SOUNDS OF GREEN: HOW BRAND NAME SOUNDS METAPHORICALLY CONVEY ENVIRONMENTAL FRIENDLINESS AND ROLE OF INVOLVEMENT AS A MODERATOR

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ABSTRACT

SOUNDS OF GREEN: HOW BRAND NAME SOUNDS METAPHORICALLY CONVEY ENVIRONMENTAL FRIENDLINESS AND ROLE OF INVOLVEMENT AS A MODERATOR

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Linking research in sound symbolism and metaphor cognition, the current research suggests that silent consonants in brand names (e.g. Sekato), compared to voiced consonants (e.g. Jobeza), are more effective in conveying environmental attributes of brands. A series of studies conducted in laboratory and natural setting show that brands with silent brand names are perceived more environmentally friendly than voiced brand names. This effect of sounds on perception of brand's environmentally friendliness is mediated through metaphorical human characteristics (e.g. good-heartedness, kindness etc.) associated with environmentally friendly products and silent sounds. In addition to testing this primary hypothesis, I also test boundary conditions for the effect of brand names sounds on perception of environmental friendliness. I show that the effect of brand name sounds persists in low involvement product purchase conditions but weakens in high involvement purchase situations.

In four empirical studies conducted with different demographic groups, different brand name formations, and different experimental setting show results consistent with the hypothesis. The results are also supported in a field experiment.

This work offers a very innovative approach to marketers, advances theory of sound symbolism, as well as provides new directions for future research.

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INTRODUCTION

Pro-environmental products are called 'friendly' and 'green' for a reason. When consumers buy an environmentally friendly household cleaner, they do not just expect it to clean their house, but also expect ingredients to be 'pure', 'gentle' and 'genuine', the product to be 'caring' and 'protecting' of children and the environment; and production process to be 'responsible' and 'considerate' (Ottman, Stafford, and Hartman 2006). However it is extremely challenging for marketers to communicate these complex layers of benefits environmental product offer (Codron, Siriex, and Reardon 2006).

These complexities may result in marketing claims of environmentally friendly products to be perceived as vague, ambiguous and unclear (Kronrod, Grinstein and Wathieu 2012) and negatively affect sustainable consumption behaviors. Previous research shows that many consumers express great concern for environmental deterioration and believe themselves to be supporting environmental protection; however their concern does not always translate into environmental protection behaviors, such as, recycling, waste reduction and energy conservation (Baca-Motes et al. 2013; Davis 1995). Most notably, the environmental concern may not motivate the purchase of a brand making environmental claims. As a result of this disconnect between environmental concern and behavior, marketers continue to seek successful tactics to drive green product sales.

This study suggests that sound symbolism in branding can be used as an effective tool to convey the metaphorical meanings of environmental products. Previous literature suggests that sounds can be used to convey literal product attributes (Lowrey and Shrum 2007). However, the current research of sound symbolism in marketing communication relates exclusively to physical aspects of products, such as "sharp" or "creamy" (Yorkstone and Menon 2004).

Taking a step further, I propose that sounds can convey metaphorical attributes of a product. Specifically, I test the hypothesis that silent sounds in brand names (e.g. /k/, /p/, /t/) can convey environmental friendliness of a product via metaphorically associating the brand name with human properties such as good-heartedness, purity or honesty. The discovery of the ability of sounds to convey non-literal, metaphorical meaning may be important to explain the effects of brand name sounds on perceptions of non-literal product attributes.

This research also identifies boundary conditions for the effect of sounds. It is proposed that the effect of brand names' sounds on perceptions of environmental friendliness will largely depend on consumers' level of involvement in the product purchase . The level of involvement affects the entire product purchase procedure of a consumer, starting from information seeking to purchase decision (Petty, Cacioppo and Goldman 1981). The Elaboration Likelihood Model (ELM) suggests that highly involved consumers take a central route of decision making and elaborate on the product related arguments (Petty and Cacioppo 1983). However, brand name sounds are often used as heuristic cues and processed through a peripheral route. Thus, I predict that the effect of brand name sounds on product evaluations will only appear in the low involvement product purchase scenarios and will fade away with increasing involvement.

I tested my hypotheses, including the main effect of sound and the role of moderators, through several controlled online experiments. Along with the experimental studies, a field experiment was conducted to test the effect of sounds on actual product choice. The theoretical background and research method is explained in the next section.

CHAPTER 1: THEORETICAL BACKGROUND AND HYPOTHESES

Communicating Environmental Benefits Is Challenging

Communicating the attributes of environmentally friendly brands may be particularly challenging (Codron, Siriex, and Reardon 2006). This is in part because some of the benefits these products offer may not come to fruition immediately. Realization of many of these benefits depends upon a large number of consumers taking similar action, and has a vague beneficiary (such as "the world") (Kronrod, Grinstein, and Wathieu 2012). For example, the effect of consumers' use of electric cars on reducing air pollution will not be visible until an undefined point in the future, and only if a large number of consumers use these cars. Further due to the complexities involved in communicating environmental product benefits, environmental ad claims are criticized as ambiguous, unclear and irrelevant (Peattie 2001). These complexities in communicating environmentally friendly attributes make it a challenging task.

Brand names play a crucial role in conveying product benefits (e.g. Keller, Heckler, and Houston 1998). Strong brand names are directly related to higher brand equity and provide competitive advantage (Aaker 2009). The definition of a strong brand name includes multiple dimensions such as, uniqueness, easy pronounceability and meaningfulness (Pavia and Costa 1993). In addition to these dimensions, one specific dimension of brand names is their ability to convey meanings and benefits of the product through the sounds they contain – what is often called sound symbolism (Klink 2001).

