohli, 1997).
- Lastly, *coined brand names* consist of invented words that are not inherently related to either any product or product category; for example, “*Enron*” (Kohli et al., 2005).

Under this classification, generic brand names are the least protectable ones because they cannot be registered, but coined names provide the strongest trademark protection (Cohen, 1986). In addition, coined brand names and arbitrary brand names provide an ease for brand extensions because they are effortlessly transferred to other

products (Kohli et al., 2005). However, in terms of marketing appeal, coined names and arbitrary names are inherently weaker than descriptive and suggestive brand names which enable to create immediate image relating to the products (Kohli, 1997). Empirical studies also indicate that consumers see descriptive and suggestive brand names, which convey meaning about attributes or benefits of the product, more favorably (Keller et al., 1998; Kohli et al., 2005). Thus, arbitrary and coined names need marketers support to acquire desired image more than the other names need.

As similar with the brand name classification of the courts, a number of researchers (e.g., Dogana, 1967; Turley and Moore, 1995; Zaichkowsky, 2010; McCune, 2011) have classified the brand names, as well. In this sense, pertinent literature suggests that brand names can be divided into four general categories: (i) “*informational*”- names that reflect benefits and/or define the product category or industry to which the product is related - ; (ii) “*person/company/place related*”; (iii) “*common words used in uncommon ways*”; and (iv) “*invented*”- names which are completely fabricated - (Chen et al., 2017: 363-364). In practice, we frequently confront brand names which are based on names of people like “Estée Lauder cosmetics”; places like “British Airways”; animals like “Mustang automobiles and Dove soap”; words with inherent product meaning like “Lean Cuisine”; words suggesting important product attributes or benefits like “Die Hard auto batteries”; prefixes and suffixes that sound smart or prestigious like “Pentium microprocessors” (Keller, 2013: 31); and nonsense combination of letters and numbers like “7-UP” (Pavia and Costa, 1993).

Among these brand naming methods, some of them are more successful in explicitly conveying information about the product and its attributes. In this context, brand names reinforcing semantically the corresponding product category (e.g., “Lean Cuisine” for low calorie frozen foods) or specific product attribute or benefits (e.g., “Die Hard” for auto batteries) can be given as examples for such brand names (Keller et al., 1998). These brand names are also highly effective in creation of brand name awareness and identification for product category. In addition, particularly for the first time purchase, these brand names are more likely to create positive customer response and an increase in preferences for the products (Klink, 2000).

All of these make creating inherently meaningful brand names one of the often-noted branding objectives (Keller et al., 1998). Therefore, whatever the brand names are based on, the most important thing is what the brand names convey to customers. In this respect, brand names have also been classified in terms of “the meanings derived either from their associated verbal meaning or from the meaning inherent in the sounds they comprise” (Arora et al., 2015:81). Collins (1977) discussed on these two main brand naming strategies: *Juliet Principle* and *Joyce Principle*.

In *Juliet Principle*, “a name is justified by its traditional associations” (Collins, 1977:339). This is also emphasized in the Shakespeare’s famous line “that which we call a rose by, any other name would smell as sweet” (Vanden Bergh et al., 1987:39). The Juliet Principle mainly offers that “the verbal form of the name does not matter but whatever we associate with the verbal form becomes the meaning of the name” (Arora et al., 2015:82). Thus, the first strategy is based on selecting a name for a brand carefully and establishing it in minds of consumers through repetition in the media (Kohli and LaBahn, 1995; Vanden Bergh et al., 1987).

The second strategy is based on establishing brand names with specific linguistic qualities which differentiate them regardless of their association with the product, services or company (Kohli and LaBahn, 1995). Collins (1977: 339) calls this approach *Joyce Principle* by inspiring the literary works of Joyce like *Finnegan’s Wake* in which phonetic symbolism is frequently utilized. In *Joyce Principle*, “names depend on their sounds or phonetic symbolism to communicate an idea” (Vanden Bergh et al., 1987: 39). Thus, names categorized within the context of *Joyce principle* adopt sound symbolism to give specific meaning to the brand name (Chen et al., 2017).

The Juliet and Joyce Principle present the existence of alternative methods to create inherently meaningful brand names except semantically appropriate or suggestive brand names. However, among these two strategies, the *Joyce Principle* stands out because it emphasizes the importance of linguistic devices in brand naming which enables marketers to create unique brand names. The use of linguistic devices in brand names has been discussed throughout the years by different scholars and researchers (e.g., Collins, 1977; Klink, 2000; Lowrey et al., 2003; Nilsen, 1979;

Vanden Bergh et al., 1987). Recently, companies have increasingly benefited from the methods of linguistics to create invented or coined brand names like “Google” (Mandagili, 2008). This fact makes understanding linguistic methods for creating inherently meaningful brand names critical.

1.6.1. Linguistic Methods for Creating a Brand Name

As sounds come together, they create syllables, and as syllables come together, they create words. As well as every word, a brand name is also a word or words which are constituted with the combination of various sounds (Klink, 2000). Accordingly, brand names depend on several kinds of pictographs that may be either spoken or read by consumers (Usunier and Shaner, 2002). In that case, it can be concluded that brand names can ensure a scope of application for linguistics. So, they can be created and its effectiveness can be evaluated by using different branches of linguistics.

Initiated from this fact, to generate memorable, likeable and meaningful brand names, there has been an increase in the use of linguistic devices among marketers recent years (Lowrey et al., 2003). Particularly last few decades, consultants who have basic knowledge in linguistics and computers - which enable to make several combinations of sounds, letters, and syllables - have worked together to create distinctive and creative brand names. For instance, the name “Sentra” for Nissan was created by NameLab as a fictitious word which has some favorable characteristics based only on its sounds (Vanden Bergh et al., 1987).

In fact, it has been argued for a long time that the linguistic component of the brand name is one of the most critical elements that influence the brand name recognizability and distinctiveness (Charmasson, 1988; Huang and Chan, 1997; Francis et al., 2002). Since the mind translates words into sound, and brand names are also said as well as read, it is considered that the linguistic qualities of brand names may also significantly affect the success of brands (Trout, 1997).

Empirical studies also demonstrate that the linguistic component of a brand name can influence brand name transferability (Kum et al., 2011), standardization or adaptation of the brand name (Alashban et al., 2002), and brand perception and

preference (Chan and Huang, 1997; Kum et al., 2011). In addition, it can be readily assumed that linguistic failures of brand names may be detrimental for the brand image and brand performance of the companies (Rieks, 1993). In that case, understanding the framework for analyzing the linguistic component of brand names is a must for marketers.

Linguists constitutively study any language under four components: “*orthography*”, “*morphology*”, “*semantics*”, and “*phonology*”. These components also compose of the framework for analyzing the linguistic components of brand names. Among these components, *orthography* is a study which deals with correct spelling of words; *morphology* concerns with word formation through prefixes, suffixes, and roots; *semantics* is a study of underlying meanings of linguistic units like words and sentence; and *phonology* deals with speech sounds and letters that symbolize sounds in a given language (Lowrey et al., 2003).

These four components can also provide a context for brand naming through several linguistic devices. For instance, *unusual or incorrect spellings* (e.g., “Kool-Aid”); *abbreviations* (e.g., “AT&T”); and *acronyms* (e.g., “Amoco”) are orthographic devices which are frequently used in creating brand names (Vanden Bergh et al., 1987).

In terms of morphologic devices, *affixation* - the addition of letters or a morpheme to the root of the word - as in brand name “Jell-O” (Lowrey et al., 2003:7) is one of the most frequently adopted linguistic devices among marketers. Along with affixation, *compounding* - “the addition of morphemes, sometimes hyphenated” - as in the brand name “Janitor-in-a-Drum” (Vanden Bergh et al., 1987:40) is often preferred by marketers as a morphologic linguistic device in brand naming.

Within the context of semantics, *metaphor*, *simile*, *metonymy*, *synecdoche*, *personification* and *pathetic fallacy*, *oxymoron*, *paranomasia*, and *semantic appositeness* are linguistic devices which are more likely to be used by marketers in naming brands (Lowrey et al., 2003; Nilsen, 1979; Vanden Bergh et al., 1987). Under these semantic devices, *metaphor* takes place when a word related to one kind of idea is used instead of another to suggest similarity between them, as in the brand name “Arrid” to reflect dryness (Lowrey et al., 2003: 7-8). *Simile* is the “statement of likeness”, which is often employed for creating inherently meaningful brand

names, as in example of the brand name “AquaFresh” for toothpaste (Vanden Bergh et al., 1987:41).

Under the other semantic devices: *metonymy* is “the figure of speech for the application of one object or quality for another” (e.g., use of “crown” to point out the status of “king”), as in “Midas”; *synecdoche*, is “the use of part of an object in place of the entire object” (e.g., use of the word “prow” to express “ship”), as in “Red Lobster”; and *personification* and *pathetic fallacy* are “humanizing the inanimate” and “ascribing human emotional characteristics to the inanimate”, respectively as in “Betty Crocker”. Followingly, *oxymoron* is the “conjunction of opposites”, as in “Easy Off”; *paranomasia* is “the play on words”, as in “L’eggs”; and finally, *semantic appositeness* is the “fit of the name with object”, as in “Eveready batteries” (Vanden Bergh et al., 1987:42).

Lastly, phonetic devices are the other linguistic devices that have been frequently used by marketers in giving name to brands. Under the phonetic devices, marketers particularly adopt the linguistic devices based on sound repetition. These devices are: *alliteration* – “the repetition of consonant sounds”, as in “Coleco” and “Coca Cola”; *assonance* – “the repetition of vowel sounds”, as in “Kal Kan”; and *consonance* – “consonant repetition with intervening vowel repetition”, as in “Weight Watchers”.

In giving name to the brands, marketers also benefit from *rhyme* – the repetition of similar or same sounds in final syllables of the words (Robertson, 1989: 67). There are various types of rhymes: *masculine*, *feminine*, and *weak/imperfect*. In *masculine rhyme*, rhyme takes place at the end of a syllable stress, as in “Max Pax”; whereas in *feminine rhyme*, “unaccented syllable is followed by accented syllable”, as in “American Airlines” (Vanden Bergh et al., 1987: 42). On the other hand, in *weak and imperfect rhyme*, “vowels differ or consonants are similar but not identical”, as in “Black and Decker” (Lowrey et al., 2003:11)

The other most commonly used phonetic devices in brand name creation process are based on sound play. These devices are; *clipping* in which names are attenuated (e.g., “Pepsi” for “Pepsi Cola” or “Chevy” for “Chevrolet”); *blending* which is “morphemic combination, usually with elision” (e.g., “Travelodge”); *onomatopoeia* in which the sounds in a name imitate the sounds in environment (e.g.,

“P-s-s-s-s-t shampoo”) (Vanden Bergh et al., 1987:40); and other types of sound symbolism such as *synesthesia* (Klink, 2000).

Extant research states that a favorable brand name should be created by using repetitive sounds generated by phonetic devices such as alliteration, assonance, consonance, and rhyme (Bao et al., 2008). In addition, morphemes - the smallest units of meaning in language - and phonemes - the smallest unit of sound in speech - should be utilized by marketers in brand naming. Keller et al., (1998) also recommend that marketers should use entire words or morphemes in creating brand names to assign semantic meaning to the names.

All of these arguments explain why semantic devices; especially metaphor and semantic appositeness, and phonetic devices; especially sound symbolism are the most outstanding linguistic devices among these four linguistic categories. In terms of their potential to provide memorability and meaningfulness to the brands, they are more widely used by marketers and even considered as important criteria for selecting brand name (Lowrey et al., 2003). Therefore, the effects of semantics and sound symbolism in brand naming deserve to be examined in more detail because they contribute to establishment of strong brand equity, directly.

1.6.1.1. Use of Semantics

To convey relevant information about the product, many marketers would prefer to use some specific word fragments in their brand names. Under several circumstances, these word fragments in brand names are more likely to provide initial insight to consumers about the products. For instance, when individuals are interacting with brand names including “com” or “net”, they frequently relate these brand names to technological products or services.

In recent years, there has been an increase in the number of brand names using some specific word fragments like “tech” (e.g., Anatech), “link” (e.g., LinkedIn), “com” (e.g., Netcom), “web” (Webco), or “net” (e.g., ProNet) (Klink, 2001). In fact, this trend can be associated with using semantics. Semantics can be regarded as one of the latest linguistic methods used by marketers to create meaningful brand names (Lowrey et al., 2003). In *semantics*, existing words (e.g.,

“craft” in Craftmatic) or morphemes (e.g., word fragments like “accu” in Accutron) are imbedded in a brand name to communicate meaning about the product (Klink, 2001). There are many brand names created by exploiting semantic meaning in marketing history (e.g., “White Diamond” toothpaste and “Zip-Loc” freezer bags) (Wänke et al., 2007: 2). However, the brand name “Coldspot” is the one which is the best at explaining the phenomenon.

The brand name “Coldspot” was created for a line of refrigerators by Sears in time period between 1928 and 1976 (Sears Archives, 2017). When this brand name was developed, marketers emphasized one of the most expected features of refrigerator which is keeping food “cold”. By imbedding the word “cold” in the brand name, they succeeded to create meaningful brand name for refrigerator. Thus, by providing semantic fit between the product attributes and the brand name, brand managers could enhance the memorability of their brand name, as well as its meaningfulness (Keller, et al., 1998).

In that case, it can be readily thought that the use of semantics offers several advantages in brand naming. However, along with its advantages, the use of semantic method has some disadvantages, as well. First, the same words or morphemes can also be used in different brand names which may even compete with each other. Thus, the words or the morphemes included in a brand name may decrease the distinctiveness of the brand name (Klink, 2001). For instance, the word “net” is used in both Netscape and Netcom, and it results in decrease in the creativity and distinctiveness level of these brand names.

Second, the use of semantics leads to difficulties in securing trademark protection. As Cohen (1986) suggests, brand names including descriptive terms are less distinctive. For that reason, they are very open to trademark infringement because of less protection.

Third, semantic imbeds in a brand name are highly dependent on language of consumers (Klink, 2001). For instance, the brand name “Coldspot” can convey meaning about the products for the English speaking consumers. However, consumers who are not familiar with English do not derive any meaning from semantic imbeds, “cold”, in the brand name. Thus, the use of semantic imbeds can be

problematic for brand names competing in global arena because brand names created by semantics cannot create the same effect in different parts of the world.

Fourth, corresponding to the previous disadvantage, it is difficult to create standardized brand names, which enable companies operate worldwide, by using semantic imbeds. When the several advantages offered by standardized brand names (i.e., providing higher cost savings and increasing product's sales volume) are taken into account, the use of semantic imbeds in a brand name may seem unattractive (Alashban et al., 2002). Sometimes, some commonalities across languages may make it possible to convey same meanings from the same brand name in different parts of the world. For instance, French and English have same morphemes "hydro" and "vive" which connote "moisture" and "life", respectively. Thus, L'Oreal's Hydrovive conveys similar meaning in French and English (Lerman, 2007). On the other hand, the brand name, which can seem desirable for one market, can be detrimental in another (Shrum et al., 2012). This shows one more time that the use of semantic imbeds cannot always be good for standardized brand names operating globally.

Lastly, brand names conveying specific product benefits cannot be easily linked to new brand associations (Keller, et al., 1998). Thus, the use of semantic imbeds in a brand name can cause a disadvantage in terms of new brand extensions and brand re-positioning (Klink, 2001). All in all, semantics is one of the most popular linguistic methods to create meaningful brand name. However, imbedding meaning through sounds can seem more advantageous under these limitations rather than imbedding meaning in a brand name through words. For that reason, it can be useful to examine the impact of sounds on meaning in naming a brand.

1.6.1.2. Use of Sound Symbolism

As stated above, pertinent literature suggests that naming categories have typically classified as *semantic* (e.g., "Burger King"); *invented* (e.g., "Exxon"); and *expressive* (e.g., "Crunchie") (Dogana, 1967; Zaichkowsky, 2010; McCune, 2011). In addition to all of these classifications, Klink (2000) also recommended a *sound symbolic classification* of brand names (Arora et al., 2015). Sound symbolic

classification is derived from sound symbolism which emphasizes that sound is related to meaning (Sapir, 1929). In that case, it can be concluded that this classification is based on the notion that product related information can be conveyed through the sounds taking place in the brand names (Coulter and Coulter, 2010).

In sound symbolism, sounds of either individual letters or combinations of letters are imbedded in a brand name in place of words or word fragments to convey meaning about the product (Klink, 2001). For instance, it is believed that the efficacy of drug brand name “Prozac” comes from the power of sound “z” used in the brand name (Erich, 1995). The brand name “Kraft” conveys its dependability with its initial letter “K” (Anonymous, 2006), and “Viagra” communicates energy through its initial letter “V” (Begley, 2002). Simply put, for all of these brand names, overall connotative meaning of the products are derived from even a single sound, and this strategically contributes to their desired brand images (Robertson, 1989).

Attention of consumers has also been increasingly drawn by inventive and unusual brand names (Robertson, 1989; Keller, 2008; Baxter and Lowrey 2011). This makes sound symbolism, which is closely related to “Joyce Principle”, very strong alternative for creating inherently meaningful and distinctive brand names among marketers (Peterson and Ross, 1972). Under sound symbolism method, marketers do not construct brand names from real words as in semantics but simply fabricate them by playing with the sounds as in the case of Exxon, Lexus, and Kodak (Lowrey and Shrum, 2007). Hence, use of sound symbolism in brand names provides more creativity, distinctiveness, and trademark protection to brand names than the semantic method does (Kohli et al., 2005).

The other advantage is that a nonword invented by playing sounds is more flexible than a word in creating brand related associations. Accordingly, a nonword brand name may allow marketers reposition their brands at some point in the future with desired associations (Lerman and Garbarino, 2002). Additionally, such nonwords do not contain any language specific word. Thus, a nonword brand name which conveys meaning only through its sounds may also help marketers enter international markets easily (Athaide and Klink, 2012). So, in the case of market development for an existing brand name, sound symbolism can be one of the effective tools for naming brands.

Extant research has demonstrated that companies operating in global arena have to vary and adapt their existing brand names according to market structure factors such as competitors and buyers (Alashban et al., 2002). In such cases, marketers prefer either to find a new brand name that has similar meaning in another language by ignoring the sound; to use phonetic translation by ignoring meaning but maintaining the sound structure of the existing brand name or to translate the brand name phono-semantically in which sound is translated with meaning (Dong and Helms, 2001). Among these strategies, companies mostly select between preserving the phonetic sound and maintaining the meaning of the brand name (Francis et al., 2002; Zhang and Schmitt, 2001). In that case, it can be readily seen that as well as favorable meaning, favorable sounding of brand names is regarded important for marketers.

Besides its advantages, there can be some drawbacks of the use of sound symbolism in brand naming. First, pertinent literature suggests that the effects of sound symbolism may rely on phonological awareness - recognizing sounds in words and the acquisition of phonological skills and knowledge - (Baxter and Lowrey, 2011; 2014). For that reason, the use of sound symbolism may not be influential on children who are under 9 years of age (Baxter, Ilicic, Kulczynski, et al., 2015; Baxter, Ilicic, Kulczynski et al., 2017). Moreover, phonetic sounds of a brand name in one language can sometimes cause some major problems in different languages. For instance, the sounds of Unilever's brand name "Le Sancy soap" phonetically connote death in some specific Asian local dialects (Macrea, 1991).

Nevertheless, when it is compared with semantics, the use of sound symbolism has more advantages. Thus, sound symbolism seems as a better approach to be utilized in naming brands to convey consistent meaning about the product and brand, along with making them distinctive and memorable. In this context, to properly understand how sound symbolism is adapted from linguistics and psychology to brand naming, it is better to examine the sound symbolism phenomenon itself in detail. Accordingly, the following chapter is reserved to examine sounds as the building blocks of the sound symbolism theory; sound symbolism concept; typology of sound symbolism; its relations with semiotics and

semantics; the development of the sound symbolism theory; and sound symbolism in different fields.



CHAPTER 2

UNDERSTANDING SOUND SYMBOLISM

2.1. SOUNDS AS BUILDING BLOCKS OF SOUND SYMBOLISM

Sounds are building blocks of language. By combining sounds in a certain sequence; words, phrases and sentences are formed to convey specific meanings (Fromkin et al., 2014). Thus, individuals can speak with, understand, and be understood by others who speak the same language. By supporting this argument, Chomsky's Competence Model which addresses the nature and structure of human language suggests that "a language associates sound and meaning in a particular way: to have command of a language is to be able, in principle, to understand what is said, and to produce a signal with the intended semantic interpretation" (Chomsky, 1972:115).

Sounds naturally derive from phonemes - the smallest units of language -, and are represented by letters (Doyle and Bottomley, 2011). Since they constitutively reflect the sound system of a language, they can vary across languages. For the most part, there is an arbitrary relationship between speech sounds and meanings they represent (de Saussure, 1915). In the direction of this belief, when you acquire a language, you have to learn that only the sounds represented by certain sequences of letters signify specific concepts in that language. In this context, the combination of letters that represent the same concept can differ from language to language. For instance, to represent the house figure, you have to combine the letters "house" in English (Fromkin et al., 2014) but combine the letters "ev" in Turkish. Sometimes, the same sequence of letters can also be seen in different languages. However, they often represent different meanings as in the case of Chevrolet "Nova" car, which means "star" in English but "do not go" in Spanish (Hinton, et al., 1994).

Linguistics - the scientific study of human natural language and linguistic communication - deals with such issues. In this respect, linguistics has been considered as one of the growing and exciting studies. This interest also makes linguistics and its methods appealing to other fields such as "education,

anthropology, sociology, language teaching, cognitive psychology, philosophy, computer science, neuroscience, and artificial intelligence” (Akmajian et al., 2010:5). Marketing can also be included among these fields, if its extensive interaction with linguistics from brand naming to advertising is taken into consideration (e.g., Klink, 2000; 2001; Yorkston and Menon, 2004).

Linguistics basically focus on building a model of competence at the various levels of language organization such as sounds, words, sentences, meaning, and use. From the sound symbolism perspective, a model of competence is built at the interaction between sound and meaning. On the basis of this perspective, several linguists who support sound symbolism (e.g., Jespersen, 1922; Sapir, 1929) offer that sound alone in a word can convey meaning apart from actual definition of the word (Lowrey and Shrum, 2007). Hence, it is accepted that the effectiveness of sound symbolism comes from the sounds themselves.

In that case, it can be readily concluded that sounds are regarded as building blocks of the sound symbolism. For that reason, to better understand the sound symbolism phenomenon, a basic linguistic knowledge on sounds is required. Since the pertaining branch of linguistics which examines the sounds and phonemes is the “*phonology*”, the following section is reserved to discuss it in detail.

2.1.1. Phonology

The fundamental function of every language system is to link meaning and expression. In this relation, the link between expression and meaning is provided by *grammar*. In general sense, grammar is defined as the knowledge of the speakers on the units and rules of their language (Fromkin et al., 2014). Accordingly, grammar comprises the study of *patterns of speech sounds, word structure, sentence formation, and meaning* in languages (Finegan, 2008). As it is seen, grammar provides a context for sound symbolism particularly in terms of giving insight about patterns of speech sounds which are the main providers of sound symbolism effects.

The relevant subfields of linguistics which concentrate on “the structure and systematic patterning of sounds in human language are *phonology* and *phonetics* (Akmajian et al., 2010:14). In that case, knowing phonology and phonetics is

considered as the prerequisite of understanding sound symbolism phenomenon. Phonology derives from the Greek word “phone” which connotes “sound” or “voice” and it examines the speech sounds in a specific language (Brinton, 2000). In the most general sense, phonology refers to “the abstract principles which govern the form and distribution of sounds in a language” (Akmajian, 2010:68). Hence, phonology is principally interested in how speech is organized (Clark and Yallop, 1991). On the other hand, phonetics deals with the description and classification of speech sounds as a subdivision of phonology (Fromkin et al., 2014). In principle, phonetics examines the speech sounds of human language in terms of *how they are produced, how they are perceived, and their physical properties* (Brinton, 2000). Then, phonetics can be divided into three categories: *articulatory phonetics, auditory phonetics, and acoustic phonetics* (Fromkin et al., 2014).

Under this categorization, how sounds are produced in the vocal tract is the study area of “articulatory phonetics”; how sounds are heard by ears and perceived by brain is the study area of “auditory phonetics”, and lastly, examining the physical properties of speech waves that form speech sounds is the study area of “acoustic phonetics” (Brinton, 2000). Most of the sound symbolism research (e.g., Klink, 2000; Köhler, 1947; Sapir, 1929; Yorkston and Menon, 2004) has generally emphasized the distinction of sounds on the basis of how they are produced by the human vocal mechanism. For that reason, it will be better to continue with articulatory phonetics, which explains the production of speech sounds, in the following part.

2.1.2. The Articulatory Description of Speech Sounds

Human speech consists of sequence of discrete sounds which are organized in particular way to convey meaning (Ergenç and Uzun, 2017). These speech sounds are produced as a result of the movement of an airstream in the respiratory tract (Özsoy, 2004). In human languages, there are three airstream mechanisms which provide the airstream in producing speech sounds. These are: *pulmonic airstream mechanism; glottalic airstream mechanism; and velaric airstream mechanism*

(Özsoy, 2004). These airstream mechanisms differ from each other in terms of the organs that initiate the airstream.

In velaric airstream mechanism, the initiator organ is the *tongue*. This airstream mechanism is frequently adopted in producing *clicks* (Ladefoged and Johnson, 2011). Clicks are utterances produced when “the tongue makes a closure with the roof of the mouth not just at one point, but at two points” (Akmajian et al., 2010: 87). For instance, the sound produced to make horses go faster can be given as an example of the click. It is readily seen that as well as the other sounds, clicks are the sounds produced in vocal tract. However, they are not considered as integral part of the speech sounds of many languages (Finegan, 2008). For that reason, the use of velaric airstream mechanism in producing some sounds can be observed in scarcely any few languages as in a few African languages (Özsoy, 2004).

In glottalic airstream mechanism, the initiator organ is the *glottis*. When there is an upward movement of the closed glottis, the air will be moved out of the mouth; whereas when there is a downward movement of the closed glottis, the air will be sucked into the mouth (Ladefoged and Johnson, 2011). If either of these movements occurs, sounds are produced in the glottalic airstream mechanism. The sounds produced with this mechanism can be seen in language families like Caucasian language (Özsoy, 2004).

Lastly, in pulmonic airstream mechanism, the initiator organ is the *lungs*. Principally, air that comes out of the lungs is the source of power in almost all speech sounds (Ladefoged and Johnson, 2011). In Turkish and most of the languages (e.g., English), all speech sounds are produced by a *pulmonic egressive airstream mechanism* in which airflow is initiated from the lungs and pushed out through the mouth, or sometimes through the nose (Özsoy, 2004). As seen, this is *egressive* instead of *ingressive*, because human speech sounds are produced when the air is exiting from the lungs, not entering into (Brinton, 2000).

In this context, it can be concluded that “speech sounds are produced by the organs used in breathing and eating via their interference with the outgoing breath” (Bloomfield, 1933:93). However, most of them are occur particularly with the “movements of the tongue and the lips” (Ladefoged and Johnson, 2011: 2). Hence, the differences in sounding of every speech sound can be explained with the change

in shape of the mouth and tongue, and movement of the other parts in the vocal tract while making the sound (Finegan, 2008). In that case, in order to get insight about the production of the sounds properly, a little bit anatomy about *vocal tract* is needed.

Vocal tract is “the air passages above the larynx” (Ladefoged and Johnson, 2011:4). Thus, it is a part of the body which includes critical organs playing roles in production of sounds. The organs in vocal tract are: *lips, teeth, tongue, alveolar ridge, hard palate, soft palate (velum), uvula, pharynx, larynx, and glottis* (Fromkin et al., 2014). The vocal tract and all the articulator organs taking place in producing sounds in the vocal tract are displayed in Figure 1.

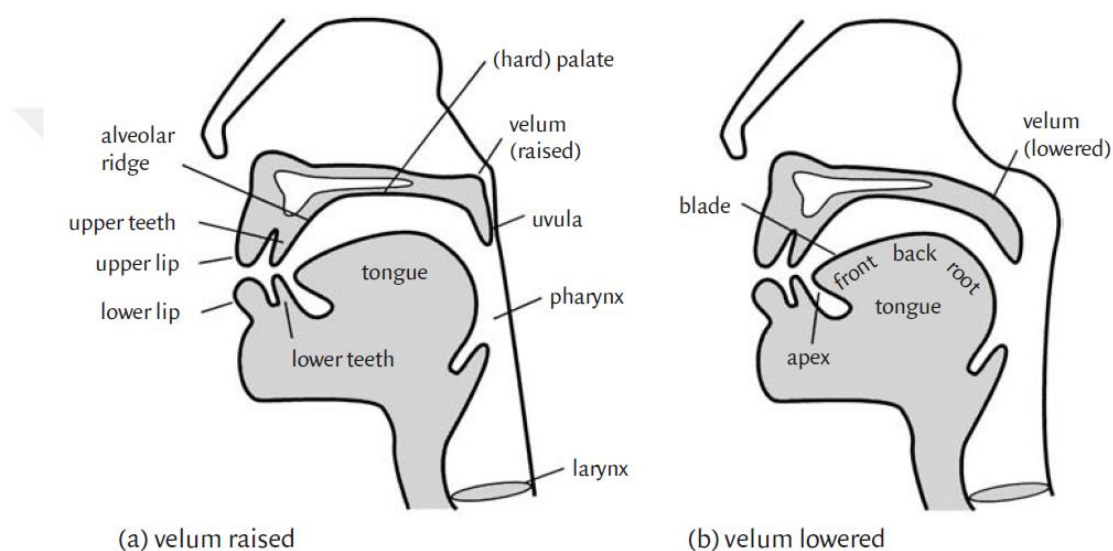
During speaking, air is extracted from the lungs, and this air moves through the larynx (Ladefoged and Johnson, 2011). Larynx is “the structure of muscles and cartilage in the throat” (Fromkin et al., 2014: 569). The larynx includes a valve functioning with the uvula (Ergenç and Uzun, 2017). This valve is known as *vocal cords* – “two muscles stretching horizontally across the larynx, attached to the cartilage at either end that controls their movement” (Brinton, 2000: 20). The vocal cords are open during normal breathing, however closed during eating. The space between the vocal cords when they are open is called glottis (Ladefoged and Johnson, 2011).

In the vocal tract, air moves from larynx into pharynx. Pharynx is the “cavity in the vocal tract above glottis through which the air passes during speech production” (Fromkin et al., 2014: 574). Pharynx takes place in between the uvula and the larynx (Ladefoged and Johnson, 2011). Uvula is the small appendage hanging down at the end of the velum (or “soft palate”) (Aronoff et al. 1997). Although, uvula and pharynx are used to produce consonants in other languages, these two articulators are not used to produce consonants in Turkish (Ergenç and Uzun, 2017).

Velum is “the back part of the roof of the mouth” which has no bone underneath (Akmajian et al., 2010: 599). For that reason, it is a softer and mobile area to which the tip of tongue touches when the tongue is curled further back (Ladefoged and Johnson, 2011). Velum takes place behind the hard palate (or “palate”) (Fromkin et al., 2014). By contrast with soft palate, hard palate is the “front

part of the roof of the mouth” which has a bone underneath (Akmajian et al., 2010:592). When the tongue is rolled back a little bit, but keeping it to the front part of the roof of the mouth, this bony structure can be easily felt (Brinton et al., 2000). Hard palate stays behind the alveolar ridge (Fromkin et al., 2014). Alveolar ridge is a small protuberance that the tip of tongue can touch just behind the upper teeth (Ladefoged and Johnson, 2011).

Figure 1: The Vocal Tract with (a) Velum Raised and (b) Velum Lowered



Source: Brinton, 2000: 21.

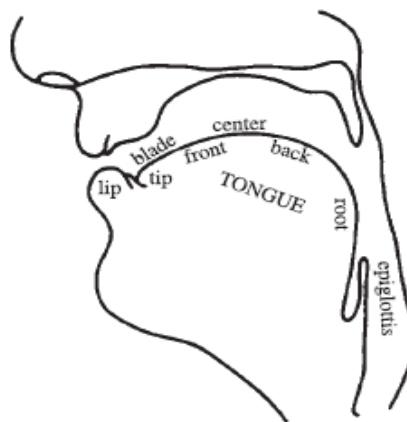
To examine the anatomy of vocal tract further, it is better to divide it into two tracts: the *oral tract* and *nasal tract*. “Oral tract” comprises “the mouth and pharynx”; and the “nasal tract” comprises “the nose”. (Ladefoged and Johnson, 2011:4). This also makes the further categorization of speech sounds as *oral* and *nasal* depending upon whether air escapes through the oral cavity or the nasal cavity (Özsoy, 2004). The velum, which is a muscular flap, has a critical role in vocal tract in terms of determining the production of oral and nasal sounds by raising and lowering (Brinton, 2000). In this context, when the velum is raised against the back of the pharynx, air flows only through the oral cavity, and so oral sounds are produced; whereas when the velum is lowered, air flows through the nasal cavity, and so nasal sounds are produced (Brinton, 2000).

In Turkish and most of the language, there are more oral sounds than nasal sounds (Özsoy, 2004). In addition, when it is compared to nasal tract, oral tract draws more attention because it includes the mouth in which there are critical organs playing role in production of speech sounds, as well (Ladefoged and Johnson, 2011). For that reason, to understand how some specific sounds are produced, understanding the parts of the mouth anatomically is also required.

Mouth naturally consists of lips, teeth and tongue. Both lips and teeth are divided into upper and lower in the mouth, and each one plays an important role in the production of speech sounds (Brinton, 2000). The upper surface of the mouth is called the roof of the mouth (Özsoy, 2004). In the lower part of the mouth, there is tongue which is also considered as one of the critical articulators in production of speech sounds depending on which of its parts are used.

Among the parts of the tongue, “tip” and “blade” are the most mobile ones (Ladefoged and Johnson, 2011). The forward part of the tongue behind the blade and underneath the hard palate is called “*front of the tongue*”. The remaining part of the tongue; which is both partly underneath the hard palate and the soft palate is called “*center*”; which is under the soft palate is called “*back*”; and which is “opposite the back wall of the pharynx is called “*root*” (Ladefoged and Johnson, 2011: 9). Finally, the epiglottis is the last part of the tongue which is linked to lower part of the root. The principal parts of the lower surface of the vocal tract are illustrated in Figure 2.

Figure 2: Principle Parts of the Tongue



Source: Ladefoged and Johnson, 2011: 10.

All in all, the harmonious and orderly working of the articulators in the vocal tract enables the production of regular sounds. These sounds provide the units uttered from the mouth to create meaningful words and sentences (Selen, 1979). Typically, these sounds are divided into vowels and consonants in terms of the extent of the obstruction that airflow confronts in the vocal tract (Ergenç, 2002). Sound symbolism literature is also mostly based on vowel sounds (e.g., Baxter and Lowrey, 2011; Klink, 2001; 2003; Köhler, 1949; Lowrey and Shrum, 2007; Sapir, 1929; Yorkston and Menon, 2004; Wu et al., 2011) and consonant sounds (e.g., Coulter and Coulter, 2010; Heath et al., 1990; Klink, 2000; 2003; Kuehnl and Mantau, 2013; Lowrey et al., 2003; Newman, 1933). In that case, it can be concluded that consonants and vowels have a significant place in creation of sound symbolism effects. For that reason, both consonants and vowels have to be examined in detail before introducing the sound symbolism concept.

However, before examining vowels and consonants, it is important to note that, even within a single language, some sounds correspond to more than one letter, as well as some letters correspond to more than one sound (Finegan, 2008). In order to deal with this problem, the best alternative is the use of International Phonetic Alphabet (IPA). IPA is a phonetic alphabet which is developed and approved by the International Phonetic Association - a body founded in 1986 by group of leading phoneticians to further research in phonetics and to develop IPA - (Ladefoged and Johnson, 2011).

The main function of IPA is to represent each sound in all human languages with a single symbol (Fromkin et al., 2014). In this way, the use of IPA provides a unique written representation of every sound in every language in clarity and consistency (Brinton, 2000). The symbols of IPA are also in use for Turkish letters. Table 1 presents the list of IPA symbols used to represent Turkish speech sounds. However, except some special cases, all letters and sounds used in the study will be represented with letters in Turkish Phonetic Alphabet in order not to cause confusion for the ones who have not enough phonetic knowledge.

Table 1: A Phonetic Alphabet for Turkish Pronunciation

Letters of Turkish Sounds	IPA Symbols	For example;	Letters of Turkish Sounds	IPA Symbols	For example;
a	/ɑ/ /a/	aktif - /ɑk'tif/ alkali - /alka'li/	m	/m/ /m̃/	masa - /'masa/ enfes - /eñ'fes/
b	/b/	baba - /ba'ba/	n	/n/ /ñ/	neden - /ne'den/ mangal - /mañ'ga/
c	dʒ/	cam - /'dʒam/	o	/o/ /ɔ/	oğlan - /o:'lan/ obje - /ɔb'ʒe/
ç	/tʃ/	çam - /'tʃam/	ö	/œ/ /ø/	örtü - /œr'ty/ öğle - /ø:le/
d	/d/	dört - /'dœrt/	p	/p/	parça - /par'ʃa/
e	/e/ (close) /ɛ/ (open)	enerji - /ener'ʒi/ elbet - /'elbet/	r	/r/ /r̃/	karne - /'karne/ resim - /re'sim/ sünger - /sYn'ʒɛŋ/
f	/f/	futbol - /fut'bɔ/	s	/s/	salam - /sa'lam/
g	/g/ (with back vowels, i.e. a, ı, o and u) /j/ (with front vowels, i.e. e, i, ö and ü)	gazete - /ga'zete/ gece - /ʒe'dʒe/	ş	/ʃ/	şefkat - /ʃɛ'kat/
ğ	/u/ (with back vowels: a, ı, o and u) /j/ (with front vowels: e, i, ö and ü)	dağ - /da/	t	/t/	tabak - /ta'bak/
h	/h/ /ç/ /x/	hafta - /haf'ta/ hekim - /çe'cim/ ferah - /fe'rax/	u	/u/ /U/	muaf - /mu'af/ kuram - /kU'ram/
ı	/u/	ılık - /u'lu/	ü	/y/ /x/	düğün - /'dy:n/ ülke - /yl'ce/
i	/i/ /I/	itibar - /i:t'İbay/ iki - /I'ci/	v	/v/ /ṽ/	övgü - /œv'jy/ vazo - /'vazɔ/
j	/ʒ/	jeton - /ʒe'ton/	y	/j/	yüzük - /jy'zy/
k	/k/ (before back vowels: a, ı, o and u) /c/ (before front vowels: e, i, ö and ü)	kaba - /ka'ba/ kebap - /ce'bap/	z	/z/ /z̃/	zeka - /ze'ca/ tuz - /'tUz/
l	/l/ /l̃/	tutkal - /tUt'ka/			
		lapa - /la'pa/			

Source: Adapted by Ergenç, 2002 and Ergenç and Uzun, 2017.

2.1.2.1. The Consonants of Turkish

Consonants constitute the big group of the speech sounds. They are produced with some restriction or closure that obstructs airflow in its passage from the lungs through the vocal tract (Fromkin et al., 2014). Accordingly, when these sounds are produced, air is partially or completely blocked (Finegan, 2008). Thus, these are regarded as the sounds which are articulated with some kind of stricture (Brinton, 2000), and consequently formed through friction or plosion (Ergenç, 2002). These strictures in the articulation of sounds affect the classifications of consonants, as well as many factors.

Consonants can be typically classified in terms of their voicing depending upon the *presence and absence of vocal cord vibration; their manner of articulation, and their place of articulation* (Ergenç, 2002; Finegan, 2008; Fromkin et al., 2014; Özsoy, 2004). Under this categorization, first, consonants are classified on the basis of the vibration of the vocal cords. This is also one of the most commonly used classifications of consonants in sound symbolism research particularly in marketing (e.g., Klink, 2000). As it is mentioned, vocal cords are “two muscular folds within the larynx behind the Adam’s apple”, and they are manipulated by closing and opening (Özsoy, 2004). In the direction of these movements, consonants are basically divided into *voiced consonants* and *voiceless consonants*. Voiced sounds are produced when the vocal cords vibrate in the production of sound; whereas voiceless sounds are produced when the vocal cords do not vibrate (Fromkin, et al., 2014). In Turkish, “b”, “c”, “d”, “g”, “j”, “l”, “m”, “n”, “r”, “v”, “y” and “z” are considered as *voiced consonants*; whereas “ç”, “f”, “h”, “k”, “p”, “s”, “ş”, and “t” are considered as *voiceless consonants* (Ergenç, 2002).

Second, in terms of their manner of articulation, consonant sounds are classified as *plosive (stop)*, *nasal*, *rolled (trill)*, *approximant*, *affricate*, and *fricative consonants* (Brinton, 2000; Ergenç and Uzun, 2017). Under this categorization, “plosive (stop) consonants” are the sounds which are produced by completely blocking the airflow and then suddenly releasing it through the mouth (Akmajian et al., 2010; Finegan, 2008; Özsoy, 2004). Accordingly, these sounds are also regarded as the oral sounds. In Turkish, “b”, “d”, “g”, “p”, “t”, and “k” are included in *plosive*

or *stop consonants* (Ergenç, 2002: 58). On the other hand, “nasals” are produced when the air is obstructed in the oral cavity (Akmajian et al., 2010) but it can go out through nose by lowering velum (Ladefoged and Johnson, 2011). The sounds produced in that way are also regarded as the nasal sounds. In Turkish, “m” and “n” are the *nasal consonants* (Ergenç, 2002:58).

“Rolled (trill or flap) consonants” are other consonant sounds which are formed with a tongue tip which is lifted toward the alveolar ridge by making single tap (Akmajian et al., 2010; Ladefoged and Johnson, 2011). In Turkish, “r” is *rolled consonant* (Ergenç, 2002:58). Differently, “approximants” are the sounds which are produced when two articulators approach one another like fricatives but not coming close enough to form a narrow passage which leads to friction (Finegan, 2008). Approximants in Turkish are typically divided into *central approximant* and *lateral approximant*. In the production of “central approximant”, air flows over the center of the tongue because the sides of the tongue touch the roof of the mouth behind the sides of the teeth (Ergenç and Uzun, 2017). On the other hand, in the production of “lateral approximants”, the tongue blade is raised and the apex touches alveolar ridges (Akmajian et al., 2010). So, the air flows over the sides of the tongue (Özsoy, 2004). In Turkish, “v” and “y” are regarded as central approximants, while “l” is *lateral approximant* (Ergenç and Uzun, 2017).

“Affricates” are also considered as consonant sounds which are defined as “a stop followed by a homorganic fricative” (Ladefoged and Johnson, 2011: 305). In this context, affricates can be included in both stop and fricative because they are beginning as a stop but turning into fricatives (Akmajian et al., 2010). In Turkish, “c” and “ç” are regarded as affricates.

Lastly, “fricatives” are the sounds which are produced with partial blocking of the airflow in which the air is forced through a narrow opening in the vocal tract which leads to audible friction (Akmajian, et al., 2010; Finegan, 2008; Ladefoged and Johnson, 2011; Özsoy, 2004). In Turkish, “f”, “s”, “ş”, “h”, “j”, and “z” are *fricative consonants* (Ergenç, 2002:58). Additionally, although the sounds “c”, “ç” were discussed in affricates and the sounds “v” and “y” were discussed in approximants, these sounds are frequently included in the fricative sounds of Turkish (Ergenç, 2002: 58). As well as plosives, fricatives are also one of the most

commonly used types of consonants in sound symbolism research (e.g., Coulter and Coulter, 2010; Klink, 2000; 2003; Kuehnl and Mantau, 2013)

Finally, in terms of their place of articulation, consonants are categorized as *bilabial*, *labiodental*, *dental*, *alveolar*, *palato-alveolar*, *apical/palatal*, *velar* and *glottal*. Among these consonants, “bilabial sounds” are produced when the upper and lower lips come together; whereas “labiodental sounds” are produced when the lower lip makes a contact with the upper front teeth (Brinton, 2000; Fromkin et al., 2014; Ladefoged and Johnson, 2011; Özsoy, 2004). “Dental sounds” are produced when the tongue tip or blade touches the back of the upper front teeth, while “alveolar sounds” are produced when the tongue tip or blade is raised to make a contact with the alveolar ridge behind the upper teeth (Brinton, 2000; Ladefoged and Johnson, 2011). “Palato-alveolar” sounds are produced when the tongue blade just touches the area between alveolar ridge and the palate; whereas “palatal sounds” are produced when the front of the tongue is raised toward the hard palate (Brinton, 2000; Ladefoged and Johnson, 2011; Fromkin et al., 2014). Lastly, “velar sounds” are produced when the back of the tongue is raised toward the velum or soft palate; whereas “glottal sounds” are produced in larynx because of the closure in the glottis (Brinton, 2000; Fromkin et al., 2014).

In Turkish, “b”, “p”, and “m” are *bilabial consonants*; “f” and “v” are *labiodental consonants*; “d” and “t” are *dental consonants*; “n”, “r”, “s”, “z”, and “l” are *alveolar consonants*; “ç”, “c”, “j”, and “ş” are *palato-alveolar consonants*; “y” is *apical/palatal consonant*; “k” and “g” are *velar consonants*; and lastly “h” are *glottal consonants* in terms of the place of their articulation (Ergenç, 2002:58). It is important to note that although “ğ” is a letter in Turkish writing system, there is no specific corresponding sound to “ğ” (Ergenç and Uzun, 2017). For that reason, “ğ” is never used in sound symbolism research.

All in all, consonants are accepted as the one of the two main sources of sound symbolism because empirical research has demonstrated that they can also convey inherent meaning (e.g., Newman, 1993; Klink, 2000). For that reason, understanding consonant sounds and their types are prerequisite of understanding sound symbolism. In order to learn the Turkish consonants in a more clear way, the sounds mentioned above are displayed in Table 2 in terms of their places and manner

of articulation, and vocal cords. In order to provide a consistency with text, consonant sounds in Table 2 are given in Turkish letters rather than their IPA symbols.

Table 2: The Classification of Turkish Consonant Sounds

Consonants		Bilabial	Labiodental	Dental	Alveolar	Palato-alveolar	Apical/palatal	Velar	Glottal
Stop	Voiceless	p		t			c	k	
	Voiced	b		d			j	g	
Fricative	Voiceless		f		s	ş			h
	Voiced				z	j			
Nasal	Voiceless				n				
	Voiced	m							
Approximant Central	Voiceless						y		
	Voiced		v						
Lateral	Voiceless								
	Voiced				l				
Rolled	Voiceless								
	Voiced				r				
Affricate	Voiceless					ç			
	Voiced					c			

Source: Adapted by Özsoy, 2004: 33.

2.1.2.2. The Vowels of Turkish

The second group of speech sounds is vowel sounds. While these sounds are being produced, the articulators in the vocal tract are not closing each other or narrowing, and so the passage of the airflow is relatively not obstructed (Ladefoged and Johnson, 2011). In this respect, in contrast with the consonants, vowel sounds are produced with a relatively open vocal tract in which the air freely flows (Akmajian,

et al., 2010). As a result of this, vowels are produced and articulated without constriction of the air that flows through the oral tract (Ergenç, 2002).

At this point, although the absence of constriction provides an ease in articulation of these sounds, this also makes the classification of vowels difficult. For instance, there is no voiced and voiceless sounds categorization for vowels because all vowels are regarded as voiced sounds contrary to consonants (Özsoy, 2004). For that reason, on contrary to the production of consonants, which is based on location and degree of airflow constriction with definite and clear boundaries, production of vowels sounds do not have clear boundaries.

Accordingly, the production of vowel sounds is frequently based on a continuum which makes the production of different vowels possible between any two vowels (Özsoy, 2004). This also makes the classification of vowels more difficult than the classification of consonants, in spite of the fact that there are fewer vowel sounds than consonants (Brinton, 2000). However, vowels can also be classified, anyway. To classify the vowels, position of several organs taking place in mouth such as lips and tongue are frequently used. In this way, vowels are principally classified in terms of the *height of the tongue*, *backness/frontness of the tongue*, *position of the lips* (Ergenç and Uzun, 2017), and *angle of the chin* (Ergenç, 2002).

In terms of the “height of the tongue”, the vowels are classified depending upon the distance of tongue from the roof of the mouth in the oral tract (Özsoy, 2004). This also results in further categorization of vowels as *high*, *mid*, and *low* (Brinton, 2000). In Turkish, “*high vowels or closed vowels*” are produced when “the tongue is raised toward the roof of the mouth”; “*low vowels or open vowels*” are produced when “the tongue is lowered to a lower position than that of [ə]”; and lastly “*mid vowels*” are produced when the height of the tongue is “similar to that of [ə]” (Ergenç, 2002). In Turkish, high vowels are “i”, “ı”, “ü”, and “u”; mid vowels are “e”, “ö”, and “o”; and the only one low vowel is “a” (Göksel and Kerslake, 2005:9).

The other classification of vowel sounds is done according to the position of tongue in terms of its *backness* or *frontness*, when the sound is pronounced (Özsoy, 2004). This is also the most commonly used vowels distinction in sound symbolism literature (e.g., Klink, 2000; Lowrey and Shrum; 2007; Yorkston and Menon, 2004). Within the context of backness and frontness, if the tongue is more toward the front

of the mouth, when a sound is pronounced, this sound is called “*front vowels*”; whereas if the tongue is more toward the back of the mouth, when a sound is pronounced, this sound is called “*back vowels*” (Ergenç, 2002; Göksel and Kerslake, 2005; Özsoy, 2004). As a result of the movement of the tongue in the oral tract, back vowels of Turkish are “ı”, “o”, and “u” and front vowels of Turkish are “i”, “e”, “ö”, and “ü” (Göksel and Kerslake, 2005:9).

In here, it is important to note that although “a” is mostly considered as back vowel, when it is compared with other vowels (Ergenç, 2002; Göksel and Kerslake, 2005), it is not a back vowel like “ı”, “o” and “u”. Thus, it is also considered as the only one central vowel in Turkish in terms of backness and frontness (Ergenç and Uzun, 2017). In that case, it can be readily concluded that, in terms of the position of tongue that falls more toward the middle on the front/back vowel continuum, the sound “a” in Turkish is operating like the letter “a” in English (MacKay, 1978). Therefore, the sound “a” should not be taken into account in experimental sound symbolism research on front/back vowel distinction.

Vowel sounds are also classified in terms of the “position of lips”, when they are pronounced. According to this classification, vowel sounds are divided into *rounded vowels* and *unrounded vowels* (Göksel and Kerslake, 2005). “Rounded vowels” are produced when the lips are “protruded” and “rounded” in articulation of the sound; whereas “unrounded” vowels are produced when the lips are not protruded and rounded but spread (Özsoy, 2004). In this context, in Turkish, “o”, “ö”, “u”, and “ü” are accepted as rounded vowels, while “ı”, “i”, “a”, and “e” are accepted as unrounded vowels (Ergenç and Uzun, 2017).

Along with movement of the tongue and form of lips, vowel sounds are classified in terms of the “angle of chin”, as well. In this context, vowel sounds in Turkish are categorized as *broad vowels* and *narrow vowels*. In Turkish, “a”, “e”, “o”, and “ö” are accepted as broad vowels, whereas “ı”, “i”, “u” and “ü” are accepted as narrow vowels (Ergenç, 2002:57).

Consequently, vowels are considered as the other sources of sound symbolism effects in terms of their potential in conveying inherent meaning. In addition, when they are compared with consonants, it can be readily seen that vowels are more frequently adopted in sound symbolism research (e.g., Baxter and Lowrey,

2011; Klink, 2001; 2003; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). Initiated by this fact, in order to provide a clearer description for all Turkish vowels, they are displayed in Table 3 in terms of their classifications. As well as in Table 2, the sounds given in Table 3 are presented with Turkish letters rather than their IPA symbols in order not to create a confusion for the ones who have not enough knowledge about the phonetics.

Table 3: The Classification of Turkish Vowel Sounds

Vowel Sounds	High		Non-High (Mid and Low)	
	Rounded	Unrounded	Rounded	Unrounded
Front	ü	i	ö	e
Back	u	ı	o	a
	Narrow		Broad	

Source: Göksel and Kerslake, 2005:9.

Up to now, insight about patterns of speech sounds in Turkish is provided systematically. This is required because in order to understand the effects of sound symbolism in any language, understanding the sound system of that language initially is imperative. In this context, since the needed groundwork for sound symbolism is laid, sound symbolism concept can be introduced in the following section.

2.2. THE SOUND SYMBOLISM CONCEPT

A foundational principle of modern linguistics presumes that there is an arbitrary, non-direct and conventional relationship between speech sounds and semantic concepts (Fromkin et al., 2014; Haynie et al., 2014). Therefore, most mainstream linguists suggest that sounds in a word do not have any natural, logical, or inevitable relations with the thing that it refers in the real world, but only the speaker of the language must agree that it refers the thing (Brinton, 2000). Extant evidence also present that the correlation between the phonetic structure of existing words and their meanings is very low (Robertson, 1989). However, when the words are fictitious or unfamiliar, the role of their sounds in conveying meaning totally

changes. For such words, the sounds making up the words are frequently used by individuals to derive meaning about the words. Moreover, the meanings attributed to these words via sounds are mostly consistent (Sapir, 1929).

In that case, it can be readily thought that sounds can be related to the inherent meaning of the words that they form, and so they can carry meaning (Fromkin, et al., 2014). The concept used to explain this phenomenon in pertinent literature is called “*phonetic symbolism*”; “*onomatopoeia*”; “*phonaesthesia*”; “*phonetic motivation*”; “*phonetic iconicity*”; or most frequently “*sound symbolism*” depending upon its extent and use (Fischer, 1999:123). As it is seen, sound symbolism can be referred as many other concepts. Accordingly, it can be defined in several ways. In the most general sense, sound symbolism is regarded as the *natural association* (Abelin, 2015; Jakobson and Waugh, 1979) and *direct linkage* (Hinton et al., 1994) between sound and meaning. Hence, in contrast to the principles of linguistics, the relation between meaning and sound is accepted as *non-arbitrary* (Sapir, 1929; Lowrey and Shrum, 2007), and *systematic* (Jespersen, 1922) in sound symbolism.

In that case, even the tiniest bits of sounds in words can potentially connote intrinsic meaning about the words, under sound symbolism perspective (Bolinger, 1975). For the most part, this connotation is generally occurred on the basis of the similarity in the use of vocal pitch to communicate aggression or submission (Ohala, 1994). This also makes some sounds of the words more appropriate for their meanings (Allott, 2012). Thus, sounds per se are capable of conveying particular meanings (Jespersen, 1922; Newman, 1933; Sapir, 1929; Uznadze, 1922; 1927) or evoking particular feelings (James, 1890).

All in all, it can be concluded that in sound symbolism, sounds of words communicate meaning beyond their semantic connotation (Lowrey et al., 2008). This direct and non-arbitrary relationship between sound and meaning has been examined and verified through number of various experiments conducted in different areas and across many different languages (e.g., Klink, 2000; Köhler, 1947; Sapir, 1929). Nevertheless, linguists have still been on debating to what extent the sound and meaning is related. In order to understand the degree of linkage between sound and

meaning, it is useful to look at typology of sound symbolism which was developed by Hinton, Nichols and Ohala, in the following section (1994).

2.3. TYPOLOGY OF SOUND SYMBOLISM

Sound symbolism is based on the notion that sounds can communicate meanings on their own, regardless of their arrangement within a word (Sapir, 1929). Even in the case of cries of pain or hiccups, the sound uttered say something about the “internal state of body or mind”. Simply put, even these sounds can carry some meaning. In that case, to better understand the extent of the expressiveness of the sounds, it is important to examine the degree of relationship between sound and meaning. Starting from this fact, Hinton, Nichols and Ohala (1994) examined the sound symbolism phenomenon in terms of the degree of linkage between sound and meaning. As a result, they divided the sound symbolism concept into four categories: “*corporeal sound symbolism*”, “*imitative sound symbolism*”, “*synesthetic sound symbolism*”, and “*conventional sound symbolism*”.

2.3.1. Corporeal Sound Symbolism

“*Corporeal sound symbolism*” expresses the specific sounds or intonation patterns to represent internal state of the speakers emotionally or physically (Arora et al., 2015). Involuntary uttered sounds such as coughing, hiccupping or interjections can be given as examples of this type of sound symbolism (Klink, 2000). As it is seen in these examples, most of the sounds in corporeal sound symbolism are not commonly in written form (Klink and Athaide, 2014). For that reason, they are expressed in unconventional way (Hinton et al., 1994). Accordingly, since they are not coded linguistically, they do not take a place in the sound system of conventional vocabulary. However, sounds such as like Ouch! or Aaugh! can be frequently seen in comic strips (Klink, 2000).

“*Vocatives*”- the utterances used for gaining the attention of hearer (Hinton et al. 1994)- are also included in corporeal sound symbolism. For instance, “crying of a child” or “scream of someone in a danger” is directly symptomatic and vocative in

nature (Hinton et al., 1994:3). In addition, as in the case of clearing the throat or coughing, corporeal utterances are manipulated as “vocative” or “turn-taking signals”. In this context, although some scholars accept that corporeal utterances convey meaning, some others argue that these involuntary sounds are a “sign” or “symptom” rather than a “true symbol” of meaning (Hinton et al. 1994). Therefore, this type of sounds is not considered within the context of sound symbolism by some scholars. In addition, due to their unconventionality, structural simplicity, and lack of writing, corporeal sound symbolism has not attracted the expected attention in human speech area.

2.3.2. Imitative Sound Symbolism

“*Imitative sound symbolism*” is based on imitations of sounds in the environment. Accordingly, it involves onomatopoeic words and phrases such as ssss! for hissing of snake or toc-toc for knocking the door (Hinton et al., 1994). In this respect, imitative sound symbolism is also referred as *onomatopoeia* or *auditory iconicity* in which phonological iconicity is comprised by speech sounds representing non-speech sounds or noises (Fischer, 1999).

Almost over 2,000 years ago, Plato gave support to onomatopoeic theory of language by asserting that words were created through the imitation of ideas in sounds (Jowett, 1953). Today, most languages have also onomatopoeic words like “buzz” or “murmur” which imitate the sounds related to the objects or actions that they refer to (Fromkin et al., 2014). However, the sounds of the onomatopoeic words can differ from language to language. For instance, crow of a rooster is “kukkokiekuu” in Finish, “ü ürü ü” in Turkish, but “cock-a-doodle-doo” in English.

Imitative sound symbolism has several characteristics in common with corporeal sound symbolism. For instance, as well as corporeal utterances, many imitative utterances such as “bird and animal sounds” or “children’s imitations of sirens” are out of conventional speech and have deficiency of writing (Hinton et al., 1994: 3). Thus, it can be easily seen that imitative sound symbolism has non-lexical forms, as well as corporeal sound symbolism (Fischer, 1999). On the other hand, imitative sound symbolism also includes utterances that have an importance in

referential speech in particular, with regard to the words for “tame” and “wild” (Hinton et al., 1994). In this context, while tame words such as “cuckoo” are involved in dictionary frequently, wild words such as “grrrrrr” are not (Klink, 2000; Klink and Athaide, 2014). Thus, it can be readily concluded that on contrary to corporeal sound symbolism, imitative sound symbolism has lexical forms along with non-lexical forms (Fischer, 1999).

Having all these in mind, imitative utterances can be seen superior to corporeal utterances in terms of vocabulary because onomatopoeic vocabulary has partly become conventionalized (Hinton et al., 1994). Moreover, in terms of the relationship between sound and meaning, imitative utterances can be accepted as more expressive than corporeal utterances. For instance, within the context of imitative sound symbolism, stops are employed to represents “abrupt sounds and acts”; continuants are used for “continuing sounds and acts”; nasals are used for “ringing, reverberating sounds”; and fricatives are utilized to represent “quick, audible motion of an object through air” (Hinton et al., 1994:9).

2.3.3. Synesthetic Sound Symbolism

“*Synesthetic sound symbolism*” accepts that certain speech sounds are capable of representing the meaning about the properties of objects such as size or shape (Klink, 2000). For instance, while high front vowel “i” (e.g., *little*; *teeny*, etc.,) is associated with small objects, low vowel “a” (e.g., *large*, *vast*, etc.,) is associated with the larger ones (Fischer, 1999). This phenomenon can also be associated with the different positions of various speech organs relative to each other when the sounds are uttered. Thus, it is believed that the positions of speech organs also bring spatial or dimensional meaning to speech sounds. For instance, in the case of uttering “a”, the opening between tongue and palate is large, and so “a” is mostly related to large objects (Ramachandran and Hubbard, 2001). Thus, since expressiveness of the sounds is also based on their articulation, synesthetic sound symbolism can also be referred as articulatory iconicity (Fischer, 1999).

Along with the sounds, “*expressive intonations*” such as “*deep voice*” and “*vowel lengthening*” are also examined within the context of synesthetic sound

symbolism because they also represent the properties of objects (Hinton et al., 1994). For instance, vowel lengthening is mostly used in speaking of large objects, as in the case of referring big fish by saying “what a biiiiiig fish!”. This example clearly shows that how vowel lengthening increases the size of fish.