Sound Symbolism is one of the tools used by marketers to convey meaning of a brand through its sounds, especially when the brand name is a meaningless word. According to a branding company, Lexicon which specializes in creating effective brand names using appropriate sounds, "traditional meaning is only one part of the communication equation"

(www.lexiconbranding.com). Lexicon uses different sounds to convey different meanings, such as, use of 'obstruent consonants' (sounds formed by complete or partial obstruction of airflow through nose or throat) to convey hardness or sharpness (e.g. Clorox) vs. use of 'sonorant consonants' (sounds created by relatively free or non-turbulent air flow through the vocal tract) to convey smoothness and softness (e.g. Swiffer/ Febreze); or use of sounds like, *q*/x/z (e.g. *Xerox*) to imply pseudo-scientific connotation; and use of 'glides' such as, y/w/h, in names that attempt to exude personality (e.g. *Yahoo, Wii*). The following section discusses sound symbolism and its use in brand names in details.

Sound Symbolism and Brand Names

Sound symbolism is defined as "the direct linkage between sound and meaning" (Hinton, Nichols, and Ohala 1994, p. 1). Research shows that smallest bits of sound are also capable of signifying innate meaning (Bolinger 1975), which suggests that sounds can convey product related attributes and consequently affect consumers' attitudes towards the products (Lowrey and Shrum 2007). Previous literature has shown that some sounds, like "a" and "o" denote largeness, whereas "i" denotes smallness (Sapir 1929). Similarly, Newman (1933) found that meaningless words containing silent sounds (sounds that do not create a vibration in vocal cords, e.g. /p/, /t/, /k/) were associated with sharpness and smallness, while voiced sounds (sounds that create a vibration in vocal cords, e.g. /b/, /d/, /g/) were associated with largeness.

These findings are supported by studies indicating that silent consonants and front vowels (vowels pronounced by positioning the tongue in the front of mouth, for example, /i/ as in beet, /I/ as in bit, /e/ as in bet or bait, and /æ/ as in bat) are associated with lightness, brightness and angular shapes, whereas voiced consonants and back vowels (vowels pronounced by positioning the tongue in the back of the mouth, for example, /u/ as in food, /U/ as in put, /o/ as in boat, and

/ô/ as in bought) were associated with heaviness, strength, darkness, and largeness and rounded shapes (Heath, Chatterjee, and France 1990; Klink 2001; 2003). Some researchers indicate that use of certain sounds is suitable for brand names of certain product categories. And using such suitable sounds in brand names, improves recall (Peterson and Ross 1972; Vanden Bergh et al.1984), and subconsciously evokes emotions (Schloss 1981) even in the absence of backup marketing messages.

The particular sounds at the focus of this study are silent and voiced consonants that are produced through vocal cord separation (Clark and Yallop 1990). Consonants on the other hand are separated as voiced and silentsilent, depending on the vocal cord vibration (Clark and Yallop, 1990). The sound that produced through vibration of vocal cord, are called voiced consonants, for example, /b/, /d/, and /g/. Whereas, voices produced through vocal cord separation are called silent consonants. Thus vocal cord does not vibrate while pronouncing silent consonants, such as, /p/, /k/, and /t/ (Klink 2000).

Why Sounds Lead to Different Perceptions?

The support for the argument about different effects of different types of phonemes on perceptions is sought in evolution of language and human beings. During evolution of language, humans felt the need to communicate impression of size such as, largeness or smallness by acoustic sounds for survival. Thus, various sounds were developed to convey these messages using frequency and mass of the sounds. Voiced consonants and back vowels create more vibration, which leads to lower frequency. Such sounds convey heaviness and largeness. Silent consonants and front vowels create higher frequency which conveys smallness (Ohala, 1997, 2005). Table 1 summarizes the differences between the two types of sounds.

Table 1: Differences between Silent and Voiced Sounds	
Silent	**Voiced**
Separation of vocal cord	Vibration of vocal cord
e.g.: /p/, /t/, and /k/	e.g.: /b/, /d/, and /g/
Higher frequency sounds	Lower frequency sounds
Smaller, Faster, Lighter, Milder, Brighter, Sharp	Bigger, Slower, Heavier, Stronger, Darker, Blunt

Indirect Meanings Related to Environmentally Friendly Products

"Environmentally friendly", unlike "heavy" or "small", is a relatively vague attribute, which relates to non-literal aspects of the product. Broadly, a green product can be described as any product that "explicitly or implicitly addresses the relationship between a product/service and the biophysical environment" (Banerjee, Gulas, and Iyer 1995, p. 22). Environmental products possess non-literal attributes such as 'equity and environmental harmony' (Baumann, Boons, and Bragd, 2002), 'improved effective environmental performance' (Pujari and Wright 1999), 'efficient use of resources, low impacts and risks to the environment, and waste generation prevention' and 'minimum environmental impacts' (Albino, Balice, and Dangelico 2009). These attributes are complex to communicate because of their non-direct meaning. A good solution for this problem may be relying on inferred metaphorical meanings of "environmentally friendly". Research on the meanings of color "green" shows that it symbolizes qualities such as, 'goodness', 'peace', and 'gentleness' (Madden, Hewett, and Roth 2000).

Thus, it is possible that the sounds of a brand name may convey not only direct literal meanings, but also indirect, metaphorical meanings, which are associated with environmental friendliness, such as good-heartedness, honesty or trustworthiness.

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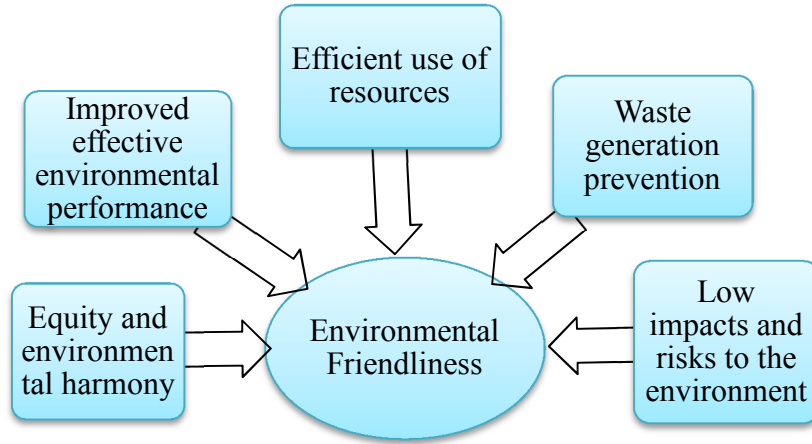
Figure 1: Different Meanings of The Term Environmental Friendliness.

A central theoretical question to this work is whether sounds can convey metaphorical meaning of 'environmental friendliness'? For example, can sounds which were found to convey the meaning 'sharp' for a knife, also convey the meaning 'clever', which is the metaphorical parallel of 'sharp', when referring to a person's mind? Literature on metaphor processing repeatedly demonstrates that metaphorical meanings inherently exist in our minds and that we naturally associate these meanings with literal meaning (Lakoff and Johnson 1980; Lee and Schwarz 2012).

Relying on metaphor processing literature I suggest that, inferring from the existing concrete links between certain sounds and their literal meanings, consumers may automatically evoke the metaphorical meanings of sounds. I test this hypothesis in relation to environmental brand names. I focus on voiced and silent consonants, previously explored by Abel and Glinert (2008), who suggested that silent (compared to voiced) consonants can be used to communicate mildness, harmlessness and safety of drugs. However the findings of Abel and Glinert (2008) were based on a content analysis of existing brand names for drugs. They did not test any causal links between sounds and their meanings. Further, they did not distinguish between literal and metaphorical meanings of product attributes and treated 'mildness' as a literal attribute of drugs.

In the current research, I specifically propose that silent sounds in brand names will be perceived as significantly more environmentally friendly compared to voiced sounds. This effect will be achieved through common metaphorical associations evoked by the sounds and by the notion of 'environmental friendliness'.

To sum, I hypothesize that:

H1: Silent Sounds are associated with a set of specific human characteristics (e.g. purity, honesty, responsibility) more than voiced sounds.

H2: Environmental friendliness of a product is associated with the same set of human characteristics (e.g. purity, honesty, responsibility).

H3: Brand names containing silent consonants (e.g. k/p/t), are perceived to be more environmentally friendly compared with brand names containing voiced consonants (e.g. g/b/d).

The next hypothesis tests the independent links tested in H1, H2 and H3 in a form of causal model and it is hypothesized that,

H4: The effect of silent sounds on perceived environmental friendliness is mediated by metaphorical meanings of human characteristics associated with the sounds. Specifically, silent consonants (e.g. k/p/t), more than voiced consonants (e.g. g/b/d), are associated with human characteristics such as trustworthiness, friendliness, and smartness, and consequently are perceived as more environmentally friendly than voiced consonants.

The Role of Involvement

The hypotheses to this point focus on the relationship between silent and voiced sounds and perception of environmental friendliness. In other words, the hypotheses focus only on

consumers' brand name evaluations based on sounds. However, consumers seldom evaluate lone brand names in real life; they always evaluate the brand name in reference to the product attached to that brand name. Thus, it is much more important and relevant for researchers and marketers to understand the effect of brand name sounds on consumers' product evaluation and purchase decision rather than on brand name evaluations.

Although brand name evaluation is an important part of product evaluation (Keller, Heckler, and Houston 1998), it should be acknowledged that the effect of brand name evaluation on product purchase is dependent upon many other factors. It is possible that some purchase situations warrant brand names a critical role in consumers' decision making, while in others brand names play a minor role. One such important variable that can moderate the effect of brand name sounds on consumers' perceptions is involvement.

The level of involvement is defined as the personal connection or reference that consumers make with the product (Krugman, 1965). A consumer's involvement in the product is said to be high when the consumer perceives a product to be important or relevant to their values, needs or interests (Zaichkowsky 1985), or specifically when a product is perceived to reflect the consumer's self-concept, incur high-price, longer duration of use, and to have high decision risk (Petty and Cacioppo 1981).

It is important to study the role of involvement in relation to the effect of brand name sounds, as involvement can affect consumers' willingness and capacity to process the brand name information. Previous research shows that involvement is a powerful moderator that can alter the effect of most other variables, influencing consumers' product evaluation and purchase decision, such as pricing, promotions, and product reviews (Richins and Bloch, 1986). Specifically, high product involvement has been shown to make consumers less sensitive

towards heuristic cues such as, product price (Bei and Widdows 1999), and quantity of online reviews (Park and Han 2007), as well as discount product fit of brand extensions (Nkwocha et al. 2005). On the other hand, high involvement has also been shown to enhance the effect of promotional offers such as rebates (Hunt, Keaveney, and Lee, 1995) and high quality product reviews (Park and Han 2007). Effect of involvement has also been studied in relation to green advertising. Kong and Zhang (2013) found that green advertising is more persuasive in the case of low involvement products than high involvement products.

It is clear from the aforementioned examples that difference in the level of involvement lead to important differences in consumers' product preference and purchase decision. Similarly, involvement can also have a significant effect in either weakening or strengthening the effect of brand name sounds on product evaluations.

The Elaboration Likelihood Model (ELM) of Petty and Cacioppo (1983) explains the mechanism underlying this robust effect of involvement on product-related decisions. According to the ELM, high involvement in the product purchase process causes higher motivation amongst consumers to invest more cognitive resources in accessing information. Thus, the purchase decisions in high involvement situations depend on the strength of arguments. On the contrary, in low involvement situations, consumers are not motivated to allocate cognitive resources towards information processing and thus rely more on peripheral cues for assessment of products (Dawar and Parker, 1994; Sengupta, Goodstein and Boninger, 1997).