As it is seen, the relation between sound and meaning is exactly regarded as non-arbitrary in synesthetic sound symbolism (Hinton et al., 1994). In addition, among the four sound symbolic forms, the interaction between sound and meaning is best illustrated by synesthetic sound symbolism. Extant research on sound symbolism also suggests that the relationship between the choice of vowels and consonants used in a word and intrinsic meaning of the word is systematically linked (e.g., Klink, 2000; Sapir, 1929; Yorkston and Menon, 2004). For instance, “high tones including vowels with high second formants and high frequency consonants” are related to “high frequency sounds” and consistently give meaning about “smallness”, “rapidity” and “sharpness” of the objects. On the other hand, “low tones including vowels with low second formants, and low frequency consonants” are related to “low frequency sounds” that give meanings about “largeness”, “softness”, “heaviness” and “slowness” of the objects (Hinton et al., 1994:11).

In that case, it can be readily said that expressiveness of the sounds in synesthetic sound symbolism is better than in corporeal and imitative sound symbolism. Moreover, contrary to corporeal and imitative sound symbolism, synesthetic sound symbolism is based on strongly conventionalized sound-symbolic speech. All of these explain why there is a growing interest toward this type of sound of symbolism in sound symbolism literature.

2.3.4. Conventional Sound Symbolism

“*Conventional sound symbolism*” is defined as analogical association of particular phonemes and clusters with particular meanings (Hinton et al., 1994). Bloomfield (1895:410) depicted this process with the creation of congeneric names in which meaning of any word is “arbitrarily” linked to some sound element in the word. However, for many scholars, the sound and meaning are also linked “non-arbitrarily” in conventional sound symbolism (Hinton et al., 1994).

Principally, conventional sound symbolism is based on “grouping of similar meanings about similar sound” (Abelin, 1999:15). For instance, initial “gl-” in “glitter”, “glow”, and “glimmer” communicates the meaning about light (Bolinger, 1950). In the other examples, initial “fl” in flame, flare, flicker, and flimmer evokes “emission of light” and final “ash” in bash, clash, smash, splash, and trash connotes “violence and/or speed” (Bloomfield, 1933:156). All of these examples can explain the conventional sound symbolism phenomenon.

This phenomenon is also referred as phonaesthesia by J.R. Firth (Reay, 1994:4064) in which combinations of sounds taking place as part of words can evoke some certain meanings (Fischer, 1999). Thus, as well as individual sounds, the sub-morphemic meaning-carrying entities are examined under sound symbolism phenomenon. These meaning-carrying entities are called “*phonesthemes*” - “consonants and consonant sequences that communicate specific sense-related meanings in a language - (Abelin, 2015:20) or “*phonetic intensives*” (Bolinger 1965). In this respect, conventional sound symbolism is regarded as different from the previous sound symbolism categories in terms of its choice of phonetic segments.

In literature, conventional sound symbolism is also referred as “*associative iconicity*” (Fischer, 1999). Associative iconicity has two different senses: (i) primary association in which speakers associate certain meanings with certain sound combinations, and (ii) secondary association in which speakers mentally associate some words with others that include same combination of sounds (Fischer, 1999). In secondary association, words with specific combination of sounds do not only possess meaning because of intrinsic quality of the sound order but also possess it because of many other words which have similar meaning and same sound order. This also makes conventional sound symbolism “contextual”. Accordingly, if sound combination of a word fits the meaning of the word, this reinforces the meaning; but if same sound combination existing in many words fits the meaning of the words, this strengthens the meaning (Samuels, 1972).

In this context, unlike the other sound symbolism categories, the link between expression and content is experienced by the typical speaker of a language in conventional sound symbolism (Abelin, 2015). For that reason, conventional sound symbolism is frequently seen as language specific (Hinton et al., 1994). These

language specific characteristics of conventional sound symbolism turn it into “local sound symbolism” in the eyes of many scholars (Priestly, 1999). However, meanings imbedded in these phonemes may extend analogical association and acquires intrinsic meanings as synesthetic sounds have (Klink, 2000). This explains why conventional sound symbolism is accepted as sound symbolism in terms of the linkage between sound and meaning.

In a nutshell, typology of sound symbolism provides insight about the degree of the link between sounds and meaning. Nevertheless, how individual speech sounds reflect, symbolize, or correlate with the real world, and how they can be iconic is questionable among leading linguists throughout centuries. To shed some light on this discussion, the following section is reserved to discuss the interaction between semiotics, semantics, and sound symbolism.

2.4. THE INTERPLAY BETWEEN SEMIOTICS, SEMANTICS AND SOUND SYMBOLISM

Semiotics is the study of the relationship between signs and what they symbolize (Solomon, 2013). The roots of semiotics can be traced back at least as far as the pre-Socratic era, in which Hippocrates recognized that bodily apparent signs convey messages about mental and physical states (Mick, 1986). In this respect, semiotics is considered as one of the oldest studies in history of humanity.

Semiotics essentially examines the meaning-producing phenomena, and accordingly signs and symbols are always accepted as the fundamental concepts of semiotics (Sebeok, 1976). For that reason, for centuries, signs, symbols and meanings have been discussed by many leading figures of their ages who have interest in semiotics. However, semiotics achieved its identity at the beginning of the 20th century by virtue of the works of the linguist Ferdinand de Saussure and the philosopher Charles Sanders Peirce (Mick, 1986).

In his book, *a Course in General Linguistics*, Saussure (1915) suggested that language is comprised of system of signs and linguistics should constitutively study “what these signs are made of”. According to Saussure (1915), every “*linguistic sign*” consists of a “concept” (the signified) on the level of meaning and a “sequence

of sound” (the signifier) on the level of expression, and the linkage between these two is arbitrary. Accordingly, the sound sequence that represents objects is not selected depending upon the characteristics of designated objects but predetermined by convention (Brinton, 2000). Initiated by this interplay between signified and signifier, it can be readily said that Saussure examined the sign in a dyadic relationship.

On the other hand, Peirce examined the sign as a system which involves three interconnecting elements: “the sign”, “the object”, and “the interpretant” (Gkiouzepas and Hogg, 2016). According to Peirce, the relationship between the object and the sign can be understood by only an interpretant depending upon the meaning given to the relation. In this respect, in terms of the relation of signs to the things they represent, Peirce classified the sign into three different types: “*iconic*”, “*indexical*” and “*symbolic*” (Brinton, 2000).

In the view of Peirce’s concept of the sign; “iconic signs” are the signs which resemble the things that they represent as in the example of map and the territory it maps; “indexical signs” are the signs which have necessarily causal connection with the things that they represent as in the example of smoke to fire or a smile to happiness; and lastly, “symbolic signs” are the signs which are conventionally related to the things that they represent as in the example of rose to love or solitaire ring to marriage (Cobley, 2001).

Among all these types of sign, symbolic signs are the most complicated ones in terms of the interplay between symbols and symbolic interpretation. For that reason, to understand symbolic signs better, it is better to understand what is a “*symbol*”, at first. “Symbols” are defined as the way in which an object is related to its sign (Gkiouzepas and Hogg, 2016). In this context, written words or images can be regarded as symbols. For instance, the word “tree” is a symbol. However, the written word “tree” does not resemble a tree but it is only conventionally related to the idea of the tree. In that case, it can be concluded that symbolic interpretation may not show the sign of a symbol because symbolic interpretation is not the sign itself but the object of the sign. This case also explains why symbolic signs must be learned by the speakers of a language because most languages are symbolic, as well (Brinton, 2000).

Under the light of these claims, it can be readily said that linguistic sign and what it represents is arbitrary, as Saussure (1915) suggested. In that case, it is normal to think that the linkage between the sounds and meaning is arbitrary, as well. Simply put, according to Saussure's focus, there is no direct relationship between semiotics and sound symbolism. However, Peirce presented that signs symbolize their objects in different ways through different types of associations (Gkiouzepas and Hogg, 2016). Particularly the resemblance based associations categorized under icons enable the way how a word sounds can add extra meaning to its object (Lowrey and Shrum, 2007). Hence, in terms of *iconicity* in language, the non-arbitrary relation between sound and meaning can be possible.

Phonological iconicity in language can be divided into three types: “*auditory iconicity*”, “*articulatory iconicity*” and “*associative iconicity*”. As it is mentioned in typology of sound symbolism, “auditory iconicity”, “articulatory iconicity”, and “associative iconicity” are associated with onomatopoeia, synesthetic sound symbolism and conventional sound symbolism, respectively (Fischer, 1999). Thus, contrary to the Saussure's argument, it can be said that semiotics and sound symbolism are related to each other in terms of the interaction between forms and meaning.

In this respect, sound symbolism can be adopted as a general concept to refer iconic or indexical relationship between “sound and meaning” as in the case of synesthetic sound symbolism or “sound and sound” as in the case of onomatopoeia (Abelin, 2015). In addition, some research in relevant literature suggests that phonetic aspects of a word (in terms of how the word sounds) may have an influence on a semantic dimension (in terms of what the word conveys), which in turn may affect the perception of individuals via a semantic association (Lowrey et al. 2003). In this context, as well as semiotics, semantics can also be related to sound symbolism as one of the main subdivisions of semiotics (Morris, 1946).

Semantics derives from Greek word “*sēmainein*” which refers to signify, show or signal. While semiotics is defined as the science of signs (Morris, 1946), semantics can be defined as the study of the relationship between sign and object (Mick, 1986). Semantics is also the subfield of linguistics which concentrates on “the nature of the meaning of individual words and the meaning of the words grouped

into phrases and sentences” (Akmajian et al., 2010:15). In general sense, semantics is defined as the study of meaning, and how meaning is conveyed. In more structural way, it is categorized into three types: “*lexical semantics*” - the study of the meanings of individual words -; “*sentence semantics*” - the study of the meanings of interaction of elements in a sentence -; and “*discourse semantics*” - study of the meaning relationship in an extended discourse- (Brinton, 2000).

Linguistics accepts that meaning derives from phonemes, from words, from sentences, and from larger texts. In that case, it is easy to say that there is a linkage between semantics and phonemes from where the meaning is starting. In this context, although semiotic dictum captures the position that sign is arbitrary from the perspective of Saussure and suggests that sounds cannot alone convey the meaning, semantics emphasizes the role of sounds in conveying meaning.

Linking certain phonemes to certain meanings is also discussed in sound symbolism, as well as in semantics. Thus, it can be concluded that there is a interdependence between sound symbolism and semantics. Several definitions of sound symbolism (e.g., “a property of certain words that have a direct relationship between their phonological form and their semantic meaning”) can also show us the interplay between sound symbolism and semantics (Bankieris and Simner, 2015:186).

Debate over “whether the phonological structure of the words can be related to their semantic meaning” and “to what extend these sounds can convey meaning” have lasted throughout the years. Based on these discussions, sound symbolism concept has been developed and extended over time. In that case, to provide a better understanding for sound symbolism concept, next section is reserved to discuss the development of the concept in different time periods from past to present.

2.5. DEVELOPMENT OF SOUND SYMBOLISM CONCEPT

As Jenkins (1959:194) purported that “sound symbolism has been thrown out of psychology and linguistics again and again, but persists in returning when its latest antagonist turns his back”. This case summarizes the long, very combative and controversial history of sound symbolism, properly (Bentley and Varon, 1933;

Taylor, 1963; Weiss, 1964). However, this longstanding debate over sound symbolism has also paved the way for sophisticated experiments conducted for understanding the function of sound symbolism in modern languages particularly since 1920's and 1930's. Thus, the interest toward seeking meaningful relation between sound and meaning has contributed to accumulation of an impressive amount of cross-linguistic data to prove the existence of sound symbolism.

Besides the linguists, sound symbolism has been the object of interest of the many other scholars from different disciplines. Hence, the expressiveness of the sounds has also been examined by different scholars in different contexts such as psychology (e.g., Newman, 1933; Sapir, 1929), and recently marketing (e.g., Baxter and Lowrey, 2011; Klink, 2000; Klink and Athaide, 2012; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). Considering all of these, in order to provide a comprehensive understanding on sound symbolism phenomenon, examining the development of the phenomenon over time is a must. For that reason, in the following sections, the development of sound symbolism concept is going to be investigated via the leading studies and works of their times.

2.5.1. Sound Symbolism Before 1900s

The early evidence of linking sound to meaning was found in the Plato's Dialogue Cratylus - Plato's dialogue about language – (Westbury, 2005). This fact presents that the roots of this phenomenon can be traced back to the Ancient Greek philosophy (Klink, 2000). In Cratylus, Plato explained and apparently gave support to the onomatopoeia, and so imitative sound symbolism:

“Everything has a right name of its own, which comes by nature. A name is not whatever people call a thing by agreement, just a piece of their own voice applied to the thing, but there is a kind of inherent correctness (orthoteta tina ton onomaton pephukenai) which is the same for all men, both Greeks and foreigners” (Allott, 2012: 237).

In Dialogue Cratylus, the expressiveness power of sounds was also mentioned with the famous phrase: *“First, then, the letter r appears to me to be an instrument for expressing all motion”* (Klink, 2000:6; Plato, 1985:460). With this phrase, Plato suggested that the sound “r” in words such as “river” and “road” conveys meaning about “movement” (Plato, 1985). In that case, The Ancient Greek philosopher Plato

is readily regarded as the oldest well-known figure in the history who first discussed the expressiveness of sounds.

In addition, in Plato's Dialogue Cratylus, the existence of the relation between sound and meaning was also discussed between Socrates and Hermogenes. In this discussion, according to Socrates, the relation between sounds and meaning may sometimes be arbitrary across all words, but only the words having a fit between its sounds and meaning are considered as a "good word" (Fitch, 1994; Klink, 2000; Lowrey and Shrum, 2007). On the other hand, Hermogenes was against this phenomenon and argued that the relationship between sound and meaning is arbitrary (Plato, 1892). Ultimately, in this discussion, Socrates takes the position that the relationship between sound and meaning is non-arbitrary, but Hermogenes disagrees. The debate between Socrates and Hermogenes is also regarded as the first and oldest well-known debate on sound symbolism between supporters and against of the phenomenon in the history.

Aristotle is one of the other Ancient Greek philosophers who mentioned about the link between sound and meaning, as well. Aristotle assumed that linguistic ornaments such as figurative language reveal enjoyment through their sounds (Fergusson, 1961). Thus, according to Aristotle, sounds are capable of stirring pleasant emotions as well as conveying meaning, and this lets individuals to act in a positive manner.

As similar with Plato and Socrates, the Roman philosopher Lucretius denied the arbitrariness of the origin of words by saying:

"putare aliquem tum nomina distribuisse desiperest. Nam cur hic posset cuncta notare vocibus et varios sonitus emittere linguae tempore eodem alii id non quisse putentur"- that is, people who think that some individual could, by himself, have invented words arbitrarily are talking nonsense" (Allott, 2012: 237).

Together with the ancient times philosophers, the interest towards whether the sounding of words symbolize their meanings has continued over the centuries. For instance, the English philosopher John Locke also mentioned about the relationship between sound and what it refers in terms of color in his book, An Essay Concerning Human Understanding, and he stated that:

“A studious blind man who had mightily beat his head about a visible object, and made use of the explanations of his books and friends, to understand those names of light and colors, which often came his way, brayed one day, that he now understood what scarlet signified. Upon which, his friend demanded what scarlet was? The blind man answered, it was like the sound of a trumpet” (Locke, 1690: 4).

In 18th century, Jonathan Swift, the writer of *Gulliver’s Travel* (1726), also used the power of sounds to describe people in his novel. For instance, for the miniature characters in his book, he created the name “Lilliputians” including front vowels such as “i” and voiceless stops such as “p” and “t” which are mostly associated with smallness. On the other hand, to describe giants, he created the name “Brobdingnagians” which include back vowels such as “o” and “a” and voiced stops such as “b”, “d” and “g” which are mostly related to largeness (Klink, 2000).

In 19th century, the existence of expressiveness of words was supported by the leading figures of their ages such as the German philosopher and linguist Humboldt. Humboldt (1836) asserted that sounds lead to an impression which is similar to what the ears hear and what the objects create in the minds. Accordingly, Humboldt (1836) suggested that sound is a sign to identify objects rather than an imitative sign. Under the light of this claim, it can be readily concluded that Humboldt’s perspective defines the onomatopoeia and sound symbolism as different phenomena.

In the same century, the American psychologist and philosopher, William James (1890) pointed out that sounds can create “subtle feelings” and “pure” and “simple” pleasures along with meanings. Thus, James (1890) supported the role of sounds in eliciting positive behaviors as consistent with Aristotle. In this respect, the work of James (1890) has motivated many researchers to examine the influence of sounds on individuals.

In a nutshell, it can be readily concluded that the interaction between sound and meaning has been started to be adopted before 1900s. Additionally, whether the sound symbolizes the meaning has been discussed by different important figures in this time period. However, for before 1900s, it is very difficult to say that sound symbolism has been conceptualized in real terms.

2.5.2. Sound Symbolism between 1900 and 1949

The existence of the sound symbolism phenomenon has been increasingly discussed by many leading authorities in linguistics in time period between 1900 and 1950. As a result of these discussions, two contrasting positions have occurred in linguistics regarding linkage between sound and meaning. One of the two contrasting positions is mostly ascribed to Saussure. As it is mentioned, Saussure (1915) disclaimed the onomatopoeia and the other natural expressiveness of words. He treated apparent onomatopoeic words as no more than conventionalized forms. In this respect, this view is based on the notion that there is no relationship between the sounds and the meaning beyond the particular case of onomatopoeia (e.g., the word “cuckoo” that both mimics the sounds in environment, and is conventionalized).

The other view has criticized the Saussure’s approach and claimed that individual sounds and meanings are systematically linked with each other. Correspondingly, the supporters of this view have argued that sounds per se can have meaning. This view has also been supported by many subsequent linguists of their times such as Maurice Grammont, Otto Jespersen, Edward Sapir, and Stanley Newman. For instance, the French linguist Grammont (1901) stated that “the domain of onomatopoeia is much vaster than it seems to have been believed” (Kirtchuk, 2011:1). Even this statement demonstrates the Grammont’s support to expressiveness of sounds.

In addition, along with onomatopoeia, which is based on a direct imitation of natural sounds, Grammont was also interested in non-arbitrary relationship between sound and meaning within the context of synesthesia. Grammont (1913) examined this phenomenon in French in terms of front/back vowel distinction to see its effects on perception for a number of contrasts such as light-dark, soft-hard, more-less mild, and thin- thick. He found that front vowels (e.g., “i”, “e”) are better to convey lightness, softness, more mildness, and thinness. As a result, Grammont (1913;1930) presented that phonetic variations influence meaning about the characteristics of the objects (Usunier and Shaner, 2002).

The Danish linguist Jespersen (1922) also claimed that some sounds are consistently related to some specific concepts. For instance, the vowel “u” sounding

in “ugh” has historically been associated with negative concepts in English (Jespersen, 1922). Starting from this fact, Jespersen (1922; 1933) suggested that the link between sound and meaning is systematic. Moreover, Jespersen (1922) argued that words in languages should have sound symbolic fit with the concepts that symbolize. Thus, Jespersen (1922; 1933) accepted the sound symbolism as a phenomenon which makes the use of words more appropriate to the meanings.

The other important figure, the American linguist Sapir (1929), also suggested that sounds per se convey meaning about the characteristics of many objects, most notably their size. In order to test it, Sapir (1929) invented two fictitious words, “mil” and “mal”, and asked to subjects to associate these words with “small” and “large” tables. The findings of the experiments presented that most of the subjects related “mal” to large table and “mil” to small table. As a result, Sapir (1929) indicated that front vowels with higher pitch are related to smallness, and so communicate meaning about the smallness of the referenced object; whereas back vowels with low pitch are related to largeness, and communicate meaning about largeness of the referenced object. Thus, Sapir (1929) verified that volume of some certain sounds can clarify size of the objects.

The study of Sapir (1929) on English speaking subjects is considered as one of the milestones in sound symbolism research. For that reason, this remarkable study of Sapir (1929) has attracted several researchers. Stanley Newman, the disciple of Sapir, was one of them. Newman (1933) further analyzed the data of Sapir through several experiments to understand the extent of the expressiveness of sounds. The findings of the experiments of Newman (1933) also presented that back vowels are better in communicating larger size, while front vowels are better in communicating smaller size. Additionally, Newman (1933) demonstrated that voiced consonants such as “b” or, “d” are perceived larger than voiceless consonants such as “p” or “t”, as well. Thus, the study of Newman (1933) repeated the study of Sapir (1929). However, Newman (1933) also extended the study of Sapir (1929) by examining the role of sounds on the basis of a new contrast: lightness and darkness. As a result of his experiments, Newman (1933) found that front vowels and voiceless consonants such as “k” and “s” are related to smallness and brightness more than back vowels and voiced consonants such as “b” and “d”, in English.

With this study, Newman (1933) also pointed out the systematic linkage between the size judgments and some factors such as position of the tongue in articulation of vowels, the frequencies of the principal acoustic formants, length of the vowel, consonantal voicing, and the size of the oral cavity occurred in pronunciation. In addition, the study of Newman (1933) indicated that sound symbolism is inherent in the sounds or words, and so it comes from the sound of the letter itself not from the things or experiences that people associate with sound. Thus, contrary what the people believe that sound symbolism is subjective; Newman (1933) suggested that the basis of sound symbolism is objective.

On several aspects, both the study of Sapir (1929) and Newman (1933) have succeeded to draw an attention to power of sounds in manipulating the perception of subjects towards the objects. In this context, although they were linguists, the study of Sapir (1929) and Newman (1929) were based on experimental psychology because they focused on the effects of sounds on individuals' perceptions. Along with Sapir (1929) and Newman (1933), many other linguists have also conducted several psychological researches on sound symbolism in order to understand the effects of sound symbolism on human behaviors. In that case, it can be readily said that understanding, "how the sounds are perceived by individuals" is the research area of psychology, as well. For that reason, besides linguists, sound symbolism has also been examined by psychologists in this time period.

Bentley and Varon (1933) were one of these psychologists who investigated the systematic link between sounds and meaning. In their study, Bentley and Varon (1933) adopted non-linguistic words like those of the study of Sapir (1929) and Newman (1933) along with some English words and nonsense syllables. Then, they asked subjects to assess those syllables on several dimensions. By confirming the findings of Sapir (1929) and Newman (1933), the findings of several experiments of Bentley and Varon (1933) suggested that the sound "a" is consistently perceived as larger than the sound "i". In addition, Bentley and Varon (1933) found that in terms of hardness, the sound "a" is perceived as softer than the sound "i". However, Bentley and Varon (1933) also criticized sound symbolism and they pointed out that sound symbolism effects occur for only specific dimensional judgments (e.g., size, shape, brightness, hardness), when they are elicited. Thus, they concluded that there

seems to be insufficient evidence which shows that “these graded attributes of sound carry in their own right (so to say) a symbolic reference” (Bentley and Varon, 1933: 85).

The study of Tsuru and Fries (1933) was the other outstanding study in this time period. Tsuru and Fries (1933) investigated the sound symbolism phenomenon with word matching technique at the first time. In their experiments, Tsuru and Fries (1933) listed the antonymic pairs of words in two languages: English and Japanese, and then asked subjects to match pairs of English words with the corresponding pairs of Japanese words. As a result, Tsuru and Fries (1933) demonstrated that Japanese equivalents of English words are paired successfully by the subjects by virtue of the principles of Gestalt organization. Thus, Tsuru and Fries (1933) indicated both the existence of sound symbolism and its universality with their study.

The Gestalt psychologist Köhler (1929; 1947) was the other psychologists who focused on the interaction between sound and shape symbolism in this time period. In the direction of his findings, Köhler (1929) purported that subjects mostly associate the nonsense word “baluma” - or “maluma” in the study of Köhler (1947) - with a curvy and rounded abstract shape because of its open articulation occurred in its pronunciation; whereas they associate the nonsense word “takete” with a spiky angular abstract shape (Adams and Doucè, 2017). With these studies, Köhler (1929; 1947) concluded that words including higher frequency sounds are better for expressing angular shapes and less-rounded lines, while words including lower frequency sounds are better for expressing rounded shapes and lines. Thus, the studies of Köhler (1922; 1947) have brought new perspective for further research on sound symbolism by examining the interplay between sound symbolism and attributes regarding shape.

2.5.3. Sound Symbolism between 1950 and 1999

By following Saussure’s (1915) argument, many linguists were against the sound symbolism in this time period, as well. For instance, the American linguist, Charles Hockett was one of them. Hockett (1958) restated and reinforced this dogma in his “design features” of language. Under the light of these claims, Hockett (1963:

10) emphasized that “the relationship between a meaningful element in language and its denotation is independent of any physical or geometrical resemblance between the two”. Accordingly, Hockett (1958) also accepted that the semantic relation is arbitrary rather than iconic.

As well as Hockett (1958), the English linguist John Rupert Firth was also against the sound symbolism. In his work, Firth (1964) frequently advised students to be careful about sound symbolism by declaring that sounds in words alone paint nothing (Allott, 2012). On the contrary, sound symbolism phenomenon has been supported by several linguists (e.g. Fónagy, 1963) and psychologists (e.g. Chastaing, 1958) in this time period, as well. By virtue of their interest towards sound symbolism, several scientifically planned experiments were conducted, and so the establishment of the reality of the sound symbolism phenomenon were strengthened more.

Most of the sound symbolism studies conducted in this time period had the similar concerns with the sound symbolism studies conducted in previous time period. For instance, attributes regarding size have still been a focus of research in sound symbolism studies done in this time period. Similar to the findings of Sapir (1929) and Newman (1933), many linguists and psychologists also found that front vowels are related to smaller objects and back vowels are related to larger ones (e.g., Chastaing, 1958; 1965; Fónagy, 1963). So, the interplay between size and sound symbolism has been enhanced by new sound symbolism studies.

Additionally, front/back vowels distinction has been investigated for a number of different contrasts in this period, as well. For instance, the linguist Whorf (1956: 267-268) presented that front vowels (high-pitched, higher tonality sounds) are related to association of “bright, cold, sharp, hard, high, light, thin (in weight), quick”; whereas back vowels (lower pitched, lower tonality sounds) are related to association of “dark, warm, yielding, soft, blunt, low, heavy, slow”. The psychologist Chastaing (1958) also examined the number of contrasts such as light-dark, light-heavy, and fast-slow in terms of front/back vowel distinction and consonants in French (Klink, 2000). The findings of Chastaing (1958) indicated that back vowels and stops are associated with slower motion, darker colors and heavier objects than front vowels and fricatives (Klink and Athaide, 2012).

In this time period, the art historian, Gombrich (1961) also brought a new perspective to sound symbolism literature which is mostly dominated by linguists and psychologists. Gombrich (1961) also mentioned about the use of front and back vowel distinction in expressing the darkness and lightness. Similar to the findings of the study of Grammont (1913), Newman (1933), and Chastaing (1958), Grombrich (1961) also stated that front vowels (e.g., “i”) are related to lighter and brighter colors than the back vowels (e.g., “u”) (Klink, 2003).

The linguists Fónagy (1963) was also interested in the use of front and back vowel distinction in portraying different contrasts such as light-dark, thin-thick, fast-slow, more-less pretty, more-less friendly, and bitter-sweet (Klink, 2000). The findings of the study of Fónagy (1963) demonstrated that front vowels (e.g., “i”) are perceived as “quicker, smaller, prettier, friendlier, harder”; whereas back vowels (e.g., “u”) are perceived as “thicker, hollower and darker, blunter and sadder, bitterer and stronger” (Waugh and Newfield, 1995: 194).

In this time period, the effects of sound symbolism were also tested within the context of real words by several studies. For instance, Jenkins et al. (1958) asked their subjects to rate 360 words in an atlas by using a semantic differential scale for 20 different contrasts such as new to old, weak to strong, beautiful to ugly, and good to bad. The findings of their study demonstrated that the fricative “s” and the nasal “m” are extremely more common among the words which are rated as good but plosives are more frequently seen among the words rated as bad and negative (Jenkins et al., 1958). Thus, this study demonstrates that even the sounds of existing words can create some associations for their meanings.

Having a similar purpose with the study of Jenkins et al. (1958), Johnson et al. (1964) claimed that some letters or letter combinations are seen mostly in pleasant words, but some others are seen in unpleasant ones. In order to test this argument, Johnson et al. (1964) created 14 pairs of fictitious words and randomly paired them with 7 good and 7 bad adjectives. Then, they asked college, deaf high school and hearing high school students to match each English adjective with the word pairs given with them. The findings of the study of Johnson et al. (1964) presented that both college students and hearing students match good sounding (bad sounding) words with good (bad) adjectives, while the deaf students did not. Thus, Johnson et

al. (1964) supported the existence of the expressiveness of word sounds in creating associations regarding to meaning.

In another study, Folkins and Lenrow (1966) examined whether graphemes - a letter or letters that represent a sound grouped according to articulation location - can be rated distinctly by English speaking respondents along three semantic differential dimensions: evaluation, potency, and activity. In the study, Folkins and Lenrow (1966) categorized both vowels and consonants into front and back sounds. The findings of the study of Folkins and Lenrow (1966) presented that front consonants are evaluated more pleasant than back consonants, and front vowels are perceived as less powerful and more active than back vowels. Folkins and Lenrow (1966) also examined this phenomenon within the context of voiced and non-voiced (voiceless) consonants, and tense (long) and lax (short) vowels. Their findings also indicated that voiced consonants are perceived as more potent than non-voiced consonants, and tense vowels are evaluated as more pleasant, potent, and active than lax vowels (Folkins and Lenrow, 1966).

As well as attributes regarding size, attributes regarding shape symbolism have still continued to be analyzed within the context of sound symbolism in this time period. For instance, Tarte and Barritt (1971) examined the symbolic value of vowels within the context of attributes related to size and shape. In accordance with the findings of previous research, Tarte and Barritt (1971) suggested that the sounds /a/ (e.g., as in father) and /u/ (e.g., as in rule) are mostly related to large figures; whereas the sound /i/ (e.g., as in beat) is related to small ones. In addition, Tarte and Barritt (1971) presented that the sound /u/ is paired with ellipses, while the sound /i/ is paired with triangles. In addition, Tarte and Barritt (1971) indicated that the sound /k/ is the most and the sound /w/ is the least related to triangle; the sound /w/ is most and the sound /k/ is least related to ellipses; the sound /w/ is related to smaller figures; and the sounds /d/ and /k/ are related to larger figures. As a result, by supporting the previous findings (e.g., Sapir, 1929), Tarte and Barritt (1971) indicated that vowels generate meaning in a consistent pattern but the consonants do not.

The relationship between symbolism of sound, size, and shape was also evidenced by the findings of Tarte (1982). In the study, Tarte (1982) pointed out that

words with back vowel sounds (e.g., /o/) are associated with rounded figures; whereas words with front vowel sounds (e.g., /i/) are associated with angular figures. In addition, Tarte (1982) presented that front vowels are associated with smallness and lighter weight as consistent with the previous findings related to sound-size symbolism.

In this time period, Sapir's (1929) study which suggests that volume of certain vowels may alone communicating about size symbolism has led to further studies in different fields, as well. For instance, zoologist and ornithologist Morton (1977) asserted that the relationship between sounds and size symbolism has been traced to back to mammals and amphibians. Morton (1977) stated that animals are in tendency of appearing as large as possible when they are intimidating their opponent because in this competition larger ones have advantages. He continued that in animal world, size can be communicated by visual means as in the case of cats arching their backs or birds fanning their wings. In accordance with laws of physics, which infer an inverse relationship between frequency and mass of the vibrating tissue, Morton (1994) pointed out that the acoustic frequency of animal calls can communicate about size.

This fact is also verified by linguist Ohala (1984, 1994). After the study of Morton (1977), Ohala (1984, 1994) examined the frequency codes of animal sounds, and suggested that front vowels have higher frequency than back vowels, inherently. Accordingly, Ohala (1984; 1994) emphasized that since higher frequency sounds communicate about small size and lower frequency sound communicate about large size, front vowels are frequently associated with smallness and back vowels are frequently associated with largeness.

Moreover, in his study, Ohala (1994) pointed out that frequency code of animal sounds can have different meanings, as well. For instance, besides conveying smallness, it can be seen that higher frequency sounds may convey meaning about "social-subordinancy, politeness, non-threat, etc."; and besides conveying largeness, lower frequency sounds may communicate meaning about "aggression, assertiveness, dominance, etc." (Ohala, 1994: 331). Consequently, all of these studies presented that there is a consistency among messages given by animals in specific frequency sounds. This means that while "harsh" messages are given with

lower frequency sounds, “friendly and appealing” messages are given with higher frequency sounds (Morton, 1994).

Hinton et al., (1994) also suggested that higher frequency consonants are better for expressing diminutive forms and other characteristics such as softness, rapidity, sharpness, lightness, and femininity. According to Hinton et al. (1994), higher frequency sounds are associated with fricatives more than stops; associated with voiceless stops more than voiced stops; and associated with voiceless fricatives more than voiced fricatives (Hinton et al., 1994; Ohala, 1994).

Sound symbolism theory has also been examined in terms of different aspects such as whether sounds can convey meaning about colors. The general conclusion of several studies on this issue demonstrate that the vowel “a” is mostly associated with “red” and “blue”; the vowels “e” and “i” are mostly associated with “white” and “yellow”; and the vowels “o” and “u” are mostly associated with “blue”, “brown” and “black” (e.g., Jacobsen and Waugh, 1987; Marks, 1975:309).

The other interesting sound symbolism study was conducted by Vickers (1984) in the domain of food. Vickers (1984) claimed that foods classified as crunchy frequently make a lower pitch sound when they are bitten than those foods classified as crispy. In addition, Vickers (1984) asserted that when the English word “crunchy” is pronounced, it has a lower pitch than the word “crisp”. Based upon the findings of the prevalent research, Vickers (1985) explained this phenomenon by demonstrating that the sound “i” in crisp and the “-sp” ending of crisp have higher pitched than the sound “u” in crunch and the “-ch” ending of crunch. Thus, depending on the findings of the study, Vickers (1984) pointed out that sounds in words themselves convey part of their meaning.

The linguist Crystal (1995) also approached to sound symbolism from a different perspective. In his work, Crystal (1995) examined the phenomenon within the context of the relation between the first names of individuals and their genders. As a result of analyzing 1,667 entries of first names in an English dictionary, Crystal (1995) found that names including front vowels such as /i/ are more commonly seen in the stressed syllable for female names such as Tina, and Linda. The anecdotal findings of the study of Crystal (1995) presented that sounds can also convey meaning about the gender. In this context, the study of Crystal (1995) extended the

previous findings on sound symbolism by demonstrating the relation between sounds in the names and femininity.

To extend the study of Crystal (1995), Klerk and Bosch (1997) examined English nicknames in terms of synaesthetic and phonaesthetic aspects. The findings of the study of Klerk and Bosch (1997) indicated that sounds “/n/”, “/t/”, “/s/”, “/r/”, “/m/”, and “/k/” occur as the initials of the positively perceived English nicknames more than the other sounds. In addition, they presented that the sounds “/I/”, “/e/”, “/Λ/”, and “/i:/” are the rankings of first four vowels most frequently occurring in English nicknames. Thus, Klerk and Bosch (1997) presented the evidence of sound symbolism in English nicknames.

In line with the study of Crystal (1995), Gordon and Heath (1998) also claimed that front vowels are more frequently associated with femininity. Initiated by the previous findings, Gordon and Heath (1998) asserted that front vowels bring some characteristics which are mostly related to femininity into minds like smallness (e.g., Tarte, 1982), lightness as opposite of weightiness (e.g., Cooper and Ross, 1975; Tarte, 1982), diminutive marking (e.g., LaPolla, 1994; Matisoff, 1994; Ultan, 1978), and cooperation and submission (e.g., Morton, 1977; Ohala, 1984).

In this time period, one of the other interests on sound symbolism has been about its universality. To prove the universality of the effects of sound symbolism, several experiments were conducted by several scholars. For instance, the study of Brown, Black and Horowitz (1955) was one of them. To analyze the universality of sound symbolism effects, Brown et al. (1955) asked native English speaking subjects to match a single English stimulus word with one of a pair of words in each of a number of unfamiliar languages (Chinese, Hindu, and Czech). In this way, Brown et al. (1955) tested whether the subjects guess the meanings of words from unfamiliar languages from their sounds. The findings of Brown et al. (1955) presented that subjects mostly pair foreign words with their English equivalents. They explained these results with hypothesis of *physiognomic language* –in which universal, unlearned intersensory connections underlying sounds and meanings enable communication among different trace systems organized in a same fashion through Gestalt organization principles -. In that case, it can be readily said that according to Brown et al. (1955), the effects of sounds do not only come from themselves but

from the hypothesis of physiognomic language. Accordingly, Brown et al. (1955) concluded that culturally acquired sound symbolism is based on experience with a common native language, and only some characteristics of sound symbolism may have universal validity.

By extending the study of Brown et al. (1955), Maltzman, Morrisett and Brooks (1956) asked respondents to match a foreign stimulus word (e.g., Croatian) with one of a pair of foreign response words (e.g., Japanese). The findings of several experiments of Maltzman et al. (1956) indicated that English and Japanese words, and English and Croatian words are matched with each other but Japanese and Croatian word pairs are not. Hence, they indicated that these mismatches are contrary to “hypothesis of gestalt organization of trace system, and the related hypothesis of universal sound symbolism and physiognomic language” (Maltzman et al., 1956:251).

With the same interest, Brackbill and Little (1957) asked English speaking subjects to evaluate the equivalence of 50 pairs of English, Chinese, Japanese, and Hebrew words given auditorily, audiovisually, and visually. The findings of their experiments presented that subjects frequently guessed the “English equivalent of Hebrew words and paired Japanese and Chinese, and Japanese and Hebrew words” (Brackbill and Little, 1957:312). However, the findings of their study also demonstrated that Chinese and Hebrew words are not paired consistently. Thus, Brackbill and Little (1957) interpreted the results of their study as contrary to a universal sound symbolism hypothesis.

In another study, Taylor and Taylor (1962) analyzed whether there is an intrinsic relationship between sound and meanings. To test this relationship, Taylor and Taylor (1962) asked monolingual subjects from United States, Korea, Japan, and South India to rate nonsense syllables on several dimensions: big-small, warm-cold, active- passive, and pleasant-unpleasant. As a result of their experiments, Taylor and Taylor (1962) presented that there is a systematic linkage between sound and meaning under all conditions tested for different languages. However, they also pointed out that meanings related to any particular sound varies from language to language. Thus, Taylor and Taylor (1962) criticized the hypothesis for universal sound symbolism, as well.

In her other study, Taylor (1963:206) asserted that sound symbolism must be “culturally delimited and therefore based upon some factors that are different from one language (community) to another unrelated language (community)”. In this study, Taylor (1963) emphasized the importance of “language habits” in creation of some specific connotation for specific sounds. For instance, according to Taylor (1963), English speaking people frequently associate “g” with largeness and “t” with smallness, because they learned that “g” and “t” are more often the initial consonant of words signifying largeness and smallness, respectively. Thus, with this study, Taylor (1963) continued to criticize the universal sound symbolism hypothesis.

Kim (1977) also investigated the sound symbolism in Korean to test its universality. On contrary to previous findings (e.g., Sapir, 1929; Newman, 1933), the findings of Kim (1977) presented that words including sounds /ɛ/ (front low vowel), /a/ (back unrounded low vowel), and /o/ (rounded low vowel) in their first syllables are related to a diminutive connotation such as lightness, brightness, quickness, affectionateness, and etc. Thus, Kim (1977:65) highlighted that sound symbolism effects can not be described “in terms of any single feature in the front/back or high/low dimension”. Kim (1977:67-68) also indicated two more points: “the connotation shift effected by consonant alternation is of a different kind from the connotation shift effected by vowel alternation; and “the correlation between the phoneme alternation and the resulting connotation shift in Korean is different from those observed in other languages”. Thus, since same sounds used for a different association in Korean, Kim (1977) criticized the universality of the sound symbolism, as well.

As well as research against universal sound symbolism, there has been also many researches which support the universality of the effects of sound symbolism (e.g., Davis, 1961; Koriat and Levy, 1977; Miron, 1961; Nichols, 1971; Tanz, 1971; Ultan, 1978) in this time period. For instance, Miron (1961) analyzed the universality of the effects of sound symbolism by using subjects from different linguistic communities: American English and Japanese. The findings of the Miron (1961) demonstrated that for both language groups, front vowels and front consonants are mostly perceived as “pleasant” and “weak”; whereas back vowels and

back consonants are mostly perceived as “unpleasant” and “strong”. Thus, Miron (1961) suggested that sound symbolism may have a universal nature.

To extend the study of Köhler (1947), Davis (1961) analyzed the interplay between sounds and shapes. In his study, Davis (1961) asked both native African children and English children from 8 to 14 years of age to match fictitious names with abstract drawings. By confirming the study of Köhler (1947), Davis (1961) also presented that words with higher frequency sounds (e.g., “takete”) are perceived better for expressing straighter lines and angular shapes than words with lower frequency sounds (e.g., “uloomu”) which are related to rounded figures. As a result of the findings of this study, Davis (1961) also indicated that the responses of children have structural similarities in matching specific sounds with specific drawings, although they are coming from different nationality. In this respect, it can be readily said that the study of Davis (1961) both supported the linkage between sounds and shapes, and strengthened the universal effects of sound symbolism.

Nichols (1971) examined whether alteration of root consonants is a means of expressing the diminutive in many western North American languages. The findings of the study of Nichols (1971) indicated that diminutives include notions such as smallness, lightness, brightness, quickness, and coldness (as opposed to heaviness, darkness, slowness, and warmth) in many of the languages of western North America. Thus, Nichols (1971) presented that interlingual comparison shows phonetic consistencies between diminutive shifts of the languages for which information of sound symbolism is available. In that case, Nichols (1971) also pointed out the universality characteristics of the expressiveness of the sounds.

Tanz (1971) also examined universality of sound symbolism by concentrating on existing words for “here” and “there” in several languages. Tanz (1971) reviewed these words differing only in a vowel in eight languages (Amhari, Canada, Koya, Tamil, Malay, Papago, Djirbal, and Hungarian), and differing in a whole syllable in six languages (Tulu, Turkish, Chinese Mandarin, Tseltal, Aztec and Indonesian). Besides physical distance, Tanz (1971) examined words signifying temporal and personal distance, as well. Based on the evidence in several natural languages, Tanz (1971) concluded that high front vowels (e.g., /i/) frequently express proximity (e.g., here), but low back vowels (e.g., /a/) express distance (e.g., there) for

words signifying all three types of distance (physical, temporal, and personal distance). In this way, Tanz (1971) suggested convincing evidence for universality of sound symbolism drawn from natural languages.

Similarly, to investigate the universality of the sound symbolism, Koriat and Levy (1977) examined the symbolic effects of vowels and their orthographic representations in two natural languages: Hindi and Japanese. In their experiment, Hebrew speaking subjects were asked to evaluate the magnitude, brightness, hardness, and length of conventional orthographic characters demonstrating the five vowel sounds in Hindi and Japanese. The findings of the study of Koriat and Levy (1977:93) presented that “the ranking of the five vowel characters in order of increasing magnitude and decreasing brightness and hardness are as follows: i, e, a, u, o” in both Hindi and Japanese. Thus, Koriat and Levy (1977) indicated that the findings regarding to figural symbolism of the orthographic characters are very similar to the sound symbolism of their phonemic referents in two languages and three symbolic dimensions. Consequently, regarding the findings of their study, Koriat and Levy (1977) suggested that the sound patterns and the visual patterns have cross-culturally consistent symbolic meaning. So, Koriat and Levy (1977) also contributed to the notion that sound symbolism effects are universal.

Another important research that strengthens the universal sound symbolism hypothesis is the study of Ultan (1978). According to the Ultan (1978), in order to determine whether there is any universal sound symbolism, evidence from a large number of data must be analyzed. For that reason, in his study, Ultan (1978) examined and compared the data from 136 randomly selected natural languages. As a result, Ultan (1978) asserted that the effects of sound symbolism can be observed in a number of languages. In this way, Ultan (1978) purported that in almost all languages sampled in the world, words representing diminutive forms have similar characteristics in their vowel sounds. Thus, the study of Ultan (1978), which gives a support for vowel-size symbolism, has encouraged many scholars to search sound symbolic relationship with sounds and meaning in several languages.

Becker and Fisher (1988) also asked English speaking and Spanish speaking subjects to evaluate nine audiotaped vowel sounds on several dimensions. The findings of the experiment presented that front vowels are more associated with

brightness and smallness than back vowels. Accordingly, Becker and Fisher (1988) found that the high front vowel /i/ is rated as the brightest, whitest, and smallest vowel in both English and Spanish; whereas the back vowel /o/ is rated as the darkest and largest.

In addition, Becker and Fischer (1988) examined the perceived psychological distances between vowel sounds for English and Spanish. For both groups of subjects, Becker and Fischer (1988) found that the distance between the two front vowel /I/ and /ε/ is the smallest, but the distance between front vowel /i/ and back vowel /o/ is the greatest. In this way, Becker and Fischer (1988:56) also gave support to argument that “semantic associations may be culturally universal”.

Lapolla (1994) also experimentally investigated the sound symbolism in Mandarin Chinese. Similar to the study of Brown et al. (1955), Lapolla (1994) asked English speaking subjects to match Chinese antonymic word pairs with English equivalents. The results of their experiments exhibited that Chinese language has sound symbolic patterns which are perceived by English monolingual speakers (Lapolla, 1994). In addition, Lapolla (1994) indicated that Chinese native speakers have enough common innate sense of sound-meaning correspondences to give a same pattern of answers when they assign meaning to sounds. Hence, depending on the findings of this study, Lapolla (1994) strengthened the argument that there is a cross-linguistic tendency toward associating higher frequencies and lower frequencies with smallness and largeness, respectively.

In this time period, the other interest in sound symbolism is about its conceptualization. In sound symbolism theory, “individual sounds are thought to reflect, or symbolize, properties of the world, and thus to have meaning” (Crystal, 1995:174). In other definition, “a speech sound seems to correlate with an object in the real world” (Reay, 1994:4064). However, the extent of which sounds are symbolic and iconic has been discussed over the years. Accordingly, whether sound symbolism is a satisfactory term to explain the phenomenon has been discussed for a long time.

In this sense, one of the contradictive issues about the sound symbolism concept is the use of “symbol”. Symbol has been used extensively and with confidence in various disciplines, but there is no clear idea to explain what a

“symbol” is (Allott, 2012). For instance, according to Peterfalvi (1970), the term “symbol” consistently contains “the idea of a natural, and not conventional, analogical correspondence between the concrete form and the object which it symbolizes”. On the other hand, Bolinger (1965) claims that “meanings in which form imitates nature are called iconic, but meanings that are arbitrary and conventional are called symbolic” (Allott, 2012: 236). Such discussions among leading linguists have made the conceptualization of the phenomenon difficult throughout the years.

Along with scholars and researchers from different fields, authors have utilized the power of sounds in words to explain or describe some characters or objects in their works in this time period. For instance, in her book, *Harry Potter and Sorcerer’s Stone*, written in 1997, J. K. Rowling created names for the objects used in fictitiously created wizarding sport of Quidditch by using the expressiveness of sounds depending on what they are associated. To describe large and dangerous ball (which tries to knock the players off their flying broom), she created a fictitious word “bludger” which includes sounds “u”, “b”, “d”, and “g” frequently associated with largeness (Klink, 2000); to describe big and round ball (which is used to score goals), she selected a fictitious word “quaffle” including sound “u” associated with roundness (Köhler, 1947); and to describe small and fast golden ball (which is used to finish the game), she used the fictitious word “snitch” which includes sounds such as “s” and “i” mostly associated with smallness (Klink, 2000).

Smith (1998) also examined the expressiveness of sounds in different context. Initiated by the notion of Jespersen (1922), which purports that some sounds are consistently associated negative concepts, Smith (1998) explored whether the names including such sounds are perceived negatively. In this study, Smith (1998) analyzed U.S. presidential elections outcomes in time period between 1824 and 1992. The anecdotal findings demonstrated that when the names of candidates include vowels which are often associated with negativeness, these candidates are perceived as less favorable than candidates with better sounding names. Moreover, Smith (1998) presented that fricative sounds are negatively associated with the political candidates’ electability, if the names of candidates contain them. Hence, Smith

(1998) suggested that candidates who have phonologically favorable names seem to consistently have more chance in winning elections.

In sum, the existence of sound symbolism phenomenon, its conceptualization, and its universality have been discussed more by several scholars and researchers in this time period. The common point of all of these studies is that sounds are regarded as a meaningful unit of communication (Nuckolls, 1999). In addition, all of these studies have led to further research in sound symbolism since the beginning of 2000s.

2.5.4. Sound Symbolism in 2000s

The interest towards understanding the effects of sounds in the words has increasingly continued in 2000s. Several scholars and researchers from different fields (e.g., Baxter and Lowrey, 2011; Baxter, Ilicic, Kulczynski, et al., 2015; Klink, 2000; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007; Mauer et al., 2006; Ramachandran and Hubbard, 2001;) have also contributed to the enrichment of sound symbolism literature through numerous systematic and scientific experiments. These empirical evidences have strengthened the existence of sound symbolism phenomenon and paved the way for further studies in different fields. In that case, initiated by the studies conducted from the early 2000s to until today, it is not wrong to say that sound symbolism is still in the spotlight of many scholars and researchers.

Recent studies on sound symbolism has signified that the studies and experiments done in this time period have similar concerns with the studies and researches done in previous time periods, as well. For instance, similar to the other time periods, principles of sound symbolism theory have continued to be related to sound and shape based judgments after 2000s. The study of Ramachandran and Hubbard (2001) was one of these studies. Consistent with the study of Köhler (1947) and Tarte (1982), the neuroscientists Ramachandran and Hubbard (2001) indicated that rounded images are related to words including back vowels as in the word “bouba”, while angular images are related to words including front vowels as in the word “kiki”, across English and Tamil. Ramachandran and Hubbard (2001) explained this phenomenon, which is called “bouba-kiki effect”, with *articulatory*

hypothesis. Articulatory hypothesis assumes that shapes imitate the articulatory movements of the speech organs when the words are pronounced. Hence, according to Ramachandran and Hubbard (2001), when one articulates “kiki”, his tongue is sharply inflected and this is associated with the sharpness of the jagged images; whereas one articulates “bouba”, his lips and oral cavity are rounded and this is related to rounded images.

To replicate and extend Köhler’s studies (1929; 1947), Westbury (2005:11) analyzed the interaction between meaning and shape with a novel approach which turns the “Köhler’s forced-choice word-picture matching task into an implicit inherent task”. In this approach, Westbury (2005) gave participants a lexical decision task with the stimuli which are presented in either spiky or curvy shapes. For instance, hard and soft consonant-vowel-consonant fictitious words such as “tabe” and “neem” are presented inside boxes which are surrounded by either straight or curvy lines while participants fulfilled a lexical decision task. In this study, Westbury (2005) mainly tested two hypotheses: if there is an association between stop strings and spiky shapes, spiky shapes are more likely to facilitate the recognition all-stop strings; and if there is an association between continuant strings and curvy shapes, curvy figures are more likely to facilitate the recognition of all-continuant strings.

The findings of the study of Westbury (2005) demonstrated that there is a fit between the sounds of fictitious words and the surrounding visual shape. Moreover, the findings of the study indicated that this congruency facilitates the accurate responses of the participants as similar with the findings of Köhler (1929; 1947). For instance, nonsense words (e.g., “kide”) including stops (e.g., b, k, p, and t) are recognized faster in spiky frames; whereas nonsense words including continuants (e.g., f, m, n, and r) are recognized faster in curvy ones. Thus, with this study, Westbury (2005) contributed to sound symbolism theory by emphasizing the neurological basis of the sound symbolism effect.

To extend the Ramachandran and Hubbard’s (2001) study, Maurer et al. (2006) analyzed the Bouba/Kiki effect in 2,5 year-old children and adults. Their findings presented that the highest proportion of participants relate the words with unrounded vowels to angular shape, and the words with rounded vowels to rounded

shape. Thus, Maurer et al. (2006) stated no significant difference between the two ages in terms of matching certain sounds with certain shapes.

Kovick et al. (2010) also concentrated on the correspondences between speech sounds and shapes. Different from the other research based on sound-shape symbolism, Kovick et al. (2010) created new two pairs of nonsense words: “mot and riff” and “dom and shick” for their study. In this way, Kovick et al. (2010) emphasized the articulatory properties of the vowels more. The findings of their study presented that nonsense words including rounded vowels (“mot” and “dom”) are consistently matched with rounded visual figures; whereas nonsense words including unrounded vowels (“riff” and “shick”) produced congruency effect with pointy visual figures (Kovick, et al., 2010). In addition, Kovick et al. (2010) suggested that if the labels including rounded and unrounded vowels are given with rounded and pointy figures, respectively, participants are faster to respond these pairs. Hence, the study of Kovick et al. (2010) also strengthened the correspondences between specific speech vowels and specific shapes.

As also one of the variants of Köhler’s (1947) experiments, Aveyard (2012) examined the impacts of consonants on object recognition within the context of sound symbolism and shape. The findings of the study of Aveyard (2012) demonstrated that subjects learn faster to match English pseudo-words containing plosive phonemes (e.g., kuh-der-pai) with rectilinear 3-D objects, while they match pseudo-words containing non-plosive phonemes (e.g., fuh-lih, sai) with curvilinear 3-D objects. Moreover, Aveyard (2012) suggested that non-plosive pseudo-words create more sound symbolism effects than plosive pseudo-words do. All in all, the study of Aveyard (2012) contributed to sound symbolism theory by indicating the natural relationship between sound and meaning, which leads to faster learning in matching specific objects with specific words.

Along with the link between sound and shape, the systematic relationship between speech sounds and other visual dimensions has also been well documented in this time period. For instance, Simner et al. (2015) indicated that people are more likely to match the letter “A” to color red, the letter “L” to yellow. In another study, Smilek et al. (2007) presented that luminous shades of color are mostly related to letters of higher frequency. Sounds have continued to be related to size based

judgments in this period, as well as in the previous time periods. For instance, in their cross-linguistic analysis including Chinese, English, Japanese and Korean, Shinohara and Kawahara (2011) found that front vowels tend to convey smallness in size; whereas back vowels convey largeness. Thus, the systematic link between sound (vowel) symbolism and size symbolism has also been continued to be strengthened through several researches.

Besides shape and size, Cuskley (2013) examined the mappings between linguistic form and meaning with respect to non-sense words and visual motion by using a direct matching task. In the study, Cuskley (2013) gave nonsense words differing in their voicing, reduplication and vowel sounds to participants and asked them to change the movement of a ball to match a given nonsense word. The findings of the study indicated that back vowels are related to slower speeds, and consonant reduplication with vowel alternation is related to faster speeds. Hence, Cuskley (2013) corroborated previous findings regarding a cross-modal correspondence between speech sounds and motion.

In addition, the relationship between sound, shape, speed, and size has been extended to other sensory stimuli, in this time period. For instance, Crisinel and Spence (2009) investigated the interplay between sounds and basic tastes. To analyze the strength of the relationship between these two, Crisinel and Spence (2009) used the higher and lower pitched musical sounds and the names of bitter and sour foodstuffs. The findings of their study showed that participants more frequently matched sour tastes with higher-pitched sounds and bitter tastes with lower pitch sounds. At first glance, it seems that this study did not address the sound symbolism. However, Crisinel and Spence (2009) pointed out that they did not use the food themselves but the name of the food. In this context, although, the study of Crisinel and Spence (2009) did not concentrate on the speech sounds as auditory stimuli, the findings of their study were manipulated by the speech sounds in the names of food. Thus, the findings of the study of Crisinel and Spence (2009) are also under the effect of target words and their associated linguistic qualities in terms of sound patterns.

To extend the study of Crisinel and Spence (2009) to vowel sounds, Simner et al. (2010) also tested the crossmodal correspondence between sound and taste.

However, as different from Crisnel and Spence (2009), they used real tastans rather than the name of tastants. In addition, in terms of auditory stimuli, Simner et al. (2010) used four invented speech related sound qualities: “F1 (correspondences to vowel height), F2 (correspondences to vowel front/backness), voice discontinuity (interruption in vowel quality), and spectral balance” (Simner et al., 2010: 553). Then, they asked respondents to match these sounds with associate tastes. As a result, Simner et al. (2010) found that different properties of vowels are systematically related to four basic tastes: sweet, sour, salty, and bitter. For example, sweet tastes are more associated with smoother and more continuous vowels than bitter and sour tastes, and so they are more related to lower voice discontinuity than bitter and sour tastes. Moreover, the findings of their study presented that sweet tastes are consistently matched with low spectral balance, low F1, and low F2 (Simner et al., 2010). Thus, this study indicated that since F1 is negatively related to vowel height and F2 is negatively related to vowel backness, sweet tastes (sour tastes) are more associated with high-tongue position (low-tongue position) and back (front) vowels within the context of low (high) F1 and F2.

Gallace et al. (2011) also explored whether there is relationship between tastes and flavors of various foods and nonsense words. In the study, Gallace et al. (2011) asked respondents to taste the given food and then match each flavor with one of the non-sense words in given word pairs: takete/maluma, bouba/kiki, lula/ruki, and decter/bobolo. As a result of the experiments, Gallace et al. (2011) found that there is a robust relation between foods/flavors and words. For instance, people are more likely to associated salt and vinegar crisps (potato chips) with takete (or kiki) than brie or cheddar cheese, and blueberry jam with maluma (or boubo) than mint chocolate. Thus, with the findings of the study, Gallace et al. (2011) presented that there is a synesthetic sound symbolism between sounds and gustatory sense.

Concentrating on flavors and speech sounds, Ngo et al. (2011) investigated whether there can be any relation between chocolates varying in their cocoa content and “rounded” versus “angular” shapes and words. In their experiments, Ngo et al. (2011) used different kinds of one commercially available chocolate, and asked respondents to taste these chocolates and to match the flavor with the most appropriate figure and words. The findings of their study presented that low cocoa

(e.g., sweet) chocolates are mostly related to rounded shapes and non-sense words including soft nasal and lateral consonants and back vowels (e.g., “lula”, “maluma”), while high cocoa (e.g., bitter) chocolates are related to angular shapes and non-sense words featuring hard plosive consonants and more front vowels (e.g., “tuki”, “takete”). Thus, the study of Ngo et al. (2011) extended the sound symbolism beyond the shape symbolism into domain of taste perception.

Similar to Ngo et al. (2011), Ngo and Spence (2011) also examined the effects of shapes and speech sounds with respect to different kinds of chocolate in different taste. In the study, Ngo and Spence (2011) presented four different chocolates (two mints which is either solid and fondant, one dark, and one milk) to participants and asked them to taste or simply image tasting the chocolates. Then, they were asked to match perceived flavor with the items regarding non-sense words or simple shapes. The results presented that dark and solid mint chocolates are related to angular shape and nonsense words including sharp speech sounds(e.g., “tuki” and “takete”); whereas mint fondant is perceived as less angular and more pleasant compared to dark or solid mints. Additionally, Ngo and Spence (2011) indicated that milk chocolate is perceived as more pleasant and is strongly related to round shape and nonsense words including rounded speech sounds (e.g., “lula” and “maluma”). In this way, the findings of Ngo and Spence (2011) corroborated the previous findings regarding sound symbolism in the taste and flavor domain.

In their next study, Spence and Gallace (2011:290) tested the cross-modal correspondences between “commercially available food and drink items (still and sparkling water, Brie cheese, and cranberry juice, and two kinds of chocolate that have different cocoa contents), visually-represented shapes, and fictitious words”. The findings of the study of Spence and Gallace (2011) indicated that after tasting the foodstuff, participants consistently associate sparkling water, cranberry juice, and Maltesers (chocolate covered honeycomb) with angular shapes and high pitched fictitious words (“tuki”, and “takete”) which need sharp inflection of the mouth in terms of pronunciation. On the other hand, Spence and Gallace (2011) presented that they associate still water, Brie cheese, and Caramel Nimbbles (chocolate covered caramel) with rounded shapes and lower pitched fictitious words (“lula” and “maluma”). Thus, depending upon its findings, the study of Spence and Gallace

(2011) extended the sound symbolism phenomenon beyond the visual perception into the taste perception by indicating how speech sounds can convey meaning about flavor.

By combining sound, shape and gustatory stimuli together, Bremner et al. (2013) also investigated the bouba-kiki effect. However, based on a different interest, Bremner et al. (2013) explored whether the bouba–kiki effect is also observable in isolated population in which there is not any written language. In this context, Bremner et al. (2013) selected Himba population of Northern Namibia which is far away from the Western cultural and environmental effects. The initial findings of their study presented that as similar with Westerners, remarkable portion of the respondents associated the angular shape with the word “kiki”, and rounded shape with the word “bouba”. Thus, Bremner et al. (2013) succeeded to show the effects of “bouba-kiki” even in non-Western cultures in which there is no any written language.

However, on contrary to findings in prevailing Western literature, the findings of Bremner et al. (2013) indicated that Himba people do not relate sparkling water with angular shapes. In addition, the findings of their study presented that these people more frequently match milk chocolate with angular shapes than rounded shapes as opposite to the matching of Westerners. Under the light of the findings of the study, Bremner et al. (2013) pointed out the importance of cultural environmental factors in shaping the repertoire of cross-modal correspondences of individuals. Thus, Bremner et al. (2013) brought a new perspective to sound symbolism in terms of understanding its effects in different cultural groups.

In another study, Ngo et al. (2013) examined the shape and sound symbolism in exotic fruit juices by adding the taste dimension in cross-modal correspondences. In the study, Ngo et al. (2013) presented different fruit juices (i.e., pineapple, lulo, guanabana, passion fruit, mango and feijoa) to British and Colombian participants and asked them to indicate their responses on line scales after tasting the fruit juices. As a result, although a few differences were observed in between British and Colombian participants’ responses, Ngo et al. (2013) found that the juices which are perceived as sweet and less sour are frequently related to round shapes, round speech sounds and lower pitched sounds, and they are generally perceived as pleasant. On

the other hand, the findings revealed that juices which are perceived as sour are frequently related to angular shapes, sharper speech sounds and higher pitched sounds, and they are perceived as less pleasant. Thus, Ngo et al. (2013) contributed to sound and shape symbolism literature by adding the taste dimensions in cross-modal correspondences.

Along with the research concentrated on correspondences between speech sound and taste stimuli, there have been also many research which investigated the interplay between sounds and other sensory stimuli such as odor. For instance, Adams and Doucè (2017) explored the interaction between sounds of the words, shapes of objects and scents. As a result of their study, Adams and Doucè (2017) found that when there is a direct correspondence between A (shape) and B (nonsense word), and when there is a direct correspondence between A (shape) and C (scent), in the direction of transitivity principle, there is a mediated correspondence between B (nonsense word) and C (scent). However, Adams and Doucè (2017) pointed out that the mediated correspondence between sound and scent is weaker than the direct correspondences between shape and sound, and shape and scent. But still, Adams and Doucè (2017) suggested that even if it is indirectly, sounds can convey meaning about the olfactory characteristics of the objects.

As it seen, the findings of linguistic, psycholinguistic, and psychological studies on sound symbolism done over the years have consistently presented that the relationship between sound and meaning is not arbitrary. So, these findings have drawn the attention of many new scholars and researchers from different fields especially to which the link between sound and meaning can be adapted. Marketing field is also one of them. In particular, the findings regarding to interaction between sounds, shapes, sizes and several sensory stimuli has motivated many marketers to imply these effects in marketing contexts such as product design and image design.

Accordingly, along with other disciplines, since the early of 2000s, marketing scholars (e.g., Baxter and Lowrey, 2011; Baxter and Lowrey, 2014; Baxter, Ilicic, Kulczynski, et al., 2015; Klink, 2000; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007; Shrum et al., 2012; Yorkston and Menon, 2004) have discovered the practicality of sound symbolism, particularly in naming brands. In addition, as compatible with the findings of linguistic and psychological studies, marketing

researchers have demonstrated that certain vowels and consonants reflect certain meanings, as well (Klink, 2000). Such findings in marketing are considered as important because it is known that meanings derived from a brand name has an influence on consumers' evaluations of brand names (Argo et al., 2010). This fact has motivated an increasing number of marketing scholars to explore the meanings elicited by sounds (e.g., Lowrey and Shrum, 2007; Yorkston and Menon, 2004) particularly since the beginning of 2000s.

In recent years, researchers have continued to extend the application of sound symbolism beyond branding domain by applying sound symbolism principles to other marketing related topics such as pricing (Coulter and Coulter, 2010), advertising (Baxter et al., 2015b), consumer perceived ethicality (Klink and Wu, 2017), and so on. Hence, the reality of sound symbolism phenomenon has been validated, and continued to be validated through various marketing related research, as well. In that case, it can be readily concluded that sound symbolism has been one of the research interests to which many scholars and practitioners have paid attention throughout the ages. This interest has also facilitated development of the concept and its extensive literature over time. In this process, although many other fields could also adopt sound symbolism to explain several phenomena in their contexts, some fields such as linguistics, psychology, and marketing seem to contribute more to the sound symbolism literature. For that reason, next section is designed to discuss sound symbolism in several fields such as linguistics, psychology, and marketing.

2.6. SOUND SYMBOLISM IN DIFFERENT FIELDS

According to Spence (2012a), sound symbolism is all about the associations of people between particular sounds and specific attributes of stimulus. This can explain why sound symbolism has been mostly investigated under the fields of linguistics and experimental psychology (Fenko et al., 2016). In that case, it is normal to think that linguistics and psychology are two important fields which have contributed to the development and conceptualization of sound symbolism phenomenon.

However, along with linguistics and psychology, numerous different fields such as anthropology, literature, biology and recently marketing have paid attention to sound symbolism (Pogacar et al., 2015). The scholars and researchers in those fields have conducted fruitful experiments which also supported the existence of the sound symbolism phenomenon. For that reason, sound symbolism is always regarded as a topic of inter-disciplinary interest.

Even sometimes, the fields, which do not seem interconnected with sound symbolism at first sight, can also be interrelated with the sound symbolism concept. The field of medicine is one of them. For instance, corporeal sound-symbolic utterances such as involuntary cries frequently represent the internal state of body, and help physicians understand the physical problems of a patient. Along with corporeal sound symbolism, effects of synesthetic sound symbolism can be examined within the context of medicine. The study of Abel and Glinert (2008), which examined whether the sounds used in cancer medication names can convey the intended meaning about the medications to patients, is a case in point.

In their study, Abel and Glinert (2008) analyzed the trade names of 60 frequently used cancer medications in terms of the frequency of voiced consonants (e.g., /b/, /d/, /g/, /v/, /z/) which are mostly associated with slowness and heaviness in the extant literature, and voiceless consonants (e.g., /p/, /t/, /k/, /f/, /s/) which are mostly associated with fastness and lightness in the extant literature. As a result of the study, Abel and Glinert (2008) concluded that medication brand names containing voiceless consonants are related to more tolerable chemotherapy. Hence, they concluded that voiceless consonants are more commonly used in cancer medication brand names in English than voiced consonants because these sounds are mostly perceived as smaller, faster and lighter (Klink, 2000; Newman, 1933).

Besides the study of Abel and Glinert (2008), the anecdotal study of Faure (2018) presented that the use of sound symbolism is one of the recent trends in drug naming. Initiated by the previous findings regarding non-arbitrary relationship between speech sounds and meaning, Faure (2018:68) emphasized that certain letters like X are frequently used by drug sponsors and branding institutes to create drug brand names (as in “Nexium, Clarinex, Corex, Xanax... , and Zithromax”) because the sound [z] is associated with the idea of relaxation and innovation. For instance,

the drug brand name “Zeviate” is one of the drug brand names created through sound symbolism (Faure, 2018: 67).

Biology is the other field which seems unrelated to sound symbolism research at first glance. However, it is incredibly related to sound symbolism. For instance, as it is mentioned, sounds of animals can also be examined under sound symbolism to explain animal behaviors in their natural environment (Morton, 1977; Ohala, 1994). Along with biology, sound symbolism is also a research topic of literature. Literature attaches importance to sound of the words in poetry or other literary genres to represent meaning as a whole. For instance in his work, Carl Sandburg generally employs obstruents to give his messages (Ross, 2009). The other example of the use of sound symbolism can be seen in the works of James Joyce who frequently adopts sound symbolism in his literary works (Collins, 1977).

In addition, in literary works, sound symbolism principles can be used in onomastics - a name must “sound right” for the person, place or thing that it bears (Finke, 1995:67). For instance, by using the expressiveness of the sounds, the American writer, Howard Phillips Lovecraft created several invented words such as “Yuggoth”, “Azatototh”, and “Nug- Soth” in his several science fictions (Robinson, 2010). In this way, Lovecraft created onomastic names which describe the features of their creatures through their sounds, as well.

Recently, much attention has been paid to sound symbolism by many marketing scholars and researchers, as well (e.g., Klink, 2000; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). This interest has driven increasing number of marketers and marketing scholars spend more time and effort to understand the processes, applications and bounds of sound symbolism theory. Thus, sound symbolism has been extended to marketing and especially brand related contexts, as well.

All in all, as it is seen that the fields contributed to development of sound symbolism literature are quite diverse. However, linguistics, psychology, and marketing have a distinguished place in sound symbolism literature in terms of number of research addressed the concept. For that reason, next section is specifically designed to concentrate on the interaction between sound symbolism and these three fields.

2.6.1. Sound Symbolism in Linguistics

Sound symbolism is originated as a linguistic process examined under semantic which deals with how meaning is conveyed (Brinton, 2000). Therefore, linguists have been interested in this phenomenon and its effects consistently, over the years. To demonstrate the existence of sound symbolism and its effects, a great number of linguists have contributed to sound symbolism literature by exploring the phonemes and sounds (e.g., Clark and Yallop, 1990; Jakobson and Waugh, 1979; Ladefoged, 1975; Ohala, 1984; MacKay, 1978), and in particular sound symbolism (e.g., Hamano, 1986; Hinton et al., 1994; Jespersen, 1933; Karlgren, 1962; Kim, 1977; Lapolla, 1994; Morton, 1994; Nichols, 1971; Ohala, 1994; Samarin, 1967; Ultan, 1978). Thus, this longstanding interest has led to accumulation of a great deal of findings and evidences that unequivocally suggest that sound symbolism is a real phenomenon observed in many world languages (Hinton et al., 1994).

Some of these linguistic studies in sound symbolism literature are based on normative studies, anecdotal evidence and reports, and annotated listings (e.g., Crystal, 1995; Heise, 1965). For that reason, such studies are often regarded as unconvincing as a whole. Accordingly, these weak post hoc evidences have also been supported by a numerous experimental and quasi-experimental evidences (e.g., Brown et al., 1955; Lapolla, 1994; Newman, 1933; Sapir, 1929; Taylor and Taylor, 1962; Westbury, 2005). In these experiments, mathematical scales are frequently used, and the reactions, feel, and perceptions of subjects on the basis of psychological dimensions are measured. Thus, all of these make the sound symbolism a research area of “*psycholinguistics*”, as well (Greenberg and Jenkins, 1964).

“Psycholinguistics” concentrates on “what happens in mind when individuals process languages” (Carnevale et al., 2017:573). More structurally, it is the study of production, comprehension, use, and development of language within the context of cognitive psychology (Lowrey et al., 2013). Psycholinguistic approach has also made increasing number of linguists to adopt the methods of experimental psychology to examine the sound symbolism phenomenon within the context of human cognition (e.g., Köhler, 1947; Newman, 1933; Sapir, 1929). Accordingly, several sound

symbolism research has also been conducted on the basis of scientific experiments. These remarkable number of experimental studies have also indicated that sounds are capable of communicating meaning (Nuckolls, 1999). Hence, the interest towards understanding the effect of sound symbolism on individual responses has led to a rich body of psycholinguistics literature on sound symbolism, as well (Westbury, 2005).

Initiated by the linguistics and psycholinguistics literature, it can be seen that sound symbolism is regarded as a concept which examines phonological features, phonemes, and clusters of phonemes in words from the aspects of meanings. Therefore, sound symbolism has been used to explain a great variety of phenomena in human languages for a long time. For instance, Humboldt's argument on the sign process - which pointed out that either each letter or combinations of letters have particular meaning - have contributed to word formation in different languages, and so contributed to the development of languages (Allott, 2912). By concurring with Humboldt (1936), Jespersen (1922) also restated the role of sound symbolism in initial formation of language and its development (Swadesh, 1970).

Over the last few decades, the interest in how sound symbolism affect the ability to relate words to objects has increasingly continued particularly within the context of the language learning and development. Thus, sound symbolism has protected its place among the topics which consistently attract the attention of scholars (e.g., Imai et al., 2008; Kantartzis et al., 2011; Maurer et al., 2006; Monaghan et al., 2011; Nygaard et al., 2009; Yoshida, 2012) who have examined the language development. Extant research has also demonstrated that there is a positive effect of sound symbolism on *development of early reading skills* (e.g., Ehri and Wilce, 1985); *facilitating early verb learning* (e.g., Imai et al., 2008), and *word learning in infants* (e.g., Imai et al., 2015); *word learning in adults* (Parault and Schwanenflugel, 2006), *word learning in a foreign language* (e.g., Nygaard et al., 2009), and *word learning in a native language* (e.g., Parault and Schwanenflugel, 2006); and *development of language in children* (e.g., Asano et al., 2015; Maurer et al., 2006; Ramachandran and Hubbard, 2001), and *in adults* (e.g., Aveyard, 2012; Nielsen and Rendall, 2012).

Moreover, prevailing findings have suggested that sound symbolism, especially phonaestheme type of sound symbolism, can contribute to creation and recognition of new words (Abelin, 2015). Thus, sound symbolism gives a mechanism to language learners to link words with objects in a consistent and predictable way at a time when they are carrying out many language acquisition tasks (Aveyard, 2012). In this context, in particular to deal with ambiguities in comprehension, to predict the meanings of unfamiliar words, to learn new languages, and to invent new words, sound symbolism is adopted as a useful mechanism.

In a nutshell, pertinent linguistics and psycholinguistics literature have supported that there is an incontestable link between sound symbolism and language development (Hinton et al., 1994). For that reason, it is not wrong to say that sound symbolism has a distinctive place in a theory of language, and so linguistics and psycholinguistics. In addition, initiated by these linguistic and psycholinguistic studies, sound symbolism can be related to psychology because these studies are frequently based on understanding human cognition. This interplay makes sound symbolism a critical phenomenon to explain particular human behaviors. In that case, it can be readily said that there is an interplay between psychology and sound symbolism. Therefore, it will be better to examine sound symbolism in psychology in the next section.

2.6.2. Sound Symbolism in Psychology

As it is mentioned, sound is regarded as one of the sensory stimuli. Accordingly, while perceiving the world, individuals can get useful information from the sounds (Gibson, 1966). In many cases, perception of environmental auditory stimuli does not necessarily correspond to basic physical dimensions (Gaver, 1993). Simply put, perception can also occur as a result of integrating different unisensory experience dimensions into multisensory percepts. The interaction between multisensory percepts is examined within the context of cross-modal correspondences (Spence, 2011). Cross-modal correspondences are examined in detail in the first chapter. However, to refresh the minds, (synesthetic) the definition of cross-modal correspondence is given one more time as the consistent non-arbitrary

mappings that appear to exist between different basic physical stimulus attributes, or features, in different sensory modalities (Spence, 2011).

The cross-modal correspondence process is constitutively based on Gestalt principles for stimulus organization in psychology (Gallece et al. 2011). Gestalt principles propound that meaning is derived from a set of stimuli as a whole, rather than from any individual stimulus (Solomon, 2012). In this respect, it is normal to think that sounds can also convey meaning as a result of their interaction with other stimuli. At this point, understanding synesthesia or cross-modal association as a psychology terminology is extremely important to examine appropriateness of some sounds to non-auditory experience (French, 1977). Recent researches have also indicated that sound symbolism is just a specific case of the more general phenomenon of cross-modal correspondences (e.g., Spence, 2011; Walker and Walker, 2012).

Over the last few decades, cross-modal correspondence between speech sounds and visual dimensions of objects such as *shape* (e.g., Boyle and Tarte, 1980; Karwoski et al., 1942; Nuckolls, 1999; Ramachandran and Hubbard, 2001; Sweeny et al., 2012; Taylor and Taylor, 1962; Walker, 2012; Westbury, 2005), and *size* (e.g., Hinton et al., 1994; Shinohara and Kawahara, 2010) has been well documented. Thus, it is verified that people spontaneously relate particular sounds (front vowels) with specific figures (angular shapes) (Ramachandran and Hubbard, 2001) and specific size (small) (e.g., Shinohara and Kawahara, 2010).

In addition, several research on cross-modal correspondence have also pointed out that people are in tendency of perceiving some specific sounds (higher pitched sounds) as more relevant for some other visual dimensions such as brightness, hardness, fastness, highness in space, lightness in weight, and sharpness than other type of sounds (lower pitched sounds) (e.g., Collier and Hubbard, 2001; Eitan and Timmers, 2010; Hubbard, 1996; Marks, 1975, 2004; Mondloch and Maurer, 2004; Walker, 2012; Walker and Smith, 1984).

There has been also a rapid growth of research on cross-modal correspondences between speech sounds and other sensory stimuli such as *gustatory/flavor stimuli* (e.g., Ngo et al., 2013; Simner and Haywood, 2009; Simner and Ward, 2006; Simner et al., 2010; Spence, 2011; 2012b; Spence and Gallace,

2011; Ward and Simner, 2003; Ward et al., 2005;); *olfactory/smell stimuli* (e.g., Favalli et al., 2013; Ngo et al., 2013); and *tactile/ haptic stimuli* (e.g., Baxter et al., 2017b; Favalli et al., 2013; Ngo et al., 2013). In here, it is important to notify that different from sound symbolism, sounds are not limited only to speech sounds in cross-modal correspondence. For instance, Crisnel and Spence (2009) analyzed cross-modal associations between pitch of musical sounds and tastes. Their findings suggested that sweet and sour tastes are related to higher pitch sounds; whereas bitter tastes are related to lower pitch (Crisnel and Spence, 2009).

In their next study, Crisnel and Spence (2010) emphasized the cross-modal associations between the sounds of several musical instruments and basic tastes. Their findings indicated that sound of trombone, which is perceived unpleasant by respondents, is related to bitter and sour tastes; whereas sound of piano, which is perceived as pleasant by respondents, is associated with sweet tastes.

In another study, Mesz et al., (2011) found that words connotating “salty” taste are musically expressed by using low pitch and staccato (short, abrupt phrasings); whereas words signifying “bitter” taste are expressed by using low pitch and legato (smooth, flowing phrasings). Along with these studies, there are several studies which display that distinct musical properties can convey meaning about the other sensory impressions such as smell and vision (e.g., Deroy et al. 2013).

In this context, in cross-modal correspondence literature, the kinds of sound stimuli can be varied from *sound of octave* (e.g., Tomasik et al., 2008), *pouring sound of beverage* (e.g., Velasco et al., 2013), *sound of a name of the product* (Velasco et al., 2014), *sound of packaging* (Spence, 2012b), *sound of food and beverage preparation* (e.g., Knöferle, 2012) or *sound of products* (e.g., car engine) (e.g., Spence and Zampini, 2006) to *sound of biting, eating, or chewing of a food* (e.g., Christensen and Vickers, 1981; ; Spence, 2012b; Zampini and Spence, 2004; Zampini and Spence, 2005).

In addition, many studies have presented that even background music or environmental sounds can influence the consumer behavior on various aspects. For instance, the tempo of the music played in the restaurants has an influence on time spent eating and the number of food stuff ordered (Milliman, 1986). The in-store music has an influence on consumers’ product choice (e.g., North et al.1997; 1999).

Some types of music like classical music make people buy expensive products in the stores (Areni and Kim, 1993). Thus, it can be readily seen that sounds can be highly effective to explain some human behaviors.

Having all these in mind, it can be readily seen that psychology, and especially the experimental psychology is the other field, in which the influence of sound symbolism has been explored in detail. Regardless of its type, each sound symbolism research in psychology literature emphasized that sounds have an ability to manipulate the perception of individualst through the meanings that they convey. Therefore, it is considered that the place of sound symbolism in psychology is extremely critical to explain systematic relations between the perceived world and expression.

Consequently, cross-modality or more narrowly sound symbolism concentrates on how meaning is generated through use of signs either in single mode or in interplay among modes (Rossolatos, 2017). In this context, they can also be regarded as an integral concept in social semiotics, as it is mentioned. It is known that signs and symbols constitute semiotic resources, and so they can be adopted to create meaning in different contexts such as brand languages. By this way, cross-modality or particularly sound symbolism pave the way for a fruitful research area to marketing scholars, as well.

2.6.3. Sound Symbolism in Marketing

Marketing and particularly branding heavily depend on language. Through the language used in different marketing tools, meaning about a product and/or brand can be conveyed to consumers. So, their perception, memory, attitudes, and behaviors towards brands/products are manipulated. Pertaining literature also suggests that consumers generally familiarize a brand through language used in advertising, language used on packaging or language used in brand names (Carnevale et al., 2017). Notably, in terms of brand names, the linguistic component is regarded as their essence because brand names are frequently constituted by a series of speech sounds like all words (Klink, 2000). In that case, it is normal to think that linguistic component of a brand name may directly influences its functioning

(Bao et al., 2008; Huang, and Chan, 1997). For instance, as it is also mentioned in the first chapter, if a brand name includes an invented word which is created by using several linguistic methods, its distinctiveness will increase (Lowrey et al., 2003).

Accordingly, there has been an increase in the number of marketing research on linguistics which emphasizes the importance of the use of language in branding (Klink, 2000). Most part of these research indicates the several effects of language on consumers' responses to brands (e.g. Lowrey et al., 2003; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). This has made marketers capitalize the findings of several psycholinguistic and psychological studies more to understand the role of language on consumer psychology of brands. As a result of this effort, several linguistics and psycholinguistics concepts have been transferred and adapted to marketing context. Sound symbolism is also one of these concepts which provide a broad range of research interest to understand the interplay between sounds and meaning, and its effects on human psychology.

Initiated by this phenomenon, a considerable amount of studies have already examined the influence of sounds in human perception (e.g., Köhler, 1947; Ramachandran and Hubbard, 2001; Sapir, 1929). The findings of these valuable studies have an important role in prompting the marketers to test whether the phonetic structures of marketing stimuli can affect the consumers' psychology. Along with psycholinguistic sound symbolism studies, several sound symbolism studies in psychology provide important consequences regarding to marketing of products. For instance, many of these studies present that sounds used in brand names (e.g., Spence, 2012), sounds made by packaging (Spence and Zampini, 2006), and sounds made by experiencing (e.g., eating, chewing, biting) the products/brands (e.g., Zampini and Spence, 2004) have a direct influence on the brand perception of consumers. Thus, these findings also motivate marketing scholars to examine sound symbolism phenomenon in marketing context. In this context, it can be readily said that much attention has been paid by marketing scholars in recent years to understand the sound symbolism theory, its principles, and bound. This leads to increase in the number of marketers, who have tested the practicability of findings of psycholinguistic and psychological sound symbolism studies in marketing context,

day by day (e.g., Klink, 2000; Lowrey and Shrum, 2007; Yorkston and Menon, 2004).

Among these marketing studies in sound symbolism literature, particularly the research on creating distinctive and meaningful brand names, has already gained remarkable ground in marketing field (e.g., Baxter and Lowrey, 2011; Klink, 2000; 2001; 2003; Lowrey and Shrum, 2007; Yorkston and Menon, 2004;). This case can be explained by the the nature of sound symbolism which is extremely suitable for branding context. As it is mentioned before, sound symbolism is about conveying meaning through the mere sound of a word, apart from its actual definition (Shrum et al., 2012). In this context, it can be readily seen that marketing studies on sound symbolism have also mostly concentrated on to test whether the sounds or phonemes in brand names can give a cue to customers about product or brand characteristics (e.g., Baxter and Lowrey, 2011; Lowrey and Shrum, 2007; Yorkston and Menon, 2004).

A basic marketing text (Elling, 1969) states that:

“...[a new brand name was desired] that had approximately the same semantic characteristics as major competing products... [since] ... the customer may have a preconceived idea or opinion about the semantic characteristics of the product name...[or] ...what he considers a typical name for a given type of product....” (Peterson and Ross, 1972:29).

This statement hypothesizes that consumers can learn to relate particular phonetic sounds to certain product categories or product characteristics. If this is verified, creating and selecting a new brand name can be easier for marketers more than ever. For that reason, understanding the effects of sounds on perception of individuals is a must for marketers because sounds may provide information to consumers about the products and/or brands. Initiated by Information Theory, - which was first presented in 1949 as a mathematical approach to studying communication and describing information as a probabilistic concept (Shannon and Weaver, 1949)- information is regarded as a means of reducing uncertainty (Brockett et al., 1995).

Applying Information Theory to the branding context, it can be concluded that a brand's value depends on its ability to reduce consumers' uncertainty about product performance and imagery (Bao et al., 2008). Then, it is normal to thought that a good brand name must provide useful information to reduce product related

uncertainty for consumers, and sound symbolism can be one of ways to create inherently meaningful brand names.

If it is proved that sounds forming a brand name manipulate the perception of consumers through the meaning they convey about the product or brand, marketers will be empowered to better distinguish their brands from the others in the marketplace. For that reason, questions like: Can individual phonemes or sounds truly be iconic representations of words semantically? Do the phonemes or sounds in a name of objects give inherent meaning about the objects? Can the specific speech sounds be used in a brand name to reflect the intended message or image about the brand? and so on, have occupied marketing scholars' minds for a while. In this context, as linguistic and phonetic phenomena, sound symbolism has been increasingly adopted by marketing scholars and practitioners over the last few decades.

In a nutshell, regarding these marketing studies, it can be clearly seen that since last few decades, sound symbolism theory has already taken its place in marketing literature, as well. Therefore, next chapter is reserved to review the pertinent sound symbolism literature in marketing field. Since the marketing interest towards sound symbolism is the outcome of interest towards use of linguistics and its methods in marketing, literature review section starts with the linguistic studies which can be associated with sound symbolism. All marketing studies are given in an order in terms of date, to indicate from which aspects sound symbolism effects are extended into new marketing scopes.

CHAPTER 3

MARKETING STUDIES ON SOUND SYMBOLISM

3.1. LITERATURE REVIEW OF THE MARKETING STUDIES ON SOUND SYMBOLISM

3.1.1. Early Marketing Studies on Sound Symbolism

Initiated by the sound symbolism theory, sounds constituted a word are regarded as extremely symbolic in terms of conveying meaning about the word. Dogana (1967) was the first scholar who examined the symbolic link between sound and meaning in marketing context. According to Dogana (1967), sounds in brand names might also convey meaning about the attributes of the products. This interest motivated Dogana (1967) to apply psycholinguistics to brand naming context. Thus, Dogana (1967) examined the appropriateness of the brand names for products in terms of their sound patterns. For Dogana (1967), if a brand name symbolically fits the object that it represents, it is associated with the object better than if it does not fit. Accordingly, Dogana (1967) particularly concentrated on how the phonetic variations result in differences in consumers' perception with regard to objects' attributes.

The findings of Dogana (1967) presented that certain phonetic forms communicate meaning about *movement*, *size*, *luminosity*, and *shape*. For instance, front vowels /i/ and /e/ are more likely to express dynamic concepts (*rapidity*, *lightness*); whereas back vowels /a/, /o/, and /u/ are more associated with *slowness* and *heaviness*. In terms of luminosity, Dogana (1967) pointed out that sounds such as /i/ convey meaning about *brilliancy*, *glittering*, and *sparkling*, while the sounds such as /a/ convey *darkness*. Similar to prevailing literature, Dogana (1967) also purported that front vowels /i/ and /e/ are more frequently perceived as *small*, *simple*, *thin*, and *angular*; whereas the sounds /a/, /u/, and /o/ represent the *largeness*, *complexity*, *thickness*, and *roundness*.

Hence, Dogana (1967) started a new era in marketing in terms of brand naming by emphasizing the expressiveness of the sounds in brand names. However, empirical marketing studies concentrated on the interplay between sound symbolism and product attributes perception have not been conducted till the study of Klink (2000). Thus, although the study of Dogana (1967) was a cornerstone for marketing studies on sound symbolism, most of the early marketing studies on sound symbolism did not go further linguistic research in marketing. These initial marketing studies on sound symbolism are summarized in following part.

3.1.1.1. Marketing Studies Based on Linguistic Research

Although sound symbolism concept has been discussed in linguistics, psycholinguistics and psychology literature for ages, marketing researchers have neglected to empirically examine this phenomena in marketing. For that reason, initial marketing research on sound symbolism was the outcome of studies which have explored the use of linguistic methods in naming product. In this context, the study of Peterson and Ross (1972) could be accepted as a very first marketing research on sound symbolism. In their study, Peterson and Ross (1972) focused on two main research objectives: whether names having certain linguistic characteristics are more proper to certain product categories and whether people can infer some meaning from these names.

To test these hypotheses, Peterson and Ross (1972) determined two product categories; breakfast cereals and detergents. Then, they invented computer generated fictitious brand names which have differences in terms of their linguistic qualities. In their experiment, Peterson and Ross (1972) asked their respondents to match these fictitious brand names with the associative product category. The findings of Peterson and Ross (1972) showed that *one-syllable words*, *plural forms*, and *hard sounding words* are better for breakfast cereals. In addition, they indicated that these linguistic features make the name of breakfast cereals more remindful. On the other hand, they demonstrated that *singular word forms* and *soft sounding words* are better to increase the remindfulness of the detergents.

As a result, Peterson and Ross (1972) suggested that sounds of a brand name play a critical role on eliciting specific meanings about whether the brand name is appropriate for specific product categories. For that reason, although they did not mention about sound symbolism concept explicitly in their study, they have contributed to sound symbolism theory, directly. In addition, Peterson and Ross (1972:32) manifested that “brand awareness”, “media exposure”, “product-use history”, and “income” are unrelated to remindfulness scores of brand names, but demographic variables such as “age”, “sex”, and “marital status” are related. Thus, the study of Peterson and Ross (1972) also emphasized the importance of demographic variables in explaining the interaction between sound structure and meaning.

Based on the study of Sapir (1929) and Newman (1933), Collins (1977) did one of the early sound symbolic marketing studies by investigating whether the phonetic elements of language communicate meaning per se within the context of brand naming. With this purpose, Collins (1977) examined two basic strategies regarding naming brands: **Juliet Principle** - selecting a name for a product and establishing it in the minds of consumers through repetition over time -, and **Joyce Principle** - selecting a name with desirable phonetic symbolism for a product-. As a result of his anecdotal study, Collins (1977: 346) presented that “phonetic elements of language tend to convey a meaning of their own, a “feel” of meaning, or symbolic meaning, quite independently of ordinary linguistic meaning”. Thus, Collins (1977) emphasized the use of **Joyce Principle** in creating a novel and distinctive brand name that reflects some product related aspects through its sound patterns.

Another study concentrated on application of linguistic methods on brand naming was the study of Nilsen (1979). In this study, Nilsen (1979) examined the brand names and corporate names on the basis of not only sound patterns but also other linguistic qualities. To explore the linguistic qualities of brand names, he used fivefold linguistic typology which includes phonology, orthography, morphology, syntax, and semantic.

Within the context of phonetic category, Nilsen (1979) examined the brand names in terms of *alliteration*, *assonance*, *consonance*, *rhymes*, *clipping*, *blending*, and *onomatopoeia*. Within the context of orthographic category, Nilsen (1979)

investigated brand names in terms of *unusual or incorrect spellings*, *abbreviations*, and *acronyms*. In terms of morphological category, Nilsen (1979) used two most common devices which are *affixation* and *compounding*. Lastly, with regard to semantic category, Nilsen (1979) used *metaphor*, *simile*, *metonymy*, *synecdoche*, *personification* and *pathetic fallacy*, *oxymoron*, *paronomasia*, and *semantic appositeness*. Syntactic category was not employed by Nilsen (1979) in the study because it is only applied to syntagmatic chains that are rarely found in general brand names.

The findings of Nilsen (1979) presented that brand and corporate names use several linguistic characteristics such as *alliteration* (e.g., “Jumbo Jack” hamburgers), *assonance* (e.g., “Sunbeam Mist Stick” curlers), *clipping* (e.g., “Pepsi”), *blending* (e.g., “Endust”), *unusual spellings* (e.g., “Quik” chocolate), *affixation* (e.g., “7-up”), *personification* (e.g., “Mr. Clean”), *use of plosives* (e.g., “Kellogg’s”), *metaphor* (e.g., “Satin”), and so on. In this context, similar to the study of Collins (1977), the study of Nilsen (1979) was based on anecdotal evidence, and so it was not a systematic research. In addition, this study was not about sound symbolism, directly. However, with this study, Nilsen (1979) pointed out that while naming brands, marketers and advertisers consciously adopt some certain linguistic characteristics, in particular use of some specific sounds. In this respect, this study could be regarded as important because it has showed that how linguistics could be employed in creating brand and corporate names.

In another study, Vanden Bergh et al., (1987) investigated 479 real brand names in time period between 1971 and 1985 in terms of their linguistic qualities. Vanden Bergh et al., (1987) derived the linguistic qualities from the study of Nilsen (1979). Accordingly, similar to the study of Nilsen (1979), linguistic qualities used in the study of Vanden Bergh et al. (1987) included *phonetic* (e.g. use of plosives in a brand name such as Bic); *orthographic* (e.g., acronyms such as AMOCO); *morphological* (e.g. compounding such as Jack-in-the-Box); and *semantic* characteristics.

The results of the study of Vanden Bergh et al. (1987) presented that 31.9 % of the brand names have *semantic appositeness* which refers to a fit between the name and product (e.g. Bufferin); 31.3 % of the brand names include *plosives* as the

word-initial; 16.7% of the brand names have *semantic likeness*; 16.1 % of the brand names have *sound repetition*, and the rest of them have *rhymes*, *orthographic*, *morphological*, and *sound-play* and *word-play devices*. In addition, the findings of the study demonstrated that more than one linguistic technique can be observed in one brand name as in the example of Coca-Cola (in which seven linguistic devices including plosives and compounding are used). Thus, as well as Nilsen (1979), Vanden Bergh et al. (1987) pointed out the use of linguistics in creating brand names. In this respect, similar to the other initial studies, the study of Vanden Bergh et al. (1987) did not present any conclusive evidence for the effectiveness of sound symbolism used in brand names. However, they suggested a comprehensive classification of linguistic qualities which will be used in creating appealing brand names.

Different from the motivation of the early sound symbolic marketing studies, Robertson (1989) examined the strategically desirable brand name characteristics by reviewing the relevant linguistic, psychological, and marketing literature. On the basis of this literature review, Robertson (1989) suggested that brand names should be simple, distinctive, meaningful, a verbal or sound associate of the product class, an emotional word, and should elicit a brand image. Moreover, Robertson (1989) advised to marketers that brand names should include repetitive sounds, morphemes, and phonemes to support the desired brand image and brand awareness. In this way, Robertson (1989) has drawn attention to the use of linguistic qualities in enhancing memorability for brand names. At this point, he particularly pointed out the role of sounds in creating simple, distinctive, and inherently meaningful brand names. Herewith, although it was just a review study, the suggestions of Robertson (1989) was considered as important in terms of practicability of sound symbolism in brand naming.

Seemingly, most of the marketing research mentioned up to now such as Nilsen (1979) and Vanden Bergh et al. (1987) are considered as extremely critical for the further sound symbolic marketing research. However, it is important to note that these valuable studies more frequently concentrated on the use of linguistic methods in brand naming context rather than directly addressed the sound symbolism phenomena. In addition, it should be emphasized that these studies mostly examined

the brand names in terms of letters rather than sounds. Besides these initial marketing studies based on linguistic research, there were also marketing studies based on sound qualities. To better understand the development of sound symbolism concept in marketing, these studies should be reviewed in the next sub-section.

3.1.1.2. Marketing Studies Based on Sound Qualities

The linguistic research in marketing have motivated many researchers and scholars to do marketing studies that concentrated on sound qualities. Sound quality is based on the phonemics. As one of the branches of phonology, phonemics concentrates on the classification and analysis of the speech sounds in any given language which differentiates one word from another (Usunier and Shaner, 2002). In this context, early marketing studies based on sound qualities could also be considered under linguistic research in marketing. However, these studies primarily concerned with sound qualities of the words' phonemes that have symbolic relationship to the object it represents. For that reason, it should be better to dissociate marketing studies based on sound qualities from the others based on linguistic research.

In this context, the study of Schloss (1981) could be considered as one of the very initial marketing researches on sound symbolism. In the study, Schloss (1981) examined the real top brand names in time period between 1975 and 1979 in terms of their sound structures through content analysis. His findings impressively demonstrated that successful brands in given time period mostly began with the letters "a", "b", "c", "k", "m", "p", "s", and "t" than other letters in alphabet (Schloss, 1981). Initiated by this fact, Schloss (1981) concluded that certain letters in English influence the reaction of people towards them. In this respect, Schloss (1981) succeeded to draw the attention to the role of sound patterns of brand names on their success in the marketplace.

Vanden Bergh et al., (1984) extended the Schloss's (1981) study by categorizing the sounds used in initial letters of brand names as plosive sounds (p, t, and k) and non-plosive sounds. The findings of their study indicated that brand names (e.g., "Bic", "Coca Cola", "Kodak" and "Pontiac") beginning with hard-

sounding plosives (i.e., b, c, d, g, k, p, and t) are better in brand recognition and brand recall than the others starting with non-plosive sounds (Vanden Bergh et al., 1984). In this respect, the findings of the study of Vanden Bergh et al. (1984) are regarded as important in terms of presenting the effects of particular sounds in memorability.

To replicate the study of Schloss (1981) and extend the study of Vanden Bergh et al., (1987), Vanden Bergh (1990) investigated whether some letters are more frequently the initial letter in top brand names than they are in the words in English dictionary, in general. The findings of the study showed that some letters such as “K” are more often the initial letters of brand names than they are the initials of other words in English. Additionally, similar to the findings of Schloss (1981), Vanden Bergh (1990) also suggested that as well as the letter “k”, the letters “a”, “b”, “c”, “m”, “p”, “s”, and “t” are observed as the initial letters of successful brand names.

However, different from the study of Schloss (1981), Vanden Bergh (1990) also examined why the letter “K” is selected as initial letter for brand names more than it is selected as initial letter for other words in English. He explained this phenomenon with sound symbolism in terms of what the letter “k” conveys. According to Vanden Bergh (1990), *versatility of the letter “k”* (which makes it occur not only beginning of a word but also in the middle and at the end of the word); *uniqueness of the letter “k”* (which makes it occur less frequently as the initial letter of a word in English); and *memorability of the letter “k”* (which comes from sound symbolism and its uniqueness) explained why the letter “k” is most frequently used initial letters in brand names.

In another study, Ungerer (1991) examined the brand names within the context of phonetic motivation which covers onomatopoeia and sub-morphemic phonaesthemes. In his anecdotal study, Ungerer (1991) presented that there are several brand names which are created on the basis of expressiveness of sounds. For instance, the power of “Kodak” comes from its initial “K”, “Crunch” is the imitation of the sounds of bite, and “Sprite” is created from phonaestheme “-sp” which has semantic link with sprightly. Accordingly, although it was an anecdotal study, the

evidences given by Ungerer (1991) demonstrated that sound symbolism has been already used in creation of several popular brand names.

To sum up, these initial studies based on sound qualities could be accepted as extremely critical to development of the sound symbolism concept in marketing. However, these studies frequently concerned with letters rather than sounds, as well. In this context, to better comprehend the use of sound symbolism in marketing, reviewing marketing studies based on sounding and pronunciation of letters and words is also a must. Thus, next sub-section is reserved to discuss these studies.

3.1.1.3. Marketing Studies Based on Sounding and Pronunciation of Letters and Words

Along with the marketing studies based on sound qualities, there were many early marketing studies did not directly address the sound symbolism but have contributed to development of the sound symbolism concept in marketing discipline. These studies could be the ones which mainly concentrated on sounding of letters and articulation of words. Since these marketing studies have led to several further sound symbolic marketing studies, it will be better to discuss these marketing studies that emphasized sounding of letters, words or brand names.

Among these studies, marketing studies on alpha numeric brand names had a remarkable place. Alpha-numeric brand names are the brand names that include non-sense combination of letters, words, and number. Since they include words and letters, they provide a good context for sound symbolic research. Although, all marketing studies with regard to alpha-numeric brand names were not directly related to sound symbolism, some of them were closely related to it. For instance, the study of Boyd (1985), which discussed the alpha-numeric brand names on the basis of their origins, increase in their use, and their classification, was one of them.

At first sight, the anecdotal study of Boyd (1985) did not directly address the sound symbolism. However, Boyd (1985) pointed out that phonetic pronunciation of the brand names can communicate an apt image. For instance, he stated that for Boeing, “the soft sounding “707” seems entirely appropriate in projecting the image of a safe and comfortable smooth-cruising vehicle cutting through the air high aloft

(Boyd, 1985:50). Depending upon these given evidences, the study of Boyd (1985) is regarded as a study which emphasized the expressiveness of the sounds, as well.

Just like the study of Boyd (1985), Pavia and Costa (1993) examined the effects of sounds within the context of alpha-numeric brand names. The findings of Pavia and Costa (1993) indicated that consumers draw some inferences from alpha numeric brand names. For instance, the letters “X” and “Z” are mostly perceived as the indicators of high-technology, speed, and complexity. In addition, when these letters are coupled with large numbers, they are more related to masculinity because of their sharp visual appearance and harsh spoken sound. Based on these findings, Pavia and Costa (1993) concluded that brand names including some certain sounds and numbers (e.g., “Z 50”) may fit some certain products (e.g., computer drive) better than others (e.g., “A 50”). Thus, Pavia and Costa (1993) suggested that even nonsense alpha numeric brand names could convey some certain meanings to the consumers through their sounds and numbers.

Ang (1997) also explored the effects of letters and numbers on the perception of consumers. In his study, Ang (1997) particularly concentrated on the letters and sounding of numbers in Chinese in terms of whether they can convey meaning to consumers about bringing luck. In the direction of this research motivation, Ang (1997) initially determined that the letters “a” and “s”, and the number “8” are evaluated as the luckiest letters and number in Chinese, respectively. Then, he hypothesized that alpha-numeric brand names, “A8” and “S8”, are perceived as the lucky brand names, while “F4” and “Z4” are considered as the unlucky.

As a result of the study, Ang (1997) supported his hypotheses. In this way, he succeeded to indicate that brand names containing the luckiest numbers and letters are perceived as more favorable because of being considered as lucky. In addition, on the basis of given alpha numeric brand names, the findings of the study also presented that alpha-numeric brand names are also considered as more fitting to technical products than non-technical ones (Ang, 1997). Under the light of the findings of the study, Ang (1997) has contributed to sound symbolism theory and Joyce Principle by demonstrating the role of letters to convey meaning to consumers in Chinese context. Moreover, this study has also contributed to marketing practice because its findings indicated that consumers can infer meaning about characteristics

of product through its name in particularly the absence of other information about the product.

The other study which concentrated on sounding of words was the the study of Zinkhan and Martin (1987). In their study, Zinkhan and Martin (1987) investigated the relations between brand name imagery and the variables which can potentially lead to differential effects on brand name imagery. Based upon their research objective, Zinkhan and Martin (1987) examined the attitudes of consumers towards the fictitiously created typical and atypical brand names. In the study, typical brand names are the names which are similar or remindful like other names in the product category. On the other hand, atypical brand names are the names which are dissimilar to the other names in the product category. Within the context of these two brand name types, Zinkhan and Martin (1987) tested that whether typical brand names are more likely to lead to positive inferential beliefs; whereas atypical brand names are more likely to lead to negative or neutral beliefs.

The findings of the study of the Zinkhan and Martin (1987) presented that if the brand name is given alone, consumers perceive the typical brand names more positively than atypical brand names. For instance, consumers are more likely to prefer the fictitious brand name Mishu for cameras and Polar Bear for ice cream than the brand name Pilot and Pharaoh, respectively. Under the light of these findings, Zinkhan and Martin (1987) suggested that consumers have preconceived beliefs relating to what a brand name for a specific product should sound like. Hence, Zinkan and Martin (1987) advised manufacturers about creating typical brand names with familiar sound structures which may result in more success than atypical brand names do in the marketplace.

Besides sounding of letters, marketing studies based on pronunciation of sounds or words could also be regarded as early sound symbolic marketing studies in terms of displaying the effects of sounds on consumers. For instance, Leclerc et al. (1994) examined the sounds in terms of whether the pronunciation of a brand name in a foreign language affects the perception and attitudes of consumers towards the brand. With this motivation, Leclerc et al. (1994) investigated the impacts of French and English pronunciation of brand names on U.S. consumers' behaviors.

The findings of the study of Leclerc et al. (1994) indicated that if the same fictitious brand name is pronounced in French, as opposed to English, this leads to *increase in perceived hedonism for the products; increase in positive brand attitudes towards hedonic products but not towards utilitarian or hybrid products; and increase in favorable attitudes toward the brand name*. Moreover, Leclerc et al. (1994) presented that pronunciation of a brand name in French leads to more positive brand attitudes for hedonic products than country-of-origin effect does alone. Thus, the findings of the study of Leclerc et al. (1994) suggested that sounds alone are highly influential to create desired brand attitudes for specific products.

Additionally, Leclerc et al. (1994) also conducted taste test to understand whether the pronunciation of the same brand name in different languages influences the product perception of consumers only when they lack of direct product experience. As a result of the taste test, Leclerc et al. (1994) demonstrated that even if the consumers have a direct sensory experience with the product, their perception towards the product changes via the French-sounding brand name, especially for hedonic products. Consequently, the study of Leclerc et al. (1994) pointed out that differences in sounding of brand names in different languages affect the perception and attitudes of consumers towards products, brands and brand names. In this context, although the study of Leclerc et al. (1994) does not directly address the sound symbolism phenomenon, it can be readily said that its findings have contributed to the sound symbolism theory, directly.

In another study, Pan and Schmitt (1996) examined the effect of script and sound matching in Chinese and English. In the study, Pan and Schmitt (1996) employed masculine and feminine product categories, masculine and feminine scripts, and male and female voices to create match and mismatch conditions regarding script/product and sound/product. The results indicated that match between script and product has a significant effect on attitudes of Chinese native speakers whose language is based on logographic system; whereas match between sound and product has a significant effect on English native speakers whose language is based on alphabetic system. Thus, Pan and Schmitt (1996) emphasized the effects of structural characteristics of language, sounding of words, and writing system on consumer behavior.

As it is seen, the early marketing research on sound symbolism has started with adapting linguistic methods to marketing, and particularly examining sound and sounding qualities in brand names (e.g., Robertson, 1989; Vanden Berg et al., 1987). However, these early marketing studies were not enough to draw conclusion about sound patterns of brand names, and in particular the effects of sound symbolism in marketing context. Anyway, this interest has continued to gather momentum with the purpose of understanding the interaction between sound symbolism and consumer psychology since the beginning of 2000s. In this momentum, the study of Klink (2000) had a remarkable contribution. Klink (2000) investigated the use of synesthetic sound symbolism to create inherently meaningful brand names, and this study has led to several further empirical marketing studies on sound symbolism in 2000s. Thus, with the study of Klink (2000), marketing studies have started to address the sound symbolism phenomena, directly and empirically.

3.1.2. Empirical Marketing Studies Directly Based on Sound Symbolism

Although sound symbolism concept has been discussed in marketing for only a few decades, a large number of empirical studies have tested the effects of sound symbolism in marketing. For that reason, it can be readily said that there is a relatively extensive literature regarding sound symbolism in marketing. In this respect, in order to discuss these empirical marketing studies in a more structural way, it should be better to categorize these studies into some aspects.

While the relevant literature was reviewed, the most remarkable aspect with respect to these studies was detected as the type of sounds employed in these studies. Although, there is a great number of marketing studies testing the effects of only vowel sounds, there are a few marketing studies on only consonant sounds. Nevertheless, the effects of consonants have also been examined in many empirical marketing studies together with the effects of vowels. For that reason, marketing studies that directly addressed sound symbolism phenomena are going to be reviewed under three sub-sections: (i) marketing studies on both vowels and consonants, (ii) marketing studies on only vowels, and (iii) marketing studies on only consonants.

3.1.2.1. Marketing Studies on Both Vowels and Consonant Sounds

Vowels are classified into a number of different ways as discussed in Vowels of Turkish section in Chapter 2. Nevertheless, the front/back vowels distinction has frequently been a focus of sound symbolism research in marketing, as well. Accordingly, there is a relatively great number of marketing studies that tested the effects of front/back vowel distinction on conveying meaning in sound symbolism literature. Sound symbolism research also suggests that consonant sounds can convey inherent meaning, as well as vowel sounds do. In particular, two dimensions of consonants have been investigated more commonly in sound symbolism literature: (1) fricative vs. stop consonants in terms of manner of articulation and (2) voiceless vs. voiced consonants in terms of vibrating the vocal cords. In relevant literature, it can be possible to see many empirical marketing studies tested the effects of both vowels and consonants either in the same study or even in the same stimuli.

For instance, at the early of 1990s, Heath et al., (1990) explored the influence of sound symbolism on the perception of customers towards brand names for specific products. To test this effect, Heath et al. (1990) selected two products; toilet paper and household cleanser, and created fictitious brand names including different combinations of consonants and vowels. The findings of Heath et al. (1990) presented that as the hardness level of consonants (**stop consonants**) and frequency level of vowels (**front vowels**) used in fictitious brand name for both toilet paper and household cleanser increase, consumers' perception towards *harshness of the product* increases. In addition, Heath et al. (1990) purported that although these perceptions do not lead to any brand attitudes or purchase intentions, sounds in brand names can convey meaning and strengthen positioning of the brands. Thus, the study of Heath et al. (1990) showed the effects of sound symbolism in marketing context, clearly.

At the beginning of 2000s, the first study which empirically tested the effects of vowels and consonants was the study of Klink (2000). Klink (2000) mainly tested the effects of the use of sound symbolism in brand names on the perception of English speaking subjects. For his research, Klink (2000) did two studies: first one is for understanding whether a brand name alone is capable of conveying product

related information; and the second one is for understanding whether brand names can convey information with supporting marketing communications. For these studies, Klink (2000) created several nonsense brand names which differ in terms of their vowel and consonant patterns. Then, he asked the participants to relate these sounds to several contrasts which have been examined before in prevailing psycholinguistic sound symbolism literature.

The findings of Klink (2000) demonstrated that in terms of vowels, brand names including **front vowels** (e.g., /i/, /e/) are perceived as “*smaller*”, “*lighter* (opposite of darker)”, “*milder*”, “*thinner*”, “*softer*”, “*faster*”, “*colder*”, “*more bitter*”, “*more feminine*”, “*friendlier*”, “*weaker*”, “*lighter* (opposite of heavier)”, and “*prettier*” than brand names including **back vowels** (e.g., /o/, /u/). In terms of consonants, the findings of his study presented that brand names including **fricatives** (/f/, /s/, /v/, and /z/) are perceived as “*smaller*”, “*faster*”, “*lighter* (opposite of heavier)”, and “*more feminine*” than brand names including **stops** (/p/, /t/, /b/, /d/, /g/, and /k/); brand names including **voiceless stops** (/p/, /t/, and /k/) are perceived as “*smaller*”, “*faster*”, “*lighter* (opposite to heavier)”, “*more feminine*”, and “*sharper*” than **voiced stops** (/b/, /d/, and /g/); and brand names including **voiceless fricatives** (/f/ and /s/) are perceived as “*faster*”, “*softer*”, and “*more feminine*” than brand names including **voiced fricatives** (/v/ and /z/).

In addition, Klink (2000) pointed out that vowel sounds in a brand name can convey meaning about characteristics of the product either in the presence or absence of supporting marketing communications. Thus, the study of Klink (2000) presented the existence of direct effect of sounds on conveying meaning to individuals. All in all, by confirming the findings of previous research in sound symbolism literature, Klink (2000) indicated the applicability of sound symbolism phenomena in marketing context just like the Dogana (1967). Hence, the study of Klink (2000) extended the sound symbolism beyond the linguistics, psycholinguistics and psychology into marketing, in real terms.

In his next study, Klink (2001) examined the use of semantics and sound symbolism in creating a meaningful brand name. In this way, Klink (2001) aimed to test whether there are differences in consumers’ reactions to meaningful brand names including either semantic or sound symbolic imbeds. To test the effects of semantic

and sound symbolic imbeds, Klink (2001) used several stimuli which were prepared as no-imbed name, sound symbolic imbed name, and semantic imbed name (e.g., **Polbee**, **Silbee**, **Silsoft** for shampoo and **Bondin**, **Zindin**, **Zinfast** for pain reliever). So, the effects of vowels and consonants were tested together in the same stimuli in the study.

The findings of the study of Klink (2001) indicated that brand names including some specific vowels and consonants are better to convey product-related information to customers. For instance, in terms of vowels, the **front vowel sound “/i/”** is more frequently associated with *softness* and *rapidity* than the **back vowel sound “/o/”**; and the **front vowel sound “/e/”** is more closely associated with *lighter weight* than the **back vowel sound “/u/”**. In terms of consonants, the findings indicated that the **fricative sound “/s/”** is more frequently associated with *softness* than the **stop sound “/p/”**; the **fricative sound “/z/”** is better to convey *rapidity* than the **stop sound “/b/”**; and the **fricative sound “/v/”** is more closely associated with *lighter weight* than the **stop sound “/g/”**. Additionally, the findings of the study presented that these brand names are better positioned in the minds of consumers than the brand names using semantics.

Besides indicating the interplay between sounds and product attribute perception, Klink (2001) also found that if a brand name includes both semantic imbeds and sound symbolism imbeds, this leads to increase in product liking and positioning for customers. Consequently, Klink (2001) concluded that meaning communicated through brand names including both sound symbolic and semantic imbeds reinforce each other and creates more meaningful brand names. In this way, he both contributed to marketing practice with respect to brand naming and sound symbolism literature.

In another study, Klink (2003) investigated the design characteristics of brand names and brand marks with respect to sound symbolism. As well as his previous studies, Klink (2003) also employed vowels and consonants together in this study. However, rather than testing the effects of vowels and consonants in the same stimuli as in the study of Klink (2001), Klink (2003) tested the effects of vowels and consonants separately via different stimuli as in the study of Klink (2000).

Consistent with prior psycholinguistic research, the result of the study specified that brand names including **front vowels** (“/i/” and “/e/”) and **fricatives** (“/f/” and “/v/”) are perceived as more closely to “*lighter color*”, “*angular shapes*” and “*smaller display of brand logos*” than **back vowels** and **stops**, respectively. Klink (2003) also pointed out that characteristics of brand marks such as size, color, and shape can reinforce the sound symbolic meaning in a brand name, which in turn, increase the brand liking. For instance, if back vowels are used in a new brand name for a beer to communicate about its darkness, the brand meaning can be enhanced by using a large, rounded and dark colored brand mark. Eventually, the findings of Klink (2003) indicated that if a brand mark is consistently designed with the sound structure of brand names, brand can convey intended brand meaning much better.

Initiated by a different research objective, Argo, Popa, and Smith (2010) examined the impact of sound repetition in brand names on product evaluation of consumers. According to Argo et al. (2010), brand names with sound repetition such as Coca-Cola, Kit Kat, and Jelly Belly might reveal the positive feelings towards the products, in particular if they are spoken loudly. In this direction, Argo et al. (2010) particularly concentrated on consumers’ feelings and consumption decisions, when they are audibly exposed to brand names containing sound repetition phonetically.

To test the effects of sound repetition, Argo et al. (2010) used non-sense brand name pairs in which one of them represented sound repetition and the other did not (e.g., **sepsop/sepfut** and **temasema/temafanu**). To prepare these brand name pairs, vowels and consonants were matched according to their phonetic characteristics. For instance, fricative “/f/” and back vowel “/o/” were replaced with another fricative “/s/” and another back vowel “/u/”, respectively.

The findings of the study presented that brand names with sound repetition in their phonetic structure and spoken aloud lead to positive effect on consumers’ brand evaluations, cross-selling, and product choice. However, Argo et al. (2010) demonstrated that these effects are not influential for consumers, who are low in sensitivity to sound repetition. Additionally, they presented that these effects are not influential for cases in which the phonetic structure of brand names deviates too excessively from linguistic expectations. The research on sound symbolism conducted to date has been frequently based on the notion that sounds of a brand

name can influence the product evaluations through the meaning that consumers derive when they are exposed to it (Klink, 2000; Lowrey et al., 2003). However, Argo et al (2010) showed that brand names positively influence product evaluations and choices of customers through “*affect*”. In this context, rather than tackling sound symbolism from cognitively driven perspective, Argo et al. (2010) tackled the sound symbolism by employing affect. So, as a main result of their study, they asserted that positive affect influences consumers. More clearly, if brand names including specific linguistic devices such as sound repetition are spoken aloud, this leads to positive affect, which in turn, influences consumers’ product evaluations and choices.

All in all, the study of Argo et al. (2010) emphasized the impact of expressing the brand name either aloud or silently on consumers’ behaviors. In this respect, the study of Argo et al. (2010) have contributed to sound symbolism theory by suggesting that sound symbolism can influence consumer affect. In addition, it has contributed to marketing practice by manifesting how rhyming and sound repetition in a brand name positively affect behaviors of consumers.

Another study, which embraced the sound symbolism phenomenon in different context, was the study of Coulter and Coulter (2010). In fact, the study of Coulter and Coulter was based on the findings of prevailing sound symbolism literature which suggest that particular vowels and consonants are related to smallness and largeness. However, Coulter and Coulter (2010) examined these implications within the context of pricing. The main research objective of Coulter and Coulter (2010) was to test whether the mere sounds of numbers in prices can manipulate perception of individuals towards price of the products. The other research objective of the study was to understand whether the effects of sounds in numbers are consistent in several languages. To test the consistency of the sound symbolism effects, Coulter and Coulter (2010) selected three languages: English, Chinese, and Spanish.

To analyze the effects of sounds of numbers, Coulter and Coulter (2010) initially categorized the numbers in English, Chinese and Spanish in terms of their pronunciation and letters. Herewith, they classified the numbers “3 (**three**), 6 (**six**), 7 (**seven**), 8 (**eight**), and 10 (**ten**)” as the numbers including **front vowels** associated with *smallness*, and classified the numbers “1 (**one**) and 2 (**two**)” as the numbers

including **back vowels** associated with *largeness* in English. Similarly, they classified the numbers “1 (yee) and 7 (chee)” as the numbers including **front vowels** in Chinese, while they classified the numbers “2 (uhr), 3 (sahn), 4 (suh), 5 (woo), 8 (bah), and 9 (jyo)” as the numbers including **back vowels**. Lastly, they classified the numbers “3 (tres), 6 (seis), and 7 (siete)” as the numbers with **front vowels** in Spanish; whereas they classified the numbers “1 (uno), 2 (dos), and 8 (ocho)” as the numbers including back vowels.

Along with vowels, Coulter and Coulter (2010) categorized the numbers in terms of consonants that they have. In this way, they classified the numbers “4, 5, 6, and 7” in English, “3, 4, and 10” in Chinese, and “6” in Spanish as the numbers including **fricatives** associated to smallness. On the other hand, they classified the numbers “2 and 10” in English, “8” in Chinese, and “2, 3, 4, and 10” in Spanish as the numbers including **stops** which are associated with largeness. Lastly, in terms of vowel/consonant interaction, Coulter and Coulter (2010) classified the numbers “3, 6, 7, and 8” in English, “1 and 7” in Chinese, and “3, 6, and 7” in Spanish as the numbers with **front fricatives** which are associated with smallness. On the other hand, they classified “1 and 2” in English, “2, 5, 8, and 9” in Chinese, and “1, 2, 4, 8, and 10” in Spanish as the numbers with **back stops** which are associated with largeness.

The findings of Coulter and Coulter (2010) demonstrated that perceptions of largeness and smallness eventuate as a consequence of mental rehearsal of price endings which differ in terms of front/back vowel and fricative/stop consonant. Thus, Coulter and Coulter (2010) implied that sounds of the numbers influence the analog magnitude representations related to price discount. More clearly, Coulter and Coulter (2010) suggested that in phonological rehearsal conditions (in which respondents are asked to rehearse the prices internally to keep them in memory), the prices including numbers with small sounds like front vowels and fricatives lead to overestimation of price discounts. On the other hand, the prices including numbers with large sounds like back vowels and stops lead to underestimation of price discounts. In addition, Coulter and Coulter (2010) indicated that same sales prices typified by small phonemes in one language and large phonemes in another language can allow differential effects. For instance, if the sales prices are rehearsed in

English, a price discount from \$11.00 to \$ 7.88 (28.4 %) is perceived as greater than a price discount from \$10.00 to \$7.01 (29.9 %). However, the latter discount is perceived as greater if the same sales prices are rehearsed in Chinese.

Coulter and Coulter (2010) also purported that in some cases, these underestimation and overestimation effects can lead to greater perceived discounts, increased perception of sales price value, and greater purchase intention. Moreover, Coulter and Coulter (2010) emphasized that in the case of absence of rehearsal of sales price but existence of rehearsal of non-price related sounds, effects of sound symbolism originating from the sounds of numbers do not occur. Therefore, consumers perceive actual discount amounts. All in all, under the light of their findings, Coulter and Coulter (2010) highlighted that sounds of number per se can non-consciously influence and alter numerical magnitude perception. In this respect, the study of Coulter and Coulter (2010) has contributed to sound symbolism literature by extending brand related sound symbolism research into pricing context. Moreover, with this study, Coulter and Coulter (2010) has contributed to the marketing practice by showing the effects of sound symbolism on pricing across languages, which will guide many marketers in their global pricing strategies.

By drawing on sound symbolism theory, Athaide and Klink (2012) investigated the creation of meaningful brand names for international markets. In their study, Athaide and Klink (2012) mainly concentrated on whether meaning imbued in a brand name through sound symbolism is persistent after translating the brand name from one language to another. To test this effect, they selected two languages: English and Hindi. Then, brand names were translated from English to Hindi. To test the effects of sounds, Athaide and Klink (2012) employed both vowel and consonant sounds just like the study of Klink (2000),

The findings of their study presented that in terms of vowels, Hindi brand names containing **front vowels** were perceived as *lighter* (opposite to darker), *thinner*, *softer*, *faster*, *colder*, *more bitter*, *lighter* (opposite to heavier), and *prettier* than **back vowels**. On the other hand, no significant differences were detected between front versus back vowels in brand names for conveying masculinity, size, strength, mildness, and friendliness. In terms of consonants, the findings of their study presented that Hindi brand names translated from English were perceived as

faster, lighter (opposite to heavier), *softer*, and *more feminine*, when they included **fricatives** as opposed to **stops**. On the other hand, in terms of conveying sharpness, no significant differences were found between stops and fricatives.