A large amount of literature suggests that brand name is a one of the most important peripheral cues that affect the product purchase decision. A brand name, extrinsic to the product, is often used as indicator of product attributes, quality and performance of the product and affects consumers' overall product judgment (Maheswaran, Mackie, and Chaiken, 1992).

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Considering inherent the peripheral nature of the effect of brand name sounds on consumer perception, it is particularly interesting to study the effect of product involvement in the case of brand names for environmental products, as environmentally concerned consumers usually have high levels of personal involvement in the overall environmental product category. Previous research by Matthes and Wonneberger (2014) suggests that pro-environmental consumers have high level of environmental concern and a consequently higher level of involvement in green products.

Based on these findings, the current study predicts that sounds in brand names would play a more important role in communicating 'environmental friendliness' of the product in low involvement purchase situation. However in high involvement situations, consumers will pay more attention to product related information, such as environmentally friendly product attributes in forming product related judgment. Thus, the effect of brand name sounds on consumer product perception will not occur in high involvement purchase situations.

H5: The effect of sound on perceptions of environmental friendliness will be moderated by the level of involvement, such that the effect of sounds on perceptions of environmental friendliness will only exist in the low involvement situation, and disappear in the high involvement situation.

The conceptual model explains the hypothesized relationships (Figure 2).
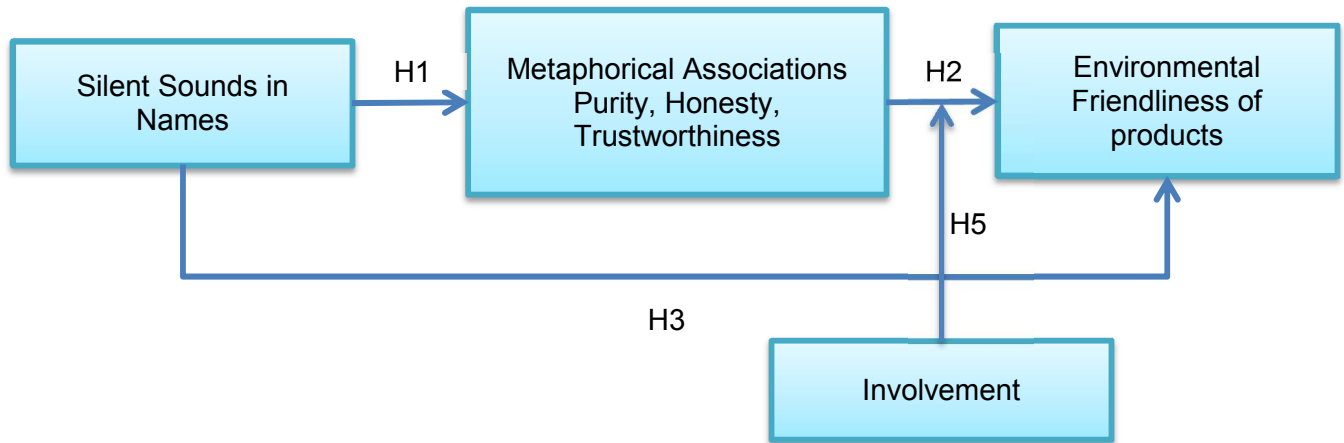
Figure 2: The Conceptual Model of Relationships between Constructs.

CHAPTER 2: PRELIMINARY STUDIES

Two preliminary studies were run to study viability of proposed relationships as there were no previous studies to guide. Also, metaphorical associations of environmentally friendly products were generated in these studies, which were used in the main experiment.

Preliminary Study 1: Perceptions Related to Environmentally Friendly Products

This study was conducted to test links proposed by H2 and H3. Firstly this study was used, to find what metaphorical associations consumers make with environmentally friendly products, and secondly to asses perceptions of environmental friendliness related to silent vs. voiced names. A pretest was conducted to find a larger set of metaphorical associations of environmentally friendly products to be used in later studies. Also I manipulated silent and voiced sounds in names by creating fictitious brand names.

Pretest

A pretest was carried out to pilot test the assumption that environmental products are associated with metaphorical human characteristics, and to explore what metaphorical assumptions environmental products are linked with. A convenience sample of 50 individuals (aged 18 to 42, 33 women) was instructed to list associations of environmental products as if they were human beings. The sample was instructed to think about human characteristics or adjectives they would use to describe a person. Participants were then asked to answer an open ended question; 'If a green product was a person, I would describe him/her as…' 50 participants answered the question. Simple frequency analysis generated a list of most frequently mentioned 29 associations (Appendix B). These 29 human characteristics were then used in the preliminary study 1.

Method

Participants

37 undergraduate students from a large Midwestern University, (mean age 21 years old, 34% females) participated in the study for course credit. The experiment was conducted using an online platform, Qualtrics.

Procedure

The first section of the study was designed **to test H2** that is, finding metaphorical associations of environmentally friendly products. Participants were asked to rate each of the 29 human characteristics, derived from the pretest, on the degree to which it could suit an environmentally friendly product, if the product was a person, using a 7 -point scale (Definitely not (1) to definitely yes (7)).To test H3, 12 pairs of fictitious meaningless brand names were created. In each pair, one name included silent consonants (e.g. /f/, /k/, and /t/ in the name Fokita) and another name included phonetically corresponding voiced consonants (e.g. /v/, /g/, and /d/ in the name Vogida). The names were created using phonetic and word formation rules. Many silent and voiced consonant sounds come in pairs as they are articulated at the same place in the mouth. For example, /p/ and /b/ are both bilabial sounds (pronounced by both lips coming together), articulated in the same place in the mouth with the tongue in the same position. However /p/ is a silent sound and /b/ is a voiced sound. Similarly, /t/, and /d/ are both alveolar sounds (Pronounced by contact of tongue tip with alveolar ridge or the gums just behind the teeth). But /t/ is a silent sound and /d/ is a voiced sound. Table 2 shows all such pairs of silent and voiced sounds embedded in words. The pairs of silent-voiced consonants were used to create pairs of fictitious names except /ð/th (they) – /θ/th (thirty) as it is not possible to differentiate these sounds while reading the fictitious names. Each pair of names was created using

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corresponding silent and voiced sounds. Pairs of silent and voiced consonants were randomly

selected. The selected pairs of consonants were mixed with vowels to create words. The vowels

were selected to represent variation in word formations. Some pairs of names were created using

mostly front vowels (e.g. /i/, /y/, /e/, /ø/), some pairs were created using mostly back vowels (e.g.