In addition, just like the study of Klink (2000), Athaide and Klink (2012) also examined the consonants in terms of being voiced and voiceless. In this context, they also investigated whether meaning imbued in a brand name through voiced vs. voiceless stops and voiced vs. voiceless fricatives was similar after translating the brand name from English to Hindi. The results presented that Hindi brand names containing **voiceless stops** were perceived as *smaller, lighter* (opposite to heavier), *sharper, softer*, and *more feminine* than **voiced stops**. However, regarding speed, no significant differences were observed between voiceless and voiced stops. In terms of difference between voiced and voiceless fricatives, the results indicated that Hindi brand names containing **voiceless fricatives** are perceived as *faster, lighter* (opposite to heavier), *softer*, and *more feminine* than **voiced fricatives**. Whereas, no significant differences were observed between voiced and voiceless fricatives with regard to conveying speediness and sharpness. As a result, the findings of the study also demonstrated that consonants sounds could communicate inherent meaning across languages, as well as vowels do. Thus, Athaide and Klink (2012) has strengthened the universal sound symbolism effect, as well. In addition, their findings have contributed to marketing practice by showing that creating brand names with consistent meaning across languages is possible via sound symbolism.

To replicate and extend the study of Shrum et al. (2012) on international sound – brand name preference effects beyond vowel sounds, Kuehnl and Mantau (2013) conducted a new study. In their study, Kuehnl and Mantau (2013) investigated the effects of sound symbolism on international brand names within the context of different sounds, different languages, and new fictitious brand names. By this way, different from the study of Shrum et al. (2012), Kuehnl and Mantau (2013) examined sound symbolism effects in German, and within the context of consonants, as well. The findings of the study replicated the findings of Shrum et al. (2012) in terms of interaction by language, vowel sounds and product type (car). However, the findings of the study differed from the findings of Lowrey and Shrum (2007) in terms of brand name preferences of consumers for product type (car). For instance,

as distinct from the findings of Lowrey and Shrum (2007), Kuehnl and Mantau (2013) indicated that English speaking natives mostly prefer brand names including front vowels irrespective of whether the car is two-seater convertible or SUV.

In addition, as a result of examining sound-preferences effects on consonants, Kuehnl and Mantau (2013) demonstrated that there is a tendency in all languages except French toward preferring the brand names containing stops over fricatives for SUVs. Nevertheless, the findings of the study did not give a clear pattern for fricatives. All in all, Kuehnl and Mantau (2013) succeeded to extend the study of Lowrey and Shrum (2007) to consonants from the perspective of sound-preferences effects but did not succeed to extend the study of Shrum et al. (2012) to consonants. Simply put, Kuehnl and Mantau (2013) purported that there is no interaction by language, consonant sounds and car type, as it is found by Shrum et al. (2012) for vowel sounds. As a result, Kuehnl and Mantau (2013) indicated that sound symbolism effects on brand name preferences cannot be generalized across all vowels, consonants, and languages. In this respect, their study has contributed to sound symbolism theory by displaying the extent of sound-preference effects and sound-perception effects across languages. In addition, the study of Kuehnl and Mantau (2013) has contributed to marketing practice by advising marketers to be careful about selecting right sound pattern for right language to convey meaning about product attributes.

In another study, Favalli et al. (2013) examined whether the sounds in a name of a product can convey sensory associations to consumers. In fact, the interplay between speech sounds and sensory associations has been well documented in psycholinguistic sound symbolism literature. However, Favalli et al. (2013) explored this interplay within the context of marketing. In their study, Favalli et al. (2013) selected sandwich as product category, and used several nonsense words (e.g., “takete”, “tuki”, “bouba”, “maluma”) to test whether the sounds of these words convey meaning about the sandwich. As different from other marketing studies on sound symbolism, Favalli et al. (2013) conducted entire study in Danish.

The findings of the study of Favalli et al. (2013) revealed that sounds of the products’ names are related to conceptual attributes of the products. For instance, product names including **sharp sounds** (e.g., “t”, “k”, “i”) expressed *fishy*

sandwiches; whereas product names with **soft sounds** (e.g., “m”, “l”, “u”) connoted *meaty characteristics* of the sandwiches to consumers. In addition, Favalli et al. (2013) indicated that sounds in the names of products convey meaning about shape of the product and other sensory attributes such as its taste and texture. For instance, brand names including **sharp sounds** (e.g., Kiki) were associated with *sharp curves*, while names including **soft sounds** (e.g., Maluma) were associated with *soft curves*. Accordingly, Favalli et al. (2013) pointed out that consumers are more likely to associate different meanings to different speech sounds. All in all, the findings of Favalli et al. (2013) emphasized the critical role of product name in multisensory product experience. In this context, this study contributed to sound symbolism literature by extending the known associations to sensory attributes. Moreover, this study suggested a number of significant sound symbolism implications for brand naming, branding, and advertising of products to enhance product experiences of consumers.

Another important sound symbolism study was conducted by Klink and Wu (2014) to understand how best sound symbolism is imbedded in a brand name to create meaningful brand names and favorable brand name response. In their study, Klink and Wu (2014) specifically looked for answers to three basic questions: “*where to position the sound symbolism imbeds*”; “*what type of sound symbolism imbeds to use*”; and “*what is the effect of combining sound symbolism imbeds*”. To test these hypotheses, brand meaning created by sound symbolism was measured in terms of size and speed. The findings of the study demonstrated that brand meaning in terms of size and speed is conveyed, if the imbeds are positioned in the first syllable of a brand name. In addition, Klink and Wu (2014) presented that brand meaning is still conveyed, even if the imbeds are positioned after the first syllable of a brand name. In this context, the findings of Klink and Wu (2014) indicated that **front vowels** (“i”) and **fricatives** (“v”) were good at conveying *smallness* and *fastness*.

The findings of Klink and Wu (2014) also revealed that brand meaning is conveyed better by vowels in a brand name than consonants. Thus, Klink and Wu (2014) suggested that the effects of sound symbolism can be observed best in front/back vowel distinction rather than in fricative/stop distinction. Moreover, Klink

and Wu (2014) found that if consistent vowel and consonant imbeds are combined in a brand name, brand meaning conveyed by the brand name will be much better with stronger effect, which in turn, increase favorable impact on its product choice (Klink and Wu, 2014). Thus, with this study, Klink and Wu (2014) has advised marketers for effective use of sound symbolism when they are embedding sound symbolism in brand names.

In their next study, Klink and Athaide (2014) examined the sound symbolic relationship between brand name and brand mark in emerging market context. Through this study, they aimed to extend the study of Klink (2003) (which investigated the interaction between sound symbolic meaning and brand mark characteristics) beyond US marketplace and the study of Athaide and Klink (2012) (which asserted that consistent brand name meaning can be conveyed across languages). The findings of the study indicated that brand names including **higher frequency sounds** (front vowels and fricatives) are related to brand marks which are more *angular* and *smaller* in size. However, there was a limited support for color in international context as different from the findings of Klink (2003) for US context.

In the direction of their findings, Klink and Athaide (2014) concluded that colors have different meanings in different languages. Thus, this study suggested that rather than synesthetic sound symbolism, the interplay between sound and color may be involved in conventional sound symbolism because it is culturally specific. In addition, in their study, Klink and Athaide (2014: 265) found “a significant effect for brand marks”, “a marginally significant effect for brand name”, and “no significant effect for the interaction of the two” on communicating intended meaning. Thus, they suggested that brand name and brand mark together cannot increase intended brand meaning. All in all, with this study, Klink and Athaide (2014) highlighted that customers in emerging markets mostly rely on visual brand elements and derive more meaning from them rather than brand names which require literacy, pronunciation, phonetic knowledge. Hence, this study contributed to marketing practice and sound symbolism theory by demonstrating superior position of brand mark relative to brand name in conveying intended product positioning in an emerging market context.

As well as the study of Favalli et al. (2013), Velasco et al. (2014) examined sound symbolism phenomena within the context of cross-modal correspondences. However, in their study, they specifically focused on whether visual and auditory characteristics of packaging can be associated with taste of the product. In this respect, Velasco et al. (2014) examined how rounded vs. angular shapes, rounded (Swis721 B1kRnd BT – Black) vs. angular (Hollywood Hills - Regular) typefaces, and rounded (Blum) vs. angular (Clax) names and high vs. low pitched sounds can be combined to communicate information about sweetness or sourness of a product. Seemingly, Velasco et al. (2014) used a high and low pitched sound as a sound stimuli. However, they also used the name pairs which were created through back vowels and stops (**Blum**) and through front vowels and fricatives (**Clax**). The findings of the study demonstrated that when *rounded shapes, typefaces, and brand names* are matched with **low pitched sounds**, they better convey information about sweet taste. On the other hand, when *angular shapes, typefaces, and brand names* are matched with **high pitched sounds**, they communicate sour tastes better. Through the findings of the study, Velasco et al. (2014) have contributed to sound symbolism theoretically by examining the interaction between sound and taste within the context of cross-modal correspondences. Moreover, they have contributed to marketing practice by emphasizing the role of this interaction on creating appropriate customer expectations towards the products.

In another study, Fenko et al. (2016) examined the effects of sound symbolism on consumers' responses by addressing the elements which potentially structure product expectations of consumers. In their study, Fenko et al. (2016) concentrated on the interplay between sound symbolism, packaging design, and product category and its influence on responses of consumers. To test the effects of this interplay on consumers' responses, Fenko et al. (2016) created fictitious brand names (e.g., "Asahi" and "Ramune"), selected different package shapes (rounded vs. angular), and lastly picked cookie as the product category. Then, Fenko et al. (2016) tested the influence of sounds, package shapes, and product types on "perceived product healthfulness", "product evaluation", "taste expectations" and "purchase intention". The findings of the study indicated that fictitious brand name "Asahi" is associated with health; whereas "Ramune" is associated with unhealth; rounded

package design is associated with unhealthy product, but angular package design is associated with healthy product; and lastly muesli cookie is rated for healthy product, while butter cookie is rated for unhealthy product. In this respect, the findings of the study presented that both shape of package and type of product have an influence on perceived product healthfulness for two products. Nevertheless, brand name alone does not have any influence on responses of consumers. However, the findings indicated that participants prefer congruent combination of product shape and brand name (e.g., “round Ramune cookie”) more than the incongruent ones, and they expect better taste from congruent combination of brand name and product type (e.g., “Ramune butter cookie” and “Asahi muesli cookie”) than incongruent ones.

Herewith, Fenko et al. (2016) concluded that consumers are more likely to purchase the congruent combination of brand name and product type than the incongruent ones. The findings of Fenko et al. (2016) also showed that the extent of the effect of sound symbolism can vary from individual to individual. For instance, the findings of the study presented that sound symbolism influences the perceived product healthfulness of consumers with low interest in healthy eating more than the consumers with high interest in healthy eating. As a result, through the findings of the study, Fenko et al (2016) has contributed to sound symbolism theory by extending sound symbolism effects into packaging and product type effects. In addition, this study has contributed to marketing practice by emphasizing the importance of interaction between brand name, product type, and package shape for designing successful branding strategy.

Another study regarding to the use of letters in brand names was done by Xu et al. (2017). In their study, Xu et al. (2017) examined the effects of using a specific lettering case in a word-mark on perception of consumers. The findings of the study demonstrated that lowercase word-marks are perceived as more friendly than the uppercase word-marks are perceived. On the other hand, the findings of the study presented that uppercase word-marks are perceived as more authoritative than lowercase word-marks. In this respect, Xu et al. (2017) presented that consumers are more likely to feel closer to the lowercase word-marks. Nevertheless, they think that uppercase word-marks increase the brand authority.

In addition, Xu et al. (2017) found that the effect of this lettering case can be mitigated on the basis of whether the word-mark design is simple or complex. In this context, the study of Xu et al. (2017) mainly concentrated on visual aspects of brand name. However, Xu et al. (2017) also adopted sound symbolism to explain some findings. For instance, the findings demonstrated that participants perceived a lower level of authority in some brand names (gest/GEST) than others (evan/EVAN and april/APRIL). According to Xu et al. (2017), this can be explained by sound symbolism effect which enables individuals match specific sounds with low authority. In this respect, the study of Xu et al. (2017) was not a direct sound symbolism research but it can be considered as important in terms of sound symbolism implications.

In their recent study, Baxter, Ilicic and Kulczynski (2017) examined the priming effects of pseudohomophone brand names - non-words (e.g., “Whyte”) that sound like the real words (e.g., “White”) with a single semantic representation- on product and benefits judgments of consumers. The findings of their study presented that fictitious pseudohomophone brand names (e.g. “Whyte”) prime associative meanings on product and benefit attributes (e.g., darkness) as well as the real word (e.g. “White”). In addition, the findings of the study indicated that the priming effect of an orthographically similar word (Wheut) to a pseudohomophone (Wheet) is weaker when compared to the real word (Wheat). Thus, Baxter, Ilicic and Kulczynski (2017) suggested that pseudohomophone priming effects are manifested by the activation of the sounds than orthographic similarities. Additionally, Baxter, Ilicic and Kulczynski (2017) presented that these effects occur only when consumers have lack of brand knowledge. However, the findings of their study also pointed out that cognitive capacity constraints enable even the consumers with strong brand knowledge prime associative meaning about the product benefits through pseudohomophone. Thus, with this study, Baxter, Ilicic, and Kulczynski (2017) contributed to sound symbolism theory by showing the expressiveness of sounds within the context of pseudohomophone.

In their recent study, Klink and Wu (2017) aimed to understand the role of brand name on consumer perceived ethicality (CPE), which is one of the critical components of brand equity. Correspondingly, they investigated whether certain

brand name characteristics can inherently communicate about ethicality of brand by drawing sound symbolism theory. In order to test it, Klink and Wu (2017) used non-sense brand names within a pair contrasted such that high frequency vowels (front vowels) were combined with high frequency consonants (fricatives) and low frequency vowels (back vowels) were combined with low frequency vowels (stops). In this context, they used two set of stimuli. For the first set of stimuli, there were six brand name pairs contrasted the first two letters in the first syllable (e.g., **Doppa** vs. **Vippa**). For the second set of stimuli, there were six brand name pairs that contrasted the first two letters in both the first and second syllables (e.g., **Punbor** vs. **Vinser**). The findings of the study presented that brand names including **higher frequency sounds** (front vowels and fricatives) are better to communicate *ethicality* of the brand than brand names including **lower frequency sounds**. Moreover, Klink and Wu (2017) purported that brand names including higher frequency sounds may also be specifically effective in mitigating the potential damage of negative ethical information about the brand. Thus, Klink and Wu (2017) suggested that the use of sound symbolism in creating brand names may also help marketers to create ethical brand image.

In another study, Preziosi and Coane (2017) examined the interplay between sound symbolism and associative memory with respect to smallness and largeness perception. In the study, Preziosi and Coane (2017) employed a new set of 100 nonwords differing in only low frequency sounds (plosive consonants and back vowels) and high frequency sounds (fricative consonants and front vowels). Preziosi and Coane (2017) asked participants to rate these nonsewords with respect to size and to provide definitions regarding these words as if they are products. The results of the study indicated that participants rate nonwords including **fricative consonant** and **front vowels** as *smaller* as compared to the those including **plosive consonant** and **back vowels**.

On the basis of definition generated by participants, Preziosi and Coane (2017) also found that if the definitions are sound symbolically congruent with nonwords in terms of size, they are better recalled than definitions which are incongruent with nonword pairings. In this way, Preziosi and Coane (2017) concluded that the congruency between definitions generated by participants and

nonwords enable these definitions to be more memorable. Thus, the study of Preziosi and Coane (2017) contributed to the sound symbolism literature and marketing practice by displaying creation of brand names with respect to not only conveying product attributes but also being memorable for consumers.

In another study Pathak, Calvert and Lim (2017) examined how sounds of a brand name can influence its luxury appeal. To understand the effects on luxury appealing of brands, Pathak, Calvert and Lim (2017) initially employed the top 50 luxury brand names in the United States. The results indicated that luxury brand names more frequently include **back** and **high vowels** (i.e., /o/, /u/) and **nasals** (i.e., /n/) and **affricates** (i.e., /sh/), as compared to basic brand names. Additionally, Pathak, Clavert and Lim (2017) presented that luxury brand names are formed up more multi-syllabic names and include stressed vowels; whereas basic brand names are frequently mono-syllabic and include unstressed vowels. Then, Pathak, Calvert and Lim (2017) created hypothetical brand names for luxury and basic products by using different phonetic patterns associated with luxury and basic brand names in order to corroborate the initial results. As a result, Pathak, Calvert and Lim (2017) found that participants are successfully classify brand names as either luxury or basic brands by looking their phonetic patterns. All in all, the study of Pathak, Calvert and Lim (2017) suggested that sound symbolism is highly influential on perception of customers regarding whether the brand is luxury or basic.

In another recent study, Ketron and Spears (2018) examined the effect of sound symbolic incongruity in retailer names with respect to perceptions of inventory size and pricing. In the study, Ketron and Spears (2018) employed both front/back vowel distinction (/e/ vs. /o/) and fricative/stop distinction (/z/ vs. /k/). Hence, they presented one of four randomly assigned invented nonsense retailer names differing in vowel/consonant structure to participants. Then, they were asked to indicate their responses regarding perceptions of inventory size and pricing. The findings of the study revealed that for the **fricative conditions**, retailer names including **front vowel** lead to *higher price perceptions* as compared to **back vowel**; whereas for the **stop conditions**, retailer names with front vowel lead to *lower price perceptions* than the back vowels. Additionally, Ketron and Spears (2018) found that for the **fricative conditions**, retailer names with **back vowel** lead to *higher inventory size perceptions*

as compared to **front vowel**; whereas for stop conditions, no statistically significant value is found. All in all, Ketron and Spears (2018) suggested that incongruency between vowel and consonant combinations in retailer names lead to lower price perceptions regarding retailer. This finding also showed that this effect is mediated by perception regarding inventory size because the higher the inventory size is, the lower the price perceptions are. In this respect, different from the previous studies which examined the effects of sound symbolic congruity (e.g., Klink, 2003), Ketron and Spears (2018) contributed to sound symbolism literature by exploring the effect of sound symbolic incongruity. Moreover, the study of Ketron and Spears (2018) contributed to marketing practice by displaying the effect of sound symbolism in retailer store naming.

Finally, Pogacar et al. (2018) examined the explicit and implicit preferences for sounds used in brand names. In the study, Pogacar et al. (2018:243) used the implicit associations test which “measures the speed with which participants sort targets and attributes to reveal implicit associations in automatic cognition”. The findings of the study presented that participants reported an implicit preference for brand names including the sound “s”, as compared to the brand names including the sound “th”. Additionally, Pogacar et al. (2018) indicated that they also expressed an explicit willingness to pay more for each brand names including the sound “s” over brand names including the sound “th”. In this context, Pogacar et al. (2018) concluded that implicit preference for brand names including the sound “s” is related to explicit willingness to pay for these brand names.

With respect to **nasal sounds** “m” and “n”, Pogacar et al. (2018) found that participants expressed an implicit preference and explicit willingness to pay more for brand names including the sound “m” relative to the brand names including the sound “n”. With respect to **approximant sounds** “l” and “w”, Pogacar et al. (2018) indicated that participants stated an implicit preference and explicit willingness to pay more for brand names including the sound “l” over the brand names including the sound “w”. Finally, with respect to **vowels**, the findings of the study demonstrated that participants implicitly prefer brand names including the sound “e” relative to brand names including the sound “u” and they explicitly want to pay more for brand names with the sound “e” over the brand names with the sound “u”.

Moreover, the results also revealed that the consonant sounds “s”, “m”, and “l” and the vowel sound “e” are perceived as pleasing sounds relative to “th”, “n”, “w”, and “u” respectively. Having all these results in mind, Pogacar et al. (2018) contributed to the sound symbolism literature and marketing practice by explaining why some sounds are overrepresented but some others are underrepresented among top brand names.

To sum up, it can be readily seen that the impacts of vowels and consonants have been tested together by several marketing research with respect to synesthetic type sound symbolism. A review of these marketing studies notably reveal that these studies have concentrated on the impact of vowels and consonants on four important extents: (i) *consumers’ attribute perception* (e.g., Athaide and Klink, 2012; Heat et al., 1990; Klink, 2000; 2001; 2003; Klink and Athaide, 2014; Klink and Wu, 2014; Klink and Wu, 2017; Preziosi and Coane, 2017); (ii) *preference for brand names including specific sounds to convey specific product attributes* (Klink and Wu, 2014; Kuehnl and Mantau, 2013); (iii) *cross-modal correspondence* in which the sounds lead to a multimodal correspondence to the products’ taste and shape (Favalli et al., 2013; Fenko et al., 2016; Velasco et al., 2014); and *sound symbolism effects* with respect to consumers’ brand evaluations (Argo et al., 2010); overestimation and underestimation of price discounts (Coulter and Coulter, 2010); priming effects of pseudohomophone brand names (Baxter, Ilicic and Kulczynski, 2017); luxury appealing of brands (Pathak, Calvert and Lim, 2017); inventory size and pricing perceptions (Ketron and Spears, 2018); and implicit and explicit preferences for brand names (Pogacar et al., 2018).

To better see the empirical marketing studies on both vowels and consonants that particularly addressed these four extents, marketing studies regarding each extent were summarized in Table 4, Table 5, Table 6 and Table 7, separately. Additionally, themes of these studies and their outcomes were summarized briefly in each relevant Table.

Table 4: Marketing Studies on Sound Symbolism and Attribute Perception for Vowel and Consonant Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound symbolism and attribute perception	product's attribute perception	Heath et al. (1990)	Front vowels /i/, /e/ and Fricatives /f/, /s/: <i>more harsh</i>
	creating meaningful brand names for national markets	Klink (2000)	Front vowels /i/, /e/: <i>smaller, lighter (opposite to darker), milder, thinner, softer, faster, colder, more bitter, weaker, more feminine, prettier, lighter (opposite to heavier), friendlier</i> Fricatives /f/, /s/, /v/, /z/: <i>smaller, faster, lighter (opposite to heavier), more feminine</i> Voiceless stops /p/, /t/, /k/: <i>smaller, faster, lighter, more feminine, sharper</i> Voiceless fricatives /f/, /s/: <i>faster, softer, more feminine</i>
	creating meaningful brand names through sound symbolism and semantics	Klink (2001)	Front vowels /i/, /e/: <i>more rapid, lighter (opposite to heavier)</i> Fricatives /s/, /z/, /v/: <i>softer, more rapid, lighter (opposite to heavier)</i>
	creating meaningful brand names through right position of sound symbolic imbeds in brand names	Klink and Wu (2014)	Front vowels /i/, /e/ and Fricatives /v/, /s/: <i>smaller, faster</i>
	creating meaningful brand names for international markets	Athaide and Klink (2012)	Front vowels /i/, /e/: <i>lighter (opposite to darker), thinner, softer, faster, colder, more bitter, lighter (opposite to heavier), prettier</i> Fricatives /f/, /s/, /v/, /z/: <i>faster, lighter (opposite to heavier), softer, more feminine</i> Voiceless stops /p/, /t/, /k/: <i>smaller, lighter (opposite to heavier), sharper, softer, more feminine</i> Voiceless fricatives /f/, /s/: <i>faster, lighter (opposite to heavier), softer, more feminine</i>
	creating ethical brand names	Klink and Wu (2017)	Front vowels /i/, /e/ and Fricatives /v/, /s/: <i>more ethicality</i>
	brand name and brand mark interaction with respect to adults	Klink (2003)	Front vowels /i/, /e/ and fricatives /f/, /v/: <i>lighter color, more angular shapes, smaller display of logos</i>
	brand name and brand mark interaction with respect to emerging markets	Klink and Athaide (2014)	Front vowels /i/, /e/ and Fricatives /v/, /s/: <i>smaller and more angular</i>
	sound symbolism and associative memory	Preziosi and Coane (2017)	Front vowels /i/, /e/ and Fricatives /f/, /v/, /z/ <i>smaller</i>

Source: Based on Review of Attribute Perception Research into Sound Symbolism

Table 5: Marketing Studies on Sound Symbolism and Brand Name Preference for Vowel and Consonant Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound Symbolism and brand name preference	brand name preference of bilinguals	Kuehnl and Mantau (2013)	Front vowels /i/, /e/: <i>preferred for two-seater convertible car (which is fast, small, light)</i> Stops /p/, /t/: <i>preferred for SUV (which is slow, large, heavy)</i>
	creating meaningful brand names through positioning of right sound symbolic imbeds	Klink and Wu (2014)	Front vowel /i/ and Fricative /v/: <i>preferred for smaller and faster car</i>

Source: Based on Review of Brand Name Preference Research into Sound Symbolism

Table 6: Marketing Studies on Sound Symbolism and Cross-Modal Correspondences for Vowel and Consonant Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound symbolism and cross-modal correspondences	interplay between sound symbolism and sensory associations	Favalli et al. (2013)	Sharp sounds /t/, /k/, /i/: <i>fishy sandwich, sharp curves</i> Soft sounds /m/, /l/, /u/: <i>meaty sandwich, soft curves</i>
	interplay between visual and auditory characteristics of packaging and taste of the product	Velasco et al. (2014)	Rounded sounds /b/, /u/: <i>rounded shapes, rounded typefaces, lowpitched sounds, sweet taste</i> Unrounded sounds /c/, /a/: <i>angular shapes, angular typefaces, high pitched sounds, sour taste</i>
	interplay among sound symbolism, packaging design, and product category	Fenko et al. (2016)	Rounded sounds /m/, /u/: <i>rounded shapes, butter cookie</i> Unrounded sounds /s/, /a/: <i>angular shapes, muesli cookie</i>

Source: Based on Review of Cross-Modal Correspondence Research into Sound Symbolism

Table 7: Marketing Studies on Sound Symbolism Effects for Vowel and Consonant Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound Symbolism Effects	sound symbolism effect on consumers' brand evaluations	Argo et al. (2010)	brand names with sound repetition in their phonetic structure and spoken aloud lead to positive effect on consumers' brand evaluations, cross-selling, and product choice.
	sounds' effects on overestimation and underestimation of price discounts	Coulter and Coulter (2010)	prices including numbers with small sounds like front vowels and fricatives lead to overestimation of price discounts . prices including numbers with large sounds like back vowels and stops lead to underestimation of price discounts
	priming effects of pseudohomophone brand names on consumers' product and benefits evaluations	Baxter, Ilicic and Kulczynski (2017)	pseudohomophone priming effects are manifested by the activation of the sounds than orthographic similarities.
	effects of phonetic structures used in brand names	Pathak, Calvert and Lim (2017)	Luxury brand names include back and high vowels (/o/, /u/), nasals (/n/), affricates (/sh/), multi-syllabic names and stressed vowels
	effects of sound symbolic incongruity in retailer names on perceptions of inventory size and pricing	Ketron and Spears (2018)	Fricative (/z/) and front vowel (/e/) condition: higher inventory price perceptions Fricative (/z/) and back vowel (/o/) condition: higher inventory size perceptions Stop (/k/) and front vowel (/e/) condition: lower inventory price perceptions
	sound symbolism effects on implicit and explicit preference	Pogacar et al. (2018)	implicit preference and explicit willingness to pay more for brand names including the fricative /s/, the nasal /m/, the approximant /l/ and front vowel /e/ over the brand names including the stop /th/, the nasal /n/, the approximant /w/, and the back vowel /u/, respectively.

Source: Based on Review of Sound Symbolism Effects Research into Sound Symbolism

3.1.2.2. Marketing Studies on Only Vowel Sounds

As stated in Chapter 2, vowel sounds are one of the main groups of the speech sounds. When they are compared with consonants, the number of vowels is

lesser than the number of consonants. This makes vowels preferred sounds in sound symbolism research. Additionally, due to the differences in their frequency levels, vowels provide a better context to test the effects of sound symbolism.

As seen in previous sub-section, some marketing studies employed vowels with consonants to test the effects of sound symbolism in relevant literature. However, a remarkable number of marketing studies examined sound symbolism effects by using only vowels particularly within the context of front/back vowel continuum. In this sense, one of the important studies which has furthered the sound symbolism research in marketing was the study of Yorkston and Menon (2004). In their study, Yorkston and Menon (2004) mainly explored the sound symbolism process itself in terms of how or why individuals adopt sound symbolism as a source of meaning about the object. Additionally, they also examined whether the phonetic structures of brand names can influence the product evaluations of individuals.

Initiated by these research purposes, Yorkston and Menon (2004) initially selected a product category, and then determined its attributes through initial pretest. Hence, they picked ice cream as the product category, and selected taste as its most outstanding attribute among the other attributes (e.g., calorie and cost). Then, they identified the underlying features of taste by asking participants. As a result, smoothness, creaminess, richness and sweetness emerged as underlying attributes of ice cream. In the next step, Yorkston and Menon (2004) selected two vowels: the **longer** and **broader sound [ä]** as in the fictitious brand name Frosh and the **shorter** and **tighter sound [i]** as in the fictitious brand name Frish. So, the sound symbolism effects of sound [ä] are compared with the effects of sound [i] in several experiments.

After all of these stimuli determination, Yorkston and Menon (2004) tested the sound symbolism effect on attribute perception at first. In the prevailing literature, the sound [ä] is commonly perceived as bigger, heavier, slower, and duller than the sound [i] (which is perceived as smaller, lighter, livelier, and sharper). For that reason, Yorkston and Menon (2004) also expected to find that Frosh conveys meaning about smoother, creamier, and richer ice cream than Frish. Consistent with the findings of the study of Klink (2000), they initially found that the attributes of a product with a brand name including **sound [ä]** are evaluated *heavier* than attributes of a product with a brand name including sound [i]. So, since the smoothness,

creaminess, and richness could be associated with heaviness, the brand name Frosh is associated with *smoother*, *creamier*, and *richer* ice cream than Frish.

Along with understanding the effects of sound symbolism on attribute perception as what Klink (2000) did, Yorkston and Menon (2004) also investigated when consumers are exactly influenced by the phonetic structure of brand names. In order to test this effect, Yorkston and Menon (2004) manipulated the diagnosticity of brand name by informing participants that the given brand name will be either a true name or a test name for the product. The findings of this study demonstrated that phonetic structure of brand names influence consumers only if the brand name is given as true versus the test name. Thus, Yorkston and Menon (2004) pointed out that the perceived diagnosticity of the brand name moderates the effects of brand names on attribute perception.

Yorkston and Menon (2004) also examined the automaticity of sound symbolism effects in terms of whether the process is effortless, unintentional, outside of awareness, and uncontrollable. To test it, Yorkston and Menon (2004) manipulated the timing of the diagnosticity information by giving this information either simultaneously with brand names or afterwards. As a result, the findings of this study presented that sound symbolism effects on attribute perceptions are moderated by timing of information given about the diagnosticity of brand names. Simply put, when the information is given at the same time with the brand name information, the effects of phonetic structure of the brand name are only observed in high diagnosticity condition in which participants are informed that brand name is the true brand name. However when the information is given after the brand name information, the phonetic effects are observed in two conditions.

Lastly, Yorkston and Menon (2004) analyzed whether cognitive capacity can moderate the sound symbolism effects on attribute perception. To test this effect, Yorkston and Menon (2004) used the time taken to read information about the ice cream as cognitive capacity variable. The findings of the last study presented that phonetic effects can be observed in high diagnosticity condition under normal cognitive capacity use in which reading takes less time than impaired cognitive capacity. On the other hand, the findings also showed that under the case of impaired cognitive capacity, the diagnosticity of the brand name does not have an

effect, but the basic phonetic effects can also be observed. In this context, the findings of the fourth study indicated that in the case of normal cognitive capacity and when the brand name was described as true name in high diagnosticity case, consumers are more likely to use sound symbolism in forming their judgment regarding the brand attributes. However, under impaired cognitive capacity, regardless of whether the name is given as test or true, they use sound symbolism in shaping their judgment regarding brand attributes, as well.

All in all, Yorkston and Menon (2004) demonstrated that the effects of sound symbolism occur automatically at a non-conscious level. Moreover, they pointed out that sound symbolism has a lot more effect, even if the cognitive resources are constrained rather than they are abundantly available. In this way, Yorkston and Menon (2004) suggested that sound symbolism process is uncontrollable, outside awareness, and effortless. According to Yorkston and Menon (2004), all of these are enough to make the process itself automatic. Consequently, with this study, Yorkston and Menon (2004) have contributed to sound symbolism theory by demonstrating its processes in terms of how it occurs and affects meaning. In addition, through the valuable findings of their study, Yorkston and Menon (2004) have contributed to marketing practice by providing insight on how consumers interpret and use sounds in brand names to evaluate brands' attributes.

To extend particularly the study of Yorkston and Menon (2004) and the other marketing studies on sound symbolism (e.g., Klink, 2000; 2001; 2003), Lowrey and Shrum (2007) explored the role of sound symbolism on consumers' brand name preferences. In this way, they tried to demonstrate the implications of sound symbolism for creating meaningful brand names. In this respect, Lowrey and Shrum (2007) conducted two experiments. In the first experiment, they constructed fictitious brand names for four products (two-seater convertible, SUV, knife, and hammer) with specific attributes. Then, participants were asked to show their brand name preferences for only one product from given word pairs and products.

The findings of the first experiment indicated that consistent with the prevailing literature, **front vowels** are apt to associate with attributes such as *fastness*, *smallness*, *lightness*, and *sharpness*. Accordingly, Lowrey and Shrum (2007) presented that brand names with **front vowels** are rated more for "**two seater**

convertible", which is considered as *smaller, faster and lighter*, and for "**knife**", which is *shaper*. On the other hand, brand names with **back vowels** are rated more for "**SUV**", which is perceived as *larger, slower, and heavier*, and for "**hammer**", which is *duller*. Thus, the findings of the first experiment of Lowrey and Shrum (2007) indicated that brand names are preferred more if the product attributes associated with vowel sounds in the brand names are perceived favorable for a product category and its attributes. Whereas; the same brand names are preferred less, if the product attributes connotated by vowel sounds in the brand names are perceived less favorable for a product category and its attributes. Thus, with this study, Lowrey and Shrum (2007) succeeded showing the impact of sounds in brand names on consumers' brand name preferences.

In order to provide validity for the findings of their first experiment, Lowrey and Shrum (2007) selected only one product category (beer) for the second experiment. However, they manipulated the attributes associated with the product. In this experiment, participants were asked which brand name is best for a cold, clean, and crisp tasting beer or smooth, mellow, and rich-tasting beer. The findings of the second experiment demonstrated that brand names containing **front vowels** are preferred more than **back vowels** if the beer is described as *cold, clean, and crisp*. On the other hand, the findings presented that brand names containing **back vowels** are preferred more than **front vowels** if the attribute of beer is *smooth, mellow and rich*. In addition, Lowrey and Shrum (2007) found that brand names with vowel sounds such as [yoo] in "puke", which evoke negativeness at least in English, are least preferred by participants regardless of product or its attributes. However, they also noted that preference for positive sounding brand names may also be less when the sounds of such brand names convey meaning about product attributes (e.g., slow) which are considered as negative for the product category (e.g., two seater convertible car).

All in all, Lowrey and Shrum (2007) highlighted the effects of sounds constituting the brand names on brand name preferences for specific products with specific attributes. In other words, they presented the interplay between sound symbolism and category fit between brand name and product attributes. Accordingly, through the findings of the study, they extended and increased the generalizability of

the findings of the study of Yorkston and Menon (2004). In addition, this study provided a comprehensive understanding of sound symbolism by suggesting that sounds of words communicate meaning beyond the actual meaning of the words. Having all these in mind, the study of Lowrey and Shrum (2007) is also regarded as one of the critical marketing researches in sound symbolism literature. Similar to the previous studies, this study has contributed to sound symbolism theory and marketing practice by pointing out how meanings derived from sounds can systematically influence perceptions, judgments, and brand preferences of individuals.

To extend the study of Lowrey and Shrum (2007) beyond English, Lowrey, Lerman and Luna (2008) examined the interaction between sound symbolism and brand name preferences in French and English. In their experiment, they asked bilingual French-English speakers to indicate their brand name preferences among each brand name pair for a single set of products. In their experiment, Lowrey et al. (2008) selected the products' attributes as compatible with what the particular vowel sounds in their names symbolize. In addition, they preferred to use the questionnaire written either in speakers' native language of French or English. As a result, Lowrey et al. (2008) found that brand names containing **back vowel sounds** (e.g., "ah" sounds) are preferred more for products such as **SUV** and **hammer**, for which *largeness*, *heaviness*, *lack of quickness*, and *dullness* are positive attributes. On the other hand, they showed that brand names containing **front vowel sounds** (e.g., "ih" sounds) are more preferred for products such as **two seater convertible** and **knife**, for which *smallness*, *lightness*, *quickness*, and *sharpness* are positive attributes.

Additionally, Lowrey et al. (2008) presented that the native speakers of French, who also speak English, manifest a more pronounced sound symbolism effect when they are responding to French questionnaire than those who are responding to English questionnaire. Thus, Lowrey et al. (2008) indicated that the effects of sound symbolism are more likely to occur in one's native language. In this respect, the study of Lowrey et al. (2008) presented that sound symbolism has a universal effect. However, the effects of sound symbolism can be observed more saliently, if individuals are exposed to sound symbolism effect in their native language.

To extend the previous sound symbolism studies on product attribute perception (e.g., Klink, 2000), Park and Osera (2008) examined the effect of sounds in brand names on consumers' brand evaluation in Japanese context. The findings of the study presented that brand names including **back vowels** are perceived as *bigger*, *heavier*, *darker*, and *rounder* than brand names including front vowels. Additionally, Park and Osera (2008) indicated that when there is a congruence between sound of a brand name and product category and a congruence between sound of a brand name and product attributes, perceived quality, brand image and purchase intention regarding the product increase. Thus, Park and Osera (2008) corroborated findings of previous studies conducted in the West. Accordingly, they also contributed to marketing practice by emphasizing the use of sound symbolism in creating effective brand names not only for Western market but also for Asian market.

To add a new dimension to sound symbolism discussion, Klink (2009) explored sound symbolism phenomena within the context of individual-level differences. In his study, Klink (2009) selected "gender" as individual level differences. Thus, he mainly concentrated on the role of gender in responding to new brand names including different sound structures. The findings of the study demonstrated that brand names including **front vowels** are welcomed by *females* more favorably than males. On the other hand, brand names including **back vowels** are welcomed by *males* more favorably than females. In addition, the findings of the study revealed that gender differences in response are more salient, if the most outstanding attribute of the product is based on masculinity or femininity (Klink, 2009). All in all, the findings of the study of Klink (2009) have contributed to sound symbolism literature by indicating differences in genders' response to sound symbolism effects in brand names. Moreover, the study of Klink (2009) has contributed to marketing practice by emphasizing the use of specific sounds in brand names for successful gender targeting.

In another study with a different research objective, Doyle and Bottomley (2011) examined the interplay between sound symbolism and visual brand name properties. According to Doyle and Bottomley (2011), visual characteristics of the letters may also communicate meaning on their own. Therefore, when customers see a brand name rather than hear it, they might respond to it differently. Initiated by this

fact, Doyle and Bottomley (2011) explored whether visual properties of the brand name can influence sound symbolism effects. Based upon their research interest, Doyle and Bottomley (2011) investigated brand names in English by separating the effects of letter shape from sound symbolism. In addition, to replicate and extend the study of Yorkston and Menon (2004), Doyle and Bottomley (2011) hypothesized that whether the letters “O” and “o” can communicate smooth, rich, and creamy message about the ice cream than the letter “I” and “i” as a visual sign.

The findings of the study initially presented that brand name “Fr^osh” and “Fr^Osh” are more associated with smooth-rich-creamy ice cream than brand name “Frⁱsh” and “Fr^Ish”. In the direction of these findings, the study of Doyle and Bottomley (2011) replicated the findings of Yorkston and Menon (2004). However, with this study, Doyle and Bottomley (2011) additionally purported that visual form of letters can influence the meaning derived from the brand name. For instance, the findings of the study also demonstrated that brand name “Frⁱsh” and “Brⁱsh” can also be related to more smooth-rich-creamy ice cream than “Fr^osh” and “Br^osh” depending upon the type of typefaces selected to embed the letters “i” and “o” in brand names. Consequently, by courtesy of this study, Doyle and Bottomley (2011) reversed the basic findings of Yorkston and Menon (2004) by manipulating the visual shape of the letter in the brand names. Hence, by demonstrating the separate contribution of sound and vision and how the effects of vision and sound mask each other, Doyle and Bottomley (2011) has contributed to sound symbolism theory and marketing practice.

Another different marketing study in sound symbolism literature was the study of Baxter and Lowrey (2011). To date, brand related research on sound symbolism has been conducted on adults (e.g., Klink, 2000; 2001; 2003). However, Baxter and Lowrey (2011) analyzed whether the role of sound symbolism in brand name preferences can differ between children and adults. In the direction of their research objective, Baxter and Lowrey (2011) examined the preferences of children, who are between 6 to 12 years of age, for brand names that are phonetically manipulated. To test the difference in response, they conducted three different experiments.

In their first experiment, Baxter and Lowrey (2011) asked children to indicate their brand name preferences for one of the two ice cream with different attributes among each given fictitious word pairs. As a result, they found that for an ice cream brand, brand names including **back vowels** are more preferred by children for *creamy* and *rich ice-cream*, while brand names with **front vowels** are preferred for *icy* and *sweet* ones. In this context, the findings of the first experiment presented that within the same product category, brand name preferences of children is a function of product attributes. Thus, these findings supported what Lowrey and Shrum (2007) found for adults.

In their second experiment, Baxter and Lowrey (2011) selected a new product category. Since their sample is children, they decided on toys as a product category. Then, Baxter and Lowrey (2011) tested whether front vowels are preferred for small, soft, and light toys, and back vowels are preferred for big, hard, and heavy toys. The findings of their second experiment suggested that most of the children perceived teddy bear and squishy ball as small, soft and light; whereas they perceived outdoor play equipment as big, hard and heavy. Accordingly, the findings of the study indicated that brand names including **front vowels** are associated with products perceived as *small* and *light* like **teddy bear** and **squishy ball**, while brand names with **back vowels** are associated with products perceived as *big* and *heavy* like **outdoor play equipment**. In this context, as a result of second experiment, Baxter and Lowrey (2011) again concluded that brand name preferences of children across product categories are a function of the relevant products' attributes. Thus, the results of the second experiment also confirmed what Lowrey and Shrum (2007) found for adults.

In their third experiment, Baxter and Lowrey (2011) examined whether semantic characteristics of brand names might overwhelm the sound symbolism effects. To test it, they created fictitious words with semantic imbeds, for instance for teddy bear, they create the words **Beariz/Bearoz**, **Bearil/Bearol**, **Bearen/Bearun**, and **Bearip/Bearop**. As a result of their third study, Baxter and Lowrey (2011) suggested that brand names with **front vowels** are consistently associated with toys perceived as *small* and *light* like **teddy bear**. On the other hand, brand names with **back vowels** are consistently associated with toys perceived as *big* and *heavy* like

outdoor play equipment. Thus, the findings of the last experiment demonstrated that even in the case of semantically meaningful information in a brand name, sound symbolism affects brand name preferences.

Consequently, with this study, Baxter and Lowrey (2011) offered that children are also responding to sound symbolism like adults. However, Baxter and Lowrey (2011) also purported that front and back vowel distinction and the effects of sound symbolism increase with age depending on phonological development. In that case, it is not to wrong to say that the study of Baxter and Lowrey (2011) contributed to sound symbolism theory by emphasizing the importance of age in sound symbolism effects. In this respect, the findings of Baxter and Lowrey (2011) also contributed to marketing practice. Specifically, by indicating the sound symbolism effects on children, Baxter and Lowrey (2011) has advised to marketers, who have to select a creative and discernible brand name especially for the products for children.

To extend the previous research on sound symbolism, Shrum, Lowrey, Luna, Lerman and Liu (2011) examined the sound symbolism effects on brand name preferences of bilinguals across multiple languages. In addition, along with the purpose of testing the generalizability of the effects of sound symbolism across languages, Shrum et al., (2011) also explored whether fluency can moderate the effects of sound symbolism. The findings of the study presented that bilingual participants, who speak either French, Spanish, or Chinese but also fluently speak English, consistently prefer brand names which have congruency between their sounds and product category, regardless of the language proficiency of participants in that language. For instance, while they consistently prefer brand names including **front vowel sounds** for **two-seater convertible** and **knife**, they prefer brand names with **back vowel sounds** for **SUV** and **hammer**.

In this respect, the findings of the study replicated the findings of Lowrey and Shrum (2007). In addition, regarding the effects of sound symbolism which are found as robust across different languages and cultures, Shrum et al. (2011) strengthened the universal sound symbolism argument. Importantly, Shrum et al. (2011) also presented that sound symbolism effects are observed in languages in which presentation is non-alphabetic but logographic as in Chinese. Accordingly, the

findings of the study has also contributed to marketing practice in terms of global brand naming.

In another study, Klink and Athaide (2012) examined whether brand names alone can convey meaning about brand personality through their sound patterns. To measure brand personality, Klink and Athaide (2012) used Aaker's (1997) Brand Personality Scale. The main findings of their study showed that certain sounds in a given brand name have an influence on the perception towards brand personality dimensions. For instance, brand names including **back vowels** are mostly associated with *masculinity* (Klink, 2000). Therefore, they are perceived better to create *ruggedness* brand personality. On the other hand, brand names including **front vowels** are better to create *sophistication* and *sincerity* personalities because front vowels are mostly associated with attributes such as femininity, prettiness, cheerfulness and friendship. Thus, with this study, Klink and Athaide (2012) emphasized the role of sound symbolism in creating brand personality as well as creating meaningful brand name.

Just like the study of Shrum et al. (2011), Shrum, Lowrey, Luna, Lerman, and Liu (2012) explored the sound symbolism effects on brand name preferences of bilinguals across language within the context of front/back vowel distinction. However, in their study, Shrum et al. (2012) particularly concentrated on whether phonetic qualities pertain to preserving the sound of the brand name across translation; whether the actual sound of the brand name alone can convey meaning; and whether this effect can differ across languages. The findings of the study suggested that brand names including **front vowels** were preferred over brand names including **back vowels** for **convertible car** and **knife**. On the other hand, for **SUV** and **hammer**, brand names containing **back vowels** were preferred over brand names containing **front vowels**. In this context, the results presented that brand names which have a fit between their sound symbolic meaning and the attributes of products are preferred by French, Spanish, and Chinese speaking participants who are bilingual in English.

Moreover, Shrum et al (2012) indicated that preferences of participants towards these brand names are not affected by whether these participants complete the experiments either in their first or second language; by their second language

proficiency; or by whether the Chinese language representations are in logographic or alphabetic form. In this respect, to some certain extent, the findings of the study gave the similar findings with the study of Lowrey and Shrum (2007) and Shrum et al. (2011). However, additionally, this study demonstrated that the extent of sound symbolism effects on product name preferences of bilinguals can vary according to language. For instance, sound symbolism effect with respect to size is larger for French and Chinese logographic than those of the Spanish and English.

In addition, Shrum et al. (2012) suggested that preference for a specific brand name over another can be affected not only by the fit between meaning conveyed through the sounds of brand name and product attributes, but also the preference as a function of this fit can be reversed. Thus, Shrum et al. (2012) succeed to extend previous findings to an international context and show that sound-preference effects hold across language. Having all these in mind, the findings of Shrum et al. (2012) displayed the possibility of embedding universal meaning in brand names through sounds while creating global brand names and doing global brand extension. In this respect, this study has contributed to both sound symbolism theory and marketing practice.

In order to extend the study of Klink (2009) and Klink and Athaide (2012), Wu, Klink and Guo (2013) explored the use of sound symbolism in brand names to create appropriate gender personalities that appeal to the brands' respective gender segment. To test the effects of sound symbolism, Wu et al. (2013) used fictitious brand name pairs which were different only on front/back vowel continuum. In order to measure the brand personality, they adapted Masculinity Brand Personality/Femininity Brand Personality scales of Grohmann (2009) for each brand. The findings of the study presented that brand names containing **back vowels** are significantly rated as better to establish a *Masculinity Brand Personality*. On the other hand, brand names containing **front vowels** are significantly rated as better to form a *Femininity Brand Personality*. Moreover, Wu et al., (2013) pointed out that consumers are in tendency to select brand names containing **front vowels**, if they know that the brand is designed for women. Conversely, consumers are in tendency to select brand names containing **back vowels**, if they know that the brand is designed for men. Thus, the findings of the study of Wu et al. (2013) indicated that

consumers have greater preference for the brand name, if there is a fit between sounds of a brand name and the gender target of the brand.

Additionally, the findings of Wu et al. (2013) also indicated that consumers have more favorable attitudinal responses including brand liking and purchase intention toward the brand, if the sounds in a brand name are related to gender that the brand targets. For instance, when the brand targets men, the attitude of individuals toward the brand is more favorable, if its name includes back vowels; whereas when the brand targets women, the attitude of individuals toward the brand is more favorable, if its name contains front vowels. In this respect, the findings of the study of Wu et al. (2013) highlighted that the congruence between sounds of a brand name and targeted gender of a brand can influence overall brand attitudes of consumers. Additionally, the findings of Wu et al., (2013) have provided managers with guidelines for establishing gender brand personality through brand names in which gender related information can be imbedded via sounds.

In order to replicate the study of Shrum et al. (2012), Baxter and Lowrey (2014) investigated whether individuals prefer brand names containing vowel sounds that express specific product attributes, as well. However, to extend extant sound symbolism literature, Baxter and Lowrey (2014) also tested the impact of accent and phonological development on the nature of sound symbolism phenomenon. In this context, in their study, Baxter and Lowrey (2014) mainly examined the preference of children for phonetically manipulated brand names as they examined in the study of Baxter and Lowrey (2011). However, different from the Baxter and Lowrey (2011), they examined this process across two contrasting English accent groups: Southern American and Australian in which there are substantial differences in terms of their vowel pronunciation.

The findings of the study demonstrated that children prefer brand names including **back vowels** when the product is *large*, as opposed to brand names including **front vowels**. Moreover, Baxter and Lowrey (2014) presented that the children preference of brand names including back vowels for the large product is strengthened, if children are the natural speakers of Australian English in which the position of tongue is back. Thus, Baxter and Lowrey (2014) succeeded to demonstrate the effect of accent in sound symbolism. Additionally, as well as the

study of Baxter and Lowrey (2011), this study also suggested that the impacts of sound symbolism increase with age depending on the phonological development. Furthermore, consistent with the findings of Shrum et al. (2012), this study offered that individuals prefer brand names containing vowel sounds which connote associative attributes of a product across geographical bounds. In that case, this study has also contributed to sound symbolism theory by examining the effects of sound symbolism from a cross-cultural perspective and across accent groups. In addition, it has contributed to marketing practice by demonstrating the effect of sound symbolism in creating meaningful brand names even across the different accents with differing phonological structures.

To replicate and extend the study of Yorkston and Menon (2004), Baxter et al. (2014) examined whether automaticity of sound symbolism judgments differ for adults and children. Accordingly, Baxter et al. (2014) aimed to strengthen the argument regarding to automaticity of sound symbolism. The findings of their study highlighted that sound symbolic inferences derived from the vowels are automatic and relatively effortless for adults. Moreover, Baxter et al. (2014) stated that the effects of sound symbolism for adults occur regardless of information diagnosticity and cognitive capacity constraints. Thus, these findings replicated the findings of Yorkston and Menon (2004). In this context, the brand name *Frosh* was perceived as *creamier*, *richer*, and *smoother*. However, as distinct from the study of Yorkston and Menon (2004), Baxter et al. (2014) presented that the effects are not automatic for children who have low cognitive resource and phonological awareness. Thus, consistent with the study of Baxter and Lowrey (2011; 2014), this study suggested that the effects of sound symbolism increase with age.

Under the light of these findings, Baxter et al. (2014) emphasized that initial sound symbolic judgments do not present in younger children who are in between 6 to 9 years. However, these effects are observed in older children who are in between 10 to 13 years only in conditions of normal cognitive capacity. In this respect, this study extended the studies which addressed the effects of sound symbolism consistently happening under normal cognitive capacity (e.g., Baxter and Lowrey, 2014; Lowrey and Shrum, 2007; Shrum et al., 2012) by demonstrating the automatic nature of the sound symbolism effects in children. Accordingly, this study has

contributed to the marketing practice in terms of the use of sound symbolism in brand names targeting children.

In another study, Ilicic et al. (2015) examined the sound symbolism phenomena within product attribute-spokesperson name fit context. Hence, in their study, Ilicic et al. (2015) analyzed whether the appearance of a spokesperson and the sounds in a spokesperson's name can affect the consumers' perception on spokesperson-product fit. The findings of the study indicated that sounds in the name of spokesperson influence consumers' perceptions towards spokesperson-product fit regardless of visual appearance. For instance, if the spokesperson's name includes **front vowels (back vowels)** and the product attributes are *clean* and *crisp (smooth and rich)*, perceived spokesperson-product fit is the highest.

In addition, Ilicic et al., (2015) found that, for consumers with low need for recognition, sounds in the name of spokesperson do not effect consumers' perceptions towards spokesperson-product fit. Accordingly, it can be readily said that the effects of verbal congruence (sounds in a spokesperson's name) can be limited in some cases like low need for recognition. Having all these in minds, the study of Ilicic et al., (2015) has extended the sound symbolism literature by addressing the effects of sound symbolism in creating perceived fit between spokesperson and product and moderating role of need for recognition in this interplay. In this respect, the findings of the study have contributed to marketing practice in terms of selecting right spokesperson for a right product particularly in advertising.

Similar to their previous sound symbolic marketing studies on children, Baxter, Ilicic, Kulczynski et al. (2015) examined sound symbolism phenomena among children. However, in this study, they particularly wondered how children perceive physical attribute of a product when it is presented with brand elements manipulated by using sound and shape symbolism. Accordingly, they specifically investigated perception towards product size in terms of sounds of a brand name and shape of a brand logo across children in different developmental stages. The findings of the study presented that only older children perceive a product *smaller* when the product is matched with a brand name including **front vowel sound** or brand logo that has an *angular shape*. On the other hand, the findings indicated that they perceive the product *larger* when brand name includes **back vowels**, and brand logo

has *curved shape*. In the direction of these findings, Baxter, Ilicic, Kulczynski, et al. (2015) has concluded that sound symbolism effects will increase as age increases, as well.

In addition, the findings of the study implied that when principles of shape symbolism are exercised in brand logo shape, shape-based judgments will be stronger as the age of children increases. The findings of the study also indicated that besides older children, younger ones can infer meaning about product attribute, as well if they are exposed to symbolic cues like brand name and brand logo together. However, Baxter, Ilicic, Kulczynski, et al. (2015) indicated that the effects of shape symbolism regarding brand logo are weaker and observed later in age than the effects of sound symbolism regarding brand name. All in all, the study of Baxter, Ilicic, Kulczynski, et al. (2015) pointed out that children require higher level of abstraction to figure out symbolism between image shape and attributes of product. In this context, the main contribution of this study was to extend the study of Klink (2003) to children. In addition, for marketers, this study has highlighted the importance of use of multiple symbolic cues to create meaningful and inventive brand elements for brands targeting children.

Initiated by the findings of previous sound symbolism studies regarding brand name and brand mark, Lieven et al. (2015) examined the effect of brand name, type font, logo shape and color on brand gender perceptions, consumer preferences and brand equity. The findings of the study of Lieven et al. (2015) indicated that with respect to logo shape, heavier and angular logos enhance brand masculinity (MBP); whereas slender and round logos increase brand femininity (FBP). With respect to font type and brand name, Lieven et al. (2015) found that brand logo with bold and angular type font and brand names including **back vowels** increase the *brand masculinity (MBP)*. On the other hand, they presented that brand logo with slender and rounder type font and brand names including **front vowels** enhance the *brand femininity (FBP)*.

Additionally, Lieven et al. (2015) revealed that in terms of brand logo, sound, and font type, high masculine and feminine brands lead to greater brand preference and equity as compared to less masculine and feminine brands, respectively. In this respect, Lieven et al. (2015) emphasized the use of consistent cues regarding type

font, shape of logo, and sounds in creating desired gender brand personality. Moreover, Lieven et al. (2015) suggested that if there is a great congruence between masculinity and femininity of brand and product category, this leads to increase in brand preferences. All in all, by extending the sound symbolism studies regarding brand name and brand mark to gender-based brand personality, the study of Lieven et al. (2015) contributed to sound symbolism literature. Moreover, this study also contributed to marketing practice by showing how brand could be designed for a product that targets specific gender, as well.

To extend the study of Ilicic et al. (2015), Baxter, Ilicic, and Kulczynski (2015) investigated the influence of phonetic fit between spokesperson's name and product attributes on perceived source credibility. In their study, Baxter, Ilicic, and Kulczynski (2015) used perceived source credibility to refer attractiveness and trustworthiness of spokesperson. The findings of the study demonstrated that there is a greater fit between name of the spokesperson and attributes of product, if the name of the spokesperson including a **front vowel** (Tim Rizzi) was seen in ads of a product identified as *crisp* and *clean*. On the other hand, there is a greater fit, if the name of the spokesperson including a **back vowel** (Tom Rozzo) was seen in ads of a product that is identified as smooth and rich.

In addition, Baxter, Ilicic, and Kulczynski (2015) suggested that if there is a phonological fit between name of spokesperson and product attribute, spokesperson credibility is perceived as positive regardless of whether a spokesperson takes part visually in an advertisement. In this respect, Baxter, Ilicic, and Kulczynski (2015) has strengthened the effects of expressiveness of sounds on source credibility. Additionally, Baxter, Ilicic, and Kulczynski (2015) presented that phonetic fit between name of spokesperson and attributes of product can encourage positive attitudes towards product, its advertisement and purchase intention when these relationships are mediated by perceived spokesperson credibility. Accordingly, it has contributed to sound symbolism literature and marketing practice by applying the sound symbolism principles in advertising domain to create trust for consumers.

In another study, Spears et al. (2016) examined the interplay between speech sound of brand names and product/label shape within consumer behavior contexts. In the study, instead of front/back vowel distinction, Spears et al. (2016) employed

spiky sounds (as in ee, eye, ih, eh, a-[as in apple], ay] that are produced by angular shaping of the lips and round sounds (as in ah, oh, oo, uh) that are produced by rounding of the lips. In terms of product, Spears et al. (2016) selected cookie and candy. The initial findings of the study of Spears et al. (2016) presented that participants are associated angular shapes with spiky sounding brand names regardless of whether the product is candy or cookie. Hence, the results indicated that there is a robust relationship between speech sound and shape symbolism. Additionally, Spears et al. (2016) revealed that if sounds of a brand name are congruent with a product's label shape, this increases consumer persuasion to purchase the product and increases their hunger.

Spears et al. (2016) also tested the effects of sounds and shape on actual behavior which was measured as taking pieces of candy for consumption. As a result, Spears et al. (2016) suggested that with respect to effects of shape on persuasion, brand names with **round sounds** enable the participants who see the rounded cookie image to show greater appetitive response in terms of actual behavior, compared to **spiky sounds**. Nevertheless, Spears et al. (2016) revealed that the effect of shape was significant on actual behavior but brand name was not. Hence, they suggested that if the shape of a cookie is square, the total candy taken increases, when the brand name has **spiky sounds**; whereas if the shape of cookie is round, the total candy taken increase, when the brand name has **round sounds**.

In the study, Spears et al. (2016) also examined the mediating roles of vivid imagery and consumption visions on the relationship between shape and persuasion and between shape and actual behavior. The results presented that imagery mediates the both relationships but consumption visions only mediate the relationship between shape and persuasion but not shape and behavior. All in all, the results presented that consumers' anticipation with respect to shape of cookies (that they are usually round) enables them to be more persuaded in the existence of rounded cookie image, as compared to spikiness. Thus, by indicating the importance of consistency between shape and sound on behavior and persuasion, the study of Spears et al. (2016) has contributed to sound symbolism research with respect to sound and shape symbolism.

Initiated by the findings of previous gender-based sound symbolism study, Reavey et al. (2016) examined the effects of anthropomorphism on sound symbolism with respect to gender. In a series of experiments, Reavey et al. (2016) found that the *women* (*men*) would prefer brand names including **front vowels** (**back vowels**) in non-anthropomorphized ads, similar to previous literature. Nevertheless, the results presented that *women* would prefer brand names including **back vowels** and *men* would prefer brand names including **front vowels** in anthropomorphized ads. Hence, the findings of the study indicated that if a brand humanizes a product by giving a person's name to it, the effects of sound symbolism are reversed in terms of the relationship between front vowels (back vowels) and women (men).

Depending upon the fact that the pronunciation of the sound [ē] leads to facial movement like a smile when the sound is particularly found at the last syllable of a name, Kniffin and Shimizu (2016) examined to what extent the sound [ē] might affect affective and behavioral outcomes. In the study, Kniffin and Shimizu (2016) employed “hard e” (or sound [ē]), and so they used invented names differing in only existence and absence of sound [ē] in their last syllables. The findings revealed that participants are in more tendency to help someone who has a name ending with the **sound [ē]**. Additionally, Kniffin and Shimizu (2016) found that female would more prefer the names including the **sound [ē]** than the names including **non-[ē] sound**. Nevertheless, the preference with respect to names including the sound [ē] is not significant among males. Finally, Kniffin and Shimizu (2016) indicated that in a case of soliciting help from their parents, women are in more tendency to call them as “mommy” or “daddy” instead of calling them as “mom” or “dad”.

With respect to these findings, the study did not seem as a direct marketing research. However, Kniffin and Shimizu (2016) conducted the study to give insights to marketers who design marketing campaigns addressing consumer engagement. Additionally, by extending the effect of sound symbolism on helping behavior, the study of Kniffin and Shimizu (2016) has contributed to the sound symbolism literature.

In their next study, Baxter, Ilicic, Kulczynski et al. (2017) analyzed whether the effects of sound symbolism are conditional on the development of phonological awareness. With this research objective, Baxter, Ilicic, Kulczynski et al. (2017)

specifically focused on the ability to identify sounds in words, within the context of sub-lexical priming. Consistent with their prior studies (e.g., Baxter et al., 2014; Baxter, Ilicic, Kulczynski, 2015), the findings of the study showed that as age increases, phonological awareness increases. Therefore, brand names containing **back vowel sounds** (e.g., *Vopoz*) are better perceived as *slower, heavier, larger, smoother, creamier, chewier, and thicker* than brand names containing **front vowel sounds** (e.g., *Vipiz*) by older children who are capable of identifying sounds in words.

The findings of the study also indicated that the effects of sound symbolism can also be observed on younger children who have low phonological awareness. In this context, Baxter, Ilicic, Kulczynski et al. (2017) suggested that even younger children can derive meaning from the sounds in the brand names, if they are primed to focus on part or segment of a word, which is called as sub-lexical priming. In a nutshell, the study of Baxter, Ilicic, Kulczynski et al. (2017) indicated the role of sub-lexical primes such as embedded tasks or chunking of brand names on increasing the effects of sound symbolism in younger children. In this respect, this study has extended the findings of their previous sound symbolic marketing studies on children (e.g, Baxter and Lowrey, 2011; 2014). In addition, this study provided a means to marketers to overcome drawbacks of sound symbolism in branding activities and advertising communications that target the younger children.

Consequently, it can be readily seen that vowel sounds have been frequently adopted to test the effects of sound symbolism in several brand name and product interaction context. These studies have also the feature of synesthetic type sound symbolism research as well as the marketing studies on both vowels and consonants. Additionally, similar to the marketing studies on both vowels and consonants, marketing studies on only vowels could also be categorized into three extents: (i) sound symbolism and attribute perception; (ii) sound symbolism and brand name preference; and (iii) sound symbolism effects. To better comprehend these sound symbolic marketing studies on vowels with regard to attribute perception, brand name preference, and sound symbolism effects, they are given in Table 8, Table 9 and Table 10, respectively. Additionally, themes of these studies and their outcomes are summarized briefly in each relevant table.

Table 8: Marketing Studies on Sound Symbolism and Attribute Perception for Vowel Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound symbolism and attribute perception	automaticity of sound symbolism effects in adults	Yorkston and Menon (2004)	Back vowel /o/: <i>smoother, creamier, richer, heavier</i>
	brand name and product attributes perception	Lowrey and Shrum (2007)	Front vowels /e/, /i/: <i>faster, smaller, lighter (opposite to heavier), sharper</i> Back vowels /o/, /u/: <i>slower, larger, heavier, duller</i>
	consumers' brand evaluations	Park and Osera (2008)	Back vowels /o/, /u/: <i>bigger, heavier, darker, and rounder</i>
	individual-level differences in perception with respect to gender	Klink (2009)	Front vowels /i/, /e/: <i>more feminine</i> Back vowels /o/, /u/: <i>more masculine</i>
	sound and visual brand name properties	Doyle and Bottomley (2011)	Back vowel /o/: <i>smoother, richer, creamier</i>
	creating brand personality through sounds used in brand names	Klink and Athaide (2012)	Front vowels /i/, /e/: <i>femininity, sincerity, sophistication</i> Back vowels /o/, /u/: <i>masculinity, ruggedness</i>
	creating gender brand personalities through sounds used in brand names	Wu, Klink, Guo (2013)	Front vowels /i/, /e/: <i>femininity brand personality</i> Back vowels /u/, /o/: <i>masculinity brand personality</i>
	automaticity of sound symbolism effects in children	Baxter et al. (2014)	Back vowel /o/: <i>smoother, creamier, richer, heavier</i>
	spokesperson's names, appearance, and product fit	Ilicic et al. (2015)	Front vowels /i/, /e/: <i>more clean, more crisp</i> Back vowels /u/, /o/: <i>smoother, richer</i>
	the effects of interplay between brand name-brand mark on children	Baxter, Ilicic, et al. (2015)	Front vowels /i/, /e/ and angular shape: <i>smaller</i> Back vowels /o/, /u/ and curved shapes: <i>larger</i>
	brand gender perceptions	Lieven et al. (2015)	Front vowels /e/: <i>femininity</i> Back vowels /o/: <i>masculinity</i>
	effects of fit between spokesperson name and product attributes on perceived source credibility	Baxter, Ilicic, and Kulczynski (2015)	Front vowel /i/: <i>crisp, clean</i> Back vowel /o/: <i>smooth, rich</i>
	sub-lexical priming effects on children	Baxter, Ilicic, Kulczynski et al. (2017)	Back vowel /o/: <i>slower, heavier, larger, smoother, creamier, chewier, thicker</i>

Source: Based on Review of Attribute Perception Research into Sound Symbolism

Table 9: Marketing Studies on Sound Symbolism and Brand Name Preference for Vowel Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s) of the Study
Sound Symbolism and brand name preference	sound symbolism effects on brand name preference	Lowrey and Shrum (2007)	Front vowel /i/: <i>preferred for two seater convertible (which is fast, small and light) and knife (which is sharp)</i> <i>preferred for clean, crisp, cold beer</i> Back vowels /o/: <i>preferred for SUV (which is slow, large and heavy) and hammer (which is dull)</i> <i>preferred for smooth, mellow, rich tasting beer</i>
	brand name preference of bilinguals	Lowrey, Lerman and Luna (2008)	Front vowel /i/: <i>preferred for two seater convertible (which is fast, small and light) and knife (which is sharp)</i> Back vowels [o]: <i>preferred for SUV (which is slow, large and heavy) and hammer (which is dull)</i>
	brand name preference of children	Baxter and Lowrey (2011)	Back vowels /o/: <i>preferred for creamy and rich ice cream</i> <i>preferred for outdoor play equipment (which are big, hard and heavy)</i> Front vowels /i/: <i>preferred for icy and sweet ice cream</i> <i>preferred for teddy bear and squishy ball (which are small, soft and light)</i>
	brand name preferences of bilinguals with respect to moderating effect of fluency	Shrum, Lowrey, Luna et al. (2011)	Front vowel /i/: <i>preferred for two seater convertible (which is fast, small and light) and knife (which is sharp)</i> Back vowels /o/: <i>preferred for SUV (which is slow, large and heavy) and hammer (which is dull)</i>
	brand name preferences of bilinguals with respect to brand names translated across languages	Shrum, Lowrey, Luna et al. (2012)	Front vowel /i/: <i>preferred for two seater convertible (which is fast, small and light) and knife (which is sharp)</i> Back vowels /o/: <i>preferred for SUV (which is slow, large and heavy) and hammer (which is dull)</i>
	creating gender brand personalities through sounds used in brand names	Wu, Klink, Guo (2013)	Front vowels /i/, /e/: <i>preferred for feminine products</i> Back vowels /u/, /o/: <i>preferred for masculine products</i>
	brand name preference of children with respect to impact of accent and phonological development	Baxter and Lowrey (2014)	Front vowels /i/, /e/: <i>preferred for smaller products</i> Back vowels /u/, /o/: <i>preferred for larger products</i>

Source: Based on Review of Brand Name Preference Research into Sound Symbolism

Table 10: Marketing Studies on Sound Symbolism Effects for Vowel Sounds

Extent of the Study	Theme(s) of the Study	Author(s)	Outcome(s)
Sound Symbolism Effects	automaticity of sound symbolism effects in adults	Yorkston and Menon (2004)	symbolism effect is effortless, unintentional, outside of awareness , and uncontrollable
	consumers' brand evaluations	Park and Osera (2008)	a congruence between sound of a brand name and product attributes increases perceived quality, brand image and purchase intention
	creating gender brand personalities through sounds in brand names	Wu, Klink, and Guo (2013)	a congruence between sounds in a brand and brand's gender target increases consumers favorable attitudinal responses including brand liking and purchase intention toward the brand
	automaticity of sound symbolism effects in children	Baxter et al. (2014)	sound symbolism effects are not automatic for children who have low cognitive resource and phonological awareness
	brand gender perceptions	Lieven et al. (2015)	a great congruence between masculinity and femininity of brand and product category leads to increase in brand preferences
	effects of fit between spokesperson name and product attributes on perceived source credibility	Baxter, Illicic, and Kulczynski (2015)	phonetic fit between spokesperson name and attributes of product leads to positive attitudes towards product, its advertisement and purchase intention when these relationships are mediated by perceived spokesperson credibility
	sound symbolism effects on persuasion, appetite increases in hunger and actual behavior	Spears et al. (2016)	a congruence between sounds of a brand name and a product's label shape increases consumer persuasion to purchase the product and increases their hunger .
	effects of anthropomorphism on sound symbolism with respect to gender.	Reavey et al. (2016)	Women (men) would prefer brand names including front vowels (back vowels) in non-anthropomorphized ads; whereas women (men) would prefer brand names including back vowels (front vowels in anthropomorphized ads)
	sound symbolism effects on helping behavior	Kniffin and Shimizu (2016)	there is more tendency to help someone who has a name ending with the sound [ē].

Source: Based on Review of Sound Symbolism Effects Research into Sound Symbolism

3.1.2.3. Marketing Studies on Only Consonant Sounds

As seen, there are several marketing studies tested the effects of both consonants and vowels either in the same study or same stimuli. Nevertheless, there is a few marketing study which tests only the effects of consonants within the context of synesthetic type sound symbolism. This study was conducted by Guévremont and Grohmann (2015) with respect to brand gender perceptions. In the study, Guévremont and Grohmann (2015) principally examined whether consonants in

brand names can influence perceptions towards masculine and feminine brand personality.

Initiated by the differences between stops and fricatives, Guévremont and Grohmann (2015) did four experiments to display the effects of fricatives and stops distinction on gender based brand personality perception. As a result of their experiments, Guévremont and Grohmann (2015) found that when a brand name includes **stops** rather than **fricatives**, the perception regarding *brand masculinity* increases; whereas when a brand name includes **fricatives** rather than **stops**, perception regarding *brand femininity* increases. Moreover, they found that if a masculinity or femininity is a desirable attribute for brand, consumers' responses to brand names are strengthened. Nevertheless, Guévremont and Grohmann (2015) could not find the same effects for other brand personality dimensions.

In another study, Pathak, Calvert and Velasco (2017) examined the effect of sound symbolism on perceived luxury appeal of brands. Initiated by the fact that humans acquire different sounds at different ages, Pathak, Calvert and Velasco (2017) employed sounds in terms of early- (sounds acquired early in life and generally easy to articulate) and late- (sounds acquired late in life and generally more difficult to articulate) acquired sounds. So, different from the previous sound symbolism research, Pathak, Calvert and Velasco (2017) used invented nonsense brand names differing in only early- or late-acquired sounds. With respect to early-acquired sounds, the sounds /m/, /b/ and /d/ were used in the study; whereas with respect to late-acquired sounds, sounds such as “ ‘sh /ʃ/’ as in posh, th /θ/ as in think and th /ð/ as in then” were used (Pathak, Calvert and Velasco, 2017:527).

The results of several experiments revealed that brand names including early-acquired sounds are more related to basic brands which are used everyday; whereas brand names including late-acquired phonemes are more related to luxury brands. In this way, by emphasizing the linkage between age of acquisition (AoA) of various sounds, their use in brand naming and consumers' perception towards these brand names, the study of Pathak, Calvert and Velasco (2017) contributed to the sound symbolism literature. Moreover, Pathak, Calvert and Velasco (2017) contributed to marketing practice by displaying the effect of the use of sound symbolism on luxury brand naming.

Finally, when the relevant literature was reviewed, it could be seen a marketing study which examined the effects of only consonants within the context of conventional sound symbolism which concentrates on phonaesthemes. In this context, to extend the sound symbolism research into new languages and new types of sound symbolism, the linguist Abelin (2015) examined the use and psychological reality of sound symbolism in Swedish brand names. On the basis of maluma and takete effect suggested by Köhler (1949), she explored to what extent consumers perceive and match pictures of objects with the sounds. However, as stated and also different from the other marketing studies on sound symbolism (which are frequently based on synesthetic type), Abelin (2015) specifically concentrated on phonaesthemes (which is one of the type of sound symbolic entity rather than individual sounds).

The findings of Abelin (2015) presented that there is a relationship between the consonant clusters and the attributes of the pictured objects. For instance, it was found that consonant clusters “kl-” has a stronger association with the objects that have short wide form; whereas the cluster “sp-” has a stronger association with the objects that have long thin form. Accordingly, the findings of the study presented that consumers also use sound clusters consistently to derive meaning about the new product name to reduce product uncertainty. In this respect, the study of Abelin (2015) has contributed to marketing practice because the findings showed the sound symbolic implications of phonaesthemes in creating a meaningful brand name. In addition, with this study, Abelin (2015) has extended the brand related sound symbolism studies beyond the iconic and indexical aspects of language to conventional sound symbolism. For that reason, the findings of Abelin (2015) have also contributed to sound symbolism theory.

3.1.3. Anecdotal and Conceptual Marketing Studies on Sound Symbolism

Seemingly, there has been an increase in the number of marketing studies on sound symbolism in 2000s. Particularly, since the beginning of 2000s, several empirical marketing studies have been conducted to test the effects of sounds in marketing and branding context. Besides these empirical marketing studies on sound

symbolism, there are also anecdotal marketing studies. For instance, the study of Lowrey, Shrum and Dubitsky (2003) was one of these anecdotal studies. In their study, Lowrey et al. (2003) examined the interplay between the linguistic characteristics of brand names and memory for those names. In their study, Lowrey et al. (2003) collected 480 brand names from television advertisements. Then, they coded these brand names in terms of their linguistic features on the basis of the list compiled by Vanden Bergh et al. (1987).

The findings of the study revealed that three linguistic characteristics (semantic appositeness, paronomasia, and initial plosives) have positive influence on brand name memory but only for less familiar brands. In addition, Lowrey et al. (2003) presented that two linguistic characteristics (unusual spelling and blending) have main effects on brand name memory. Among these two linguistic characteristics, while unusual spelling in brand name is positively related to brand name memory, blending is negatively related. Hence, Lowrey et al. (2003) highlighted that the effects of unusual spelling (positive) and blending (negative) on brand memory are stronger for less familiar brands than they are for more familiar brands.

As seen, the study of Lowrey et al. (2003) did not directly address the sound symbolism phenomena in brand naming. However, they discussed the effects of sounds (e.g., initial plosives) on brand naming, as well as other linguistic properties. In this respect, the study of Lowrey et al. (2003) have also contributed to brand naming practices, and sound symbolism theory.

Similar to the several empirical marketing studies which suggest that sound symbolism can be adopted as brand naming method, the anecdotal study of Arora et al. (2015) also supported this argument. In their study, Arora et al. (2015) aimed to formulate a comprehensive classification for brand names by integrating previous and current brand naming methods in the literature. On the basis of this formulation, they investigated the top 428 global brand names across 11 product categories through content analysis to understand current methods used in brand naming.

The findings of the study pointed out that many brands are classified under more than one category. Initiated by this finding, Arora et al. (2015) emphasized that 39.7 % of brand names use name of their promoters, fictitious, real person, or place

of origin (e.g., “Kelloggs”); 34.1 % of them adopt compounding (e.g., “Coca-Cola”); 18.2 % of them employ abbreviations (e.g., “GE”); and lastly 7.9 % of them are made up blending (e.g., “Duracell”). In their study, Arora et al. (2015) also did category-wise analysis to indicate brand naming trends in specific product categories. For example, for durables, the findings of the study presented that 61.5 % of all coded brand names are made up semantic words which have meaning in English. 53 % of the brand names are invented brand names which generally do not have any meaning in English. Lastly, 23.6 % of all coded brand names are non-word names which are generally not based on words.

Additionally, Arora et al. (2015) demonstrated that several brands use names which reflect the product or benefits of the product (e.g., “Home Depot”). The findings of the study presented that such brand names can be formed semantically based names (e.g., “Burger King”) or invented names. Hence, Arora et al. (2015) drew attention to increase in use of invented brand names. In this context, Arora et al. (2015) particularly highlighted that invented brand names can also convey meaning about the product or its attributes through sound symbolism (e.g., “Soflan”) or combination of sound symbolism and semantics (e.g., “Silsoft”) (Arora et al., 2015: 102). Thus, Arora et al. (2015) purported the importance of sound symbolism as a recent brand naming method.

In another anecdotal study, Pogacar et al. (2015) documented the phonetic sound patterns in top brand names, starting from the fact that some letters can represent more than one sound as in the case of “c” in “Cisco” and “Cartier”. To do this, Pogacar et al. (2015) examined the already existing brand names in terms of their phoneme level linguistic attributes. The data set including brand names was derived from Interbrand’s top brand name list in 2011. Hence, Pogacar et al. (2015) adopted a new data set which have not been used before in sound symbolism research. In this respect, with this study, Pogacar et al. (2015) aimed to extend the study of Schloss (1981), which explored a list of real brand names based on only advertising expenditures. In addition, they aimed to extend the study of Vanden Bergh (1990), which examined all-inclusive trade name index by adopting Interbrand’s “Top 100” list based on brand performance factors.

In their study, Pogacar et al. (2015) initially determined the frequencies of key sounds in brand names in the data set. Then, they compared the frequencies of sounds with the corresponding sound frequencies in a benchmark data set that includes general brand names. Thus, as well as a new data set, Pogacar et al. (2015) also used a new method. The findings of the study indicated that sounds which are more frequently used in top brand names convey brand enhancing properties, but sounds less frequently used in top brand names do not. For instance, consonants “p”, “b”, “t”, “k”, “d”, “g”, “l”, “m”, “v”, “s”, “z” and “h”, and vowels “a” and “e” are found as positive sounds for naming brand to connote positive sound symbolic properties to brand names.

Additionally, the findings of the study also presented that top brand names have different sound patterns when they are compared to general brand names. According to Pogacar et al. (2015), pattern of sound differences between top brand names and general brand names originated from sound symbolism. Thus, Pogacar et al (2015) concluded that sound symbolism can be considered as one of the factors that influence brand performance of top brand names. In sum, by examining sound categories like front and back vowels, stops and fricatives, nasals, affricates and approximates in the English, Pogacar et al. (2015) have provided more comprehensive analysis of sound patterns of top brand names within the context of sound symbolism. Accordingly, they have contributed to the marketing practice by informing marketers about best naming practices and strategies through the use of some specific sounds.

Finally, in order to replicate the study of Schloss (1981), Doorn et al. (2016) examined initial letter frequencies of the top 200 company names from the Fortune 500 lists. Their findings presented that the letters “A” and “J” are the most common initial letters of the brand names; whereas the letter “S” is the least. Thus, Doorn et al. (2016) pointed out that, as contrary to previous studies, the “K” is not the most frequently seen initial letter today.

As seen, the study of Doorn et al. (2016) did also not directly address the sound symbolism effect. However, the study of Doorn et al. (2016) gave insight about sound patterns of current top brands. In this context, it has established an

indirect connection with sound symbolism by presenting the link between initial letters, its sounding and being top brands.

To sum up, besides empirical marketing studies on sound symbolism, there are several anecdotal study which addressed the sound symbolism. Both these empirical and anecdotal study have adapted sound symbolism concept in several marketing contexts. Nevertheless, there are still gaps in sound symbolism literature in terms of marketing. Thus, next section is reserved to discuss literature gaps which were addressed after literature review of marketing studies on sound symbolism.

3.2. LITERATURE GAPS ADDRESSED

As it is seen, several studies have been conducted to examine the sound symbolism phenomena in marketing, and particularly brand naming context (e.g., Klink, 2000; 2001; 2003; 2009). These sound symbolic marketing studies have indicated that sound symbolism has been conceptualized in various aspects: *alpha-numeric brand names* (e.g., Ang, 1997; Gunasti and Ross, 2010; Pavia and Costa, 1993), *sound qualities* (e.g., Doorn et al., 2016; Pogacar et al., 2015), *linguistic approach* (e.g., Arora et al., 2015; Lowrey et al., 2003), *brand name-attribute perception* (e.g., Athaide and Klink, 2012; Heath et al., 1990; Klink, 2000; 2001; Klink and Wu, 2014; 2017), *product's attribute-brand name preference* (e.g., Baxter and Lowrey, 2011; 2014; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007; Lowrey et al., 2007; Shrum et al., 2012), *brand name's luxury appeal* (e.g., Pathak, Calvert, and Lim, 2017; Pathak, Calvert, and Velasco, 2017), *brand name-brand marks* (Baxter, Ilicic, et al., 2015; Doyle and Bottomley, 2011; Klink, 2003; Klink and Athaide 2014), *brand name-gender targeting* (e.g., Guévremont and Grohmann, 2015; Klink, 2009; Klink and Athaide, 2012; Lieven et al., 2015; Wu et al., 2013), *spokesperson name -product fit* (e.g., Baxter, Ilicic, and Kulczynski, 2015; Ilicic et al., 2015), *pricing perceptions* (Coulter and Coulter, 2010; Ketron and Spears, 2018), and *sound symbolism effects* (e.g., Argo et al., 2010; Baxter et al., 2014; Baxter, Ilicic, Kulczynski et al., 2017; Kniffin and Shimizu, 2016; Park and Osera, 2008; Pogacar et al., 2018; Spears et al., 2016; Yorkston and Menon, 2004)

A remarkable amount of these studies have also shown that sound patterns of brand names can cognitively influence *product judgments and evaluations regarding product attributes* (e.g., Argo et al., 2010; Park and Osera, 2008; Yorkston and Menon, 2004); *brand liking* (e.g., Klink, 2001; 2003); *purchase intentions* (e.g., Baxter, Ilicic, and Kulczynski, 2015; Coulter and Coulter, 2010; Heath et al, 1990); *brand name preference of adults* (Lowrey and Shrum, 2007), *bilinguals* (Kuehnl and Mantau, 2013; Lowrey et al., 2007; Shrum et al., 2012), and *children* (e.g., Baxter and Lowrey, 2011; 2014); *brand gender perceptions* (Guévremont and Grohmann, 2015; Lieven et al., 2015); and lastly *consumer perceived ethicality* (Klink and Wu, 2017). Moreover, these sound symbolic marketing studies have suggested that sounds in brand names are highly influential on *positioning of the product* (e.g., Klink, 2001; Lowrey and Shrum, 2007), *brand mark design for adults* (Doyle and Bottomley, 2011; Klink, 2003), *children* (Baxter, Ilicic, et al., 2015), and *emerging markets* (Klink and Athaide, 2014); *establishing brand personality* (e.g., Klink and Athaide, 2012; Wu et al., 2013), *creating meaningful brand names* (Athaide and Klink, 2012; Klink, 2000; 2001; Klink and Wu (2014), and finally *packaging of the product* (e.g., Fenko et al., 2016; Velasco et al., 2014); However, there are still some original scopes which have not been addressed by any marketing research to date.

For instance, the relationship between sounds and product attributes have been well documented (e.g., Klink, 2000; Kuehnl and Mantau, 2013; Yorkston and Menon, 2004). However, the interplay between sound symbolism and product appearance attributes and its influence on consumers' perception towards the brands has not been discovered in detail, yet. As Newman (1957) noted that a product is a symbol by virtue of its form, size, color, and functions, and its significance varies with respect to how it is associated with individual needs and social interaction. According to Newman (1957), a product is the sum of meanings that it communicates, often unconsciously, to others when they look at it. Initiated by Newman's (1957) definition, it can be readily said that product appearance is an inseparable part of the product because it is the exterior of the product which is visible to the consumers.

In this context, it can be readily said that the power of product appearance depends on the capability of its visual elements to enhance attraction, communication

and satisfaction. In this respect, as well as sounds, product appearance itself can be considered as a symbol within the context of semiotics. Additionally, both brand name and visual appearance are the outward expression of the brand (Adidam, 2007). In this context, particularly to create strong brand identity, the outward expression of the brand is worth to be studied. Accordingly, the relationship between sounds used in the brand names and product appearance should be directly addressed, and its effects on consumers' brand perception and brand name preference should be analyzed in detail.

The other gap detected in the relevant literature is about the type of sound adopted in the studies. In sound symbolism literature, a remarkable number of study has examined the sound symbolism effects with regard to vowels (e.g., Lowrey and Shrum, 2007; Yorkston and Menon, 2004; Wu et al., 2011) because the number of vowels are less than consonants. Accordingly, for both brand name preferences for specific products and brand attributes perception, sound symbolism effects have been well documented for vowels (e.g., Baxter and Lowrey, 2011; Klink, 2000; Klink and Athaide, 2012; Lowrey et al., 2008). However, particularly in terms of brand name preference, the only study using consonant sounds was the study of Kuehnl and Mantau (2013). Thus, brand name preferences should be explored in detail in terms of consonants, as well as vowels.

Additionally, a large part of these studies have well established whether the sounds of words are perceived as naturally appropriate to their meaning for *English* (e.g., Klink 2000; Lowrey and Shrum, 2007), *German* (e.g., Kuehnl and Mantau, 2013), *French* (e.g., Leclerc et al.1994; Lowrey et al., 2008; Shrum et al. 2011), and *Spanish* (e.g., Coulter and Coulter, 2010; Shrum et al., 2011). Accordingly, it is clearly seen that these studies have been mostly dominated by Western context. In that case, it can be readily said that the natural expressiveness of sounds in the words has been mostly examined within the context of major European languages which are originated from Indo-European languages.

In addition to these languages, there are also few sound symbolism research on other languages such as *Korean* (e.g., Kim, 1977) and *Japanese* (e.g., Hamano, 1994) from Altaic languages; *Chinese* (e.g., Lapolla, 1994) from Sino-Tibetan languages; *African languages* (Childs, 1994) from Bantu languages; and *Hindi* (e.g.,

Athaide and Klink, 2012; Klink and Athaide, 2014) from Indo-European languages. The findings of the large part of these studies are quite robust and support universal sound symbolism effect. However, Western languages domination in sound symbolism research on marketing can still make generalizability of managerial implications of the theory in non-Western context problematic. For that reason, it will be better to understand whether the effects of sound symbolism can hold in other languages beyond Western context.

In this sense, Turkish may provide a novel context to sound symbolism research. Turkish is a language belonging to the Turkic family of languages which are the sub-family of Altaic languages as well as Japanese and Korean (Göksel and Kerslake, 2005). There are only few conceptual and anecdotal studies which addressed the sound symbolism in Turkish (e.g., Ay, 2017; Baş and Altunışık, 2015; Batı and Ünal, 2010; Küçükaslan and Ural, 2006; Tanz, 1971). Nevertheless, these studies have remained relatively ad hoc and lacking a systematic way of organizing what it is known about how sound symbolism influence the consumer psychology of brands. In this respect, it can be readily seen that there is not any study which directly concentrates on sound symbolism effects on brand name perception, brand name preferences, and other brand related behaviors of consumers in Turkish.

Lastly, all sound symbolism studies in marketing have suffered from a lack of any integrative review of the studies in the extant sound symbolism literature which is mostly based on psycholinguistics and psychology. Thus, to address these gaps and to extend sound symbolism literature beyond Western context, this study mainly aims to understand the interplay between sound symbolism and product appearance, and its influence on consumers' brand perception in Turkish. Moreover, this study aims to transfer the accumulated knowledge on sound symbolism from linguistics, psycholinguistics and psychology to marketing discipline.

Initiated by these main research objectives derived from the overview of relevant literature, the following chapter is designed to present research methodology of this study, based on the consumer research approaches regarding to sound symbolism. In this context, the next chapter is organized around detailed analysis of the purpose of the research; research hypotheses; research design including the procedures applied during the stages of research; and data collection methods along

with the instruments and sampling procedure. In addition, in the following chapters, the findings, conclusions, implications, and limitations of the research are discussed in detail.



CHAPTER 4

METHODOLOGY AND FINDINGS

4.1. THE DESIGN OF THE STUDY

4.1.1. Objective of the Study

At the first interaction with any brand, the name of the brand frequently guides consumers to derive meaning from the product. As it is mentioned before, there are different types of brand names which suggest meaning about functions or attributes of the product. Among these brand names, using non-word brand names which are composed of different sound combination is the most preferred one particularly to differentiate the brand from the others. For such brand names, the expressiveness power comes from their sound structure depending upon sound symbolism. In that case, sound symbolism is an important phenomenon to turn any non-meaningful brand name into inherently meaningful brand name which conveys information about product's functions or attributes.

Along with the brand names, sensory characteristics of the brands are effective to derive meaning about the product or brand at first sight. Since the world we live in is full of sensations, it is normal to think that product related sensory stimuli shape consumers' perception towards products. Among these sensory stimuli acquired through five senses, visual ones are preferentially used more than other sensory stimuli by individuals to interpret the environment (Verona et al., 2004). As a window on the world, eyes often have an important role in this perception process. It is also scientifically proved that eyes are capable to send more data more quickly to the nervous system than any other sense do (Barry, 1997). Several research also reveals that the information acquired through eyes can be as high as 75 to 80 percent (Hanson, 1987; Berger, 1997). Additionally, evidence confirms that most of the stimuli reach the brain through the visual stimuli, while the remaining are transmitted through sound, taste, smell, and touch (Zaltman, 1997).

Initiated by these findings, it is quite obvious that as well as sounds in a brand name, a significant amount of meaning is communicated through the visual channel. So, it is not wrong to say that before tasting the product, smelling and touching it or hearing how it works, people are mostly in tendency of perceiving its color, volume, texture, shape, or size. This also explains why companies mostly concentrate on endowing their products with visually appealing characteristics today. Then, it can be concluded that a distinctive brand name which also emphasizes the visual characteristics of a product may be highly preferential for the product. This argument is also supported by Gestalt argument which asserts that perception of the object is integrative with its all elements (Park et al., 2005). In that case, it can be readily assumed that the composition of different elements like the sounds of a brand name and visual characteristics can influence the perception and appreciation of the product together. Accordingly, the effects of sounds in non-sense brand names on deriving meaning about the product related visual stimuli deserve attention for a better understanding of a mechanism underlying brand naming.

In this respect, in the most general sense, this study attempts to provide an overview of the possible function of non-arbitrary interaction between linguistic form and meaning within the context of brand naming. In the study, the linguistic form was determined as the sounds of individual letters that constitute the brand name, and meaning was examined in terms of information conveyed about the product appearance. In terms of linguistic form, both vowels and consonants were adopted to see the effects of sound symbolism. In terms of meaning, product appearance attributes were addressed.

The non-arbitrariness between sound and meaning was considered from two different perspective in the study. First, it was intended to support the sound symbolism literature which emphasizes the pervasiveness of non-arbitrary link between sound and meaning in a language. Initiated by this perspective, whether the specific consonants and vowels consistently convey specific information was tested with respect to attribute perception, initially. In this way, it was assumed that this study would contribute to universal sound symbolism effect which is suggested by the findings of several research, as well (e.g. Davis, 1961; Koriat and Levy, 1977; Ultan, 1978).

Second, this study addressed the non-arbitrary link between sound and meaning with respect to brand name preferences. Thus, with this study, it was planned to provide new experimental evidence which would show the matching between specific types of linguistic sounds and product appearance characteristics by tying linguistic and experimental evidence together. Additionally, in the direction of the gaps found in the relevant literature, this study also aims to examine sound symbolism effects within the context of Turkish by transferring the sound symbolism knowledge from linguistics and psychology to marketing discipline.

To shed light to the relationship between sound symbolism and product appearance, several research questions were determined on the basis of the objectives of the study and gaps noticed in literature. Throughout the study, these research questions were answered and then it was going to be reached that whether sound symbolism might influence creating inherently meaningful Turkish brand names. These research questions which direct the realization of the study are exhibited with a more detailed analysis below:

- *Do consumers match specific types of sounds with specific visual characteristics?*

In relevant literature, words including front vowels (e.g., “i”, “e”) are consistently matched with visual elements such as small and thin size more than back vowels (e.g., “o”, “u”). Additionally, individuals frequently match words containing fricatives (e.g., “f”, “v”) with smaller and thinner size than stops (e.g., “b”, “d”). In this context, this question is designed to understand the interplay between words containing specific consonants and vowels and product appearance characteristics in detail.

- *Do consumers derive meaning about the visual attributes of the product from the sounds in its brand name?*

As it is frequently noted that individuals are in tendency of deriving meaning from non-sense words. Applying this in brand naming context, the contribution of sound cues to information drawn from the visual attributes of products is worth investigating.

- *Do consumers prefer a brand name when the product appearance attributes connoted by vowel and consonant sounds were positive for a product category?*

This question aims to shed light to understand brand name preferences of consumers for specific products with specific product appearance attributes, as particularly with regard to brand names including different types of sounds.

- *Do the sounds of a non-sense brand name possess inherent meaning in Turkish?*

Previous marketing studies have not examined the sound symbolism phenomenon in Turkish. In this context, as relevant with the all other research questions, this question explores to what extent sounds may convey information about product appearance in Turkish language.

- *Do the findings of this study contribute to the universal sound symbolism effect?*

Initiated by relevant literature, it is reasonable to expect that Turkish respondents match certain sounds with certain visual attributes, and prefer brand names including specific sounds for specific products. In this context, this research question aims to display whether the findings of study can contribute to the universal sound symbolism argument.

4.1.2. Theoretical Framework and Hypotheses of the Study

4.1.2.1. Sound Symbolism and Attribute Perception

As it is mentioned, some linguists believe that the interplay between sound and meaning is arbitrary. However, some other linguists and particularly Gestalt psychologists were not restricted by the notion of arbitrary relationship between sound and meaning in theoretical linguistics. So, they have explored the notion of non-arbitrary naming in a more detailed way (Cuskley, 2013). For instance, in the early 20th century, Köhler (1929; 1947) started several experiments in motivated

naming. These experiments have been followed by similar experiments performed with children (Irwin and Newland, 1940; Mauerer et al., 2006); conducted cross culturally (Davis, 1961); and performed with different visual and linguistic stimuli (Ramachandran and Hubbard, 2001; Nielsen and Rendall, 2011; 2012). The vast majority of the studies in prevailing literature shows that people have a common naming bias to pair certain non word-names including specific sounds with certain visual forms and characteristics of objects (Cuskley, 2013).

The similar evidences have also been collected from several marketing studies particularly since the beginning of 1990s. In this context, as well as found in linguistic, psycholinguistic, and psychological research, marketing research consistently indicates that sounds can provide consumers with a cue for product category or product attributes (Baxter and Lowrey, 2011; 2014; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007; Yorkston and Menon). Depending upon the literature review of marketing studies on sound symbolism in previous chapter, it can be readily concluded that the meanings have frequently been studied with respect to several visual elements such as *shape* (angularity vs. roundness); *value of colors* (darkness vs. lightness); *intensity of colors* (brightness vs. dullness); *texture* (softness vs. hardness); and *volume* in terms of *length* (shortness vs. longness) and *width* (thickness vs. thinness). Additionally, some other attributes which can be perceived via eyes such as *size* (smallness vs. largeness), *movement* (fastness vs. slowness), *styling* (feminine vs. masculine), *complexity* (complex, vs. simple), *strength* (weakness vs. strongness), *beauty* (more pretty vs. less pretty), *coldness* (coldness vs. warmth), *friendliness* (more friendly vs. less friendly), *sharpness* (sharpness vs. dullness) and *weight* (heaviness vs. lightness) have been examined by marketing studies in relevant literature.

Nevertheless, all of these attributes used in sound symbolic marketing studies are not considered within the context of product appearance, directly. For instance, coldness and friendliness may have visual indicators (e.g., wollen materials which keeps warm or smiling salesperson which is the indicator of friendly service). However, these attributes are not directly associated with the general product appearance. In other example, fastness of a car can be perceived via eyes, if the car moves, but fastness can not be considered as a direct product appearance, if the car

does not move. In this respect, to test the effects of sound symbolism on product appearance perception, it should be better to concentrate on visual elements which can be used in the design of the products and perceived directly via eyes.

In this context, size could be regarded as one of the visual attributes of the products with respect to their smallness vs. largeness. Additionally, size is one of the most commonly used dimension to test the interplay between sound and meaning in brand naming context as well as in the whole sound symbolism literature (e.g., Klink, 2000; Sapir, 1929). Size could also be determined via width with respect to thinness and thickness. For that reason, to understand the sound symbolism effect in product attribute perception, size and width were employed as an attribute dimension in this study.

Initiated by the sound symbolic marketing studies conducted on different languages such as English, Chinese, Spanish, French, Hindu, and German, it could be seen that **front vowels** (e.g., “i”, “e”) are consistently associated with *smallness* (e.g., Baxter, Ilicic, et al., 2015; Dogana, 1967; Klink, 2000; 2003; Klink and Athaide, 2014; Klink and Wu, 2014; Lowrey and Shrum, 2007) and *thinness* (e.g., Athaide and Klink, 2012; Klink, 2000). On the other hand, **back vowels** are associated with *largeness* and *thickness* (e.g., Dogana, 1967; Klink, 2000). So, **front vowels** are frequently perceived as *smaller* and *thinner* than **back vowels** in several languages. In that case, it is reasonable to assume that front/back vowel distinction may create the same effects on attribute perception in Turkish as well as it creates for several languages. Then, initiated by the overview of sound symbolism literature on front/back vowels distinctions and assumptions, this study offers that:

H_{1a}: non-sense brand names containing front vowels (/e/, /i/) are significantly perceived as smaller than non-sense brand names containing back vowels (/o/, /u/).

H_{1b}: non-sense brand names containing front vowels (/e/, /i/) are significantly perceived as thinner than non-sense brand names containing back vowels (/o/, /u/).

In relevant literature, **fricatives** are also consistently related to *smallness* (e.g., Klink and Athaide, 2014; Klink, 2000; whereas **stops** are related to *largeness*. Nevertheless, there is no finding with regard to thinness because these attributes have not been directly matched with neither fricatives nor stops in any sound symbolic marketing study. Accordingly, since both front vowels and fricatives are considered as high frequency sounds (Hinton et al.1994), it could be assumed that fricatives may be perceived as thinner than stops as well as front vowels are perceived than back vowels. Then, initiated by the overview of sound symbolism literature on stop/fricative consonant distinction and assumptions, this study offers that:

H_{2a}: non-sense brand names containing fricatives (/f/, /v/) are significantly perceived as smaller than non-sense brand names containing stops (/k/, /g/).

H_{2b}: non-sense brand names containing fricatives (/f/, /v/) are significantly perceived as thinner than non-sense brand names containing stops (/k/, /g/).

4.1.2.2. Sound Symbolism and Brand Name Preference

In order to support the link between sound and meaning, it will be better to examine the interplay between sound and meaning within the context of brand name preference. The latest empirical research in marketing has suggested that brand names are welcomed more favorably by consumers, if the sound structure of the brand names is congruent with the attributes and characteristics of the products (Baxter and Lowrey, 2011; Klink, 2000; 2003; 2009; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). Thus, the underlying reason of the brand name preference is said to be the notion of congruence between the meaning drawn from the sound contained in the brand name and product attributes.

This argument has been well documented in terms of back/vowel distinction. So, several marketing research consistently demonstrate that consumers are more likely to prefer brand names that contain specific vowel sounds (Baxter and Lowrey,

2011; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). For instance, since front vowels are more associated with smallness (Klink, 2000), consumers would prefer brand names including **front vowels** for products like two-seater convertibles which are considered as small. On the other hand, since back vowels are more associated with largeness (Klink, 2000), they would prefer brand names including back vowels for products like SUVs which are considered as large (e.g., Lowrey and Shrum, 2007; Lowrey et al., 2008; Shrum et al., 2012). The real life evidence also suggests that since “i” and “e” are mostly associated with thinness rather than creaminess, these letters are mostly seen in brand names of crackers than in brand names of ice-cream (Krulich, 2011).

The effects of vowels on brand name preference have been tested in English (e.g., Baxter and Lowrey, 2011; Lowrey and Shrum, 2007; Lowrey et al., 2008; Shrum et al., 2012); in French (Lowrey et al., 2008; Shrum et al., 2011;2012); in German (Kuehnl and Mantau, 2013); and Spanish and Chinese (Shrum et al., 2011; 2012). In this context, it can be assumed that brand names including front vowels could be preferred more than brand names including back vowels for a product whose product appearance attributes are associated with meanings derived from front vowels in Turkish, as well. Then, initiated by the overview of sound symbolism literature on front/back vowel distinction and assumptions, this study offers that:

H_{3a}: non-sense brand names containing front vowels (/e/, /i/) would be significantly preferred more than non-sense brand names containing back vowels (/o/, /u/) for a smaller product.

H_{3b}: non-sense brand names containing front vowels (/e/, /i/) would be significantly preferred more than non-sense brand names containing back vowels (/o/, /u/) for a thinner product.

Sound symbolism research also suggests that consonants may influence the brand name preference of customers (Kuehnl and Mantau, 2013; Klink and Wu, 2014). Nevertheless, the interplay between consonants and brand name preferences has not been well documented on contrary to vowels. In relevant literature, there are

only two studies which addressed the consonants within the context of brand name preferences. One of these two studies was done by Kuehnl and Mantau (2013). As stated previous chapter, Kuehnl and Mantau (2013) also used consonants to test the effects of sound symbolism on brand name preference in several languages as well as they used vowels. The findings of the study presented that except French speaking customers, English, Spanish and Chinese speaking customers are preferred brand names including **stops** for cars which are *large* like SUV. Hence, the study of Kuehnl and Mantau (2013) presented that either it is vowel or consonant, sounds effects on brand name preferences for products increase, if the sound of brand names fits with product attributes which are desirable for the products.

Another study which addressed the interplay between consonants and brand name preference as done by Klink and Wu (2014). In their study, Klink and Wu (2014) also presented that **fricatives** (e.g., “v”) are more preferred for *smaller* car by English speaking customers because fricatives are frequently associated with smallness. In that case, it is reasonable to assume that fricatives may affect brand name preferences for products whose attributes are associated with the meaning derived from the fricatives in Turkish, as well. Then, initiated by the overview of sound symbolism literature on fricatives/stops distinction and assumptions, this study offers that:

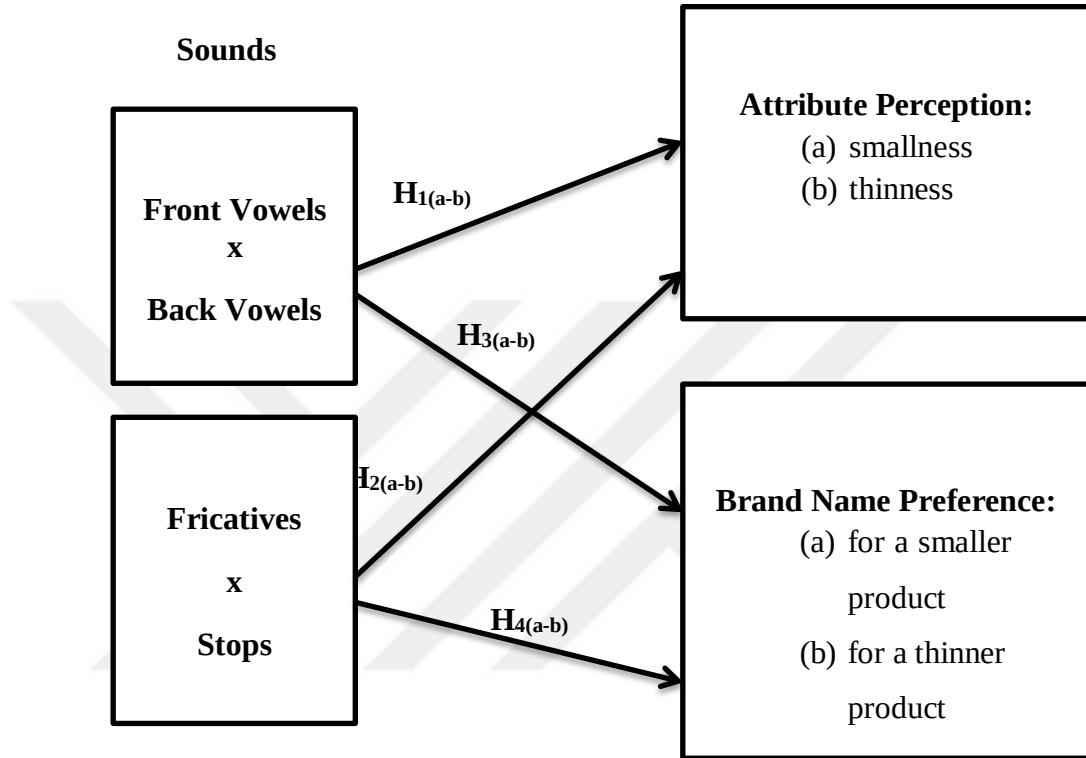
H_{4a}: non-sense brand names containing fricatives (/f/, /v/) would be significantly preferred more than non-sense brand names containing stops (/k/, /g/) for a smaller product.

H_{4b}: non-sense brand names containing fricatives (/f/, /v/) would be significantly preferred more than non-sense brand names containing stops (/k/, /g/) for a thinner product.

Depending upon the hypotheses, research model of the study is displayed in Figure 3. It should be noted that Hypothesis 1_(a-b) and Hypothesis 2_(a-b) examine the difference between the front and back vowel sounds and fricative and stop consonant sounds for each dependent variable, respectively. On the

other hand, Hypothesis 3_(a-b) and Hypothesis 4_(a-b) examine differences in sounds between the scenarios regarding product and its attributes.

Figure 3: Research Model of the Study



4.2. RESEARCH METHOD

4.2.1. Research Design

Having developed theoretical framework and hypotheses, the following step is to design the research. A research design is a framework to conduct a research. For that reason, research design is considered as important for studies because it details all the procedures necessary for collecting the requisite data and its analysis to arrive at a solution (Malhotra, 2010). In this respect, a good research design includes the information about the purposes of the study, its type of investigation and study setting, the extent of the researcher interference, its temporal aspects in terms of time horizon, and the level at which the data will be analyzed (Sekaran, 2003).

Additionally, a good research design details the procedures with regard to sampling process and sample size, measurement and scaling procedures, data collection methods and data analysis.

The main aim of the study is to explore the relationship between sound and meaning. As noted previously, the non-arbitrariness between sound and meaning was tested from two different perspectives in this study. First, to shed light to interplay between sounds of brand names and brand attributes perception, the effect of sound symbolism was tested for selected visual attributes which can be unequivocally accepted as product appearance attributes. In this respect, it was intended to extend particularly the study of Klink (2000) and all other previous studies, and so contribute to universal sound symbolism argument. Second, this study aims to display to what extent sound symbolism is influential on consumers' brand name preferences for specific products with specific visual attributes. Thus, along with supporting the previous research motivation, it was planned to provide new experimental evidence to sound symbolism phenomenon.

In order to provide a comprehensive analysis of the relationship between the sounds and product appearance attributes, the research was organized around two studies. The first study examined whether a brand name alone can convey product appearance related information through its sounds. Accordingly, the first study addressed the first two hypotheses which were designed to test the effects of sound symbolism on brand attributes perception. The second study investigated whether a brand name is matched with a product when there is a congruency between visual attributes of the product and meanings derived from the sound in its brand name. So, the second study addressed the last two hypotheses and the effects of sound symbolism on brand name preferences.

As it is seen, in terms of purpose of the study, this study is hypothesis testing study in nature because it mainly concentrates on explaining the certain relationship between brand names including specific sounds and meaning with regard to their product appearance attributes. Additionally, it can be readily said that this study is a hypothesis testing study because it aims to establish the differences among different sound groups such as front and back vowels and fricative and stop consonants. Thus, with the hypotheses of the study, whether some specific sounds are better to convey

some specific visual attributes than the others are tested. Herein, it is also important to note that the research design of the study is determined as causal depending on the type of investigation necessary for the studies that test group of different hypotheses.

In Study 1, to what extent the brand names including specific sounds are associated with perception of several specific product appearance attributes was explored. In Study 2, the effects of sound symbolism on brand name preference for a product having specific visual attributes associated with the meaning derived from the relevant sound(s) were explored. In this sense, in both of the two studies, brand names manipulated by different sound distinctions (front vowels vs. back vowels and fricatives vs. stops) were determined as independent variable. Whereas perception regarding pairs of several product appearance attributes (small vs. large and thin vs. thick) and preferences for a product with specific visual attributes were determined as dependent variable for Study 1 and Study 2, respectively.

In this context, both Study 1 and Study 2 are determined as causal research in which evidence with regard to cause and effect relationship is explored. As stated by Malhotra (2010), this type of investigation is suitable to discover the nature of the relationship between the causal variables and the effect to be predicted. The following sections are designed to give more information about the Study 1 and Study 2 in terms of their participants and sampling process, procedure, stimuli, data collection method, analysis and results.

4.2.2. Study 1

4.2.2.1. Participants and Sampling Process

Previously noted that the extent of perception can vary according to demographics. For instance, adults derives meaning from sounds more than children do (Baxter and Lowrey, 2011). In recent years, several psycholinguistic (Mauer et al., 2006; Mondloch and Mauer, 2004) and marketing research (e.g., Baxter and Lowrey, 2011; 2014) have also suggested that developmental factors affect the presence of sound symbolism effects. Particularly, the findings of research indicate that children under the age of nine do not show sound-stimuli relationships consistent

with sound symbolism theory (Baxter and Lowrey, 2014). Accordingly, it is reasonable to say that sound symbolism effects manifest as children age because the more children age, the more their necessary language based-skills and knowledge develop (Baxter and Lowrey, 2011; Baxter, Ilicic, and Kulczynski, 2015). In relevant literature, this development which is required to observe the sound symbolism effects is called *phonological awareness* (Fowler, 1991). In this context, it can be readily concluded that age-based boundary condition of phenomenon makes children inappropriate for being selected as sample.

Along with age, there are also cognitive constraints which impede the effect of sound symbolism in children. Psycholinguistic research indicates that a child often begins to learn letters and their associations at approximately six to seven years of age (Chall, 1983). These ages are the time in which children begin to process words phonetically by concentrating on the sounds in words and their meaning (Ehri and Wilce, 1985). Then, it can be readily concluded that sound symbolism effects can not be observed among children under the age of six. Several research also suggests that, under cognitive load conditions, sound symbolism effects do not manifest in a child sample who are in between the age of six to thirteen (Baxter and Lowrey, 2014; Baxter, Lowrey and Kulczynski et al., 2015). In that case, it is again reasonable to think that child sample is not appropriate to observe the sound symbolism effects.

In this context, in order to manifest the sound-stimuli relationship, using adult sample seems more sensible. However, adults can manifest differences in terms of their perception process. For instance, several research provides evidence that females are more sensitive in most perceptual modalities than males (e.g., Klink, 2009; McGuiness, 1976). In order to deal with these differences, it can be assumed that working with homogeneous group will be better. By supporting this argument, Erdem et al. (2006: 38) also state that “the smaller differences in age, socio-demographics, relative income and so forth [...] making possible a clearer attribution of substantive theoretical differences”.

In this context, since a homogenous sample allows a better theoretical explanation, students may be used as a unit of analysis in this study to collect data. In the literature, student samples are often regarded as homogeneous groups. For instance, Sternthal et al. (1994: 208) purport that:

“[...] when the researcher is interested in theoretical explanation, a homogenous sample is the preferred option [...] lowering inter-subject variance in this way enhances the likelihood of findings support for the theory is true. In such instances, student samples or other homogeneous groups are preferred.”

Although it inevitably puts limits on the generalizability of the observed sound symbolism effects, a remarkable number of marketing studies in sound symbolism literature also used student samples (e.g., Klink, 2000; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). Since the main focus of this research is not generating population projections but testing theoretical hypotheses regarding sound symbolism effects, the use of student sample was justified for this study, as well.

For Study 1, the student sample was intentionally constructed from Turkish respondents because Turkish is one of the languages in which sound symbolism effects have not been examined in detail and well documented, yet. The students were selected from undergraduates studying at Afyon Kocatepe University, Turkey. At this point, it is important to note that the student sample of the study particularly composed of students who were native Turkish speakers and did not speak any foreign language fluently in order to minimize the bilingual effects on sound symbolism effects. Accordingly, sample consisted of students who are from Turkey and have never been in any foreign countries before. In order to provide maximum level of homogeneity, students from all departments except the ones regarding linguistics and psychology were included to the sample. Such departments were deliberately excluded from the study because students in these departments might have a disciplinary knowledge about sound symbolism phenomena. Moreover, undergraduates studying in departments in which education language is English (e.g., Business Administration in English) were excluded from the study because their English knowledge would lead to bias when evaluating sound-stimuli relationships.

After determining sampling criteria, a minimum sample size was determined to get reliable results. In general, to get results that are somewhat reliable in brand naming research, a minimum sample size of 50 is a must (Blackett, 1989). For such research, a sample size which is greater than 200 is rarely needed (Kohli, 1997). Initiated by the overview of the marketing research on sound symbolism, it can be readily said that the size of the sample employed in the studies ranged between 79

(Klink and Athaide, 2014) and 456 (Kuehnl and Mantau, 2013). However, as a fieldwork characteristics, the sample size is frequently under 200 (e.g., Baxter and Lowrey, 2011; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). In this context, the sample size of 200 could be considered as enough to analyze the sound symbolism effects for Study 1. Nevertheless, since the ideal sample size should be at least 10 times of the number of items used in scale (Kline, 2016; Nunnally, 1978), sample size of at least 320 seemed quite enough with respect to number of items to be used in the questionnaire (32 items).

In order to reach given sample size, *purposive sampling method* is used in Study 1. Purposive sampling or criterion-based sampling as LeCompte and Preissle (1993: 69) called, is a strategy for selecting “particular settings, persons, or events deliberately to provide important information” that is unlikely collected from other alternatives (Maxwell, 1996: 70). Simply put, in purposive sampling, “you decide the purpose, you want informants to serve, and you go out to find them” (Bernard, 2006: 189). As it is stated above, there are some criteria to construct a sample from whom the data are collected. For instance, it is expected that all participants are native Turkish speakers, who do not speak any other language fluently and have never been in abroad, before. Additionally, it is expected that all participants are studying in departments exluded from linguistics and psychology. In this way, it is expected to reach students who are “uniquely able to be informative” (Weiss, 1994: 17).

There are also some potential drawbacks of purposive sampling. For instance, selecting predetermined individuals, times and settings to provide information which you need is considered as a concern in qualitative and non-probability sampling decisions (Maxwell, 1996). In this respect, purposive sampling method may seem inappropriate to generalizability of the results. However, as mentioned before, the aim of the study is not to extend the findings to broader population but to understand the phenomenon (Given, 2008). All in all, the use of purposive sampling is justified for this study on several accounts.

To ensure certain types of participants, announcements were prepared on the basis of given criteria and these announcements were hanged on information-sharing board of the faculties in Afyon Kocatepe University. Along with written announcements, participants were also called via verbal announcements.

Additionally, in order to increase the participation, it was announced that participants would be compensated for their time by partial course credit.

4.2.2.2. Procedure

In return for partial course credit, 716 undergraduates studying at Afyon Kocatepe University participated in Study 1. Nevertheless, questionnaires of the 604 participants were deemed full completed with approximately a 84.36 percent response rate. 294 of the participants (48.7 percent) were female and 310 of them (51.3 percent) were male (See Table 11).

Table 11: Demographic Characteristics of the Participants with respect to Gender

Gender	Frequency	Percent
Female	294	48.7
Male	310	51.3
Total	604	100.0

In terms of age, participants were aged 18-49 years (M_{AGE} : 21.8212, SD_{AGE} : 2.80803) (See Table 12). A vast majority of the participants (81.2 percent) were between the age of 20 to 23. 8.5 percent of the participants were in 24-29 age group, followed by 19 years old and less with nearly 8 percent. On the other hand, there were only 14 participants (2.5 percent) who were 30 years old and above (See Table 13).

Table 12: Descriptive Statistics regarding the Age of the Participants

	N	Minimum	Maximum	Mean	Standard Deviation
Age	604	18	49	21.8212	2.80803

Table 13: Demographic Characteristics of the Participants With Respect to Age

Age Groups	Frequency	Percent
19 years old and less		
18	6	1.0
19	42	7.0
20-23		
20	106	17.5
21	170	28.1
22	120	19.9
23	95	15.7
24-29		
24	34	5.6
25	11	1.8
26	3	0.5
27	1	0.2
28	1	0.2
29	1	0.2
30 years old and above		
30	3	0.5
33	1	0.2
34	2	0.3
35	3	0.5
36	1	0.2
38	1	0.2
42	1	0.2
45	1	0.2
49	1	0.2
Total	604	100.0

With respect to faculty, a vast majority of the participants (60.4 percent) were studying at Faculty of Economics and Administrative Sciences, Faculty of Engineering, and Faculty of Science and Literature. 10.4 percent of the participants were studying at Faculty of Veterinary Medicine, followed by participants studying at Faculty of Fine Arts with 9.1 percent, Faculty of Law with 7.8 percent, Faculty of Technology with 7.0 percent and Faculty of Tourism with 5.3 percent. Demographic characteristics of the participants in terms of their faculties and departments were displayed in Table 14.

As seen from Table 14, within the context of Faculty of Economics and Administrative Sciences, the participants studying Political Science and Public

Administration were the 7.6 percent of the 604 participants, followed by the participants studying Business Administration with 7.3 percent, Public Finance with 6.3. percent, Economics with 5.3 percent, and International Trade and Finance with 4.3 percent. 11.4 percent of the participants were students of Civil Engineering, and 3.3 percent and 2.5 percent of them were students of Biomedical Engineering and Food Engineering, respectively at Faculty of Engineering. 38 of the participants (6.3 percent) were studying History, 21 of them (3.5 percent) were studying Mathematics, and 16 of them (2.6 percent) were studying Molecular Biology and Genetics at Faculty of Science and Literature. The participants studying Veterinary Medicine were the 10.4 percent of the participants.

With respect to Faculty of Fine Arts, the participants studying Painting and Motion Picture and Television were the 4.8 percent and 4.3 percent of the participants, respectively. 7.8 percent of the participants were studying Law. Within Faculty of Technology, the participants studying Electrical and Electronic Engineering and Mechanical Engineering were the 3.5 percent and 3.5 percent of the 604 participants, respectively. Finally, 21 of the participants (3.5 percent) were students of Tourism Management and 11 of them (1.8 percent) were students of Tourist Guiding at Faculty of Tourism.

Table 14: Demographic Characteristics of the Participants With Respect to Faculty and Department

Faculty	Department	Frequency	Percent
Faculty of Economics and Administrative Sciences	Political Science and Public Administration	46	7.6
	Business Administration	44	7.3
	Public Finance	38	6.3
	Economics	32	5.3
	International Trade and Finance	26	4.3
	Total	186	30.8
Faculty of Engineering	Civil Engineering	69	11.4
	Biomedical Engineering	20	3.3
	Food Engineering	15	2.5
	Total	104	17.2
Faculty of Science and Literature	History	38	6.3
	Mathematics	21	3.5
	Molecular Biology and Genetics	16	2.6
	Total	75	12.4
Faculty of Veterinary Medicine	Veterinary Medicine	63	10.4
Faculty of Fine Arts	Painting	29	4.8
	Motion Picture and Television	26	4.3
	Total	55	9.1
Faculty of Law	Law	47	7.8
Faculty of Technology	Electrical and Electronic Engineering	21	3.5
	Mechanical Engineering	21	3.5
	Total	42	7.0
Faculty of Tourism	Tourism Management	21	3.5
	Tourist Guiding	11	1.8
	Total	32	5.3
Total		604	100.0

In terms of class, 62 of the participants (10.3 percent) were freshmen; 144 of them (23.8 percent) were sophomore; 225 of them (37.3) were junior; and finally 173 of them (28.6) were senior. Thus, the results revealed that more than half of the participants (65.9 percent) were junior and senior students (See Table 15).

Table 15: Demographic Characteristics of the Participants With Respect to Class

Class	Frequency	Percent
Freshmen	62	10.3
Sophomore	144	23.8
Junior	225	37.3
Senior	173	28.6
Total	604	100.0

In terms of level of foreign language, 597 of the participants (98.8 percent) reported that they knew English. The remaining participants stated that they knew German (0.8 percent) and Arabic (0.3). With respect to English, 266 of the participants (44.0 percent) reported that they were at the beginner level and 331 (54.8 percent) of them were at the pre-intermediate level of English. Additionally, 5 of them (0.8 percent) and 2 of them (0.3 percent) were at the pre-intermediate level of German and Arabic, respectively. Demographic characteristics of the participants in terms of foreign language and foreign language level was presented in Table 16. The results regarding foreign language level of the participants presented that they did not speak any foreign language fluently.

Table 16: Demographic Characteristics of the Participants With Respect to Foreign Language and Foreign Language Level

Foreign Language	Beginner		Pre-Intermediate		Total
	Frequency	Percent	Frequency	Percent	
English	266	44.0	331	54.8	597
German	-	-	5	0.8	5
Arabic	-	-	2	0.3	2
Total	266	44.0	338	56.0	604

Finally, all of the participants reported having a normal sense of audition and they stated that they have never been in abroad before (See Table 17). Additionally, before their participation, all participants provided consent to participate.