/u/, /ʊ/, /o/, /ɔ/, /a/), few pairs were created using predominantly middle vowels (e.g. /ɨ/, /ʉ/, /ɵ/,

/ə/, /ʌ/), while some names were created by mixing two types of vowels in different order. The

two names in each pair contained same vowels in same order.

Participants were presented with the 24 names (Appendix A) in random order and rated

each name on a 7-point scale, 'how environmentally friendly do you think these products are'

and on the scale of not at all environmental (1) to definitely environmental (7).

Table 2: Examples of Pairs of Silent and Voiced Sounds in Words	
Voiced Sound	**Silent Sound**
b (**b**ook)	p (**p**lease)
v (**v**anilla)	f (**f**ive)
ð (**th**ey)	θ (**th**irty)
d (**d**ish)	t (**t**en)
Z (**z**ero)	s (**s**ir)
ʒ (**g**enre)	ʃ (**sh**e)
dʒ (**j**ump)	tʃ (**ch**eers)
g (**g**ood)	k (**k**ing)

Next, participants rated the names on three additional scales: pronounceability,

familiarity and likeability. Pronounceability was measured by the item, 'how difficult/easy is the

name to pronounce?' (Very difficult (1) to very easy (7)); familiarity was measured by 'how

much does the name sound familiar to you?' (Not at all (1) to very familiar (7)); and likeability

was measured by, 'how much do you like the name (Not at all (1) to very much (7)?' Measures in this study were based on procedures used in similar studies in Psycholinguistics (e.g. Kronrod and Lowrey 2014).

Analysis and Results

To examine H2, I analyzed the 29 human characteristics suggested by the pretest participants. Participants in the current experiment rated these 29 human characteristics on the degree to which they are perceived as suitable to environmental friendliness on a 7 point scale. These Characteristics were rated on the 7-point scale where, ratings less than 4 (intervals 1-2, 2-3) denoted clear unsuitability of the human characteristics to environmental friendliness. Ratings around 4 (intervals 3-4, and 4-5) denoted neutrality. Whereas, Ratings above 4 (intervals 5-6, and 6-7) indicated strong association with environmental friendliness. Thus the cut of point was established as 5 and human characteristics rated higher than 5 were selected. This analysis revealed the top 26 human characteristics which received scores higher than 5 (Appendix B).

The 12 pairs of names were analyzed to test H3. Grand average score of perceived environmental friendliness, likeability, pronounceability and familiarity for the 12 silent consonant names and the 12 voiced consonant names was calculated, ending with two scores for each construct.

Results of Repeated measures ANOVA showed significantly higher ratings of environmental friendliness for silent consonant brand names ($M = 3.92$; $F (1, 36) = 5.70$, $p = .023$), compared with voiced consonant brand names ($M = 3.75$). Similarly, I found significantly higher ratings for silent consonant brands on the other three measures, familiarity ($F (1, 36) = 3.152$, $p=.003$); pronounceability ($F (1, 36) = 5.96$, $p =.000$); and Likeability ($F (1, 36) = 2.55$, p

=.015). Familiarity ratings did not exceed $M=2.27$ on the 7-point scale, indicating low unfamiliarity with all of the fictitious brand names.

Discussion

This study suggests that names containing silent sounds are perceived as more environmentally friendly than names containing voiced sounds, confirming H3. These brand names were also perceived as more familiar (though familiarity did not exceed 2.27 on the 7 point scale), easier to pronounce and more likeable.

In H2, I suggest that the underlying reason for higher ratings on environmental friendliness for silent consonant names can be a match between metaphorical meaning conveyed by silent consonant names and the expected metaphorical qualities from environmentally friendly products. To examine this suggestion, in this study, I shortlisted 15 metaphorical qualities associated with environmentally friendly products. However some of these 26 adjectives such as, healthy, clean, safe, pure, fresh and gentle could also describe literal product related benefits in addition to being human characteristics. This concern was addressed in study 2.

Preliminary Study 2: Perceptions Related to Sounds in Brand Names

Purpose

The purpose of this study was to further investigate the prediction in H3 using a broader, non-student sample. Another purpose of this study was to establish the link between silent sounds and its metaphorical associations (H1). In other words, the study was designed to compare ability of silent sounds (vs. voiced) to convey metaphorical human characteristics related (vs. unrelated) to environmental friendliness of product.

Method

Participants

164 participants from Amazon M-Turk, (mean age 32 years old, 48% females) participated in the study for a small compensation. The experiment was conducted using online platform, Qualtrics.

Materials and Procedure

To reconfirm H3, procedures similar to study 1 were used, but only four of 12 pairs of fictitious brand names were selected and used to reduce participant fatigue and to conserve resources.

To choose four pairs, first the likeability ratings for all 12 pairs in study 1 were considered. The aim was to choose pairs, where silent and voiced consonant names had comparable likeability to avoid the bias towards names with higher likeability. In other words the pairs, in which both the names had similar ratings on likeability, were chosen. Three pairs with significant difference in likeability, (Gadoz-Katos, Dijabee-Tichapee, Bozg-Posk), and one pair (Beva-Pefa) with difference approaching to significance were eliminated. From the remaining eight pairs, (Zogad-Sokat, Vogida-Fokita, Jobaz-Chopas, Gazab-Kasap, Dajub-Tachup, Jabb-Chapp, Zeezd-Seest, and Zoog-Sook) four pairs were selected to represent different word formations: Zogad_Sokat, Gazab_Kasap, Jabb_Chapp, Zeezd_Seest.