Table 17: Demographic Characteristics of the Participants with respect to Hard of Hearing and Being Abroad

Hard of Hearing	Frequency	Percent
No	604	100.0
Total	604	100.0
Being Abroad	Frequency	Percent
No	604	100.0
Total	604	100.0

The data were collected from the participants between April and May of 2019. The data with respect to Study 1 had not been collected before, nor will they be collected again from the same participants for this study. In that case, since the data were collected at one point in time, Study 1 was designed as cross-sectional study in terms of time horizon.

The sessions in Study 1 were conducted in relatively small groups (12-20 participants) in a quiet classrooms equipped with surround sound system. The illumination and air conditioning of the classrooms were controlled before the each session. During the sessions, the participants were seated alone in each desk, and 1 desk between the each two participant was left empty to enable each participant give their answer independent of the answer given by any other participants.

At the beginning of the session, a 3 page booklet was given to each participant. The first page oriented participants to the task by informing them that they are going to evaluate potential new brand names that they listen. However, they were not informed about the main purpose of the study. Each question pair in the questionnaire booklet corresponded to one of the 4 hypotheses. Among these hypotheses, 2 pertained to the vowels sounds (H1_{a-b}), and 2 pertained to the consonants (H2_{a-b}).

In pioneering studies in sound symbolism, participants were asked to indicate their responses by circling their choice for one of the two invented brand names which better conveys information about a given attribute for particular product (e.g., Klink, 2000; Newman, 1933; Sapir, 1929). For instance, Sapir (1929) asked participants to select one of the two invented words which signify small tables or

Newman (1933) asked participants to identify one of two non-sense words that signify large horses. Similarly, Klink (2000:11) asked their subjects to indicate their responses by selecting one of the two invented words which better communicates a given attribute for a specific product (e.g. “Which brand of ketchup seems thicker?”). However, in Study 1, specific attributes were not given with specific products. Hence, it was expected to decrease the bias that would potentially occur due to connotations with regard to specific products.

Additionally, instead of asking participants to circle their choice between two invented brand names for relevant attributes by using direct matching task, they were asked to rate their attribute perception with regard to each brand name. In this context, to clarify the sound symbolism effects, semantic differential scale was used in Study 1 to measure quantitatively the connotative meaning of invented brand names with a battery of bipolar adjectives. Hence, semantic differential scale enabled participants to rate the stimulus brand name against a number of independent scales by checking of one of five blanks bounded on either side by bipolar adjectives (French, 1977).

Depending upon the first two hypotheses, meaning regarding brand appearance attributes was measured in terms of size with respect to smallness and thinness perceptions in Study 1. In this respect, for Study 1, five-point semantic differential scales were anchored: small/large and thin/thick. In order to provide convenience in comprehension and completion of the questionnaire and enable participants to express their opinion readily, scale points were numbered from 1 to 5. Thus, participants were asked to rate how small and thin each brand name seems with 1 to 5 interval scales. Hence, size was measured such that “1 = small” and “5 = big”; and width was measured such that “1 = thin” and “5 = thick”. The format of questionnaire booklet used in the Study 1 was presented in Appendix 1.

Although sessions conducted in a laboratory equipped with personal computers in several psycholinguistic studies in sound symbolism literature, computers were intentionally not used in this study because of the potential technical problems that might occur during sessions. Additionally, it was considered that computers have several functions which are more likely to distract the attention of participants. For instance, participants would prefer surfing on the internet rather

than concentrating on the study. Thus, it was thought that the use of computer might make control of participants difficult. However, in order to make Study 1 more psycholinguistic study, stimuli were created in a more systematic and controlled fashion.

As stated before independent variables were the brand names which were produced on the basis of alteration of some specific sounds. For that reason, in Study 1, the brand names were the stimuli. In spite of the fact that brand names are expressed both visually and aurally in real life, virtually in all studies on brand names and sound symbolism, the approach of studying brand names is based on reading brand names silently (e.g., Klink, 2000; 2001; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). In these studies, brand names were given to participants with several questions and participants gave response to the questions after reading the brand names silently by themselves. This approach is based on working memory model of Baddeley and Hitch (1974) which suggests that individuals are endowed with an articulatory control process and a phonological store.

However, incoming information may be registered into the phonological store either by an optional registration through subvocalization of written brand names or by an obligatory process of hearing spoken brand names (Salamé and Baddeley, 1986). In this context, it can be readily assumed that if the brand names are spoken aloud, they are more automatically entered into the phonological store than brand names that are read silently. Previous studies also presented that expressing brand names aloud are better than the absence of sound in silent reading (e.g., Argo et al., 2010).

In this context, instead of visual stimuli, only auditory stimuli were used in Study 1. Hence, to present these auditory stimuli to participants, audio file in which brand name pairs were recorded was used in Study 1. This study would also prefer to present auditory stimuli through audio file for other several reasons:

- First, as stated by Sapir (1929), the inherent volume of sounds or words may create the sound symbolism effects. In this context, each participant may bias themselves through their pronunciation by altering intonation or volume. Thus, in order to mitigate within speaker variations in tone and loudness, single and common audio file was adopted.

- Second, even in the pronunciation of well-known brand names, there can be some deviations. For instance, according to some people, Nike is pronounced as one syllable word; whereas according to others, it is pronounced as two syllable word. Then, since the brand names used in the study were new and invented brand names that participants have never heard before, it would be better to prepare audio file in which brand names were pronounced by only one speaker.
- Third, listening the brand names via audio record might entail a less time-consuming procedure which allows more word-pairs to be tested with more product appearance attributes in a controlled manner.
- Fourth, several specialized processes can be activated in the brain, if individuals see a brand name (Gontijo et al., 2002; McClure et al., 2004). For instance, the type, color, and size of the font of brand names may pave the way for bias which alter the perception of participants towards the meaning derived from the sounds(e.g., Doyle and Bottomley, 2011).
- Lastly, initiated by the articulatory hypothesis, it can be suggested that shapes imitate the articulatory movements of the speech organs when the words are pronounced. For instance, according to Newman (1933) and Ramachandran and Hubbard (2001), words including front vowels are associated with sharpness because the tongue is sharply inflected in pronunciation of these sounds. On the other hand, words including back vowels are related to roundness because lips and oral cavity are rounded when these sounds are pronounced. In this respect, even reading the brand name pairs in front of the participants might lead to bias in terms of the shape of the mouth of speakers during the pronunciation of the brand names. For that reason, audio file in which stimuli brand names were recorded was used in this study.

The audio record used in Study 1 was created via MatLab, a software package for “iterative analysis and design processes with a programming language”¹. Initial recordings regarding brand name pairs were made by using Olympus VN-8600PC

¹ MatLab, “Millions of Engineers and Scientists Trust MATLAB”, <https://www.mathworks.com/products/matlab.html>, (21.04.2019)

digital voice recorder located 25 cm from the mouth of speaker. In Turkish, there is a high correlation between the way words sound and the way they are written. Thus, each invented brand name was recorded same as written into the audio record. Then, original sounds recorded regarding each brand name pair were normalized (See Appendix 2).

Normalizing original sounds is to change their overall volume by a fixed amount to reach a target level. Normalization of audio is required to get the maximum volume, if there are any quiet audio files that you want to make them as loud as possible (0 Dbfs) without changing their dynamic ranges. Additionally, it is required to match volumes, if there are group of audio files at different volumes that you want to make them all as close as possible to the same volume. Hence, to increase the standardization between audio files regarding each brand name pair, normalized soundings of brand names were used in Study 1.

After normalization, duration of sequence between one brand name and the other was determined through several pre-tests conducted on students to determine exact duration between following brand names in each relevant attribute. In this way, it was planned to get participants' responses in the shortest possible time to make them not to think anything else which may influence their responses. As a result of the pre-tests, duration of sequence between one brand name and the other was determined at 3 seconds (3000 ms) in audio file. On the other hand, duration of sequence between last brand name for smallness and first brand name for thinness was determined at 5 seconds (5000 ms). By this way, it was planned to make participants' ready for the new brand name pairs regarding different attribute. The audio file was presented at a level of 70 dB through the Lenovo computer and Logitech S120 1+1 speaker. Each invented non-sense brand name was listened to participants only one time.

At the start of sessions of Study 1, participants were initially informed to read information in the first page of the questionnaire booklet regarding tasks that they are going to follow through the session. In this context, they were requested to indicate their responses for only the brand name they heard and the relevant question. In this way, it was planned that participants would not deal with other questions with regard to other brand name pairs. Participants were also informed to indicate their response

within 3 seconds after hearing each brand name and to never change their first response. They were also told that each brand name pair was to be listened only one time. In this manner, the involvement of the participants were tried to be increased. Thereafter, they were informed about measurement scale and the way how they rated the stimuli brand names.

As stated above, the measurement scale of the Study 1 was five-point semantic differential scale labelled with numbers from 1 to 5. For that reason, participants were told that in seven-point semantic differential scales, “1” signifies closest relationship to the term on the left; “2” indicates decreasing appropriateness to the term on the left, “3” has neutrality; “4” indicates increasing appropriateness to the term on the right; and “5” has the closest relationship to the right-hand term. Hence, participants were asked to rate invented brand names they heard from 1 to 5 interval scales for each relevant question in terms of closeness between given brand names and attributes. Finally, after listening to the audio presentation, participants were asked to provide demographic data by fulfilling the related questions at the end of the questionnaire booklet. The session for the Study 1 was organized to be lasted for approximately 10 minutes. Then, all participants were debriefed.

In Study 1, each of 4 hypothesis was tested with 4 different word pairs. The following section about stimuli also explains that’s why 4 different word pairs were needed for each hypothesis. In order minimize any kind of bias, the order of brand name heard in a brand name pair was altered. Thus, sometimes brand names manipulated by front vowels or fricatives were given first in a brand name pair and sometimes brand names manipulated by back vowels and stops were given first in a brand name pair. Hence, brand names were presented counterbalanced in the audio record in order to minimize the order effects and to reach more reliable results. Next section provides more information about how these invented brand names were created.

4.2.2.3. Stimuli

Study 1 was primarily conducted to understand whether sounds in brand names posses inherent meaning. For that reason, this study concentrated on

synesthetic sound symbolism. Synesthetic sound symbolism suggests that meaning is derived from the differences in the frequency of the sounds. For example, high frequency sounds such as front vowels and fricatives are consistently associated with smallness and fastness than low frequency sounds such as back vowels and stops (e.g., Klink, 2000; Kuehnl and Mantau, 2013). Additionally, it essentially considers the link between sound and meaning to be inherent, and so not to be language specific (Klink and Athaide, 2014). In this context, the focus of Study 1 was on synesthetic type sound symbolism to test whether the sounds consistently convey similar meanings in Turkish as well as they convey in particularly most Western languages.

To understand the interplay between sound and meaning, meanings are matched with invented fictitious words in virtually all research on sound symbolism (e.g., Klink 2000; Kuehnl and Mantau, 2013; Newman, 1933; Sapir, 1929). This matching is based on a kind of experimentation mostly associated with Köhler (1929). As it was mentioned, Köhler (1929) presented that people matched the invented word “baluma” with rounded shapes, while they matched the invented word “takete” with angular shapes. Since then, a great number of study has proven that individuals relate certain vowels and consonants with specific shapes (e.g., Ramachandran and Hubbard, 2001) and the other several attributes (e.g., Baxter and Lowrey, 2011; Klink, 2003) by using nonsense words. To apply synesthetic sound symbolism into branding context, invented non-sense brand names were required to be created by using the basic building blocks of each word; vowels and consonants, in Study 1. Then, they were tested whether they are perceived consistently in Turkish context, as well.

With respect to vowels, it can be readily said that the front/back vowel distinction is used in virtually all studies in sound symbolism literature, although there are other classifications for vowels such as rounded/unrounded vowel and broad/narrow vowel. As it was mentioned in detail in Chapter 2, frontness and backness occur due to position of tongue in the mouth, when a vowel sound is pronounced (Özsoy, 2002). In Turkish, “i”, “e”, “ö”, and “ü” are front vowels because the tongue is more toward the front of the mouth, when they are uttered;

whereas “i”, “a”, “o”, and “u” are back vowels because the tongue is more toward the back of the mouth (Ergenç, 2002:21).

Nevertheless, the sound “a” has a different position among the other back vowels. Although it is included in the back vowel classification according to continuum, it is also regarded as central vowel in terms of backness and frontness (Ergenç and Uzun, 2017). This means that the sound “a” falls more toward the middle of the backness and frontness of the tongue in the mouth. So, to test the sound symbolism effect, the sound “a” may not work appropriately. In that case, “i”, “o”, and “u” may be considered as the back vowels which can be used to test the sound symbolism effects, properly.

Among these remaining back vowels, the sound “o” and “u” have also similar characteristics because they are rounded vowels, as well. In this context, as well as front/back vowel distinction, the round/unrounded vowel distinction can be tested within the context of sound symbolism, if the sounds “u” and “o” are employed in the study. Additionally, in alphabets of different languages such as English, there is no letter “i” but there are letters of “o” and “u”. Thus, to compare the results with different languages, using rounded back vowels “o” and “u” seems good to test the sound symbolism effects with respect to back vowels.

After selecting back vowels to be used in the study, front vowels must be selected because the first hypothesis is about the difference between front and back vowels in terms of conveying particular meaning. Since, rounded back vowels “o” and “u” were selected for the study, unrounded front vowels should be selected to compare and contrast the effects of rounded/ unrounded vowel distinction as well as front/back vowel distinction. In Turkish, the sounds “i” and “e” are unrounded front vowels and the remaining sounds “ö” and “ü” are rounded front vowels. Just like the sound “i”, the rounded front vowels “ö” and “ü” are not found as letters in many alphabets. Therefore, the sounds “e” and “i” were selected to be contrasted with the sounds “o” and “u”. The sounds “i” and “e” are also consistently contrasted with the sounds “o” and “u” in a great deal of sound symbolism research (e.g., Athaide and Klink, 2012; Baxter and Lowrey, 2011; Klink, 2000; Klink and Athaide, 2012; Lowrey and Shrum, 2007; Yorkston and Menon, 2004).

As well as comparing front vowels with back vowels, it was required to compare fricatives with the stops to test the second hypotheses. As stated in Chapter 2 in detail, the consonants can be classified in terms of presence and absence of vocal cord vibration; their manner of articulation, and their place of articulation (Ergenç, 2002; Özsoy, 2004). In this context, fricatives and stop consonants are categorized with respect to their manner of articulation. In Turkish, the sounds “ç”, “f”, “h”, “j”, “s”, “ş”, “v”, “y”, and “z” are fricatives; whereas the sounds “b”, “d”, “g”, “p”, “t”, and “k” are stops.

As well as their manner of articulation, consonants are categorized with respect to presence and absence of vocal cord vibration. As stated before, among the fricatives, the sounds “ç”, “f”, “h”, “s”, and “ş” are voiceless fricatives; whereas “c”, “j”, “v”, “y”, and “z” are voiced fricatives in Turkish (Ergenç, 2002:22). On the other hand, among the stops, while the sounds “k”, “p”, and “t” are voiceless stops, “b”, “d”, and “g” are voiced stops in Turkish (Ergenç, 2002:22).

At this point, it is still difficult to select which fricatives are contrasted with which stops. For that reason, this study also focused on the other classification which is based on place of articulation. As stated before, according to place of articulation, the sounds “b”, “p”, “m” are bilabial; the sounds “f” and “v” are labiodental; the sounds “d” and “t” are dental; the sounds “n”, “r”, “s”, and “z” are palate-alveolar; the sounds “c”, “ç”, “j”, “ş”, and “y” are alveo-palatal; the sound “l” is palatal; the sounds “k” and “g” are velar, and finally the sound “h” is glottal in Turkish (Ergenç, 2002: 22). In order to test fricative/stop distinction effects properly, it should be better to select fricatives and stops which have differences in their pronunciation and sounding. Among these sounds, labiodental sounds and velar sounds may provide a good context to test the sound symbolism effects in terms of significant differences in their places of articulation.

As stated in Chapter 2, “labiodental sounds” are produced when the lower lip makes a contact with the upper front teeth (Brinton, 2000; Fromkin et al., 2014 Ladefoged and Johnson, 2011; Özsoy, 2004). On the other hand, “velar sounds” are produced when the back of the tongue is raised toward the velum or soft palate. In this context, voiceless labiodental fricative “f” and voiced labiodental fricative “v” were selected to be contrasted with voiceless velar stop “k” and voiced velar stop “g”

to test the sound symbolism effects in a better way. The fricative sounds “f” and “v” have been also contrasted with the stop sounds “k” and “g” in several sound symbolism research (e.g., Athaide and Klink, 2012; Klink, 2000).

In this context, by using the contrast sounds, a total of 4 contrasts (i.e. “i” vs. “o”, “i” vs. “u”, “e” vs. “o”, and “e” vs. “u”) can be produced for vowels and a total of 4 contrasts (“f” vs. “k”; “f” vs. “g”; “v” vs. “k”; and “v” vs. “g”) can be produced for consonants. This means that 4 brand name pairs with 4 different sound combinations with respect to front/back vowel and fricative/stop distinction must be created to test the effects of front/back vowel distinction and fricative/stop distinction on attribute perception, respectively. This also explained that’s why 4 brand name pairs required for each attribute in relevant hypotheses, as mentioned in the section above. Hence, totally 16 word pairs were needed to test the effects of front/back vowel distinction and fricative/stop distinction on two given product appearance attributes as indicated in Hypotheses 1_(a-b) and Hypotheses 2_(a-b), respectively.

In order to avoid any semantic associations, completely artificial word pairs were created for Study 1. When these artificial words were produced, the approach used by Sapir (1929) was employed. In 1929, Sapir conducted his experiments by using pairs of nonsense words that were built on the CVC (consonant-vowel-consonant) model. According to this model, the two words within a pair (e.g., “mil” and “mal”) were matched for the initial and final consonants; whereas the vowels were altered. Hence, in sound symbolism studies, depending upon the Sapir’s CVC model, words are manipulated by only altering one sound and keeping the rest same (e.g., “Frisch” and “Frosch”, “Esib” and “Usib”, and “Detal” and “Dutal”).

Study 1 also utilized the CVC model used by Sapir and numerous researchers to create invented non-sense brand names. As in previous studies, brand names in a given pair were created as identical except for the vowels being contrasted to test the effects of front/back vowel distinction. For Study 1, brand name pairs were also manipulated by altering only vowels being contrasted (e.g., “Tiduv” and “Töduv”) to test the Hypotheses 1_(a-b). On the other hand, to test the effects of fricative/stop distinction, consonants being contrasted (e.g., “Figuv” and “Kiguv”) were manipulated but the rest of the sounds in two brand names within a pair were matched. Hence, brand names in a given pair were created as identical except for the

consonants being contrasted (e.g. Klink 2000; Kuehnl and Mantau, 2013). In this way, the invented words in each pair were only differed in terms of fricative and stop being contrasted to test the Hypotheses 2_(a-b).

When these invented non-sense brand names were produced, except the sounds being contrasted, the other sounds used in brand name pairs were selected among the nasal, rolled, lateral, stop and fricative consonants and front and back vowels randomly. The framework used to create nonsense brand name pairs was given in Appendix 3. Additionally, all invented nonsense brand names were produced in the form of two syllable words because single syllable words may be frequently and closely like real words, even if they are fictitious. For all invented non-sense brand names, the contrast sounds appeared in the first syllable. In here, it is also important to note that brand names were created purposefully in order not to contain any sounds that may produce negative feelings and any words that may include semantic meaning. Moreover, attention was paid to create nonsense brand names which were not pronounced in a difficult manner.

In order to eliminate any nonsense brand names that may potentially remind participants any real words in Turkish or existing brand names, the invented brand names were pretested on a different set of participants before the Study 1. In the pre-test, brand names were preferred to be given both visually and aurally to participants. At the beginning of the pre-test, participants were told to read all the brand names given in the first page of a 2 page booklet aloud by themselves. In this way, it was attempted to understand whether invented brand names remind anything else to participants visually and aurally. Then, participants were informed to rate their thoughts going through their mind when they saw and after repeated the brand names by themselves.

Connotation of each brand name was measured with a 32 item 5 point Likert scale and two open-ended questions. In the pretest, participants were initially asked to rate the degree of their response to how likely any of these given brand names remind them any existing semantic words (1 = not at all to 5 = very much). Then, in the first open ended-question, they were asked to list the brand names which include any semantic word parts among the given brand names, if there were. Finally, in the second open ended question, they were asked to write the brand names which remind

them any real brand names, if there were (See Appendix 4 for questionnaire form of Pre-test 1).

In the pre-test, undergraduates studying in Department of Business Administration in Afyon Kocatepe University were used because of sampling convenience as well as their relative knowledge on existing brand names. 114 undergraduates participated in the pre-test. Of the 114 participants, 50.09 percent were female, the vast majority of them (81.6 percent) were under 24 years old ($M_{AGE}: 22,5175$, $SD_{AGE}: 1,28457$), and more than half (64.9 percent) were junior or senior students (See Appendix 5 for more information about the demographic characteristics of the participants participated in Pre-test 1).

Descriptive statistics regarding responses of the participants to each brand name were presented in Table 18. The results of descriptive statistics revealed that for the given 32 invented non-sense brand names, connotation ranged from 1 (not at all) to 3 (undecided) in 5-point scale. Hence, mean values for each invented brand name were calculated lower than 2 except Pebif ($M_{Pebif}: 2.0088$), Vumiv ($M_{Vumiv}: 2.0000$), Fimuv ($M_{Fimuv}: 2.0088$), and Giluv ($M_{Giluv}: 2.0263$). However, the mean values of Pebif, Vumiv, Fimuv, and Giluv were calculated very close to 2. Thus, the results presented that invented non-sense brand names were frequently rated nearly in between “not at all” and “not really” in terms of being associated with any existing words that have semantic meaning. In addition, participants did not state any given brand names that include any semantic word parts and evoked familiar existing brand names to them. Thus, the results of the open-ended questions corroborated that the invented nonsense brand names did not cue any real words or brand names in Turkish. As a result, pre-testing presented that invented brand names were reliable to be used in the study.

Initiated by the results of pre-test regarding invented non-sense brand names, the final set of 8 brand name pairs differed in terms of front and back vowel, and 8 brand name pairs differed in terms of the fricatives and stops were randomly matched with smallness and thinness attributes and presented in Table 19 and Table 20, respectively. Additionally, in order to create uniqueness in their pronunciation, their IPA transcriptions were given under each relevant brand name, as well.

Table 18: Descriptive Statistics for Responses of the Participants to Invented Brand Names

Brand Names	N	Minumum	Maximum	Mean	Standard Deviation
1) Tiduv	114	1	3	1.8684	0.81483
2) Vemiv	114	1	3	1.8947	0.81326
3) Pobif	114	1	3	1.9825	0.84122
4) Gusiv	114	1	3	1.8860	0.81749
5) Kibef	114	1	3	1.9561	0.82430
6) Lupiv	114	1	3	1.8860	0.80660
7) Nifep	114	1	3	1.8860	0.80660
8) Kiguv	114	1	3	1.9211	0.79983
9) Nibef	114	1	3	1.9474	0.80751
10) Pogiv	114	1	3	1.9298	0.80616
11) Vinep	114	1	3	1.9298	0.81707
12) Figuv	114	1	3	1.9474	0.80751
13) Gifep	114	1	3	1.9474	0.80751
14) Toduv	114	1	3	1.9386	0.80138
15) Vibef	114	1	3	1.9211	0.79983
16) Fugiv	114	1	3	1.9737	0.83571
17) Nufep	114	1	3	1.8421	0.81555
18) Pebif	114	1	3	2.0088	0.82543
19) Gimuv	114	1	3	1.8860	0.80660
20) Kifup	114	1	3	1.9123	0.80443
21) Fusiv	114	1	3	1.9298	0.80616
22) Vumiv	114	1	3	2.0000	0.84141
23) Vifup	114	1	3	1.9386	0.82317
24) Kugiv	114	1	3	1.8947	0.81326
25) Vonep	114	1	3	1.9123	0.80443
26) Nubef	114	1	3	1.9035	0.80890
27) Fimuv	114	1	3	2.0088	0.83608
28) Pegiv	114	1	3	1.9298	0.81707
29) Viluv	114	1	3	1.9123	0.81535
30) Vifep	114	1	3	1.9211	0.81082
31) Lepiv	114	1	3	1.9386	0.81235
32) Giluv	114	1	3	2.0263	0.83571

Table 19: Brand Name Pairs Differed in terms of Front vs. Back Vowels

Attribute	Word pair 1	Word pair 2	Word pair 3	Word pair 4
Smallness	Tiduv	Nifep	Pebif	Vemiv
	[tɪ'duv]	[nɪ'fep]	[pe'bɪf]	[ve'mɪv]
	Toduv	Nufep	Pobif	Vumiv
	[tɔ'duv]	[nu'fep]	[pɔ'bɪf]	[vu'mɪv]
Thinness	Vinep	Nibef	Pegiv	Lepiv
	[vɪ'nep]	[nɪ'bef]	[pe'ɟɪv]	[le'pɪv]
	Vonep	Nubef	Pogiv	Lupiv
	[vɔ'nep]	[nu'bef]	[pɔ'ɟɪv]	[lu'pɪv]

Table 20: Brand Name Pairs Differed in terms of Fricative vs. Stop Consonants

Attribute	Word pair 1	Word pair 2	Word pair 3	Word pair 4
Smallness	Figuv	Fusiv	Vibef	Vifep
	[fɪ'guv]	[fu'sɪv]	[vɪ'bef]	[vɪ'fep]
	Kiguv	Gusiv	Kibef	Gifep
	[cɪ'guv]	[gu'sɪv]	[cɪ'bef]	[ɟɪ'fep]
Thinness	Fugiv	Fimuv	Vifup	Viluv
	[fu'ɟɪv]	[fɪ'muv]	[vɪ'fup]	[vɪ'luv]
	Kugiv	Gimuv	Kifup	Giluv
	[ku'ɟɪv]	[ɟɪ'muv]	[cɪ'fup]	[ɟɪ'luv]

4.2.2.4. Analysis

As mentioned in stimuli section, to compare the front and back vowels effect on attribute perception, brand name pairs manipulated by altering only vowels being contrasted (/i/, /e/ vs. /u/, /o/) were used as stimuli. In order to compare the fricative and stop consonants effect on attribute perception, brand name pairs manipulated by altering only consonants being contrasted (/f/, /v/ vs. /k/, /g/) were used as stimuli. Hence, as also explained in procedure section, participants rated two brand names in each brand name pair and indicated their attribute perceptions for contrasted brand names relative to each other on semantic differential scale. As a result, each participant was measured twice for each brand name pair.

When “the observations are paired and so the two sets of observations relate to same participants”, paired samples t-test can be used to examine the difference in the cases (Malhotra, 2010:508). For that reason, to understand whether there were significant differences between attribute perception for size (with respect to smallness and largeness) and width (with respect to thinness and thickness) for brand names containing front or back vowel sounds and fricative or stop consonants, paired samples t-test were conducted in Study 1. Paired samples t-test is a statistical test based on mean differences between paired samples. Since it is a parametric test, it has several assumptions. Thus, before performing paired sample t-test, it should be better to check whether its assumptions will be met.

4.2.2.4.1. Paired Samples T-Test Assumptions

Paired samples t-test has four main assumptions. The first assumption is that the dependent variable must be numeric and continuous at either interval or ratio level. In Study 1, the participants rated the attribute perceptions for invented brand names by placing a mark at the appropriate position on scale points that runs from smallness to largeness and thinness to thickness. Hence, in order to understand the attribute perception for the brand names manipulated by several sounds, scale points were initially divided into many categories. Then, scores were assigned into the categories in which the ratings fell. Thus, since the distance between any two points

on a scale was measured, the first assumption regarding continuous dependent variable was met for paired samples t-test.

The second assumption is that the observations are independent of one another. In fact, independence of the observations could not be tested. However, since the data collection process was performed randomly without any replacement, it can be concluded that participants were independent of one another. So, the second assumption regarding independence of observations was met, as well.

The third assumption is that the dependent variable should be approximately normally distributed. In order to check that whether the dependent variables were normally distributed, Kolmogorov-Smirnov (KS) and Shapiro-Wilk (SW) normality tests were performed. The results regarding these tests of normality were displayed in Table 21 and Table 22 for attribute perception with respect to smallness and thinness, respectively. According to the results in both Table 21 and 22, normality assumption was violated because both tests had a p-value lower than 0.05 in both of the two Tables.

Table 21: Results of Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality for Attribute Perception with respect to Smallness

Smallness Perception for Brand Names	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Nifep	.265	604	.000	.882	604	.000
Nufep	.190	604	.000	.907	604	.000
Pobif	.208	604	.000	.905	604	.000
Pebif	.217	604	.000	.902	604	.000
Fusiv	.217	604	.000	.860	604	.000
Gusiv	.196	604	.000	.905	604	.000
Toduv	.234	604	.000	.823	604	.000
Tiduv	.227	604	.000	.892	604	.000
Kiguv	.206	604	.000	.897	604	.000
Figuv	.208	604	.000	.903	604	.000
Vibef	.201	604	.000	.905	604	.000
Kibef	.181	604	.000	.912	604	.000
Vemiv	.162	604	.000	.916	604	.000
Vumiv	.234	604	.000	.881	604	.000
Gifep	.176	604	.000	.896	604	.000
Vifep	.175	604	.000	.914	604	.000

a. Lilliefors Significance Correction

Table 22: Results of Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality for Attribute Perception with respect to Thinness

Thinness Perception for Brand Names	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lepiv	.231	604	.000	.898	604	.000
Lupiv	.268	604	.000	.864	604	.000
Nubef	.223	604	.000	.895	604	.000
Nibef	.241	604	.000	.893	604	.000
Fugiv	.171	604	.000	.915	604	.000
Kugiv	.214	604	.000	.901	604	.000
Pogiv	.241	604	.000	.820	604	.000
Pegiv	.226	604	.000	.901	604	.000
Gimuv	.167	604	.000	.915	604	.000
Fimuv	.216	604	.000	.905	604	.000
Vifup	.218	604	.000	.901	604	.000
Kifup	.179	604	.000	.913	604	.000
Vinep	.268	604	.000	.858	604	.000
Vonep	.247	604	.000	.801	604	.000
Giluv	.209	604	.000	.879	604	.000
Viluv	.199	604	.000	.907	604	.000

a. Lilliefors Significance Correction

In order to understand how a distribution can deviate from normality, Skewness and Kurtosis values were also checked for smallness and thinness perception. Results of Skewness and Kurtosis values were presented in Table 23 and Table 24, for smallness and thinness perception, respectively. According to the results in both Table 23 and 24, every Kurtosis and Skewness values were between ± 2 . Although the values between ± 1.0 is accepted excellent, a value between ± 2.0 may also be acceptable (George and Mallery, 2016). In this context, since all Skewness and Kurtosis values were between ± 2.0 , normality assumption regarding dependent variables could be accepted as met, as well.

Table 23: Skewness and Kurtosis Values of Smallness Perception for Brand Names

Smallness Perception for Brand Names	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Nifep	604	.528	.099	-.384	.199
Nufep	604	.160	.099	-.486	.199
Pobif	604	-.177	.099	-1.018	.199
Pebif	604	.333	.099	-.745	.199
Fusiv	604	.655	.099	-.581	.199
Gusiv	604	-.151	.099	-1.069	.199
Toduv	604	-.921	.099	-.089	.199
Tiduv	604	.470	.099	-.534	.199
Kiguv	604	.378	.099	-.409	.199
Figuv	604	.269	.099	-.563	.199
Vibef	604	.316	.099	-.709	.199
Kibef	604	-.032	.099	-.925	.199
Vemiv	604	-.005	.099	-.892	.199
Vumiv	604	-.559	.099	-.621	.199
Gifep	604	-.206	.099	-1.106	.199
Vifep	604	.159	.099	-.770	.199

Table 24: Skewness and Kurtosis Values of Thinness Perception for Brand Names

Thinness Perception for Brand Names	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Lepiv	604	.382	.099	-.638	.199
Lupiv	604	-.732	.099	-.042	.199
Nubef	604	-.391	.099	-.407	.199
Nibef	604	.479	.099	-.580	.199
Fugiv	604	-.035	.099	-.778	.199
Kugiv	604	-.351	.099	-.741	.199
Pogiv	604	-.965	.099	.139	.199
Pegiv	604	.025	.099	-.887	.199
Gimuv	604	.280	.099	-.774	.199
Fimuv	604	.378	.099	-.545	.199
Vifup	604	-.109	.099	-.915	.199
Kifup	604	.776	.099	-.018	.199
Vinep	604	-1.118	.099	.739	.199
Vonep	604	-.380	.099	-1.005	.199
Giluv	604	.326	.099	-.609	.199

Finally, the last assumption is that the dependent variable should not contain any outliers. In order to check whether dependent variables included any outliers, outlier analysis was performed. In this context, labeling method of Hoaglin and

Iglewicz (1987) were adopted and the difference between the first and third quartile of the each distribution was initially calculated. Then, the differences were multiplied by g which is equal to 2.2. Finally, the obtained values were added to the third quartile and subtracted from the first quartile of each relevant distribution (Hoaglin and Iglewicz, 1987). As a result, no outliers were detected for dependent variables. Hence, since the last assumption was met as well as the other assumptions, paired samples t-test were performed.

4.2.2.5. Results

4.2.2.5.1. Sound Symbolism Effects on Smallness Perception

Brand names including front vowels (/i/, /e/) and fricatives (/f/, /v/) were expected to be associated with smallness; whereas brand names including back vowels (/u/, /o/) and stops (/k/, /g/) were expected to be related to largeness. In order to understand whether there were significant differences between smallness perception for front vs. back vowel sounds and fricative vs. stop consonant sounds, paired samples t-tests were conducted. The results of paired samples statistics were presented in Table 25. The results of paired sample statistics revealed that compared to brand names including back vowels like *Toduv* ($M_{Toduv} = 3.9040$, $SD_{Toduv} = 1.17917$), *Nufep* ($M_{Nufep} = 2.8079$, $SD_{Nufep} = 0.99561$), *Pobif* ($M_{Pobif} = 3.16556$, $SD_{Pobif} = 1.224030$), and *Vumiv* ($M_{Vumiv} = 3.5530$, $SD_{Vumiv} = 1.20206$), brand names including front vowels like *Tiduv* ($M_{Tiduv} = 2.4371$, $SD_{Tiduv} = 1.10525$), *Nifep* ($M_{Nifep} = 2.4503$, $SD_{Nifep} = 1.03945$), *Pebif* ($M_{Pebif} = 2.5844$, $SD_{Pebif} = 1.13492$), and *Vemiv* ($M_{Vemiv} = 2.9868$, $SD_{Vemiv} = 1.18019$) were perceived as smaller, respectively.

Similar to the results regarding front/back vowel distinction, compared to the brand names including stop consonants like *Gusiv* ($M_{Gusiv} = 3.1689$, $SD_{Gusiv} = 1.25964$), *Kibef* ($M_{Kibef} = 2.9570$, $SD_{Kibef} = 1.15677$), and *Gifep* ($M_{Gifep} = 3.3013$, $SD_{Gifep} = 1.30261$), brand names including fricative consonants like *Fusiv* ($M_{Fusiv} = 2.2848$, $SD_{Fusiv} = 1.21695$), *Vibef* ($M_{Vibef} = 2.6010$, $SD_{Vibef} = 1.14231$), and *Vifep* ($M_{Vifep} = 2.7848$, $SD_{Vifep} = 1.15040$) were perceived as smaller, respectively. However, with respect to brand name pair *Figuv* and *Kiguv*, brand name including

stop consonant (/k/) ($M_{Kiguv} = 2.4536$, $SD_{Kiguv} = 1.04437$) was perceived smaller than brand names including fricative consonant (/f/) ($M_{Figuv} = 2.5397$, $SD_{Figuv} = 1.03347$).

Table 25: Paired Samples Statistics of Smallness Perception for Each Brand Name in Every Pairs

Smallness Perception for:		Mean	N	Std. Deviation	Std. Error Mean
Brand Name Pairs differed on front vs. back vowel					
Pair 1	<i>Tiduv</i>	2.4371	604	1.10525	.04497
	<i>Toduv</i>	3.9040	604	1.17917	.04798
Pair 2	<i>Nifep</i>	2.4503	604	1.03945	.04229
	<i>Nufep</i>	2.8079	604	.99561	.04051
Pair 3	<i>Pebif</i>	2.5844	604	1.13492	.04618
	<i>Pobif</i>	3.16556	604	1.224030	.049805
Pair 4	<i>Vemiv</i>	2.9868	604	1.18019	.04802
	<i>Vumiv</i>	3.5530	604	1.20206	.04891
Brand Name Pairs differed on fricative vs. stop consonant					
Pair 1	<i>Figuv</i>	2.5397	604	1.03347	.04205
	<i>Kiguv</i>	2.4536	604	1.04437	.04249
Pair 2	<i>Fusiv</i>	2.2848	604	1.21695	.04952
	<i>Gusiv</i>	3.1689	604	1.25964	.05125
Pair 3	<i>Vibef</i>	2.6010	604	1.14231	.04648
	<i>Kibef</i>	2.9570	604	1.15677	.04707
Pair 4	<i>Vifep</i>	2.7848	604	1.15040	.04681
	<i>Gifep</i>	3.3013	604	1.30261	.05300

Additionally, the results of paired samples t-tests presented that there were significant differences between smallness perception for brand name pairs *Tiduv* and *Toduv* ($t(603) = -22.615$, $p < 0.05$), *Nifep* and *Nufep* ($t(603) = -6.645$, $p < 0.05$), *Pebif* and *Pobif* ($t(603) = -8.663$, $p < 0.05$), and *Vemiv* and *Vumiv* ($t(603) = -9.218$, $p < 0.05$) with respect to front/back vowel distinction. With respect to fricative/stop consonant distinction, the results of paired samples t-tests revealed that there were significant differences between smallness perception for brand name pairs *Fusiv* and

Gusiv ($t(603) = -14.200, p < 0.05$), *Vibef* and *Kibef* ($t(603) = -6.718, p < 0.05$), and *Vifep* and *Gifep* ($t(603) = -8.107, p < 0.05$). However, no significant differences existed between smallness perception for brand name pair *Figuv* and *Kiguv* ($t(603) = 1.587, p > 0.05$) (See Table 26).

Table 26: Results of Paired Samples T-Tests of Smallness Perception for Each Brand Name Pair

Smallness Perception		(Difference) Mean	(Difference) Std. Deviation	t	df	Sig. (2-tailed)
For Front/Back vowel distinction						
Pair 1	Tiduv – Toduv	-1.46689	1.59411	-22.615	603	.000
Pair 2	Nifep – Nufep	-.35762	1.32257	-6.645	603	.000
Pair 3	Pebif – Pobif	-.581126	1.648671	-8.663	603	.000
Pair 4	Vemiv – Vumiv	-.56623	1.50970	-9.218	603	.000
For Fricative/Stop distinction						
Pair 1	Figuv – Kiguv	.08609	1.33304	1.587	603	.113
Pair 2	Fusiv – Gusiv	-.88411	1.53018	-14.200	603	.000
Pair 3	Vibef – Kibef	-.35596	1.30217	-6.718	603	.000
Pair 4	Vifep – Gifep	-.51656	1.56603	-8.107	603	.000

In fact, according to paired samples t-test results in Table 25 and Table 26, it can be concluded that front vowel and fricative sounds were frequently perceived smaller than back vowel and stop sounds, respectively. However, in order to test H_{1a} , the responses of participants regarding smallness perception were aggregated and averaged for brand names including front vowels and back vowels. In order to test H_{2a} , the responses of participants regarding smallness perception were aggregated and averaged for brand names including fricatives and stops. Then, paired samples t-tests were conducted, again. The results of paired samples statistics and t-tests were reported in Table 27 and Table 28, respectively.

According to Table 27 and Table 28, non-sense brand names including front vowels (/e/, /i/) ($M_{\text{Front vowels}} = 2.6147, SD_{\text{Front vowels}} = .60006, t(603) = -19.932, p < 0.05$) were significantly perceived as smaller than brand names including back vowels (/o/, /u/) ($M_{\text{Back vowels}} = 3.3576, SD_{\text{Back vowels}} = .68719$). In this context,

Hypothesis 1_a was **supported**. The results in Table 25 and Table 26 also indicated that non-sense brand names including fricative consonants (/f/, /v/) ($M_{\text{Fricatives}} = 2.5526$, $SD_{\text{Fricatives}} = .67149$, $t(603) = -12.498$, $p < 0.05$) were significantly perceived as smaller than brand names including stop consonants (/k/, /g/) ($M_{\text{Stops}} = 2.9702$, $SD_{\text{Stops}} = .71421$). So, **Hypothesis 2_a** was **supported**, as well.

Table 27: Paired Samples Statistics for Smallness Perception

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Brand names including front vowels	2.6147	604	.60006	.02442
	Brand names including back vowels	3.3576	604	.68719	.02796
Pair 2	Brand names including fricatives	2.5526	604	.67149	.02732
	Brand names including stops	2.9702	604	.71421	.02906

Table 28: Paired Samples T-Test Results for Smallness Perception

		(Difference) Mean	(Difference) Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	Brand names including front vowels	-.74296	.91607	-19.932	603	.000
	- Brand names including back vowels					
Pair 2	Brand names including fricatives	-.41763	.82127	-12.498	603	.000
	- Brand names including Stops					

4.2.2.5.2. Sound Symbolism Effects on Thinness Perception

Initiated by the H_{1b} and H_{2b}, brand names including front vowels (/i/, /e/) and fricatives (/f/, /v/) were expected to be significantly perceived as thinner than brand names including back vowels (/o/, /u/) and stops (/k/, /g/), respectively. To determine whether there were significant differences between thinness perception for front vs. back vowel sounds and fricative vs. stop consonant sounds, paired samples t-tests were performed for each brand name in every pairs. The results of paired samples statistics were reported in Table 29.

According to the results in Table 29, brand names including front vowels like *Vinep* ($M_{Vinep} = 2.2219$, $SD_{Vinep} = 1.06370$), *Nibef* ($M_{Nibef} = 2.5762$, $SD_{Nibef} = 1.13988$), *Pegiv* ($M_{Pegiv} = 2.5712$, $SD_{Pegiv} = 1.05562$), and *Lepiv* ($M_{Lepiv} = 2.5414$, $SD_{Lepiv} = 1.09421$) were perceived as thinner than brand names including back vowels like *Vonep* ($M_{Vonep} = 4.0745$, $SD_{Vonep} = 1.04592$), *Nubef* ($M_{Nubef} = 3.5613$, $SD_{Nubef} = 1.02111$), *Pogiv* ($M_{Pogiv} = 3.9752$, $SD_{Pogiv} = 1.09421$), and *Lupiv* ($M_{Lupiv} = 3.7450$, $SD_{Lupiv} = 1.04836$), respectively. With respect to fricative/stop distinction, brand names including fricatives like *Fugiv* ($M_{Fugiv} = 2.9089$, $SD_{Fugiv} = 1.13002$), *Fimuv* ($M_{Fimuv} = 2.6523$, $SD_{Fimuv} = 1.12486$), *Vifup* ($M_{Vifup} = 2.5265$, $SD_{Vifup} = 1.08095$), and *Viluv* ($M_{Viluv} = 2.6540$, $SD_{Viluv} = 1.12611$) were perceived as thinner than brand names including stops like *Kugiv* ($M_{Kugiv} = 3.4222$, $SD_{Kugiv} = 1.14991$), *Gimuv* ($M_{Gimuv} = 2.9007$, $SD_{Gimuv} = 1.16758$), *Kifup* ($M_{Kifup} = 3.0563$, $SD_{Kifup} = 1.19430$), and *Giluv* ($M_{Giluv} = 3.5464$, $SD_{Giluv} = 1.22691$), respectively.

Table 29: Paired Samples Statistics of Thinness Perception for Each Brand Name in Every Pairs

Thinness Perception for:			Std. Deviation	Std. Error Mean	
			Mean	N	
Brand Name Pairs differed on front vs. back vowel					
Pair 1	Vinep	2.2219	604	1.06370	.04328
	Vonep	4.0745	604	1.04592	.04256
Pair 2	Nibef	2.5762	604	1.13988	.04638
	Nubef	3.5613	604	1.02111	.04155
Pair 3	Pegiv	2.5712	604	1.05562	.04295
	Pogiv	3.9752	604	1.09924	.04473
Pair 4	Lepiv	2.5414	604	1.09421	.04452
	Lupiv	3.7450	604	1.04836	.04266
Brand Name Pairs differed on fricative vs. stop consonant					
Pair 1	Fugiv	2.9089	604	1.13002	.04598
	Kugiv	3.4222	604	1.14991	.04679
Pair 2	Fimuv	2.6523	604	1.12486	.04577
	Gimuv	2.9007	604	1.16758	.04751
Pair 3	Vifup	2.5265	604	1.08095	.04398
	Kifup	3.0563	604	1.19430	.04860
Pair 4	Viluv	2.6540	604	1.12611	.04582
	Giluv	3.5464	604	1.22691	.04992

Additionally, the results of paired samples t-tests suggested that there were significant differences between thinness perception for brand name pairs *Vinep* and *Vonep* ($t(603) = -29.904$, $p < 0.05$), *Nibef* and *Nubef* ($t(603) = -16.272$, $p < 0.05$), *Pegiv* and *Pogiv* ($t(603) = -22.863$, $p < 0.05$), and *Lepiv* and *Lupiv* ($t(603) = -20.596$, $p < 0.05$) with respect to front/back vowel distinction. The paired samples t-tests also revealed that there were significant differences between thinness perception for brand name pairs *Fugiv* and *Kugiv* ($t(603) = -8.983$, $p < 0.05$), *Fimuv* and *Gimuv* ($t(603) = -3.968$, $p < 0.05$), *Vifup* and *Kifup* ($t(603) = -9.213$, $p < 0.05$), and *Viluv* and *Giluv* ($t(603) = -13.124$, $p < 0.05$) with respect to fricative/ stop distinction (See Table 30).

Table 30: Results of Paired Samples T-Tests of Thinness Perception for Each Brand Name Pair

Thinness Perception	(Difference) Mean	(Difference) Std. Deviation	t	df	Sig. (2- tailed)
For Front/Back vowel distinction					
Pair 1 Vinep – Vonep	-1.85265	1.52257	-29.904	603	.000
Pair 2 Nibef – Nubef	-.98510	1.48785	-16.272	603	.000
Pair 3 Pegiv – Pogiv	-1.40397	1.50919	-22.863	603	.000
Pair 4 Lepiv – Lupiv	-1.20364	1.43629	-20.596	603	.000
For Fricative/Stop distinction					
Pair 1 Fugiv - Kugiv	-.51325	1.40415	-8.983	603	.000
Pair 2 Fimuv – Gimuv	-.24834	1.53821	-3.968	603	.000
Pair 3 Vifup – Kifup	-.52980	1.41331	-9.213	603	.000
Pair 4 Viluv – Giluv	-.89238	1.67114	-13.124	603	.000

On the basis of paired samples t-test results in Table 29 and Table 30, it can be concluded that front vowel and fricative sounds were frequently perceived as thinner than back vowel and stop sounds, respectively. However, in order to test H_{1b} , the responses of participants regarding thinness perception were aggregated and averaged for brand names including front vowels and back vowels. In order to test H_{2b} , the responses of participants regarding thinness perception were aggregated and averaged for brand names including fricatives and stops. Then, paired samples t-tests were re-conducted. The results of paired samples statistics and t-tests were reported in Table 31 and Table 32, respectively.

According to Table 31 and Table 32, non-sense brand names including front vowels (/e/, /i/) ($M_{\text{Front vowels}} = 2.4776$, $SD_{\text{Front vowels}} = .68863$, $t(603) = -33.591$, $p < 0.05$) were significantly perceived as thinner than brand names including back vowels (/o/, /u/) ($M_{\text{Back vowels}} = 3.8390$, $SD_{\text{Back vowels}} = .65668$). In this context, **Hypothesis 1_b** was supported. The results also indicated that non-sense brand names including fricative consonants (/f/, /v/) ($M_{\text{Fricatives}} = 2.6854$, $SD_{\text{Fricatives}} = .65440$, $t(603) = -15.081$, $p < 0.05$) were significantly perceived as thinner than brand names including stop consonants (/k/, /g/) ($M_{\text{Stops}} = 3.2314$, $SD_{\text{Stops}} = .70001$). So, **Hypothesis 2_b** was supported, as well.

Table 31: Paired Samples Statistics for Thinness Perception

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Brand names including front vowels	2.4776	604	.68863	.02802
	Brand names including back vowels	3.8390	604	.65668	.02672
Pair 2	Brand names including fricatives	2.6854	604	.65440	.02663
	Brand names including stops	3.2314	604	.70001	.02848

Table 32: Paired Samples T-Test Results for Thinness Perception

		(Difference) Mean	(Difference) Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	Brand names including front vowels	-1.36134	.99601	-33.591	603	.000
	- Brand names including back vowels					
Pair 2	Brand names including fricatives	-.54594	.88968	-15.081	603	.000
	- Brand names including					

4.2.3. Study 2

4.2.3.1. Research Issue

Consistent with the previous sound symbolism studies, the findings of Study 1 presented that specific sounds consistently convey specific meaning. Accordingly, findings obtained from Study 1 supported the sound symbolism phenomena in Turkish, as well. Hence, the universal sound symbolism argument was also verified for Turkish context. However, it is important to note that Study 1 focused on the sound symbolism in terms of the systematic linkage between sound and meaning rather than showing its impact on marketing practice. Although the brand names

manipulated by different sounds were used in the study, the main aim was to comprehend that whether sounds convey meaning. Simply put, Study 1 focused on two aspects: the range of sound symbolism effect in terms of its universality and the aspects of meaning it effects as well as previous studies on sound symbolism (e.g., Klink). For that reason, it is necessary to demonstrate the relationship between sound and meaning in marketing context in detail.

In marketing and particularly branding context, it is suggested that “the interaction between the product and its names is inevitable” (Favalli et al. 2013: 760). In this context, it is reasonable to think that there is a close fit between what brand name conveys about the product and what the product offers to customers. Findings of previous studies have also indicated that there is a non-arbitrary relationship between speech sounds used to create brands names and the properties that those products have (e.g., Lowrey and Shrum, 2007; Yorkston and Menon, 2004). As mentioned, the results of Study 1 also presented that sounds influence the perception of individuals towards attributes with regard to product appearance.

In this context, to support and extend the findings of Study 1, Study 2 mainly focused on whether the product may map onto brand name preferences. Accordingly, Study 2 addressed the last two hypotheses which were about to understand the interplay between sound symbolism and brand name preferences. In this way, not only the effects of sounds on brand attributes perception but also whether the effects of sounds may influence the brand name preferences for products having specific visual attributes was tested. Thus, this study extended the sound symbolism effects beyond attribute perception to brand name preference for Turkish.

4.2.3.2. Research Design

In pertaining literature, front vowels and fricatives are considered as high frequency sounds and they are consistently associated with attributes such as smallness and thinness (e.g., Klink and Athaide, 2014; Klink, 2000; Lowrey and Shrum, 2007). On the other hand, back vowels and stops are considered as low frequency sounds and they are often related to attributes such as largeness and thickness (e.g. Klink, 2000). In such a context, it was reasonable to assume that words

including front vowels and/or fricatives would be preferred as brand names over words including back vowels and/ or stops, when the product was small and thin. However, it was normal to expect that the opposite would be true when the product was described as large and thick.

These assumptions regarding front vowels and fricative consonants were already stated in Hypothesis 3_(a-b) and Hypothesis 4_(a-b), respectively in theoretical framework section. In this context, to test the Hypothesis 3_(a-b) and Hypothesis 4_(a-b), the research was designed as 2 (vowel sound) x 2 (attribute) and 2 (consonant sound) x 2 (attribute), respectively. In these 2 x 2 between subjects factorial designs, vowel sound (front vowels and back vowels) was a within-subjects factor to test the Hypothesis 3_(a-b) and consonant sound (fricative consonant and stop consonant) was a within-subjects factor to test the Hypothesis 4_(a-b). For Hypothesis 3_a and Hypothesis 4_a, attribute was a between-subjects factor with respect to smallness vs. largeness and for Hypothesis 3_b and Hypothesis 4_b, attribute was a between-subjects factor with respect to thinness vs. thickness.

Initiated by the identified research design for Hypothesis 3_(a-b) and Hypothesis 4_(a-b), it can be readily concluded that stimuli regarding vowel and consonant sounds and attributes regarding a product must be determined to test the sound symbolism effects on brand name preferences for products with specific attributes. For that reason, following two sections are reserved to discuss the stimuli of the Study 2 and selection of attributes to be used in the study in detail, respectively.

4.2.3.3. Stimuli

To test the Hypothesis 3_(a-b) and Hypothesis 4_(a-b), the stimuli for Study 2 was again brand names that varied in terms of front/back vowel distinction and fricatives/stop distinction. In this context, similar to Study 1, to test the effects of front/back vowel distinction and fricative/stop distinction, invented non-sense brand name pairs which were only altered for vowels being contrasted and invented non-sense brand name pairs which were only altered for consonants being contrasted were required, respectively. Additionally, to hinder any obvious semantic

associations, two syllable invented nonsense brand names were required to be used in Study 2, as well.

In this respect, the brand name pairs to be used in Study 2 were selected among brand names used Study 1. Among the 8 brand name pairs regarding front/back vowel distinction, brand name pairs *Vinep* and *Vonep* ($M_{\text{Difference}} = -1.85265$, $SD_{\text{Difference}} = 1.52257$), *Nibef* and *Nubef* ($M_{\text{Difference}} = -.98510$, $SD_{\text{Difference}} = 1.48785$), *Pegiv* and *Pogiv* ($M_{\text{Difference}} = -1.40397$, $SD_{\text{Difference}} = 1.50919$), *Lepiv* and *Lupiv* ($M_{\text{Difference}} = -1.20364$, $SD_{\text{Difference}} = 1.43629$); and among 8 brand name pairs regarding fricative/stop distinction, brand name pairs *Fugiv* and *Kugiv* ($M_{\text{Difference}} = -.51325$, $SD_{\text{Difference}} = 1.40415$), *Fusiv* and *Gusiv* ($M_{\text{Difference}} = -.88411$, $SD_{\text{Difference}} = 1.53018$), *Vifup* and *Kifup* ($M_{\text{Difference}} = -.52980$, $SD_{\text{Difference}} = 1.41331$), and *Viluv* and *Giluv* ($M_{\text{Difference}} = -.89238$, $SD_{\text{Difference}} = 1.67114$) were selected to be used in Study 2 for several reasons.

First, these brand name pairs were particularly chosen because the pretest with regard to brand name pairs conducted in Study 1 presented that these words were not related to any real or existing brand names or words. Second, the findings of pretest presented that these brand name pairs did not include any parts having semantic meaning. Finally, compared to other brand name pairs manipulated by altering similar sounds in Study 1, these brand name pairs displayed stronger evidence for sound symbolism effects in terms of mean differences between brand names in the pairs.

After selecting the stimuli to test the effects of vowel and consonant sounds, selecting attributes to be used in Study 2 was a must to test the effects of sounds on brand name preference for products with specific product appearance attributes. For that reason, next section is designed to discuss selection of attributes to be used in the study.

4.2.3.4. Selection of Attributes

Although the relationship between sound and meaning has been well-documented in terms of several attributes, the meaning conveyed through sounds were limited to attributes that might be considered as product appearance

characteristics in Study 1. For that reason product appearance attributes were planned to be used in Study 2, as well, to present the interplay between sounds in brand names and product appearance attributes in brand name preference. In this context, in order to determine the product appearance attributes, a product category was required to be determined initially.

Product category is defined as “a group of products within the product family recognized as having a certain functional coherence” (Kotler and Keller, 2012: 358). In this study, product category was planned to be held constant but its attributes were varied as it is in several marketing research on sound symbolism (e.g., Baxter and Lowrey, 2011; Lowrey and Shrum, 2007; Yorkston and Menon, 2004;). In order to select a proper product category for Study 2, *focus group interviewing* was adopted.

Focus group interviewing is based on a group discussion facilitated by a moderator (Berg and Lune, 2013). Focus group study is highly flexible in nature and enables researcher to collect large amounts of information in short amounts of time (Catterall and Maclaran, 2006). Additionally, it provides better understanding of group dynamics (Berg, 2001). In this context, focus group interviewing seemed as one of the best appropriate method to determine the products that were appreciated by undergraduates.

13 undergraduates studying in different departments at Afyon Kocatepe University attended to focus group study. At the beginning of the study, focus group was asked to discuss the product categories which they were highly interested and involved in their daily routine. Accordingly, only one question was asked to focus group participants and 30 minutes were given to discuss the question. The discussion among this small group of people was observed and notes with regard to the discussion were taken. As a result of the focus group interviewing, “phone”, “computer”, and “clothes” were found as product categories that undergraduates had a high interest and involvement.

Among these product categories, “computer” was selected, and initiated by the computer, “laptop” was chosen as the product category for Study 2 for several reasons. First, depending upon the findings of the focus group interview, it produced high interest and involvement among the university students. Second, it either has

been already purchased or was likely to be purchased by university students in the near future. Third, it elicited product evaluations that incorporated a few product appearance attributes compared to clothes and phones.

After deciding on laptop as product category, in order to define its attributes, another pretest was conducted. For this pretest 128 participants studying in department of Business Administration, Economics, Public Finance, and Business Administration (English) at Afyon Kocatepe University were reached through convenience sampling method. In the pretest, participants were asked to write visual attributes regarding laptops that came into their minds. Then, the compiled data was analyzed through frequency analysis with respect to attributes stated by participants. The results of frequency analysis was presented in Table 33.

Table 33: Results of Pre-test 2

Laptop Appearance Attributes	Frequency
Width	
Thin	67
Thick	4
Total	71
Size	
Small	16
Middle	15
Large	28
Total	59
Weight	
Light	37
Total	37
Color	
Dull	12
Bright	4
Total	16
Shape	
Curved	3
Angular	7
Total	10
Material (Texture)	
Soft	9
Total	9
Others	
Easy to carry	23
Elegant	22
Touch screen	12
Simple	7
Fast	6
Foldable	4
Back and Front Camera	1

The frequency of responses presented that visual laptop attributes consisted of three main factors: width, size, and weight. The findings of the pretest were also corroborated by Consumer Reports' buying guides for laptops² which emphasized the importance of size, width and weight in evaluating ergonomics and portability of the computers. Nevertheless, weight was excluded from the attributes to be used in Study 2 because it can not be accepted as product appearance attributes. After deciding on stimuli and product appearance attributes, next step was to develop scenarios on the basis of research designs.

4.2.3.5. Scenario Development

As stated, research design of the Study 2 was a 2 x 2 between-subjects factorial design and attribute was a between subjects factor. For that reason, this research design required four treatment groups which were based on product appearance attributes. Since size and width were found as the outstanding laptop appearance attributes as a result of previous pretest, the treatment groups were designed depending upon these two dimensions. In this context, smallness and largeness in terms of size and thinness and thickness in terms of width were used in Study 2 as contrasting attributes. Thus, the treatment groups were determined as: (1) smallness; (2) largeness; (3) thinness; and (4) thickness. For these four treatment groups, it was required to develop four scenarios regarding small, large, thin and thick laptops.

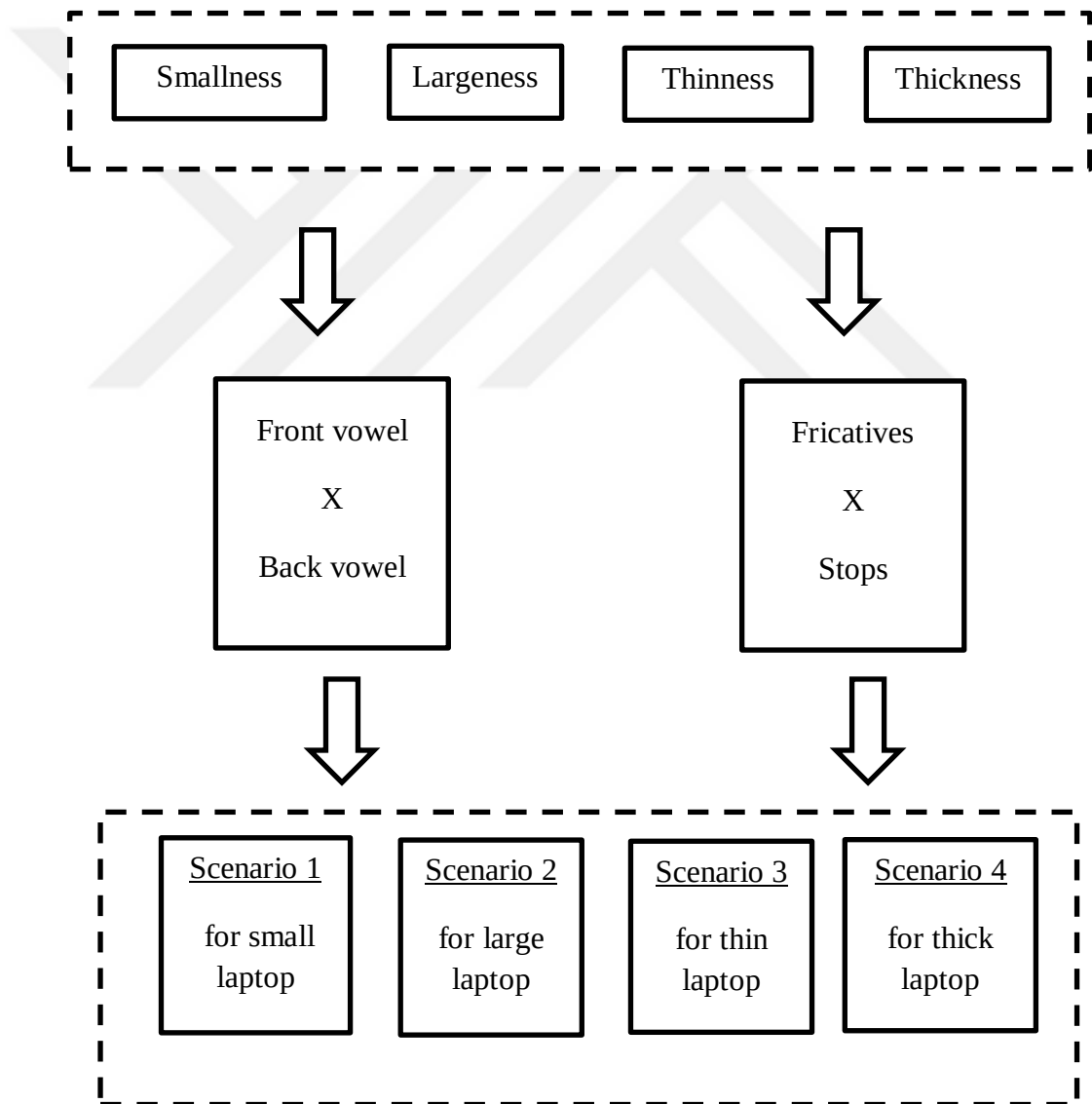
In scenario development process, information about laptops were collected from several laptop manufacturers and consumer reports websites. Initially, the general information about the laptop manufacturer was prepared identically for both of the two scenarios. Then, the announcement made by company to find a new brand name for its new laptop was prepared. For Scenario 1, the laptop was described as small; whereas for Scenario 2, it was described as large. For Scenario 3, laptop was described as thin but for Scenario 4 it was described as thick. Other information

² Consumer Reports, "Computer Buying Guide", 25. 10. 2018, <https://www.consumerreports.org/cro/computers/buying-guide/index.htm>, (18.03.2019)

given for laptops were held constant in four scenarios (See Appendix 7, 8, 9, and 10 for scenarios).

After the development of the scenarios, they were presented to two marketing and one linguistics scholars for revisions. Initiated by their revisions and recommendations, final design of the experiments were established. The final design of the research for Hypothesis 3_(a-b) and Hypothesis 4_(a-b) was also displayed in Figure 4.

Figure 4: 2 x 2 Between- Subjects Factorial Design



4.2.3.6. Participants and Procedure

In terms of unit of analysis and sampling method, Study 2 followed the same procedures with Study 1. Thus, since they were considered as homogenous sample, undergraduates studying at Afyon Kocatepe University's departments (except the department of Business Administration (English), Linguistics, and Psychology) were also reached by using purposive sampling method. For study 2, sample size was determined as at least 320 ($8 \times 10 \times 4$) on the basis of 10:1 rule to 8 items and to 4 different laptop scenarios (Bentler and Chou, 1987).

The data of Study 2 was collected in second half of May 2019. At the end of the data collection processes, total of 511 Turkish speaking undergraduates studying at Afyon Kocatepe University participated in Study 2 in return for partial course credit. Specifically, these participants were selected among the undergraduates who did not participate in Study 1. Just like in Study 1, all participants provided consent to participate and stated having a normal sense of audition before their participation. Additionally, as well as the Study 1, this study was a cross-sectional study because the data were collected at one point in time.

After screening the responses for missing data, 30 of the responses were excluded from the study because their participants did not fulfill the questionnaire completely. Hence, total of 481 responses were deemed as usable. Of the 481 responses, the number of responses to small laptop scenario was 117; large laptop scenario was 118; thin laptop scenario was 122; and thick laptop scenario was 124 (See Table 34).

Table 34: Number of Responses to Scenarios

Scenario	Frequency	Percent
Small Laptop	117	24.32
Large Laptop	118	24.53
Thin Laptop	122	25.37
Thick Laptop	124	25.78
Total	481	100.0

Of the 481 participants, 267 (55.5 percent) of them were female and 214 (44.5 percent) of them were male (See Table 35) who were aged 18-39 years ($M = 21.9356$, $SD = 2.71915$) (See Table 36). Most of the participants were between the age of 20 and 23 (74.6 percent), followed by 24-29 age group (13 percent) and 19 years old and less (10.4 percent). A very small percent of the participants (1.8 percent) were 30 years old and above (See Table 37).

Table 35: Demographic Characteristics of the Participants of Study 2 with respect to Gender

Gender	Frequency	Percent
Female	267	55.5
Male	214	44.5
Total	481	100.0

Table 36: Descriptive Statistics regarding the Age of the Participants of Study 2

	N	Minimum	Maximum	Mean	Standard Deviation
Age	481	18	53	21.9356	2.71915

Table 37: Demographic Characteristics of the Participants of Study 2 with respect to Age

Age Groups	Frequency	Percent
19 years old and less		
18	11	2.3
19	39	8.1
20-23		
20	74	15.4
21	93	19.3
22	107	22.2
23	85	17.7
24-29		
24	41	8.5
25	14	2.9
26	2	0.4
27	1	0.2
28	3	0.6
29	2	0.4
30 years old and above		
30	4	0.8
31	1	0.2
33	1	0.2
39	3	0.6
Total	481	100.0

Demographic characteristics of the participants in terms of faculty and department were presented in Table 47. According to the Table 38, most of the participants were undergraduates at Faculty of Economics and Administrative Sciences (39.9 percent), followed by undergraduates studying at Faculty of Science and Literature (15.6 percent) and undergraduates studying at Faculty of Technology (14.5 percent). Nearly, 12.5 percent of the participants were studying at Faculty of Law and 9.8 percent of them were undergraduates at Faculty of Engineering. Finally, 37 of them (7.7. percent) were studying at Faculty of Veterinary Medicine.

In terms of Faculty of Economics and Administrative Sciences, the participants studying in Public Finance Department was the 13.3 percent of the participants. 10.6 percent of them were studying in Political Science and Public Administration Department. The participants studying in Business Administration

and Economics were 8.9 percent and 7.1 percent of the total participants, respectively.

With respect to Faculty of Science and Literature, 6.4 percent of the participants were studying Sociology; 4.2 percent of them were studying Mathematics; and 3.1 percent of them were studying Philosophy. 1.5 percent and 0.4 percent of the all participants were studying Geography and History, respectively. In terms of Faculty of Tecnology, 28 of the participants (5.8 percent) and 27 of the participants (5.6 percent) were studying Electrical and Electronic Engineering and Mechanical Engineering, respectively, followed by 3.1 percent of the participants who were studying Metallurgical and Materials Engineering.

12.5 percent of the participants were studying Law followed by undergraduates studying at Faculty of Engineering in Chemical Engineering (5.2 percent), Civil Engineering (2.3 percent), and Food Engineering (2.3 percent) departments. Finally, 7.7 percent of the participants were studying in Veterinary Medicine department.

Table 38: Demographic Characteristics of the Participants of Study 2 with respect to Faculty and Department

Faculty	Department	Frequency	Percent
Faculty of Economics and Administrative Sciences	Public Finance	64	13.3
	Political Science and Public Administration	51	10.6
	Business Administration	43	8.9
	Economics	34	7.1
	Total	192	39.9
Faculty of Science and Literature	Sociology	31	6.4
	Mathematics	20	4.2
	Philosophy	15	3.1
	Geography	7	1.5
	History	2	.4
	Total	75	15.6
Faculty of Technology	Electrical and Electronic Engineering	28	5.8
	Mechanical Engineering	27	5.6
	Metallurgical and Materials Engineering	15	3.1
	Total	70	14.5
Faculty of Law	Law	60	12.5
Faculty of Engineering	Chemical Engineering	25	5.2
	Civil Engineering	11	2.3
	Food Engineering	11	2.3
	Total	47	9.8
Faculty of Veterinary Medicine	Veterinary Medicine	37	7.7
Total		481	100.0

With respect to class, most of the participants were senior and junior students (64.7 percent), followed by sophomore (18.3 percent) and freshmen (17.0 percent) students (See Table 39). Finally, with respect to foreign language and foreign language level, most of the participants spoke English at pre-intermediate level (53.43 percent) and beginner level (45.32 percent). Of the 481 participants, only 0.21 of them and 0.83 percent of them spoke Arabian at beginner and pre-intermediate

level, respectively, followed by only one participants (0.21 percent) who spoke Italian at pre-intermediate level (See Table 40).

Table 39: Demographic Characteristics of the Participants of Study 2 with respect to Class

Class	Frequency	Percent
Freshmen	82	17.0
Sophomore	88	18.3
Junior	115	24.0
Senior	196	40.7
Total	481	100.0

Table 40: Demographic Characteristics of the Participants of Study 2 with respect to Foreign Language and Foreign Language Level

Foreign Language	Beginner		Pre-Intermediate		Total
	Frequency	Percent	Frequency	Percent	
English	218	45.32	257	53.43	475
Arabic	1	0.21	4	.83	5
Italian	-	-	1	0.21	1
Total	219	45.53	262	54.47	481

The sessions under Study 2 were carried out in relatively small groups (10-15) in a quiet classrooms equipped with surrounded sound system. Before the each session, atmosphere of the classrooms was checked in terms of their illumination and air conditioning. Similar with the Study 1, the participants were seated alone in each desk and 1 desk between the each two participant was left empty. Thus, it was provided that each participant indicated their own responses without influencing the response of others.

At the beginning of each session, each participant received a 3 page booklet questionnaire which took approximately 10 minutes to complete. As well as in Study 1, the first page of the booklet oriented participants to the tasks that they are going to

follow throughout the session. However, they were not informed about the main purpose of the study. On the next page, participants viewed the given scenario. In pioneering sound symbolic marketing studies, invented brand names were visually given to participants (e.g., Klink, 2000; Lowrey and Shrum, 2007) because consumers are more likely to encounter a brand name visually during the consumption process instead of hearing it. Nevertheless, they did not receive the non-sense brand names in the questionnaire booklet visually in Study 2 in order to test the effects of sounds, properly.

Accordingly, different from the vast majority of sound symbolic marketing studies, brand names were listened to participants via audio file, as well. Similar to the Study 1, audio representation was also used to minimize potential for variation in pronunciation and increase the ecological validity for some purchase situations in which the brand name is both heard and seen. Among these given brand name pairs, 4 of 8 brand name pairs were manipulated by only altering vowels being contrasted and holding other sounds constant. The remaining brand name pairs were manipulated by only altering consonants being contrasted and holding other sounds constant.

Similar to the audio file used in Study 1, all sounds regarding each brand name were normalized. In order to determine the exact duration of sequence between brand names in both same and different brand name pairs, several pre-tests were conducted on students. As a result of these pre-tests, the duration of sequence between one brand name and the other in the same brand name pair was determined at 0.5 seconds (500 ms) in audio file. On the other hand, duration of sequence between the last brand name in one brand name pair and the first brand name in next brand name pair was determined at 3 seconds (3000 ms). In this way, it was planned to give enough time to participants to prefer one of the two brand names in the same brand name pair after hearing and repeating the brand names by themselves. The audio file was presented at a level of 70 dB through the Lenovo computer and Logitech S120 1+1 speaker. Each invented non-sense brand name was listened to participants only one time. The order of presentation of these brand name pairs was counterbalanced in the audio presentation to minimize order bias.

After receiving booklet, participants were asked to first read the given scenario. Then, they were asked to indicate their preferences for a brand name in each brand name pair for a particular product given in the scenario after hearing the each brand name pair. For that reason, some participants were asked to indicate which brand name they liked best for a small or large laptop; whereas other participants were asked to indicate which brand name they liked best for a thin and thick laptop. In here, participants were not asked to evaluate the brand names themselves along size and width dimensions because they were later asked to make these evaluations for the purpose of manipulation checks.

Each participant was randomly assigned to 1 of the 4 conditions. After indicating their preferences for brand names regarding laptop in the given scenarios, they were asked to provide general demographic information including age, gender, department and class, foreign language(s) and level of foreign language and manipulation check data. At the end of the study, all participants were debriefed.

4.2.3.7. Manipulation Checks

Manipulation checks have to be used to understand whether a manipulation in an experimental design is efficient (Hoewe, 2017). In order to determine whether participants perceive, and/or respond to manipulated variable, manipulation check data was collected for Study 2. In this context, participants who attended the sessions of Study 2 provided data for manipulation check, as well.

In order to collect manipulation check data, participants were asked to rate brand names by using a series of five-point semantic differential scales anchored: very small/ very large and very thin/very thick. Since the data collection method was similar to Study 1, audio representation was also used in Study 2 to ensure phonemes in brand names were presented as intended. Each brand name was listened to the participants at 3 seconds (3000ms) intervals and only one time. Then, participants were asked to rate brand names after hearing each brand name in pairs. Depending upon their scenarios, some of the students rated the brand names with respect to thinness and thickness and some of them rated the brand names with respect to

smallness and largeness. Additionally, there were asked to write their thoughts and impressions with regard to the purpose of the study with a few sentence.

As mentioned before, only native Turkish speakers who have never been in another country were included in studies. Additionally, undergraduates studying at departments in which education language was English, and which were related to linguistics and psychology were excluded. In this way, the efficiency of manipulation was tried to be increased.

The results of manipulation check presented that; no one guessed the real purpose of the Study 2. Moreover, the analysis of semantic-differential data presented that vowels and consonants had their intended effects, that is; the brand names with the front vowels “i” and “e” [$M_{\text{Front vowels}} = 2.5809$, $SD_{\text{Front vowels}} = .74561$], $t(234) = -13.243$, $p = .000$] and fricatives “f” and “v” [$M_{\text{Fricatives}} = 2.7128$, $SD_{\text{Fricatives}} = .62228$], $t(234) = -6.499$, $p = .000$] were significantly rated as smaller than brand name with the back vowels “o” and “u” ($M_{\text{Back vowels}} = 3.5947$, $SD_{\text{Back vowels}} = .74952$) and stops “k” and “g” ($M_{\text{Stops}} = 3.0819$, $SD_{\text{Stops}} = .68753$), respectively. Similarly, the brand name with the front vowels “i” and “e” [$M_{\text{Front vowels}} = 2.2907$, $SD_{\text{Front vowels}} = .66996$], $t(245) = -20.909$, $p = .000$] and fricatives “f” and “v” [$M_{\text{Fricatives}} = 2.6301$, $SD_{\text{Fricatives}} = .55083$], $t(245) = -13.699$, $p = .000$] were significantly rated as thinner than brand name with the back vowels “o” and “u” ($M_{\text{Back vowels}} = 3.7724$, $SD_{\text{Back vowels}} = .68512$) and stops “k” and “g” ($M_{\text{Stops}} = 3.3557$, $SD_{\text{Stops}} = .62475$), respectively (See Appendix 11).

All in all, the success of manipulation check which presented a significant difference between experimental conditions suggested that participants correctly perceived, interpreted, and reacted to the stimulus. In that case, the relationship between the independent and dependent variables could be interpreted more accurately after manipulation check.

4.2.3.8. Results

In Study 2, dependent variables indicated the preference for the brand names either including front or back vowel sounds and the preference for the brand names either including fricative or stop consonant sounds for each product attribute.

Accordingly, the dependent variables were measured at a nominal level as well as independent variables. In this context, in order to test the $H3_{(a-b)}$ for 2 (vowel sounds) x 2 (product attribute) between subjects factorial design and $H4_{(a-b)}$ for 2 (consonant sound) x 2 (product attribute) between subjects factorial design, cross-tabulation and chi-square tests were employed. With the chi-square tests, whether the relationship between brand names including front vowels and back vowels or fricatives and stops revealed significant differences between small laptop scenario and large laptop scenario and between thin laptop scenario and thick laptop scenario were examined.

4.2.3.8.1. Sound Symbolism Effects on Brand Name Preference for Small vs. Large Laptop

In order to understand the relationship between preference for brand names manipulated by either front vowel or back vowel and product attributes with respect to small and large laptop, cross tabulation was performed initially (See Table 41). The results presented that brand names Nibef (58.6 percent), Vinep (68.5 percent), Lepiv (62.4 percent), and Pegiv (69.1 percent) were more matched with small laptop than large laptop. Accordingly, brand names Nubef (56.6 percent), Vonep (71.2 percent), Lupiv (59.7 percent), and Pogiv (63.8 percent) were more matched with large laptop than small laptop. Thus, within each brand name pair, brand names including front vowels (/e/, /i/) were more preferred for small laptops; whereas brand names including back vowels (/o/, /u/) were more preferred for large laptops.

Table 41: CrossTabs for Preference for Brand Names including Front vs. Back Vowels with respect to Small vs. Large Laptop

			Scenario		Total
			Small laptop	Large laptop	
Nibef – Nubef	front vowel (Nibef)	Count	58	41	99
		Expected Count	49.3	49.7	99.0
		% within Nibef – Nubef	58.6%	41.4%	100.0%
		% within Scenario	49.6%	34.7%	42.1%
	back vowel (Nubef)	Count	59	77	136
		Expected Count	67.7	68.3	136.0
		% within Nibef – Nubef	43.4%	56.6%	100.0%
		% within Scenario	50.4%	65.3%	57.9%
Vinep_Vonep	front vowel (Vinep)	Count	85	39	124
		Expected Count	61.7	62.3	124.0
		% within Vinep – Vonep	68.5%	31.5%	100.0%
		% within Scenario	72.6%	33.1%	52.8%
	back vowel (Vonep)	Count	32	79	111
		Expected Count	55.3	55.7	111.0
		% within Vinep – Vonep	28.8%	71.2%	100.0%
		% within Scenario	27.4%	66.9%	47.2%
Lepiv_Lupiv	front vowel (Lepiv)	Count	63	38	101
		Expected Count	50.3	50.7	101.0
		% within Lepiv – Lupiv	62.4%	37.6%	100.0%
		% within Scenario	53.8%	32.2%	43.0%
	back vowel (Lupiv)	Count	54	80	134
		Expected Count	66.7	67.3	134.0
		% within Lepiv – Lupiv	40.3%	59.7%	100.0%
		% within Scenario	46.2%	67.8%	57.0%
Pegiv – Pogiv	front vowel (Pegiv)	Count	67	30	97
		Expected Count	48.3	48.7	97.0
		% within Pogiv – Pegiv	69.1%	30.9%	100.0%
		% within Scenario	57.3%	25.4%	41.3%
	back vowel (Pogiv)	Count	50	88	138
		Expected Count	68.7	69.3	138.0
		% within Pogiv – Pegiv	36.2%	63.8%	100.0%
		% within Scenario	42.7%	74.6%	58.7%

To understand, whether there were significant differences between preference for the brand names including front vowels and brand names including back vowels depending upon small and large laptops, chi-square tests were performed (See Table 42). Since, no cells (0.0 %) have expected count less than 5, Pearson Chi Square statistical test results were used to explain the relationship between the brand name preference and product attributes. Results of chi-square tests revealed that there was statistically significant association between preference for brand names including either front vowel or back vowel and product attributes; that is:

- brand name *Nibef* was significantly more preferred for small laptop than brand name *Nubef* and brand name *Nubef* was significantly more preferred for large laptop than brand name *Nibef* [$\chi^2(1, N = 235) = 5.297, p = .021$].
- brand name *Vinep* was significantly more preferred for small laptop than brand name *Vonep* and brand name *Vonep* was significantly more preferred for large laptop than brand name *Vinep* [$\chi^2(1, N = 235) = 36.962, p = .000$].
- brand name *Lepiv* was significantly more preferred for small laptop than brand name *Lupiv* and brand name *Lupiv* was significantly more preferred for large laptop than brand name *Lepiv* [$\chi^2(1, N = 235) = 11.229, p = .001$].
- brand name *Pegiv* was significantly more preferred for small laptop than brand name *Pogiv* and brand name *Pogiv* was significantly more preferred for large laptop than brand name *Pegiv* [$\chi^2(1, N = 235) = 24.573, p = .000$].

Table 42: Results of Pearson Chi Square Test for Preference for Brand Names including Front vs. Back Vowels with respect to Small vs. Large Laptop

	Value	df	Asymptotic Significance (2-sided)
Nibef vs. Nubef * Small vs. Large Laptop			
Pearson Chi-Square	5.297 ^a	1	.021
N of Valid Cases	235		
Vinep vs. Vonep* Small vs. Large Laptop			
Pearson Chi-Square	36.962 ^a	1	.000
N of Valid Cases	235		
Lepiv vs. Lupiv * Small vs. Large Laptop			
Pearson Chi-Square	11.229 ^a	1	.001
N of Valid Cases	235		
Pegiv vs. Pogiv * Small vs. Large Laptop			
Pearson Chi-Square	24.573 ^a	1	.000
N of Valid Cases	235		

^a 0 cells (0.0 %) have expected count less than 5.

Additionally, Phi and Cramer's V tests were performed, as well to validate the strength of association between preference for brand names and product attributes. The results of Phi and Cramer's V tests indicated that the strength of associations between the preference for brand names including front vowels /i/ and /e/ and small laptop and between the preference for brand names including back vowels /o/ and /u/ and large laptop were strong (See Table 43). Hence, **Hypothesis 3_a**, which assumed that brand names including front vowels /i/ and /e/ would be significantly more preferred for smaller product, was **supported**.

Table 43: Results of Phi and Cramer's V for Preference for Brand names including Front vs. Back Vowels with respect to Small vs. Large Laptop

		Value	Approximate Significance
Nibef vs. Nubef * Small vs. Large Laptop			
Nominal by Nominal	Phi	.150	.021
	Cramer's V	.150	.021
N of Valid Cases		235	
Vinep vs. Vonep* Small vs. Large Laptop			
Nominal by Nominal	Phi	.397	.000
	Cramer's V	.397	.000
N of Valid Cases		235	
Lepiv vs. Lupiv * Small vs. Large Laptop			
Nominal by Nominal	Phi	.219	.001
	Cramer's V	.219	.001
N of Valid Cases		235	
Pegiv vs. Pogiv * Small vs. Large Laptop			
Nominal by Nominal	Phi	.323	.000
	Cramer's V	.323	.000
N of Valid Cases		235	

With respect to brand names manipulated by fricative/stop distinction, to understand the relationship between preference for brand names and product attributes, cross tabulation was performed, as well (See Table 44). The results of cross tabulation indicated that brand names including fricatives /f/ and /v/ in each brand name pair like **F**usiv (64.5 percent), **F**ugiv (54.2 percent), **V**iluv (58.3 percent), and **V**ifup (57.3 percent) were more matched with small laptop than large laptop. On the other hand, brand names including stops /g/ and /k/ like **G**usiv (66.7 percent), **K**ugiv (54.7 percent), **G**iluv (63.7 percent), and **K**ifup (55.4 percent) were more matched with large laptop than small laptop.

Table 44: CrossTabs for Preference for Brand Names including Fricatives vs. Stops with respect to Small vs. Large Laptop

			Scenario		
			Small laptop	Large laptop	Total
Fusiv – Gusiv	fricative consonant (Fusiv)	Count	80	44	124
		Expected Count	61.7	62.3	124.0
		% within Fusiv – Gusiv	64.5%	35.5%	100.0%
		% within Scenario	68.4%	37.3%	52.8%
	stop consonant (Gusiv)	Count	37	74	111
		Expected Count	55.3	55.7	111.0
		% within Fusiv – Gusiv	33.3%	66.7%	100.0%
		% within Scenario	31.6%	62.7%	47.2%
Fugiv – Kugiv	fricative consonant (Fugiv)	Count	64	54	118
		Expected Count	58.7	59.3	118.0
		% within Fugiv – Kugiv	54.2%	45.8%	100.0%
		% within Scenario	54.7%	45.8%	50.2%
	stop consonant (Kugiv)	Count	53	64	117
		Expected Count	58,3	58,7	117,0
		% within Fugiv – Kugiv	45.3%	54,7%	100,0%
		% within Scenario	45.3%	54,2%	49,8%
Viluv – Giluv	fricative consonant (Viluv)	Count	84	60	144
		Expected Count	71.7	72.3	144.0
		% within Viluv – Giluv	58.3%	41.7%	100.0%
		% within Scenario	71.8%	50.8%	61.3%
	stop consonant (Giluv)	Count	33	58	91
		Expected Count	45.3	45.7	91.0
		% within Viluv_Giluv	36.3%	63.7%	100.0%
		% within Scenario	28.2%	49.2%	38.7%
Vifup – Kifup	fricative consonant (Vifup)	Count	55	41	96
		Expected Count	47.8	48,2	96,0
		% within Vifup – Kifup	57.3%	42,7%	100,0%
		% within Scenario	47.0%	34,7%	40,9%
	stop consonant (Kifup)	Count	62	77	139
		Expected Count	69.2	69.8	139.0
		% within Vifup – Kifup	44.6%	55.4%	100.0%
		% within Scenario	53.0%	65.3%	59.1%

However, results of Pearson Chi square statistical tests revealed that there was a significant difference in preference for brand names between the ones including fricatives /f/, /v/ and stop /g/ on the basis of small vs. large laptop, that is:

- brand name **Fusiv** was significantly more preferred for small laptop than brand name **Gusiv** and brand name **Gusiv** was significantly more preferred for large laptop than brand name **Fusiv** [$\chi^2(1, N = 235) = 22.781, p = .000$].
- brand name **Viluv** was significantly more preferred for small laptop than brand name **Giluv** and brand name **Giluv** was significantly more preferred for large laptop than brand name **Viluv** [$\chi^2(1, N = 235) = 10.864, p = .001$] (See Table 45).

Table 45: Results of Pearson Chi Square Test for Preference for Brand Names including Fricatives vs. Stops with respect to Small vs. Large Laptop

	Value	df	Asymptotic Significance (2-sided)
Fusiv vs. Gusiv * Small vs. Large Laptop			
Pearson Chi-Square	22.781 ^a	1	.000
N of Valid Cases	235		
Fugiv vs. Kugiv * Small vs. Large Laptop			
Pearson Chi-Square	1.877 ^a	1	.171
N of Valid Cases	235		
Viluv vs. Giluv * Small vs. Large Laptop			
Pearson Chi-Square	10.864 ^a	1	.001
N of Valid Cases	235		
Vifup vs. Kifup * Small vs. Large Laptop			
Pearson Chi-Square	3.656 ^a	1	.056
N of Valid Cases	235		

^a 0 cells (0.0 %) have expected count less than 5.

Nevertheless, with respect to brand names manipulated by the sounds being contrasted like fricative /f/ vs. stop /k/ and fricative /v/ vs. stops /k/, no significant differences were found in preference for brand names including sounds being contrasted [for **Fugiv** vs. **Kugiv**, $\chi^2(1, N = 235) = 1.877, p = .171$ and for **Vifup** vs. **Kifup**, $\chi^2(1, N = 235) = 3.656, p = .056$] for small and large laptop (See Table 45). That is; brand names manipulated by /f/ vs. /k/ and /v/ vs. /k/ were equally preferred for small vs. large laptops.

The results of Phi and Cramer's V tests also supported the results of Pearson Chi Square tests (See Table 46). According to Table 46, there was a significant differences between preferences for brand names Fusiv and Gusiv ($\phi = .311$, $p = .000$) and Viluv and Giluv ($\phi = .215$, $p = .001$) for small vs. large laptop. However, there were not any significant differences between brand names Fugiv and Kugiv ($\phi = .089$, $p = .171$) Vifup and Kifup ($\phi = .125$, $p = .056$) in terms of brand name preference for small vs. large laptop. Hence, **Hypothesis 4_a** was only **supported** for the assumption that brand names containing fricatives /f/ and /v/ would be preferred more than non-sense brand names containing stop /g/ for a smaller product but not brand names containing stop /k/.

Table 46: Results of Phi and Cramer's V for Preference for Brand names including Fricatives vs. Stops with respect to Small vs. Large Laptop

		Value	Approximate Significance
Fusiv vs. Gusiv * Small vs. Large Laptop			
Nominal by Nominal	Phi	.311	.000
	Cramer's V	.311	.000
N of Valid Cases		235	
Fugiv vs. Kugiv * Small vs. Large Laptop			
Nominal by Nominal	Phi	.089	.171
	Cramer's V	.089	.171
N of Valid Cases		235	
Viluv vs. Giluv * Small vs. Large Laptop			
Nominal by Nominal	Phi	.215	.001
	Cramer's V	.215	.001
N of Valid Cases		235	
Vifup vs. Kifup * Small vs. Large Laptop			
Nominal by Nominal	Phi	.125	.056
	Cramer's V	.125	.056
N of Valid Cases		235	

4.2.3.8.2. Sound Symbolism Effects on Brand Name Preference for Thin vs. Thick Laptop

In order to understand whether sounds could be influential on brand name preferences for thinner vs. thicker products, cross tabulation was initially conducted for front/back vowel distinction (See Table 47). The results revealed that brand names including front vowels /i/ and /e/ like *Nibef* (68.2 percent), *Vinep* (76.3 percent), *Lepiv* (73.9 percent), and *Pegiv* (71.6 percent) were more matched with thin laptop than thick laptop. On the other hand, brand names including back vowels /u/ and /o/ like *Nubef* (64.7 percent), *Vonep* (75.0 percent), *Lupiv* (64.9 percent), and *Pogiv* (70.0 percent) were more matched with thick laptop than thin laptop.

Although the results of crosstabs presented that there were differences between brand names including front vowels and back vowels in terms of brand name preference for thin vs. thick laptop, in order to fully interpret the results, Pearson chi square test results were checked (See Table 48). The results of Pearson chi square presented that there was a significant difference between brand names including front vowels /i/, /e/ and brand names including back vowels /o/, /u/ with respect to brand name preference for thin and thick laptop, that is;

- brand name *Nibef* was significantly more preferred for thin laptop than brand name *Nubef* and brand name *Nubef* was significantly more preferred for thick laptop than brand name *Nibef* [$\chi^2(1, N = 246) = 26.294, p = .000$].
- brand name *Vinep* was significantly more preferred for thin laptop than brand name *Vonep* and brand name *Vonep* was significantly more preferred for large laptop than brand name *Vinep* [$\chi^2(1, N = 246) = 64.564, p = .000$].
- brand name *Lepiv* was significantly more preferred for small laptop than brand name *Lupiv* and brand name *Lupiv* was significantly more preferred for large laptop than brand name *Lepiv* [$\chi^2(1, N = 246) = 34.770, p = .000$].

- brand name *Pegiv* was significantly more preferred for small laptop than brand name *Pogiv* and brand name *Pogiv* was significantly more preferred for large laptop than brand name *Pegiv* [$\chi^2(1, N = 246) = 42.338, p = .000$].

Table 47: CrossTabs for Preference for Brand Names including Front vs. Back Vowel with respect to Thin vs. Thick Laptop

			Scenario		Total
			Thin laptop	Thick laptop	
Nibef – Nubef	front vowel (Nibef)	Count	73	34	107
		Expected Count	53.1	53.9	107.0
		% within Nibef - Nubef	68.2%	31.8%	100.0%
		% within Scenario	59.8%	27.4%	43.5%
	back vowel (Nubef)	Count	49	90	139
		Expected Count	68.9	70.1	139.0
		% within Nibef - Nubef	35.3%	64.7%	100.0%
		% within Scenario	40.2%	72.6%	56.5%
Vinep – Vonep	front vowel (Vinep)	Count	90	28	118
		Expected Count	58.5	59.5	118.0
		% within Vinep - Vonep	76.3%	23.7%	100.0%
		% within Scenario	73.8%	22.6%	48.0%
	back vowel (Vonep)	Count	32	96	128
		Expected Count	63.5	64.5	128.0
		% within Vinep - Vonep	25.0%	75.0%	100.0%
		% within Scenario	26.2%	77.4%	52.0%
Lepiv – Lupiv	front vowel (Lepiv)	Count	68	24	92
		Expected Count	45.6	46.4	92.0
		% within Lepiv – Lupiv	73.9%	26.1%	100.0%
		% within Scenario	55.7%	19.4%	37.4%
	back vowel (Lupiv)	Count	54	100	154
		Expected Count	76.4	77.6	154.0
		% within Lepiv – Lupiv	35.1%	64.9%	100.0%
		% within Scenario	44.3%	80.6%	62.6%
Pegiv – Pogiv	front vowel (Pegiv)	Count	83	33	116
		Expected Count	57.5	58.5	116.0
		% within Pegiv – Pogiv	71.6%	28.4%	100.0%
		% within Scenario	68.0%	26.6%	47.2%
	back vowel (Pogiv)	Count	39	91	130
		Expected Count	64.5	65.5	130.0
		% within Pegiv – Pogiv	30.0%	70.0%	100.0%
		% within Scenario	32.0%	73.4%	52.8%

Table 48: Results of Pearson Chi Square Test for Preference for Brand Names including Front vs. Back Vowels with respect to Thin vs. Thick Laptop

	Value	df	Asymptotic Significance (2-sided)
Nibef vs. Nubef *Thin vs. Thick Laptop			
Pearson Chi-Square	26.294 ^a	1	.000
N of Valid Cases	246		
Vinep vs. Vonep * Thin vs. Thick Laptop			
Pearson Chi-Square	64.564 ^a	1	.000
N of Valid Cases	246		
Lepiv vs. Lupiv * Thin vs. Thick Laptop			
Pearson Chi-Square	34.770 ^a	1	.000
N of Valid Cases	246		
Pegiv vs. Pogiv * Thin vs. Thick Laptop			
Pearson Chi-Square	42.338 ^a	1	.000
N of Valid Cases	246		

^a 0 cells (0.0 %) have expected count less than 5.

The results of Phi and Cramer's V were also corroborated the results of Pearson chi square test results (See Table 49). Thus, statistically significant differences were found between brand names Nibef and Nubef ($\phi = .327$, $p = .000$), Vinep and Vonep ($\phi = .512$, $p = .000$), Lepiv and Lupiv ($\phi = .376$, $p = .000$), and Pegiv and Pogiv ($\phi = .415$, $p = .000$) in terms of brand name preferences for thin vs. thick laptop. Accordingly, **Hypothesis 3_b**, which assumed that brand names including front vowels /i/ and /e/ would be more preferred for thinner product than brand names including back vowels /o/ and /u/, was **supported**.

Table 49: Results of Phi and Cramer's V for Preference for Brand names including Front vs. Back Vowels with respect to Thin vs. Thick Laptop

		Value	Approximate Significance
Nibef vs. Nubef *Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.327	.000
	Cramer's V	.327	.000
N of Valid Cases		246	
Vinep vs. Vonep *Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.512	.000
	Cramer's V	.512	.000
N of Valid Cases		246	
Lepiv vs. Lupiv *Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.376	.000
	Cramer's V	.376	.000
N of Valid Cases		246	
Pegiv vs. Pogiv *Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.415	.000
	Cramer's V	.415	.000
N of Valid Cases		246	

In order to understand whether there were any differences between preference for brand names including fricative vs. stop consonants for thin and thick laptop, cross tabulation was also performed (See Table 50). According to the results of crosstabs, thin laptop were more matched with brand names including fricatives /f/ and /v/ in each brand name pair like **F**usiv (73.4 percent), **F**ugiv (60.3 percent), **V**iluv (69.0 percent), and **V**ifup (68.6 percent). On the other hand, thick laptop was more matched with brand names including stops /g/ and /k/ like **G**usiv (74.6 percent), **K**ugiv (60.0 percent), **G**iluv (78.2 percent), and **K**ifup (63.9 percent).

Table 50: CrossTabs for Preference for Brand Names including Fricatives vs. Stops with respect to Thin vs. Thick Laptop

			Scenario		Total
			Thin laptop	Thick laptop	
Fusiv – Gusiv	fricative consonant (Fusiv)	Count	91	33	124
		Expected Count	61.5	62.5	124.0
		% within Fusiv – Gusiv	73.4%	26.6%	100.0%
		% within Scenario	74.6%	26.6%	50.4%
	stop consonant (Gusiv)	Count	31	91	122
		Expected Count	60.5	61.5	122.0
		% within Fusiv – Gusiv	25.4%	74.6%	100.0%
		% within Scenario	25.4%	73.4%	49.6%
Fugiv – Kugiv	fricative consonant (Fugiv)	Count	70	46	116
		Expected Count	57.5	58.5	116.0
		% within Fugiv – Kugiv	60.3%	39.7%	100.0%
		% within Scenario	57.4%	37.1%	47.2%
	stop consonant (Kugiv)	Count	52	78	130
		Expected Count	64.5	65.5	130.0
		% within Fugiv – Kugiv	40.0%	60.0%	100.0%
		% within Scenario	42.6%	62.9%	52.8%
Viluv – Giluv	fricative consonant (Viluv)	Count	100	45	145
		Expected Count	71.9	73.1	145.0
		% within Viluv- Giluv	69.0%	31.0%	100.0%
		% within Scenario	82.0%	36.3%	58.9%
	stop consonant (Giluv)	Count	22	79	101
		Expected Count	50.1	50.9	101.0
		% within Viluv- Giluv	21.8%	78.2%	100.0%
		% within Scenario	18.0%	63.7%	41.1%
Vifup – Kifup	fricative consonant (Vifup)	Count	70	32	102
		Expected Count	50.6	51.4	102.0
		% within Vifup- Kifup	68.6%	31.4%	100.0%
		% within Scenario	57.4%	25.8%	41.5%
	stop consonant (Kifup)	Count	52	92	144
		Expected Count	71.4	72.6	144.0
		% within Vifup-Kifup	36.1%	63.9%	100.0%
		% within Scenario	42.6%	74.2%	58.5%

The results of crosstabs indicated the differences between brand names including fricatives and stops in terms of brand name preference for thin vs. thick laptop. However, to check whether these differences were significant, Pearson chi square tests were performed (See Table 51). The results of Pearson chi square revealed that there was a significant difference between brand names including fricatives /f/ and /v/ and brand names including stops /g/, /k/ in terms of name preference for thin and thick laptop, that is;

- brand name **Fusiv** was significantly more preferred for thin laptop than brand name **Gusiv** and brand name **Gusiv** was significantly more preferred for thick laptop than brand name **Fusiv** [$\chi^2(1, N = 246) = 56.625, p = .000$].
- brand name **Fugiv** was significantly more preferred for thin laptop than brand name **Kugiv** and brand name **Kugiv** was significantly more preferred for thick laptop than brand name **Fugiv** [$\chi^2(1, N = 246) = 10.150, p = .001$]
- brand name **Viluv** was significantly more preferred for thin laptop than brand name **Giluv** and brand name **Giluv** was significantly more preferred for thick laptop than brand name **Viluv** [$\chi^2(1, N = 246) = 53.018, p = .000$].
- brand name **Vifup** was significantly more preferred for thin laptop than brand name **Kifup** and brand name **Kifup** was significantly more preferred for thick laptop than brand name **Vifup** [$\chi^2(1, N = 246) = 25.253, p = .000$].

Table 51: Results of Pearson Chi Square Test for Preference for Brand Names including Fricatives vs. Stops with respect to Thin vs. Thick Laptop

	Value	df	Asymptotic Significance (2-sided)
Fusiv vs. Gusiv * Thin vs. Thick Laptop			
Pearson Chi-Square	56.625 ^a	1	.000
N of Valid Cases	246		
Fugiv vs. Kugiv * Thin vs. Thick Laptop			
Pearson Chi-Square	10.150 ^a	1	.001
N of Valid Cases	246		
Viluv vs. Giluv * Thin vs. Thick Laptop			
Pearson Chi-Square	53.018 ^a	1	.000
N of Valid Cases	246		
Vifup vs. Kifup * Thin vs. Thick Laptop			
Pearson Chi-Square	25.253 ^a	1	.000
N of Valid Cases	246		

^a 0 cells (0.0 %) have expected count less than 5.

The results of Phi and Cramer's V tests also revealed a significantly more preference for brand names including fricatives for thin laptop as compared to thick laptop with respect to brand name pairs Fusiv vs. Gusiv ($\phi = .480$, $p = .000$), Fugiv vs. Kugiv ($\phi = .203$, $p = .001$), Viluv vs. Giluv ($\phi = .464$, $p = .000$), and Vifup vs. Kifup ($\phi = .320$, $p = .000$) (See Table 52). Hence, **Hypothesis 4_b**, which suggested that non-sense brand names containing fricatives (/f/, /v/) would be significantly more preferred than non-sense brand names containing stops (/k/, /g/) for a thinner product, was **supported**.

Table 52: Results of Phi and Cramer's V for Preference for Brand names including Fricatives vs. Stops with respect to Thin vs. Thick Laptop

		Value	Approximate Significance
Fusiv vs. Gusiv * Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.480	.000
	Cramer's V	.480	.000
N of Valid Cases		246	
Fugiv vs. Kugiv * Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.203	.001
	Cramer's V	.203	.001
N of Valid Cases		246	
Viluv vs. Giluv * Thin vs. Thick Laptop			
Nominal by Nominal	Phi	.464	.000
	Cramer's V	.464	.000
N of Valid Cases		246	
Vifup vs. Kifup * Thin vs. Thick Laptop			
	Phi	.320	.000
Nominal by Nominal	Cramer's V	.320	.000
N of Valid Cases		246	

4.3. LIMITATIONS AND RECOMMENDATIONS

The two main objectives of the study were to present sound symbolism effects on brand attribute perception and brand name preference in Turkish context. In this way, this study attempts to extend the previous research on sound symbolism by strengthening universal sound symbolism argument. Initiated by these objectives, initially, this study tested the relationship between sound and meaning. As stated before, in extensive sound symbolism literature, the relationship between sounds and meaning has been already studied on number of different contrasts such as; *light-dark* (e.g., Athaide and Klink, 2012; Chastaing, 1958; FoÂnag, 1963; Gombrich, 1961; Grammont, 1913; Klink, 2000; 2003; Newman, 1933), *soft-hard* (e.g., Baxter and Lowrey, 2011; Grammont, 1913; Klink, 2000; 2001), *small-large* (e.g., Baxter and Lowrey, 2011; Klink, 2000; 2003; Klink and Athaide, 2014; Klink and Wu,

2014; Kuehnl and Mantau, 2013; Newman, 1933; Sapir, 1929), *thin-thick* (e.g., Athaide and Klink, 2012; FoÂnag, 1963; Grammont, 1913; Klink, 2000), *weak-strong* (e.g., Jespersen, 1933; Klink, 2000; Miron, 1961), *light-heavy* (e.g., Chastaing, 1958), *more-less mild* (e.g., Grammont, 1913; Klink, 2000), *fast-slow* (e.g., Athaide and Klink, 2012; Chastaing, 1958; FoÂnag, 1963; Klink, 2000; 2001; Klink and Wu, 2014; Lowrey and Shrum, 2007), *cold-warm* (e.g., Athaide and Klink, 2012; Klink, 2000; Whorf, 1956), *more-less pretty* (e.g., Athaide and Klink, 2012; FoÂnag, 1963), *pleasant-unpleasant* (e.g., Miron, 1961), *more-less friendly* (e.g., Athaide and Klink, 2012; FoÂnag, 1963; Klink, 2000), *angular-rounded* (e.g., Favalli et al., 2013; Fenko et al., 2016; Klink, 2003; Klink and Athaide, 2014; Köhler, 1949), *spiky-curvy* (e.g., Westburry, 2005), *high-low* (e.g., Whorf, 1956), *new-old*, *good-bad* (e.g., Jenkins et al., 1958), *complex-simple* (e.g., Dogana, 1967), *feminine-masculine* (e.g., Klink, 2000; 2009; Lieven et al., 2015), *bitter-sweet* (e.g., Athaide and Klink, 2012; Klink, 2000), *bright-dull* (e.g., Kim, 1977; Nichols, 1971), *sharp-dull* (e.g., Klink, 2000; Lowrey and Shrum, 2007; Shrum et al., 2012), *more or less ethical* (Klink and Wu, 2017), and so on.

Nevertheless, attributes used in this study is limited to size and width which are more likeltly to be used in product design. Thus, the interplay between sounds and meaning was only documented with respect to smallness and largeness in terms of size and thinness and thickness in terms of width. Accordingly, although sound symbolism effects have been examined within the context of a great deal of contrasts in several languages, using only 2 contrasts to test the effects of sounds in Turkish was the biggest limitation of the study. Therefore, future studies which test the interplay between sounds and meaning with respect to different attributes would infer valuable insights to understand sound symbolism phenomenon in Turkish, properly.

Depending upon the contrasts, another limitation of the study is about only employing functional attributes regarding products. When the relevant literature was reviewed, it was readily seen that the effects of sounds in non-sense brand names have been explored in terms of utilitarian or functional attributes of the products. For instance, warmth, smallness, and fastness can be readily considered as functional attributes of gloves, laptops, and sport cars, respectively because they are related to

functions and so performance of the products. However, the value derived from the product may be either utilitarian and hedonic.

In opposition to utilitarian product attributes, hedonic product attributes are multi-sensory, emotional (e.g., Holbrook, 1983), aesthetic (Hirschman and Solomon, 1984), and provide experiential consumption (e.g., joy, happiness, excitement). In relevant marketing literature, sound symbolism effects have also been examined in different contrasts with regard to sensory modalities including tastes and tactile impressions. For instance, softness, warmth, bitterness (e.g., Klink, 2000), creaminess, richness, and smoothness (e.g., Lowrey and Shrum, 2007; Yorkston and Menon, 2004) are examined as the product attributes in several studies. However, even these sensory product attributes are treated as functional product attributes rather than hedonic attributes, when they are considered together with the products having these attributes (e.g., softness-tissue, warmth-gloves, creaminess, richness, and smoothness-ice cream). Nevertheless, this study did not address any hedonic product attributes, although it was addressed as a gap in the literature. In this context, to extend the previous studies on sound symbolism and brand attributes perception, future studies might test the interplay between sound and meaning with respect to hedonic product attributes, as well.

Another limitation of the study is the type of sounds used in the study. In the relevant literature, sound symbolism research has frequently used front/back vowel distinction to test the effects of vowels and fricative/stop distinction to test the effects of consonants. Similar to many other sound symbolism research, this study also employed front/back vowel distinction and fricative/stop distinction to test the sound symbolism effects. Nevertheless, this study did not categorize fricatives and stops as voiced and voiceless, properly. Hence, the difference between voiceless stops and voiced stops in conveying meaning and the difference between voiceless fricatives and voiced fricatives in conveying meaning were not explored in this study, although they were explored in some other sound symbolism research (e.g., Klink, 2000; Athaide and Klink, 2012). In order to generate valuable inferences about the sound symbolism phenomenon in Turkish, a future study could analyze the interplay between sounds and meaning with respect to distinction between voiced and voiceless consonants.

Additionally, in term of front vowels, only the sounds “i” and “e” and in terms of back vowels, only the sounds “o” and “u” were employed to be contrasted in the study. Nevertheless, the other vowel sounds such as broad rounded front vowel sound “ö”, narrow rounded front vowel sound “ü”, and narrow unrounded back vowel sound “ı” were not used in this study because of the difficulty in their comparisons with the other sound symbolism studies. Similarly, in terms of fricatives, only the voiceless labiodental fricative sound “f” and voiced labiodental fricative sound “v” and in terms of stops, only the voiceless velar stop sound “k” and voiced velar stop sound “g” were employed to be contrasted in the study. Nevertheless, other fricatives such as “s” and “y” and other stops such as “d” and “t” could also be used in the study to test the effects of consonants. Additionally, some consonants such as “ç” and “ş” were not used in this study because of the difficulty in their comparisons with the other sound symbolism studies, as well. Accordingly, a future study which uses these sounds would infer fruitful insights to better understand the sound symbolism effects on attribute perception in Turkish. .

The other limitation regarding sounds is about their representation. In order to deal with the differences in sound of a letter, the best alternative is the use of International Phonetic Alphabet. As stated before, the use of IPA provides a unique written representation of every sound in every language in clarity and consistency (Brinton, 2000). Nevertheless, the IPA representations were not used in this study except special cases in order not to cause confusion for the ones who have not enough phonetic knowledge. So, all letters and sounds used in the study were represented with letters in Turkish Phonetic Alphabet. Further studies which employ IPA representation of each unique sound might provide a better explanation to comprehend sound symbolism phenomena in Turkish.

With respect to sounds, another limitation is about the place of sound symbolism imbedded in the invented brand names. When the invented words were created, sound symbolic imbeds were placed at the first syllable of each invented brand name. However, in order to test the effects of sound symbolism properly in Turkish, future studies might place sound symbolic imbeds at different syllables in the invented words as in the study of Klink and Wu (2014). In this way, where to

position sound symbolism imbeds in a word to create intended meaning could be better understood in Turkish.

Another limitation is about the product category selected for Study 2. Although, three product categories were determined via focus group interview, only laptop was selected as the product category, and so product appearance attributes to be tested were determined on the basis of laptop. Future studies which select different product categories would extend the attributes used in this study to different attributes. Moreover, future marketing studies which employ different type of consumer products (e.g., convenience, shopping, specialty and unsought products) would also infer valuable insights about whether the use of sound symbolism might be effective in brand naming of each type of consumer product.

Additionally, In Study 2, to test the interplay between sound symbolism and brand name preference, product was held constant and attributes regarding products were varied. So, the research of the study was designed 2 x 2 between-subjects design with respect to attributes. For further studies, rather than varying attributes, the products in a product category (i.e., SUV vs. two-seater convertible car, knife vs. hammer) might be varied as well as it was in several sound symbolism research (Lowrey and Shrum, 2007; Shrum et al., 2012; Wu et al., 2013). In this way, the interplay between sound symbolism and brand name preference for specific products might be extended to new context in Turkish. For instance, a future study which examines the effects of sound symbolism on brand name preference with respect to high and low involvement products would generate a fruitful inference for both scholars and practitioners about whether sound symbolism could be used in brand naming of both high and low involvement products, effectively.

Another limitation of the study is about its unit of sample. In the relevant literature, there are several marketing research with respect to adults (e.g., Klink, 2000; Klink and Athaide, 2012; Wu et al., 2013) and children (e.g., Baxter and Lowrey, 2011; 2014). In this context, similar to many marketing research on sound symbolism, undergraduates were used as the unit of sample because they are more likely to present a homogenous sample. Nevertheless, in order to get more fruitful results, future studies might test the sound symbolism effects on other adults groups such as housewives, white vs. blue collar employees, educated vs. uneducated and so

on. Additionally, future studies might also examine the sound symbolism effects on children to understand when sound symbolism starts to effect children in Turkish.

Depending upon the homogeneity of the unit of sample used in the study, whether the sound symbolism effects on attribute perception and brand name preferences could vary according to demographic variables was not detected. This is also considered as one of the limitations of the study. Whereas, demographic variables such as gender or age could change the extent of the sound symbolism effects particularly for different type of products such as high vs. low involvement products. For instance, women are expected to be more involved in purchase of some specific products like hygiene and personal care products, and for such products, the sounds in their brand names might more influence women than men. In this context, future studies which examine the role of demographic variables on sound symbolism effects with respect to different products would generate valuable insights for both scholars and marketing practitioners.

The other limitation of the study is the stimuli used in the study. As stated before, sound symbolism phenomena was examined with respect to brand names, and so brand names manipulated by specific sounds were the stimuli of the study. Accordingly, the effects of sounds only imbedded in brand names were examined with respect to attribute perception and brand name preference. However, sounds could also be imbedded into different brand related elements such as slogans and jingles or marketing communication tools such as advertising. In this context, a future study which examines the effects of different sounds in slogans, jingles or advertising would extend the sound symbolism research beyond brand naming. Additionally, creating a brand name through sound symbolism could also be examined within the context of brand extension. The statistical data shows that the remarkable part of the new products are brand extensions (Keller, 2013). As a result of brand extension, companies could have sub-brands, parent brands or family brands. In order to infer valuable insights about whether sound symbolism could be used effectively in creating new brand names for the extensions, a future study could examine the use of sound symbolism in brand naming in terms of brand extension.

Another limitation of the study is its objective. As stated before, this study examined the sound symbolism phenomena with respect to attribute perception and

brand name preferences. Nevertheless, sound symbolism could also be examined with respect to brand strategy. In this context, future marketing studies could also examine whether the fit between sounds in the brand names and meaning derived from them could influence consumers' willingness to buy, purchase intention, brand/product liking, willingness to pay premium, and so on for a specific product.

Finally, the type of sound symbolism used in the study was limited to synesthetic type sound symbolism. As stated, synesthetic sound symbolism focuses on the interplay between speech sounds and meaning. Nevertheless, the typology of sound symbolism developed by Hinton et al. (1994) presents that there are also three types of sound symbolism: "*corporeal sound symbolism*", "*imitative sound symbolism*", and "*conventional sound symbolism*". In this context, other types of sound symbolism might also provide a context for further sound symbolism related marketing studies in Turkish.

CONCLUSION

Sound symbolists suggest that the mere sound of a word is enough to convey meaning, apart from what the word semantically connotes (Shrum and Lowrey, 2007). Particularly, when the word is invented, non-sense, or unfamiliar, its sounds are more likely to be used as a cue by people to interpret meaning about what the word refers (Sapir, 1929). This is the sound symbolism effect which has been well documented across many languages by several studies (e.g., Athaide and Klink, 2012; Kuehnl and Mantau, 2013; Shrum et al., 2012). The results of these studies suggest that the effects of sound symbolism are shown to hold across a variety of languages (Kuehnl and Mantau, 2013; Shrum et al., 2012). Accordingly, sound symbolism effects are considered as universal.

Nevertheless, although the results of a majority of sound symbolism studies have revealed that sounds in a word can convey meaning to people from different cultures (Athaide and Klink, 2012), sound symbolism effects have not been tested across all languages, yet. For that reason, it is very difficult to mention about fully universal sound symbolism effects. In this respect, this study attempts to contribute to the universal sound symbolism assumption by indicating whether sound symbolism effects could be validated for Turkish with respect to brand naming. Accordingly, this study is considered as pioneer study which extends the examination of sound symbolism effects beyond Western languages to Turkish which belongs to the Altay branch of the Ural-Altaic linguistic family.

In this study, first, the effects of sound symbolism have been examined with respect to attribute perception. In this context, several non-sense brand name pairs, which included brand names manipulated by either front vs. back vowels and fricative vs. stop consonants, were created. Then, participants were asked to rate their attribute perception regarding each brand name that they listened on the semantic differential scale. In the relevant sound symbolic marketing literature, brand names manipulated by sounds being contrasted were given participants visually as a fieldwork characteristics (e.g., Athaide and Klink, 2000; Baxter and Lowrey, 2011; Klink 2000; Lowrey and Shrum, 2007; Yorkston and Menon, 2004). However, to fully test the effects of sounds in brand names, brand names were listened to

participants in this study. In that aspect, this study can also be considered as one of the pioneer sound symbolic marketing studies which explores the effects of mere sounds on attribute perception of consumers.

In the study, the interplay between sounds and attribute perception has been examined with respect to two main visual elements; size and width, which are also used as designing products. The results indicated that within each brand name pair, brand names including **front vowels** /i/ and /e/ and **fricatives** /f/ and /v/ were significantly perceived as *smaller* and *thinner* than brand names including **back vowels** /o/ and /u/ and **stops** /g/ and /k/, respectively. In this way, these results have corroborated previous findings which suggest that **front vowels** are more associated with *smallness* (e.g.,; Baxter, Illicic et al., 2015; Klink, 2000; 2003; Klink and Wu, 2104; Klink and Athaide, 2014; Lowrey and Shrum, 2007; Park and Osera, 2008; Preziosi and Coane, 2017) and *thinness* (Athaide and Klink, 2012; Klink, 2000) than **back vowels**; and **fricatives** were more associated with smallness (Klink, 2000; 2003; Klink and Athaide, 2014; Klink and Wu, 2014) than **stops**.

As stated in hypotheses development section, the interplay between brand names including fricatives vs. stops and thinness perception has not been analyzed before in the relevant literature. In this respect, this study extended the previous sound symbolism literature by showing that **fricatives** /f/ and /v/ are more associated with *thinness* than **stops** /k/ and /g/. Hence, the findings of study presented that semantic meaning is conveyed by means of speech sounds in Turkish, as well; that is universal sound symbolism effects is validated for Turkish. Accordingly, this study contributes to the universal sound symbolism assumption which is suggested by several sound symbolism researchers (e.g. Hinton et al., 1994; Ultan, 1978).

Secondly, the interplay between sounds and brand name preference for a product with specific attribute has been established. To test sounds' effects on brand name preference, participants selected one of the two invented brand names differing either only in the vowel sound in terms of front and back vowels; or consonant sound in terms of fricatives and stops for a product whose sounds connoted attributes that are congruent with the attributes of the products. Similar to several sound symbolic marketing studies on brand name preference (e.g., Baxter and Lowrey, 2011; Kuehnl and Mantau, 2013; Lowrey and Shrum, 2007), the results of the study revealed that

participants would significantly prefer brand names including **front vowels** /e/ and /i/ for a *small* and *thin laptop*; and they would significantly prefer brand names including **back vowels** /o/ and /u/ for a *large* and *thick laptop*.

Additionally, the results indicated that participants would significantly prefer brand names including **fricatives** /f/ and /v/ for a *thin laptop*; and they would significantly prefer brand names including **stops** /g/ and /k/ for a *thick laptop*. Nevertheless, while participants would significantly prefer brand names including **fricatives** /f/ and /v/ for a *small laptop* against the brand names including **stop** /g/, they would not significantly prefer brand names including **fricatives** /f/ and /v/ for a small laptop, when the alternative brand names included **stop** /k/. Thus, no significant differences were found between brand names including **stop** /k/ and **fricatives** /f/ , /v/ in terms of preference for a small laptop.

This could be explained with voiced and voiceless stops distinction. In relevant literature, the voiceless stop /k/ is already more associated with smallness than voiced stops (/b/, /d/, and /g/) (Athaide and Klink, 2012; Klink, 2000). In this respect, the results regarding preference for brand names including fricatives /f/, /v/ vs. stop /k/ for a small laptop supported the previous findings, as well. However, this case indicated that the effects of sound symbolism is observed better in front/back vowel distinction than fricatives/stops distinction in Turkish.

All in all, the sound symbolism effects were demonstrated in a very controlled environment in this study. New non-sense brand name pairs were used to avoid previously formed perceptions regarding brand names. Only one letter was varied in all brand names within a pair to avoid any other linguistic approach. Within this context, the results of the study suggest strong evidence that sounds of brand names convey meaning about thinness and smallness of the products and these meanings have implications for brand name preference. In this sense, this study is considered as the first multidisciplinary study in Turkey which investigates the relationship between sound symbolism and marketing. In addition, it is regarded as the first sound symbolic marketing study in Turkey which is performed to understand the Turkish consumers' product attribute perceptions and brand name preferences for a specific product under the effects of speech sounds in the brand names. In those aspects, this multidisciplinary study contributes to growing body of research related

to sound symbolism in Turkey and all over the world. Accordingly, this study and its findings are expected to spur the following researches in Turkey and other the parts of the world.

Managerial Implications: Brand names are an important success factor for business. Through the brand names, brand managers can provide the first image and determine the identity of what is promoted. Brand managers should also select a strong brand name which provides competition advantage by communicating the promise given to customers by evoking semantic associations. Nevertheless, selecting a unique, favorable and strong brand name is getting a very difficult task for brand managers today as the number of new products being introduced to the marketplace increases. Since there are almost no words in the dictionaries to be selected as a brand name, brand managers unfortunately do not select but have to invent new brand names. Therefore, creating a brand name requires a better understanding of what is promoted, creativity and high linguistic skills to play with sounds and words today than it was in the past.

In such a context, particularly in last few decades, there has been an increase in the use of linguistic devices among marketers to generate memorable, likeable and meaningful brand names. Among the linguistic devices, phonemes and sounds have a strategic role in terms of their expressiveness power. The fruitful results of sound symbolic marketing studies also present that customers could infer specific meaning about products from unfamiliar brand names through their sounds (Klink 2000; 2001; Shrum and Lowrey, 2007; Yorkston and Menon, 2004). Thus, recent years, branding researchers and brand managers have identified sound symbolism as an alternative brand naming method. In those aspects the findings of this study have also several implications for marketing practitioners.

As stated, sound symbolism effects are verified for Turkish with respect to smallness and thinness perception. In this context, the findings of the study present that sounds used in Turkish play a significant role in speech-to-meaning translation. Accordingly, sounds of brand names provide a mechanism to customer to associate the unfamiliar product with its smallness and/or thinness attributes as predictable as possible in Turkish. This makes the sound symbolism an alternative method to create distinctive and meaningful brand names in Turkish, as well. Hence, as the sounds

that compose a spoken brand name convey a meaning that matches the attributes of product in Turkish, the preference for product and brand can increase. In this context, using specific sounds like /i/, /e/, /f/ and/or /v/ in brand names of products for which smallness and thinness attributes are promoted could increase their preferences among the consumers.

Depending upon this, one of the other primary implications of the use of sound symbolism for marketers is to create brand names that emphasize desirable product attributes in Turkey. For instance, if the thinness and/or smallness are the features frequently used to differentiate a product from the others in the marketplace, brand names including front vowels like *Nibef* or brand names including fricatives like *Fusiv* are more appropriate than *Nubef* or *Gusiv*. Conversely, if the largeness and/or thickness are the features to be promoted to customers, brand names *Nubef* and *Gusiv* are more appropriate than *Nibef* and *Fusiv*.