All the participants were presented with the same four pairs of names (that is, eight names) in random order. Participants were told that these are brand names and to rate each of the brand names on the 7 point scale of perceived environmental friendliness, (Not at all environmental (1) to definitely environmental (7)).

Next, to test H1, participants were asked to compare the same four pairs of imaginary names on their likelihood to possess any of five of the 15 metaphorical human characteristics derived from preliminary study 1.

The five human characteristics used in this study were derived from the 26 metaphorical associations with environmental friendly product in study 1 (Appendix B). As mentioned earlier, the 26 associations with environmentally friendly product in study 1 included some metaphorical associations that could also describe literal product benefits. Also, many metaphorical associations had similar meanings. Therefore these 26 associations were grouped on the basis of similarity of their meaning and a human characteristic best describing the category was assigned to represent this category. For example, a human quality 'Honest' represented clean character, purity, genuineness, trustworthiness etc. Similarly, the category 'Affectionate' represented meanings of friendly, pleasant, cheerful, and caring; 'Humble' represented meanings such as, simple, respectful, responsible, gentle; Category 'Patient' represented mildness, and calmness; and finally, category 'Good-hearted' represented meanings such as, kindness, gentleness, and altruistic qualities. Two coders identified the final 5 characteristics. The coders consulted Merriam-Webster online dictionary, discussed the meaning of the 23 associations and reached the common conclusion.

Thus, five metaphorical human characteristics (Honest, Affectionate, Humble, Patient, and Good-hearted) relevant to environmentally friendly products were selected for this experiment. They were then mixed with other five positive metaphorical human characteristics, that had not been identified as being relevant to environmentally friendly products (Humorous, Good-Looking, Brave, Enthusiastic, Musical), in order to establish that the association of silent

sounds was only with *relevant* metaphorical human characteristics and not with any positive human characteristics.

Participants were exposed to one randomly selected pair of names at a time together with a list of 10 human characteristics (five relevant and five irrelevant). Then they were asked to rate each of the characteristics on a 7 -point bipolar scale, with silent and voiced consonant names as two ends of the scale. Figure 3 illustrates the question used in the survey.

Figure 3: Example of Study 2- Task 2, Link between Sounds and Human Characteristics Relevant to Environmental Friendliness.

The order of the silent and voiced names on the two anchors of the scale was counterbalanced, so some of the scales had silent consonant names on the left and voiced on the right, and some had them in opposite order. For example, two of four scales represented silent-voiced scale (Kasap-Gazab), whereas two used voiced-silent, (Jabb-Chapp). The order of human characteristics was randomized as well.

Analysis and Results

A paired sample t-test was run to test H3, suggesting that environmental friendliness is more associated with silent sounds than with voiced sounds. The average environmental friendliness rating was calculated for each name. Each of the four pairs was analyzed separately to compare the silent and the voiced name in that pair. Results supported H3. In each pair, the silent name was rated significantly higher on environmental friendliness than the voiced name. Table 3 and Figure 4 presents the means and statistical test results for the four pairs.

Repeated measures ANOVA, comparing the aggregated mean ratings on environmental friendliness for all silent consonant names to the aggregated mean for all voiced names, revealed that silent consonant names ($M = 4.26$) were rated significantly higher on environmental friendliness than voiced consonant names ($M = 3.52$, $F(1,163) = 48.050$, $p < .001$).

Table 3:
Paired Sample t-Test Comparing Aggregate Scores for Names in Each of The 4 Pairs (Study 2)

Name	Sound	N	Mean	SD	t-Value	df	p-level
Sokat	Silent	164	4.36	1.53497	-4.54	163	.000
Zogad	Voiced	164	3.60	1.53335			
Kasap	Silent	164	4.18	1.47892	-4.13	163	.000
Gazab	Voiced	164	3.53	1.45859			
Chapp	Silent	164	4.36	1.66113	-3.94	163	.000
Jabb	Voiced	164	3.73	1.62369			
Seesk	Silent	164	4.15	1.61129	-5.87	163	.000
Zeezg	Voiced	164	3.20	1.56447			

Another purpose of this study was to test H1, which suggests that Silent sounds convey metaphorical meanings associated with their literal meanings such as, Affectionate, Good-heartedness, Honesty, etc.
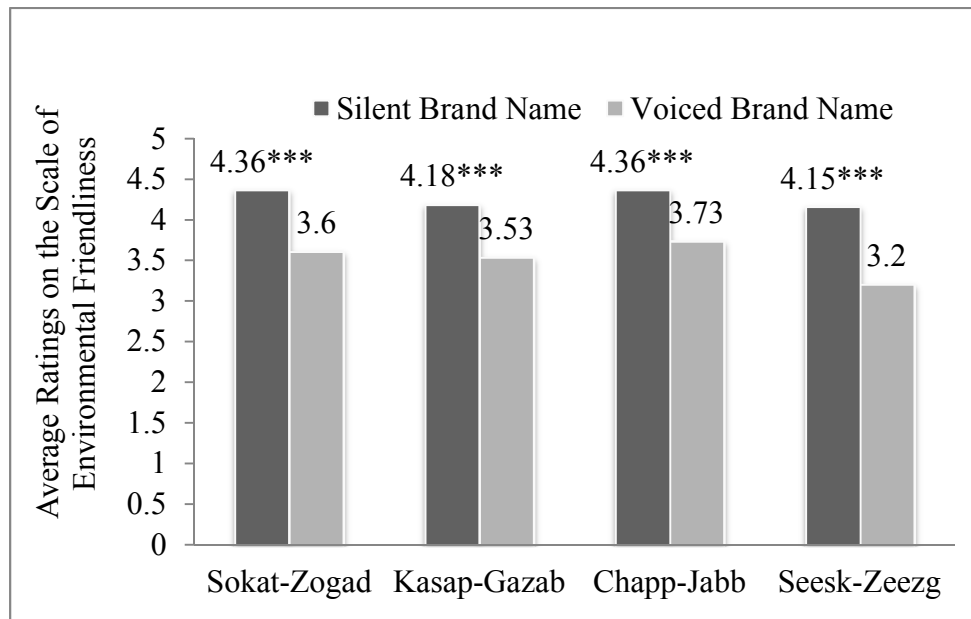
Figure 4: Results of Paired t-test Analysis Comparing Each Pair of Silent and Voiced Brand Name on The Scale of Environmental Friendliness (Study 2).