In this context, the use of sound symbolism in brand naming has also several implications on creating strong brand equity. Since the brand names can convey meaning about size and width attributes of the products through their sounds, they also contribute to establishment of brand knowledge. Accordingly, to create differential effect in consumer responses for a small/large and/or thin/thick product, the congruency between sound and meaning with respect to brand name and product attribute could contribute to formation of strong brand equity.

In this respect, another important implications of the use of sound symbolism for marketers position the products better in the minds of customers. Brand names that have inherent meanings increase the formation of strong, favorable, and unique brand associations consistent with that meaning. Hence, sound symbolic brand names may contribute to the brand image, as well. Accordingly, if the brand managers understand the relationship between sounds of brand names and meaning conveyed through these sounds, they enable to better position their products in the minds of consumers. For instance, if the marketers position their product as the most smallest or thinnest product in the marketplace, *Lepiv* and/or *Viluv* are more appropriate brand names than *Lupiv* and/or *Giluv*.

The other implications of the sound symbolism for marketing is to contribute to marketing communications. Through sound symbolism, brand names

communicate about product information regardless of marketing communication. Thus, the meaning conveyed through sounds of brand names may pave the way for increase in brand awareness particularly with respect to brand recall and favorable product perception which, in return, contribute to the establishment of strong brand equity, as well.

The findings of this study have also several implications on creating global brand names. As stated, universal sound symbolism assumption is validated for Turkish with respect to smallness/largeness and thinness/thickness perception. Initiated by these findings, it can be readily said that specific sounds such as /i/, /e/, /f/ and /v/ are more associated with thinness and smallness in Turkish, as well as they are in several other language. In such a context, creating a brand name by imbedding specific sounds could lead to a similar effects on smallness and/or thinness perception of consumers from both Turkey and different parts of the world. Hence, use of sound symbolism can contribute to creation of global brand names with a desired meaning.

Finally, the fit between sounds of a brand name and either product category or product attributes may influence significant marketing variables such as willingness to buy and pay for more, preference and inference. Additionally, certain sounds influence product evaluations (Lowrey and Shrum, 2007), price perceptions (Coulter and Coulter, 2010), and choice of customers (Argo et al., 2010). In this context, one of the other implications of sound symbolism for marketers to create brand names that will be more likely preferred by customers. For instance, the experimental laptop name *Vinep* was more preferred than *Vonep* because the “i” sound is matched with desirable laptop attributes smallness and thinness more than the “o” sound. Thus, if the marketers and brand managers know the effects of sounds on consumers’ behavior, they create effective brand names by playing with the appropriate sounds.

Having all these in mind, the findings of the research contribute to marketing and particularly brand naming practice because the effects of sound symbolism are validated for Turkish, as well as validated for several Western languages. In this context, sound symbolism is offered to marketers as an important linguistic tool to create brand names that convey meaning in a nonobvious and nonsemantic way.

Hence, compared to semantic approach, which is based on imbedding meaningful words or syllabus in a name as in the case of Camsil, sound symbolism provides opportunity to brand managers to create more distinctive brand names and so to have more legal protection.



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APPENDICES

APPENDIX 1: Questionnaire Booklet of Study 1

Değerli Katılımcı,

Bu anket formu, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü İngilizce İşletme Yönetimi Doktora Programı kapsamında yürütülmekte olan tez çalışması için hazırlanmıştır. Çalışma; tüketicilerin hayatlarında ilk defa duydukları marka isimlerine ilişkin algılarını anlamaya yöneliktir.

Vereceğiniz yanıtlar gizli tutulacak olup, yalnızca bilimsel amaçlı kullanılacaktır. Anketin doldurulması yaklaşık olarak 10 dakikanızı alacaktır. Vereceğiniz yanıtların doğru ve eksiksiz olması aşağıda verilen bilgileri okumanız çalışmanın değerini arttıracaktır. Ayırdığınız zaman için çok teşekkür ederim.

Saygılarımla,

Araş. Gör. İlkin Yaran Ögel

Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü

İngilizce İşletme Yönetimi Doktora Programı Öğrencisi

Bilgilendirme:

Lütfen anketteki sorulara başlamadan önce burayı dikkatlice okuyunuz ve soruları cevaplarken bu adımları takip ediniz.

- 1) Oturum süresince size hayali marka isimleri dinletilecektir.
- 2) Sizden hayali marka ismini dinledikten hemen sonra ilgili kısımlara değerlendirmenizi işaretlemeniz istenmektedir.
- 3) Her bir marka ismini dinledikten sonra ilgili marka isimlerine yönelik değerlendirmenizi yapmak için 3 saniye verilecektir.
- 4) “1” soldaki önermeye (örn. küçük ve ince) en yakınlığı, “5” ise sağdaki önermeye (örn.büyük ve kalın) en yakınlığı işaret etmektedir. “3” değerlendirmenizin iki önermenin tam ortasında olduğunu göstermektedir. “2” soldaki önermeye (örn. küçük ve ince) yakınlığı ifade ederken “4” sağdaki önermeye (örn.büyük ve kalın) yakınlığı ifade etmektedir.

- 5) Her bir kelime sadece bir kere dinletileceği için kelimeleri dikkatlice dinlemeniz ve değerlendirmenizi verilen süre içinde hemen ilgili yerlere işaretlemeniz son derece önemlidir.

1) ALGI

A) Büyüklük x Küçüklük

		1	2	3	4	5	
1	Küçük	-	-	-	-	-	Büyük
2	Küçük	-	-	-	-	-	Büyük
3	Küçük	-	-	-	-	-	Büyük
4	Küçük	-	-	-	-	-	Büyük
5	Küçük	-	-	-	-	-	Büyük
6	Küçük	-	-	-	-	-	Büyük
7	Küçük	-	-	-	-	-	Büyük
8	Küçük	-	-	-	-	-	Büyük
9	Küçük	-	-	-	-	-	Büyük
10	Küçük	-	-	-	-	-	Büyük
11	Küçük	-	-	-	-	-	Büyük
12	Küçük	-	-	-	-	-	Büyük
13	Küçük	-	-	-	-	-	Büyük
14	Küçük	-	-	-	-	-	Büyük
15	Küçük	-	-	-	-	-	Büyük
16	Küçük	-	-	-	-	-	Büyük

B) İncelik x Kalınlık

		1	2	3	4	5	
17	İnce	-	-	-	-	-	Kalın
18	İnce	-	-	-	-	-	Kalın
19	İnce	-	-	-	-	-	Kalın
20	İnce	-	-	-	-	-	Kalın
21	İnce	-	-	-	-	-	Kalın
22	İnce	-	-	-	-	-	Kalın
23	İnce	-	-	-	-	-	Kalın
24	İnce	-	-	-	-	-	Kalın
25	İnce	-	-	-	-	-	Kalın
26	İnce	-	-	-	-	-	Kalın
27	İnce	-	-	-	-	-	Kalın
28	İnce	-	-	-	-	-	Kalın
29	İnce	-	-	-	-	-	Kalın
30	İnce	-	-	-	-	-	Kalın
31	İnce	-	-	-	-	-	Kalın
32	İnce	-	-	-	-	-	Kalın

2) DEMOGRAFİK BİLGİLER:

a) Cinsiyetiniz: () Kadın () Erkek

b) Yaşınız:

c) Fakülteniz

d) Bölümünüz:

e) Sınıfınız:

f) Duyma engeliniz var mı?:

() Evet () Hayır

g) Daha önce hiç yurtdışında bulundunuz mu?:

() Evet () Hayır

h) Bildiğiniz bir yabancı dil var mı?:

() İngilizce () Almanca () Fransızca () İspanyolca () İtalyanca () Çince

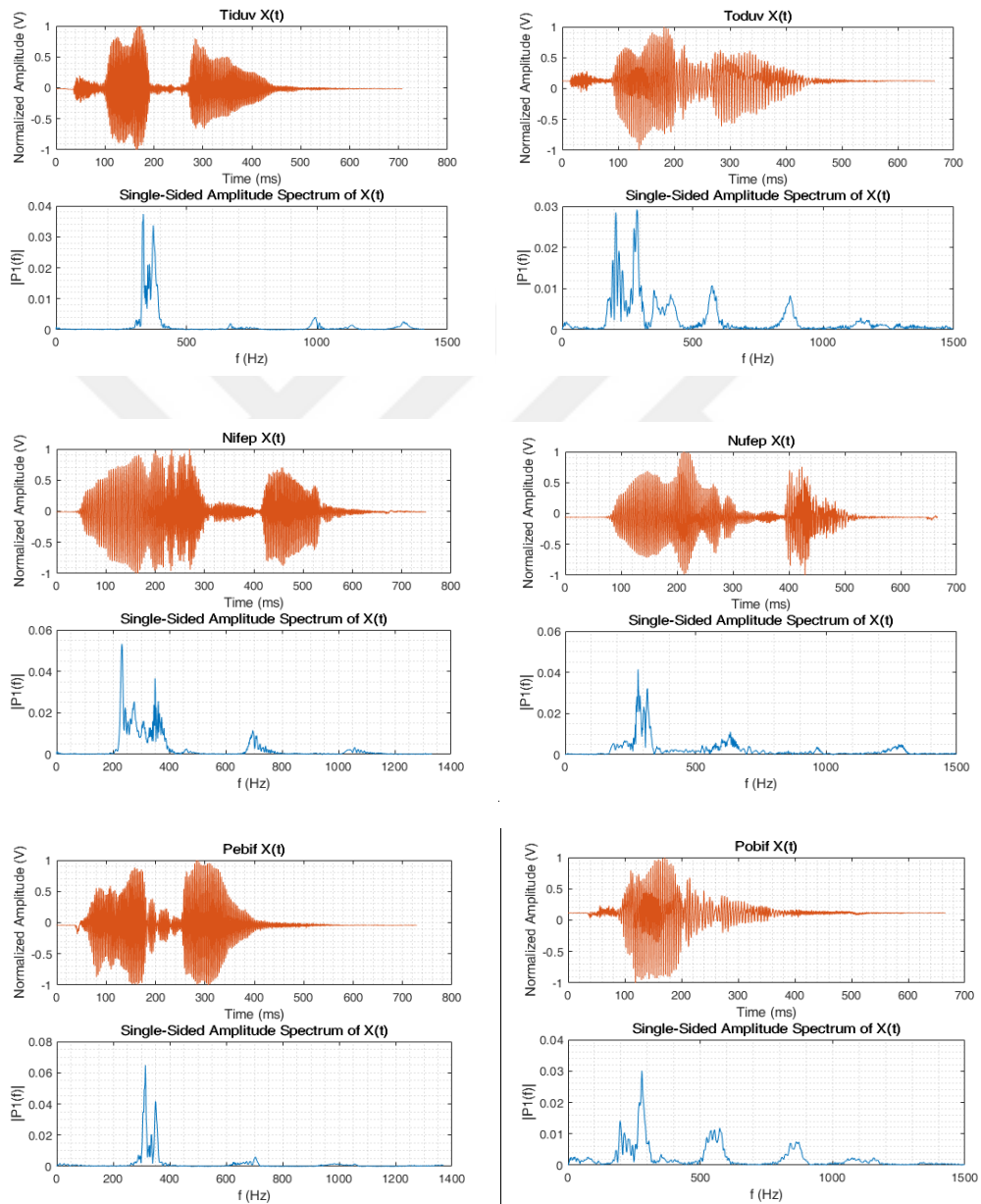
() Rusca () Japonca () Arapça () Diğer (Lütfen belirtiniz).....

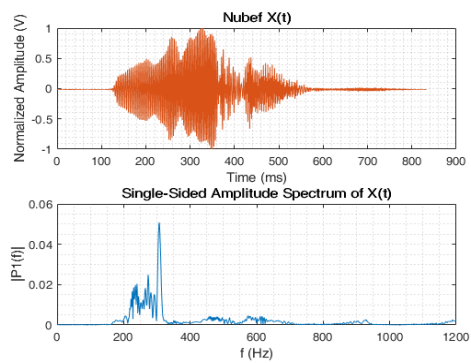
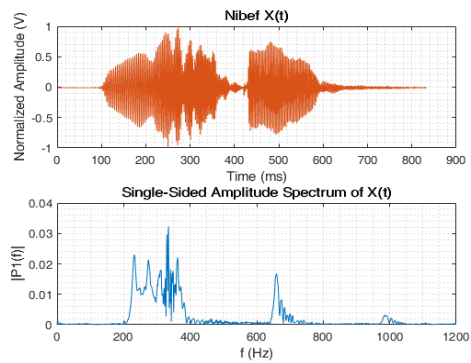
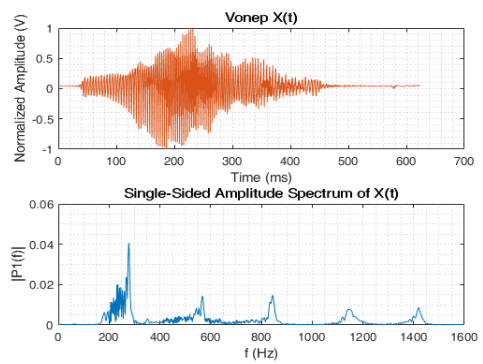
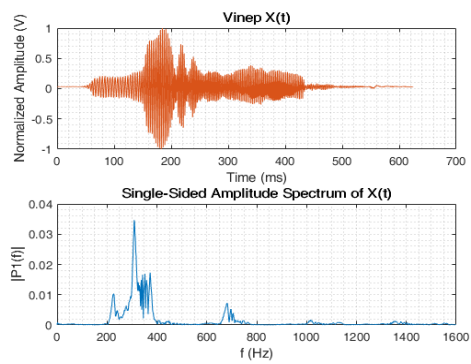
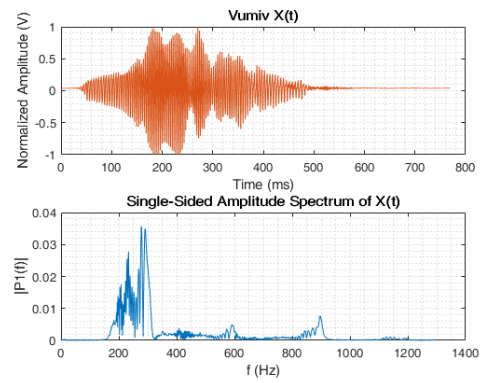
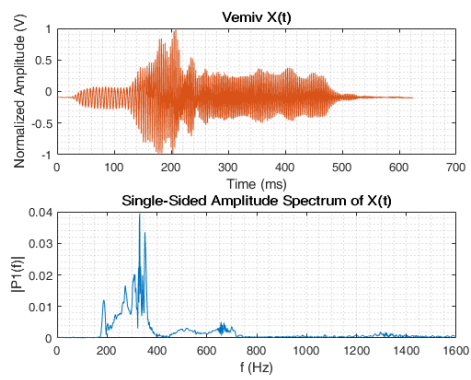
i) Yabancı bir dile sahipseniz seviyeniz nedir?

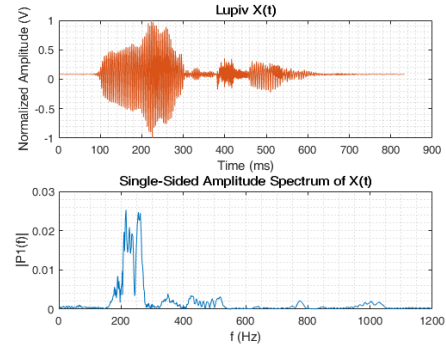
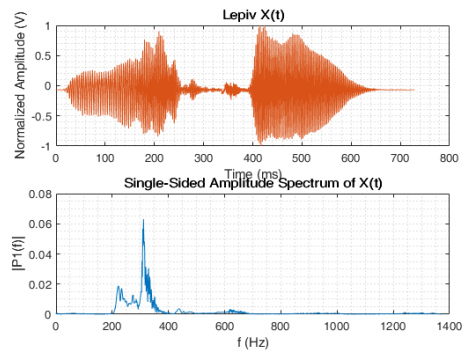
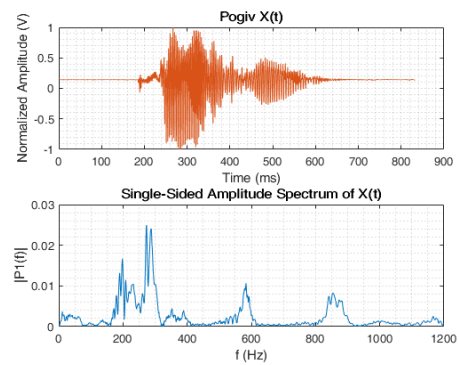
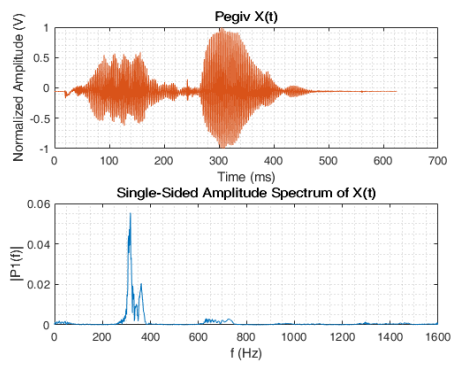
() Başlangıç () Orta () İyi () Çok İyi

APPENDIX 2: Original Sounds and Normalized Sounds Regarding Brand Name Pairs

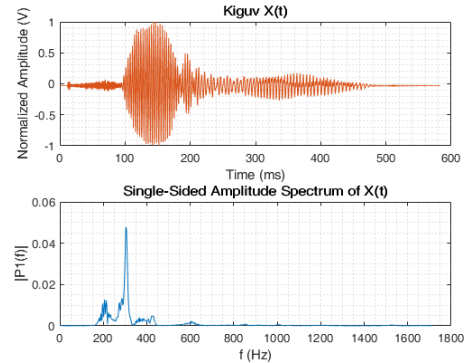
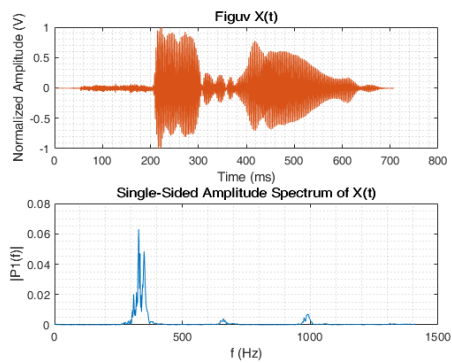
a) Front (/i/, /e/) vs. Back (/o/, /u/) Vowels

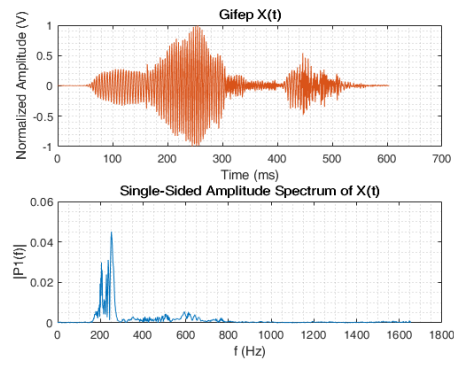
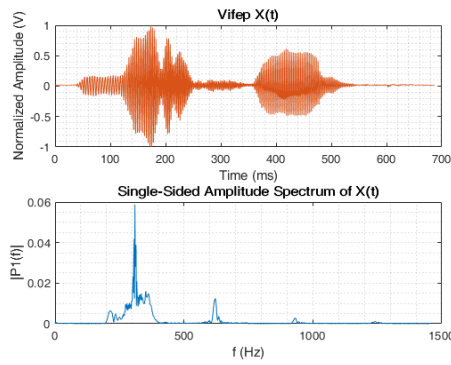
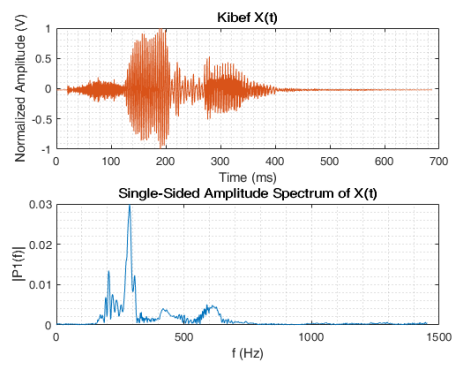
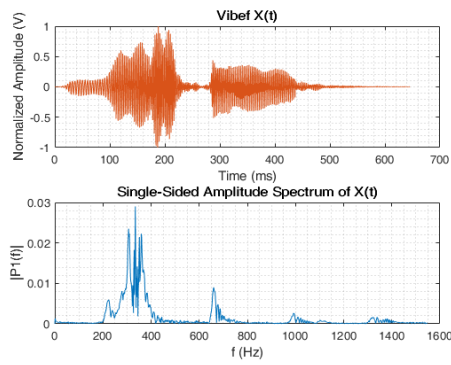
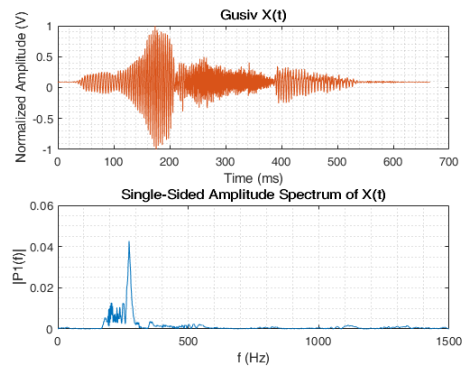
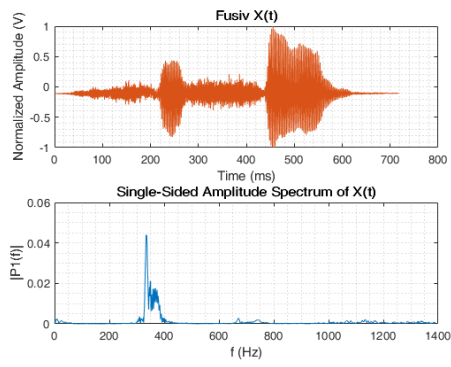


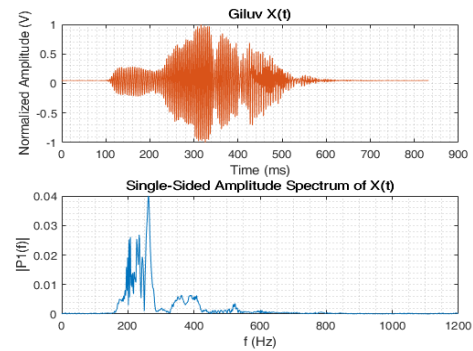
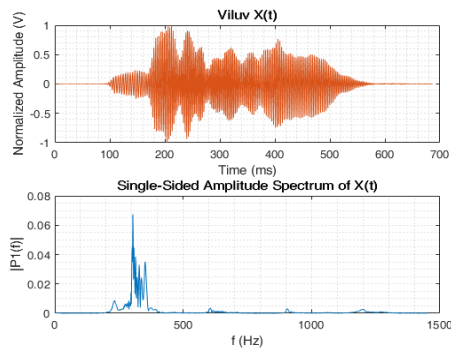
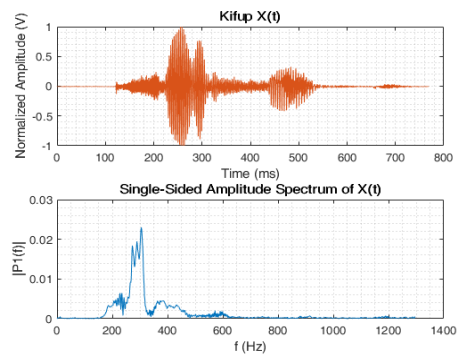
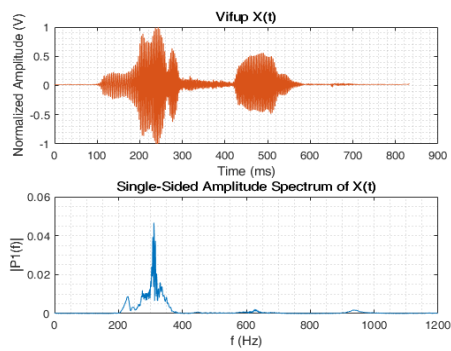
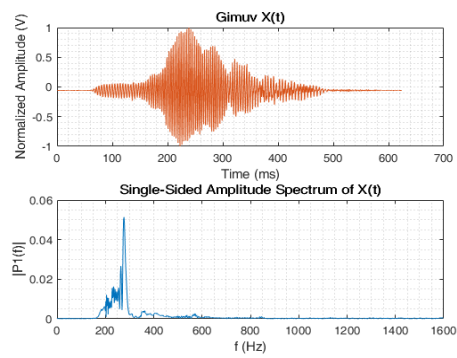
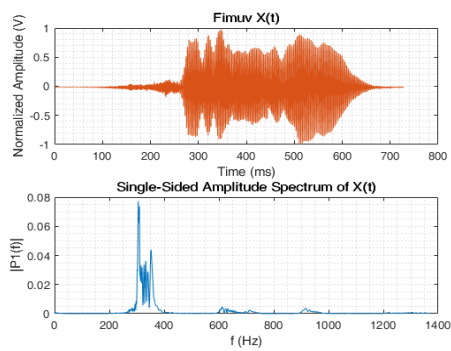
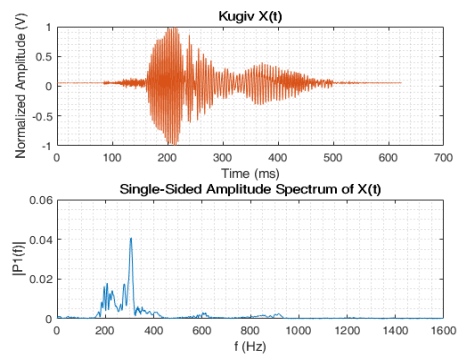
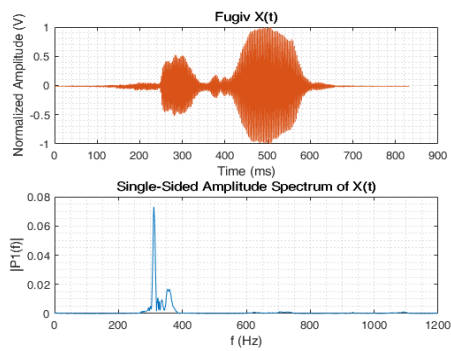




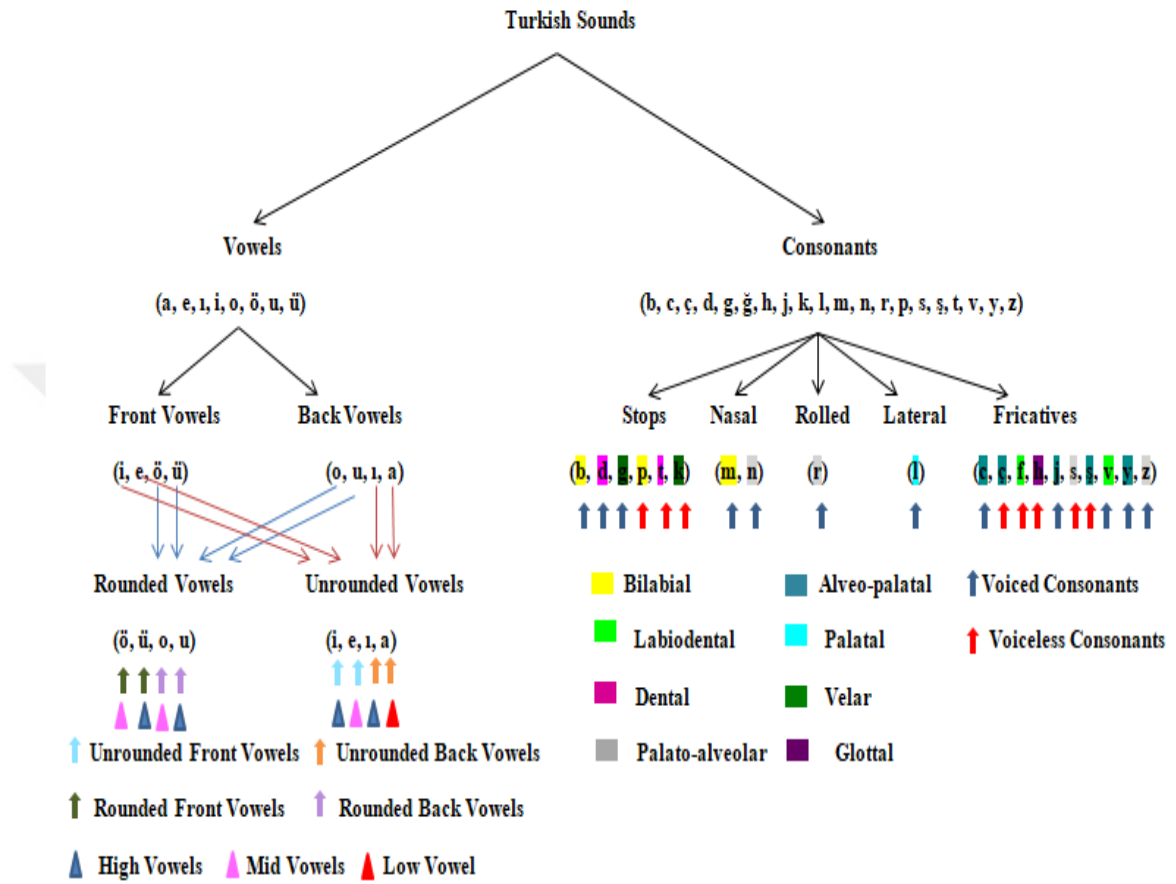
a) Fricative (/f/, /v/) vs. Stop (/k/, /g/) Consonants







APPENDIX 3: The Sound Framework Used to Create Nonsense Brand Name Pairs



APPENDIX 4: Questionnaire Form of Pre-test 1

Sayın Katılımcı,

Size aşağıda verilen 32 tane kelimeyi içinizden okuyunuz ve tekrar ediniz. Daha sonra size verilen bu kelimelerin gerçekte var olan anlamlı herhangi bir kelimeyi çağırıştırıp çağırıştırmadığını 1’den 5’e kadar derecelendiriniz. Derecelendirmenizi yaparken, 1’in “Asla Çağırıştırmamaktadır”, 2’ nin “Pek Çağırıştırmamaktadır”, 3’ün “Kararsızım”, 4’ün “Kısmen Çağırıştırmaktadır” ve 5’in “Çok Fazla Çağırıştırmaktadır” olduğunu lütfen göz önünde bulundurunuz.

	1 Asla Çağırıştırmamaktadır	2	3 Kararsızım	4	5 Çok Fazla Çağırıştırmaktadır
1)Tiduv	[]	[]	[]	[]	[]
2)Vemiv	[]	[]	[]	[]	[]
3)Pobif	[]	[]	[]	[]	[]
4)Gusiv	[]	[]	[]	[]	[]
5)Kibef	[]	[]	[]	[]	[]
6)Lupiv	[]	[]	[]	[]	[]
7)Nifep	[]	[]	[]	[]	[]
8)Kiguv	[]	[]	[]	[]	[]
9)Nibef	[]	[]	[]	[]	[]
10)Pogiv	[]	[]	[]	[]	[]
11)Vinep	[]	[]	[]	[]	[]
12)Figuv	[]	[]	[]	[]	[]
13)Gifep	[]	[]	[]	[]	[]
14)Toduv	[]	[]	[]	[]	[]
15) Vibef	[]	[]	[]	[]	[]
16) Fugiv	[]	[]	[]	[]	[]
17) Nufep	[]	[]	[]	[]	[]
18) Pebif	[]	[]	[]	[]	[]
19) Gimuv	[]	[]	[]	[]	[]
20) Kifup	[]	[]	[]	[]	[]
21) Fusiv	[]	[]	[]	[]	[]
22) Vumiv	[]	[]	[]	[]	[]
23) Vifup	[]	[]	[]	[]	[]
24) Kugiv	[]	[]	[]	[]	[]
25) Vonep	[]	[]	[]	[]	[]
26) Nubef	[]	[]	[]	[]	[]
27) Fimuv	[]	[]	[]	[]	[]
28) Pegiv	[]	[]	[]	[]	[]
29) Viluv	[]	[]	[]	[]	[]
30) Vifep	[]	[]	[]	[]	[]
31) Lepiv	[]	[]	[]	[]	[]
32) Giluv	[]	[]	[]	[]	[]

- 1) Yukarıda verilen kelimeler içinde anlamlı bir kelime parçası (örneğin; el, at vb.) içeren kelime(ler) olduğunu düşünüyorsanız lütfen aşağıya yazınız.

.....

.....

.....

.....

.....

.....

- 2) Yukarıda verilen kelimeler içinde size gerçekte var olan herhangi bir marka ismini çağrıştıran kelime(ler) olduğunu düşünüyorsanız lütfen aşağıya yazınız.

.....

.....

.....

.....

.....

.....

3) **Demografik Bilgiler**

a) **Cinsiyet:** () Kadın () Erkek

b) **Yaş:**

c) **Bölüm:**

d) **Sınıf:**

e) **Bildiğiniz Yabancı Dil(ler):**

f) **Yabancı Dil Seviyesiniz:** () başlangıç () orta () iyi () çok iyi

APPENDIX 5: Demographic Characteristics of the Participant for Pre-test 1

a) Descriptive Statistics for Age of the Participants of Pre-test 1

Descriptive Statistics for Age of the Participants					
Demographic Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	114	20	27	22,5175	1,28457

b) Frequencies for Demographic Characteristics of the Participants of Pre-test 1

Frequencies of Demographic Characteristics		
Demographics	Frequency	Percent
Age		
20	4	3.5
21	22	19.3
22	30	26.3
23	37	32.5
24	14	12.3
25	5	4.4
26	1	0.9
27	1	0.9
Total	114	100.0
Gender		
Female	58	50.9
Male	56	49.1
Total	114	100.0
Class		
Freshmen	15	13.2
Sophomore	25	21.9
Junior	35	30.7
Senior	39	34.2
Total	114	100.0
Foreign Language		
English	114	100.0
Total		
Foreign Language Level		
Beginner	74	64.91
Pre-intermediate	40	35.09
Total	114	100.0

APPENDIX 6: Demographic Characteristics of the Participants for Pre-test 2

Question: Write visual attributes regarding laptops that came into your minds.

a) Descriptive Statistics for Demographic Characteristics of the Participants of Pre-test 2

Descriptive Statistics					
Demographics	N	Minimum	Maximum	Mean	Std. Deviation
Gender	128	1 (female)	2 (male)	1.3984	0.49150
Age	128	19	25	22.2344	1.11880
Department	128	1 (Business Adm.)	4 (Business Adm. in English)	2.5625	1.27205
Class	128	3 (junior)	4 (senior)	3.4609	0.50043

b) Frequencies for Demographic Characteristics of the Participants of Pre-test 2

Frequencies			
Demographics	Frequency	Percent	Cumulative Percent
Age			
19	1	0.8	0.8
20	4	3.1	3.9
21	33	25.8	29.7
22	32	25.0	54.7
23	43	33.6	88.3
24	14	10.9	99.2
25	1	0.8	100.0
Total	128	100.0	
Gender			
Female	77	60.2	60.2
Male	51	39.8	100.0
Total	128	100.0	
Department			
Business Administration	41	32.0	32.0
Economics	20	15.6	47.7
Public Finance	21	16.4	64.1
Business Administration (English)	46	35.9	100.0
Total	128	100.0	
Class			
Junior	69	53.9	53.9
Senior	59	46.1	100.0
Total	128	100.0	

APPENDIX 7: Questionnaire Booklet of Study 2 for Small Laptop Condition

Değerli Katılımcı,

Bu anket formu, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü İngilizce İşletme Yönetimi Doktora Programı kapsamında yürütülmekte olan tez çalışması için hazırlanmıştır. Çalışma; tüketicilerin marka isimlerine yönelik tercihlerini ölçmeye yöneliktir.

Vereceğiniz yanıtlar gizli tutulacak olup, yalnızca bilimsel amaçlı kullanılacaktır. Anketin doldurulması yaklaşık olarak 10 dakikanızı alacaktır. Vereceğiniz yanıtların doğru ve eksiksiz olması için aşağıda verilen bilgilendirmeyi öncelikle okumanız çalışmanın değerini arttıracaktır. Ayırdığınız zaman için çok teşekkür ederim.

Saygılarımla,

Araş. Gör. İlkin Yaran Ögel

Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü

İngilizce İşletme Yönetimi Doktora Programı Öğrencisi

Bilgilendirme:

- 1) Anket üç kısımdan oluşmaktadır.
- 2) Ankete başlamadan önce size aşağıda verilen senaryoyu okuyunuz.
- 3) Senaryoyu okuduktan sonra senaryoda özelliği vurgulanan dizüstü bilgisayara uygun olduğunu düşündüğünüz marka ismini dinleyeceğiniz her hayali marka ismi çifti içinden birini seçerek işaretleyiniz.
- 4) Her marka ismi çifti 1 soruyu oluşturmaktadır.
- 5) Dinleyeceğiniz her bir kelime çiftleri içinden duyduğunuz ilk kelime ilk kutucuğu, ikinci kelime ikinci kutucuğu işaret etmektedir.
- 6) İlk kısmı bitirdikten sonra size bir ses dosyası daha dinletilecektir.
- 7) Bu dinleyeceğiniz isimlere ilişkin değerlendirmelerinizi lütfen ilgili yere işaretleyiniz.
- 8) Son olarak demografik bilgiler kısmını doldurunuz.

“DÜNYANIN EN KÜÇÜK DİZÜSTÜ BİLGİSAYARINI ÜRETTİK, SIRADA MARKA İSMİNİ BULMAK VAR”

TürkTech 2 yıldır sürdürdükleri yoğun AR&GE çalışmaları sonucunda dünyanın en küçük dizüstü bilgisayarını ürettiklerini açıkladı. Ancak şirketin CEO’su Serdar Türktekin üretilen dizüstü bilgisayar için hala bir marka ismi bulamadıklarını belirtti.

1986 yılında, bir bilgisayar mühendisi girişimcinin çabaları ile İstanbul’da kurulan, kişisel bilgisayarlar tasarlayarak, geliştirerek ve satarak günümüzde Türkiye’nin en büyük teknoloji markalarından biri haline gelen TürkTech iddialı dizüstü bilgisayar tasarımları ile tüketicilerin karşısına çıkmaya devam ediyor. Şirketin CEO’su Türktekin, “Bugün, 36.400 metrekare kapalı alan üzerine kurulu Avrupa ve Orta Doğu’nun en büyük bilgisayar üretim tesislerinden birine sahip olmanın gururunu yaşıyoruz” dedi. Ayrıca, yıllık 1,5 milyon adet üretim yapılabilen tesislerinde küresel çapta rekabet edebilir ürünler tasarlandığını ve üretildiğini ifade eden Türktekin,

bilgisayar kategorilerine “en” kazandıracak yeni bir ürünün piyasaya sunulacağını müjdesini de verdi.

“7 inç ekranı ile **dünyanın en küçük dizüstü bilgisayarı olma ünvanını kazanacak bu yeni ürünün**, tasarımda **küçüklük** arayan dizüstü bilgisayar kullanıcılarının beğenisine sunulacağını söyleyen Türktekin, **küçüklüğü** ile ön plana çıkan bu yeni dizüstü bilgisayar için henüz bir marka ismi bulamadıklarını, bu konuda tüketicilerin desteğine ihtiyaç duyduklarını belirterek tüketicilere **küçüklük** özelliği ile öne çıkan bu yeni dizüstü bilgisayarımıza gelin birlikte marka ismi bulalım çağrısında bulundu.

1) Lütfen dinleyeceğiniz 8 marka ismi çifti içinden bu küçük dizüstü bilgisayar için uygun olduğunu düşündüğünüz her bir marka ismi tercihlerinizi belirtiniz.

1)	☐	☐
2)	☐	☐
3)	☐	☐
4)	☐	☐
5)	☐	☐
6)	☐	☐
7)	☐	☐
8)	☐	☐

2) Lütfen ilgili marka ismini dinledikten sonra uygun yerlere değerlendirmenizi yapınız.

		1	2	3	4	5	
1	Küçük	-	-	-	-	-	Büyük
2	Küçük	-	-	-	-	-	Büyük
3	Küçük	-	-	-	-	-	Büyük
4	Küçük	-	-	-	-	-	Büyük
5	Küçük	-	-	-	-	-	Büyük
6	Küçük	-	-	-	-	-	Büyük
7	Küçük	-	-	-	-	-	Büyük
8	Küçük	-	-	-	-	-	Büyük
9	Küçük	-	-	-	-	-	Büyük
10	Küçük	-	-	-	-	-	Büyük
11	Küçük	-	-	-	-	-	Büyük
12	Küçük	-	-	-	-	-	Büyük
13	Küçük	-	-	-	-	-	Büyük
14	Küçük	-	-	-	-	-	Büyük
15	Küçük	-	-	-	-	-	Büyük
16	Küçük	-	-	-	-	-	Büyük

3) Demografik Bilgiler

a) Cinsiyetiniz: () Kadın () Erkek

b) Yaşınız:

c) Fakülteniz:

d) Bölümünüz:

e) Sınıfınız:

f) Duyma engeliniz var mı? () Evet () Hayır

g) Bildiğiniz bir yabancı dil(ler) var mı?

() İngilizce () Almanca () Fransızca () İspanyolca () İtalyanca () Çince

() Rusca () Japonca () Arapça () Diğer(Lütfen belirtiniz)

h) Yabancı bir dile sahipseniz seviyeniz nedir?

Başlangıç () Orta () İyi () Çok iyi

Çalışmanın amacı ile ilgili düşüncelerinizi bir kaç cümle ile ifade ediniz?

.....

APPENDIX 8: Questionnaire Booklet of Study 2 for Large Laptop Condition

Değerli Katılımcı,

Bu anket formu, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü İngilizce İşletme Yönetimi Doktora Programı kapsamında yürütülmekte olan tez çalışması için hazırlanmıştır. Çalışma; tüketicilerin marka isimlerine yönelik tercihlerini ölçmeye yöneliktir.

Vereceğiniz yanıtlar gizli tutulacak olup, yalnızca bilimsel amaçlı kullanılacaktır. Anketin doldurulması yaklaşık olarak 10 dakikanızı alacaktır. Vereceğiniz yanıtların doğru ve eksiksiz olması için aşağıda verilen bilgilendirmeyi öncelikle okumanız çalışmanın değerini arttıracaktır. Ayırdığınız zaman için çok teşekkür ederim.

Saygılarımla,

Araş. Gör. İlkin Yaran Ögel

Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü

İngilizce İşletme Yönetimi Doktora Programı Öğrencisi

Bilgilendirme:

- 1) Anket üç kısımdan oluşmaktadır.
- 2) Ankete başlamadan önce size aşağıda verilen senaryoyu okuyunuz.
- 3) Senaryoyu okuduktan sonra senaryoda özelliği vurgulanan dizüstü bilgisayara uygun olduğunu düşündüğünüz marka ismini dinleyeceğiniz her hayali marka ismi çifti içinden birini seçerek işaretleyiniz.
- 4) Her marka ismi çifti 1 soruyu oluşturmaktadır.
- 5) Dinleyeceğiniz her bir kelime çiftleri içinden duyduğunuz ilk kelime ilk kutucuğu, ikinci kelime ikinci kutucuğu işaret etmektedir.
- 6) İlk kısmı bitirdikten sonra size bir ses dosyası daha dinletilecektir.
- 7) Bu dinleyeceğiniz isimlere ilişkin değerlendirmelerinizi lütfen ilgili yere işaretleyiniz.
- 8) Son olarak demografik bilgiler kısmını doldurunuz.

“DÜNYANIN EN BÜYÜK DİZÜSTÜ BİLGİSAYARINI ÜRETTİK, SIRADA MARKA İSMİNİ BULMAK VAR”

TürkTech 2 yıldır sürdürdükleri yoğun AR&GE çalışmaları sonucunda dünyanın en büyük dizüstü bilgisayarını ürettiklerini açıkladı. Ancak şirketin CEO’su Serdar Türktekin üretilen dizüstü bilgisayar için hala bir marka ismi bulamadıklarını belirtti.

1986 yılında, bir bilgisayar mühendisi girişimcinin çabaları ile İstanbul’da kurulan, kişisel bilgisayarlar tasarlayarak, geliştirerek ve satarak günümüzde Türkiye’nin en büyük teknoloji markalarından biri haline gelen TürkTech iddialı dizüstü bilgisayar tasarımları ile tüketicilerin karşısına çıkmaya devam ediyor. Şirketin CEO’su Türktekin, “Bugün, 36.400 metrekare kapalı alan üzerine kurulu Avrupa ve Orta Doğu’nun en büyük bilgisayar üretim tesislerinden birine sahip olmanın gururunu yaşıyoruz” dedi. Ayrıca, yıllık 1,5 milyon adet üretim yapılabilen tesislerinde küresel çapta rekabet edebilir ürünler tasarlandığını ve üretildiğini ifade eden Türktekin,

bilgisayar kategorilerine “en” kazandıracak yeni bir ürünün piyasaya sunulacağını müjdesini de verdi.

“21.5 inç ekranı ile **dünyanın en büyük dizüstü bilgisayarı olma ünvanını kazanacak bu yeni ürünün**, tasarımda **büyüklik** arayan dizüstü bilgisayar kullanıcılarının beğenisine sunulacağını söyleyen Türktekin, **büyüklüğü** ile ön plana çıkan bu yeni dizüstü bilgisayar için henüz bir marka ismi bulamadıklarını, bu konuda tüketicilerin desteğine ihtiyaç duyduklarını belirterek tüketicilere **büyüklik** özelliği ile öne çıkan bu yeni dizüstü bilgisayarımıza gelin birlikte marka ismi bulalım çağrısında bulundu.

1) Lütfen dinleyeceğiniz 8 marka isimi çifti içinden bu büyük dizüstü bilgisayar için uygun olduğunu düşündüğünüz her bir marka ismi tercihlerinizi belirtiniz.

1)	☐	☐
2)	☐	☐
3)	☐	☐
4)	☐	☐
5)	☐	☐
6)	☐	☐
7)	☐	☐
8)	☐	☐

2) Lütfen ilgili marka ismini dinledikten sonra uygun yerlere değerlendirmenizi yapınız.

		1	2	3	4	5	
1	Küçük	-	-	-	-	-	Büyük
2	Küçük	-	-	-	-	-	Büyük
3	Küçük	-	-	-	-	-	Büyük
4	Küçük	-	-	-	-	-	Büyük
5	Küçük	-	-	-	-	-	Büyük
6	Küçük	-	-	-	-	-	Büyük
7	Küçük	-	-	-	-	-	Büyük
8	Küçük	-	-	-	-	-	Büyük
9	Küçük	-	-	-	-	-	Büyük
10	Küçük	-	-	-	-	-	Büyük
11	Küçük	-	-	-	-	-	Büyük
12	Küçük	-	-	-	-	-	Büyük
13	Küçük	-	-	-	-	-	Büyük
14	Küçük	-	-	-	-	-	Büyük
15	Küçük	-	-	-	-	-	Büyük
16	Küçük	-	-	-	-	-	Büyük

4) Demografik Bilgiler

a) Cinsiyetiniz: () Kadın () Erkek

b) Yaşınız:

c) Fakülteniz:

d) Bölümünüz:

e) Sınıfınız:

f) Duyma engeliniz var mı? () Evet () Hayır

g) Bildiğiniz bir yabancı dil(ler) var mı?

() İngilizce () Almanca () Fransızca () İspanyolca () İtalyanca () Çince

() Rusca () Japonca () Arapça () Diğer(Lütfen belirtiniz)

h) Yabancı bir dile sahipseniz seviyeniz nedir?

Başlangıç () Orta () İyi () Çok iyi

i) Çalışmanın amacı ile ilgili düşüncelerinizi bir kaç cümle ile ifade ediniz?

.....

APPENDIX 9: Questionnaire Booklet of Study 2 for Thin Laptop Condition

Değerli Katılımcı,

Bu anket formu, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü İngilizce İşletme Yönetimi Doktora Programı kapsamında yürütülmekte olan tez çalışması için hazırlanmıştır. Çalışma; tüketicilerin marka isimlerine yönelik tercihlerini ölçmeye yöneliktir.

Vereceğiniz yanıtlar gizli tutulacak olup, yalnızca bilimsel amaçlı kullanılacaktır. Anketin doldurulması yaklaşık olarak 10 dakikanızı alacaktır. Vereceğiniz yanıtların doğru ve eksiksiz olması için aşağıda verilen bilgilendirmeyi öncelikle okumanız çalışmanın değerini arttıracaktır. Ayırdığınız zaman için çok teşekkür ederim.

Saygılarımla,

Araş. Gör. İlkin Yaran Ögel

Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü

İngilizce İşletme Yönetimi Doktora Programı Öğrencisi

Bilgilendirme:

- 1) Anket üç kısımdan oluşmaktadır.
- 2) Ankete başlamadan önce size aşağıda verilen senaryoyu okuyunuz.
- 3) Senaryoyu okuduktan sonra senaryoda özelliği vurgulanan dizüstü bilgisayara uygun olduğunu düşündüğünüz marka ismini dinleyeceğiniz her hayali marka ismi çifti içinden birini seçerek işaretleyiniz.
- 4) Her marka ismi çifti 1 soruyu oluşturmaktadır.
- 5) Dinleyeceğiniz her bir kelime çiftleri içinden duyduğunuz ilk kelime ilk kutucuğu, ikinci kelime ikinci kutucuğu işaret etmektedir.
- 6) İlk kısmı bitirdikten sonra size bir ses dosyası daha dinletilecektir.
- 7) Bu dinleyeceğiniz isimlere ilişkin değerlendirmelerinizi lütfen ilgili yere işaretleyiniz.
- 8) Son olarak demografik bilgiler kısmını doldurunuz.

“DÜNYANIN EN İNCE DİZÜSTÜ BİLGİSAYARINI ÜRETTİK, SİRADA MARKA İSMİNİ BULMAK VAR”

TürkTech 2 yıldır sürdürdükleri yoğun AR&GE çalışmaları sonucunda dünyanın en ince dizüstü bilgisayarını ürettiklerini açıkladı. Ancak şirketin CEO’su Serdar Türktekin üretilen dizüstü bilgisayar için hala bir marka ismi bulamadıklarını belirtti.

1986 yılında, bir bilgisayar mühendisi girişimcinin çabaları ile İstanbul’da kurulan, kişisel bilgisayarlar tasarlayarak, geliştirerek ve satarak günümüzde Türkiye’nin en büyük teknoloji markalarından biri haline gelen TürkTech iddialı dizüstü bilgisayar tasarımları ile tüketicilerin karşısına çıkmaya devam ediyor. Şirketin CEO’su Türktekin, “Bugün, 36.400 metrekare kapalı alan üzerine kurulu Avrupa ve Orta Doğu’nun en büyük bilgisayar üretim tesislerinden birine sahip olmanın gururunu yaşıyoruz” dedi. Ayrıca, yıllık 1,5 milyon adet üretim yapılabilen tesislerinde küresel çapta rekabet edebilir ürünler tasarlandığını ve üretildiğini ifade eden Türktekin,

bilgisayar kategorilerine “en” kazandıracak yeni bir ürünün piyasaya sunulacağının müjdesini de verdi.

“9.95 milimetre kalınlığı ile 1 santimetrenin altında kalarak **dünyanın en ince dizüstü bilgisayarı olma ünvanını kazanacak bu yeni ürünün**, tasarımda **incelik** arayan dizüstü bilgisayar kullanıcılarının beğenisine sunulacağını söyleyen Türktekin, **inceliği** ile ön plana çıkan bu yeni dizüstü bilgisayar için henüz bir marka ismi bulamadıklarını, bu konuda tüketicilerin desteğine ihtiyaç duyduklarını belirterek tüketicilere **incelik** özelliği ile öne çıkan bu yeni dizüstü bilgisayarımıza gelin birlikte marka ismi bulalım çağrısında bulundu.

1) Lütfen dinleyeceğiniz 8 marka ismi çifti içinden bu ince dizüstü bilgisayar için uygun olduğunu düşündüğünüz her bir marka ismi tercihlerinizi belirtiniz.

1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

2) Lütfen ilgili marka ismini dinledikten sonra uygun yerlere değerlendirmenizi yapınız.

		1	2	3	4	5	
1	İnce	-	-	-	-	-	Kalın
2	İnce	-	-	-	-	-	Kalın
3	İnce	-	-	-	-	-	Kalın
4	İnce	-	-	-	-	-	Kalın
5	İnce	-	-	-	-	-	Kalın
6	İnce	-	-	-	-	-	Kalın
7	İnce	-	-	-	-	-	Kalın
8	İnce	-	-	-	-	-	Kalın
9	İnce	-	-	-	-	-	Kalın
10	İnce	-	-	-	-	-	Kalın
11	İnce	-	-	-	-	-	Kalın
12	İnce	-	-	-	-	-	Kalın
13	İnce	-	-	-	-	-	Kalın
14	İnce	-	-	-	-	-	Kalın
15	İnce	-	-	-	-	-	Kalın
16	İnce	-	-	-	-	-	Kalın

3) Demografik Bilgiler

a) Cinsiyetiniz: () Kadın () Erkek

b) Yaşınız:

c) Fakülteniz:

d) Bölümünüz:

e) Sınıfınız:

f) Duyma engeliniz var mı? () Evet () Hayır

g) Bildiğiniz bir yabancı dil(ler) var mı?

() İngilizce () Almanca () Fransızca () İspanyolca () İtalyanca () Çince

() Rusca () Japonca () Arapça () Diğer(Lütfen belirtiniz)

h) Yabancı bir dile sahipseniz seviyeniz nedir?

Başlangıç () Orta () İyi () Çok iyi

i) Çalışmanın amacı ile ilgili düşüncelerinizi bir kaç cümle ile ifade ediniz?

.....

APPENDIX 10: Questionnaire Booklet of Study 2 for Thick Laptop Condition

Değerli Katılımcı,

Bu anket formu, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü İngilizce İşletme Yönetimi Doktora Programı kapsamında yürütülmekte olan tez çalışması için hazırlanmıştır. Çalışma; tüketicilerin marka isimlerine yönelik tercihlerini ölçmeye yöneliktir.

Vereceğiniz yanıtlar gizli tutulacak olup, yalnızca bilimsel amaçlı kullanılacaktır. Anketin doldurulması yaklaşık olarak 10 dakikanızı alacaktır. Vereceğiniz yanıtların doğru ve eksiksiz olması için aşağıda verilen bilgilendirmeyi öncelikle okumanız çalışmanın değerini arttıracaktır. Ayırdığınız zaman için çok teşekkür ederim.

Saygılarımla,

Araş. Gör. İlkin Yaran Ögel

Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü

İngilizce İşletme Yönetimi Doktora Programı Öğrencisi

Bilgilendirme:

- 1) Anket üç kısımdan oluşmaktadır.
- 2) Ankete başlamadan önce size aşağıda verilen senaryoyu okuyunuz.
- 3) Senaryoyu okuduktan sonra senaryoda özelliği vurgulanan dizüstü bilgisayara uygun olduğunu düşündüğünüz marka ismini dinleyeceğiniz her hayali marka ismi çifti içinden birini seçerek işaretleyiniz.
- 4) Her marka ismi çifti 1 soruyu oluşturmaktadır.
- 5) Dinleyeceğiniz her bir kelime çiftleri içinden duyduğunuz ilk kelime ilk kutucuğu, ikinci kelime ikinci kutucuğu işaret etmektedir.
- 6) İlk kısmı bitirdikten sonra size bir ses dosyası daha dinletilecektir.
- 7) Bu dinleyeceğiniz isimlere ilişkin değerlendirmelerinizi lütfen ilgili yere işaretleyiniz.
- 8) Son olarak demografik bilgiler kısmını doldurunuz.

“DÜNYANIN EN KALIN DİZÜSTÜ BİLGİSAYARINI ÜRETTİK, SIRADA MARKA İSMİNİ BULMAK VAR”

TürkTech 2 yıldır sürdürdükleri yoğun AR&GE çalışmaları sonucunda dünyanın en kalın dizüstü bilgisayarını ürettiklerini açıkladı. Ancak şirketin CEO’su Serdar Türktekin üretilen dizüstü bilgisayar için hala bir marka ismi bulamadıklarını belirtti.

1986 yılında, bir bilgisayar mühendisi girişimcinin çabaları ile İstanbul’da kurulan, kişisel bilgisayarlar tasarlayarak, geliştirerek ve satarak günümüzde Türkiye’nin en büyük teknoloji markalarından biri haline gelen TürkTech iddialı dizüstü bilgisayar tasarımları ile tüketicilerin karşısına çıkmaya devam ediyor. Şirketin CEO’su Türktekin, “Bugün, 36.400 metrekare kapalı alan üzerine kurulu Avrupa ve Orta Doğu’nun en büyük bilgisayar üretim tesislerinden birine sahip olmanın gururunu yaşıyoruz” dedi. Ayrıca, yıllık 1,5 milyon adet üretim yapılabilen tesislerinde küresel çapta rekabet edebilir ürünler tasarlandığını ve üretildiğini ifade eden Türktekin,

bilgisayar kategorilerine “en” kazandıracak yeni bir ürünün piyasaya sunulacağının müjdesini de verdi.

“95.25 milimetre kalınlığı ile 10 santimetreye yaklaşan **dünyanın en kalın dizüstü bilgisayarı olma ünvanını kazanacak bu yeni ürünün**, tasarımda **kalınlık** arayan dizüstü bilgisayar kullanıcılarının beğenisine sunulacağını söyleyen Türktekin, **kalınlığı** ile ön plana çıkan bu yeni dizüstü bilgisayar için henüz bir marka ismi bulamadıklarını, bu konuda tüketicilerin desteğine ihtiyaç duyduklarını belirterek tüketicilere **kalınlık** özelliği ile öne çıkan bu yeni dizüstü bilgisayarımıza gelin birlikte marka ismi bulalım çağrısında bulundu.

1) Lütfen dinleyeceğiniz 8 marka ismi çifti içinden bu kalın dizüstü bilgisayar için uygun olduğunu düşündüğünüz her bir marka ismi tercihlerinizi belirtiniz.

1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

2) Lütfen ilgili marka ismini dinledikten sonra uygun yerlere değerlendirmenizi yapınız.

		1	2	3	4	5	
1	İnce	-	-	-	-	-	Kalın
2	İnce	-	-	-	-	-	Kalın
3	İnce	-	-	-	-	-	Kalın
4	İnce	-	-	-	-	-	Kalın
5	İnce	-	-	-	-	-	Kalın
6	İnce	-	-	-	-	-	Kalın
7	İnce	-	-	-	-	-	Kalın
8	İnce	-	-	-	-	-	Kalın
9	İnce	-	-	-	-	-	Kalın
10	İnce	-	-	-	-	-	Kalın
11	İnce	-	-	-	-	-	Kalın
12	İnce	-	-	-	-	-	Kalın
13	İnce	-	-	-	-	-	Kalın
14	İnce	-	-	-	-	-	Kalın
15	İnce	-	-	-	-	-	Kalın
16	İnce	-	-	-	-	-	Kalın

3) Demografik Bilgiler

a) Cinsiyetiniz: () Kadın () Erkek

b) Yaşınız:

c) Fakülteniz:

d) Bölümünüz:

e) Sınıfınız:

f) Duyma engeliniz var mı? () Evet () Hayır

g) Bildiğiniz bir yabancı dil(ler) var mı?

() İngilizce () Almanca () Fransızca () İspanyolca () İtalyanca () Çince

() Rusca () Japonca () Arapça () Diğer(Lütfen belirtiniz)

h) Yabancı bir dile sahipseniz seviyeniz nedir?

Başlangıç () Orta () İyi () Çok iyi

Çalışmanın amacı ile ilgili düşüncelerinizi bir kaç cümle ile ifade ediniz?

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APPENDIX 11: Manipulation Check Results for Brand Name Perception

a) Descriptive Statistics

		Mean	N	Std. Deviation
Pair 1	Smallness perception for brand names including <i>front vowels</i>	2.5809	235	.74561
	Smallness perception for brand names including <i>back vowels</i>	3.5947	235	.74952
Pair 2	Smallness perception for brand names including <i>fricatives</i>	2.7128	235	.62228
	Smallness perception for brand names including <i>stops</i>	3.0819	235	.68753
Pair 3	Thinness perception for brand names including <i>front vowels</i>	2.2907	246	.66996
	Thinness perception for brand names including <i>back vowels</i>	3.7724	246	.68512
Pair 4	Thinness perception for brand names including <i>fricatives</i>	2.6301	246	.55083
	Thinness perception for brand names including <i>stops</i>	3.3557	246	.62475

b) Paired Samples T-Test Results

		Paired Differences				
		Mean	Std. Deviation	t	df	Sig. (2- tailed)
Pair 1	Smallness perception for brand names including front vowels - Smallness perception for brand names including back vowels	-1.01383	1.17355	-13.243	234	.000
Pair 2	Smallness perception for brand names including fricatives - Smallness perception for brand names including stops	-.36915	.87073	-6.499	234	.000
Pair 3	Thinness perception for brand names including front vowels - Thinness perception for brand names including back vowels	-1.48171	1.11148	-20.909	245	.000
Pair 4	Thinness perception for brand names including fricatives - Thinness perception for brand names including stops	-.72561	.83079	-13.699	245	.000