First, the two bipolar scales indicating likeliness of names of possessing the human characteristics, representing, Voiced (1) to Silent (7) as two ends, were reversed, so all the scales denote the same order of ratings, that is, Silent (1) to Voiced (7). Then ratings of appropriateness of each relevant human characteristic (Affectionate, Good-heartedness, Honest, Humble, and Patient) were averaged across all the four pairs of names.

I ran a One-Sample t-test to compare the average ratings for each of the five relevant metaphorical human characteristics with the value four (mean of the 7 -point bipolar scale of silent (1) to voiced (7)).

Values less than four suggested that the human characteristic was more likely to be associated with the silent sounds, whereas values over four suggested association of the human characteristic with the voiced name.

Results supported H1. All the relevant Human characteristics (Affectionate, Good-heartedness, Honest, Humble, and Patient) were significantly more associated with silent consonant names than with voiced consonant names, as they received ratings significantly lower than four: Good-hearted ($M = 3.66$, t (163) = -5.28, $p = .000$); Honest ($M = 3.69$, t (163) = -4.48, $p = .000$); Patient ($M = 3.63$, t (163) = -4.85, $p = .000$); Humble ($M = 3.73$, t (163) = -3.62, $p = .000$); and Affectionate ($M = 3.68$, t (163) = -4.42, $p = .000$).

The average values for the five irrelevant human characteristics (Humorous, Good-Looking, Brave, Enthusiastic, Musical) did not show any clear associations with silent or voiced consonant names. The mean values for four irrelevant human characteristics, Good Looking ($M = 3.93$); Humorous ($M = 4.03$); Enthusiastic ($M = 4.02$); and Musical ($M = 3.90$), (respectively, $p > .1$) approached the value four, that is, Neutral value. Whereas mean for one irrelevant human characteristic, Brave ($M = 4.23$, t (1,163) = 2.83, $p = .005$) was associated more with voiced consonant names than silent consonant names. Results are illustrated in Figure 5.

To find further support for H1, an exploratory factor analysis was performed on the average ratings of 10 human characteristics (five relevant and five irrelevant to environmentally friendly products) to uncover the underlying structure of these 10 human characteristics in relation to silent sounds.

According to H1 it was predicted that, the five metaphorical characteristics relevant to environmentally friendly product would load on one factor suggesting that they are different

dimensions of one phenomenon, whereas, the five irrelevant human characteristics would not

load on the same factor, but rather would load on other factors.

Varimax rotation was applied to conduct Exploratory Factor Analysis. The analysis

revealed that, all relevant human characteristics (Good-Hearted, Honest, Humble, Affectionate,
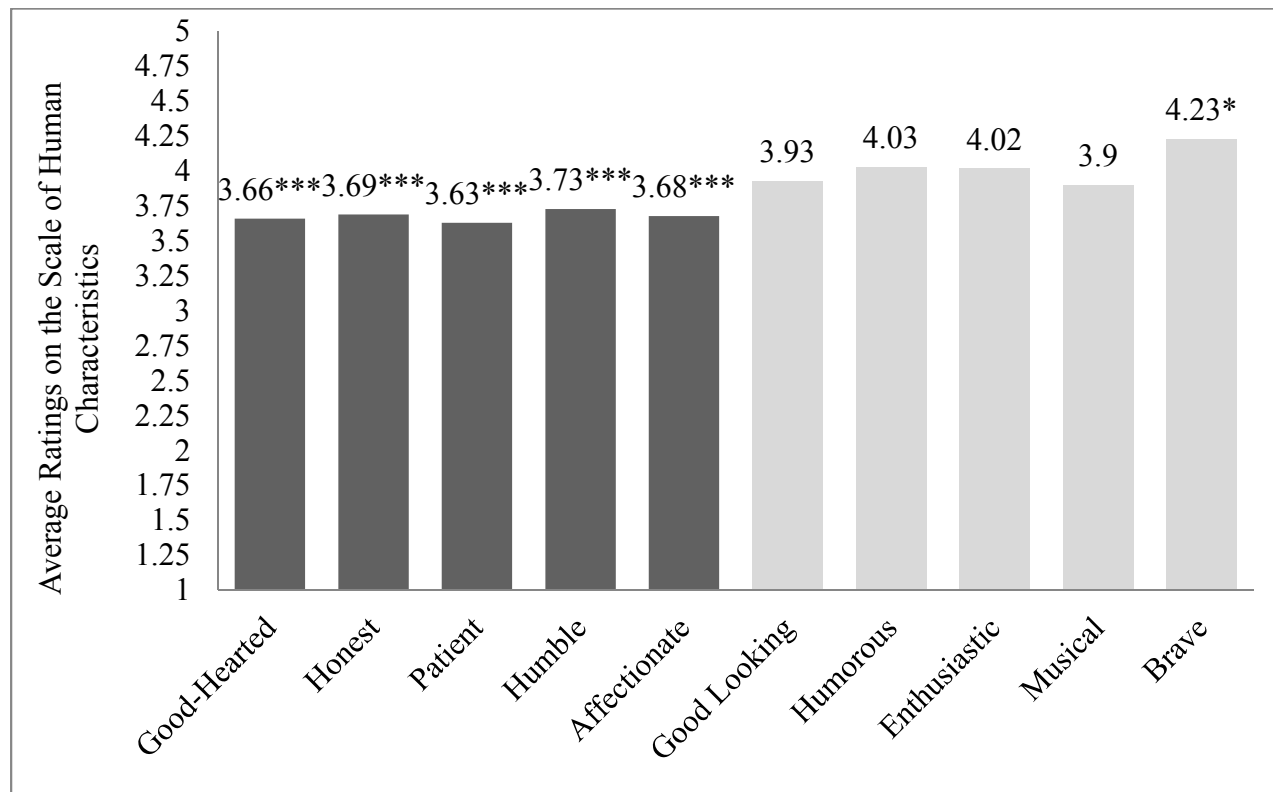
Figure 5: Results of One-Sample t-test Comparing Aggregate Ratings for Silent Brand Names on
The Scale of Relevant and Irrelevant Human Characteristics.

Patient) loaded on one factor, whereas, all irrelevant human characteristics (Good-Looking,

Humorous, Brave, Enthusiastic, and Musical) loaded on other two factors. The Kaiser-Meyer

Olkin (KMO) statistic of .772, and high communalities suggested that the correlation matrix was

appropriate for factor analysis. The scale explained 62% of the total variance and had alpha

levels of more than .75, with no cross loadings. Reliability Analysis for the relevant human

characteristics demonstrated high reliability of the scale (Cronbach's Alpha = .824).Table 4

presents results of this factor analysis. The exploratory factor analysis for each pair separately

revealed similar pattern as shown in Appendix C.

Discussion

Study 2 reconfirms my prediction that environmental friendliness is associated with silent

sounds in a broader, non-student sample. The effects observed on perceptions of environmental

friendliness with changes in sounds, are robust not only for aggregate values of silent names, but

also for each pair.

Table 4:
Exploratory Factor Analysis of Aggregate Scores of Human Characteristics in
Relation to Silent Sounds (Study 2)

Human Characteristic	Relevance	Factor 1	Factor 2	Factor 3
Good-Hearted	Relevant	**.800**	-	-
Honest	Relevant	**.767**	-	-
Patient	Relevant	**.771**	-	-
Affectionate	Relevant	**.751**	-	-
Humble	Relevant	**.689**		
Good-Looking	Irrelevant	-	.832	-
Brave	Irrelevant	-	.673	-
Enthusiastic	Irrelevant	-	.343	.637
Humorous	Irrelevant	-	.718	.455
Musical	Irrelevant	-	-	.719
% Variance explained		62.92 %		
KMO		.772		
Bartlett's χ^2		467.627		
P		.000		

*Values <.3 were suppressed.

Participants show clear preference for silent names to convey environmental friendliness.

In addition to the direct link between silent sounds and environmental friendliness, Study 2 also

verifies link between silent sounds and metaphorical product attributes. It also provides a strong

support for the two fold notion. Firstly, silent names are associated with relevant metaphorical

attributes more than voiced sounds and secondly, that silent sounds are associated only to

relevant associations, and not with irrelevant ones. Factor analysis for all the pairs revealed the

same pattern repeatedly improving the validity of results.

CHAPTER 3: STUDY 3: TESTING THE MODEL

Introduction

So far in the pilot studies, I separately studied the hypothesized links between sounds, metaphorical meanings and environmental friendliness. In the current study I retested those separate links as well as tested the full model (Hypothesized in H4) to establish causal relationships in the proposed model.

Another concern with the preliminary studies was that the fictitious names used in the experiments were created using either completely silent or voiced consonants. However in real life situations, we rarely come across names that contain only one type of consonants. Thus to address this concern the fictitious names were created to contain a mix of silent and voiced consonants, but in different proportions: the mainly-silent names contained 75% silent and 25% voiced, and the mainly-voiced names contained 75% percent voiced sounds and 25% silent.

Method

This study was designed with 2 conditions (silent sounds vs. voiced sounds) within subjects design. The experiment was conducted on Qualtrics. Data was collected through Amazon Mechanical Turk.

Previous research conducted on Mturk suggests that recruiting a large sample size is helpful, especially in the exploratory research, to ensure maximum diversity of recruited workers (Chandler, Mueller, and Paolacci 2014). The approval rate of 96% was selected for Mturk workers. Recent research suggests that an approval rate of more than 95% is considered high and can produce higher data quality (Paolacci and Chandler, 2014). Further, research also indicates that when Mturk workers have high approval rate, attention checking questions do not provide any additional advantage of quality improvement (Peer, Vosgerau, and Acquisti, 2013).

595 MTurk workers completed this study for small payment ($ 0.65). 24 inattentive respondents were identified based on response patterns, where the same response option (e.g. "3" or "7") was chosen for all the questions, throughout the survey. These respondents were eliminated from the sample. The final sample size was 571 participants. Due to a technical problem in the survey software only 490 participants could report demographic information. The average age of participants was 35 years (ranged between 18-71years). 53% of the participants were females. 4 participants chose not to disclose their gender.

Materials

To represent each condition, 4 pairs of fictitious names were created, each containing 1 mainly-silent and 1 mainly-voiced name. The procedure to create fictitious names was exactly similar to the procedure used in study 1. Each of the total eight names was created using 4 consonants. Every silent name contained 3 silent consonants and 1 voiced consonant. The voiced names contained 3 voiced and 1 silent consonant (Table 2). The names within each pair contained same vowels. For example, in the pair Bazovit-Pasofid, the silent name Pasofid contained 3 silent sounds /p/, /s/, and /f/, and one voiced sound /d/. On the other hand, the name Bazovit contained a corresponding number of voiced sounds, that is, three voiced /b/, /z/, and /v/ and one silent sound /t/. The four pairs were: Koojagad – Goochakat; Vatasig – Fadazik; Jobichaz- Chopijas; Bazovit – Pasofid.

The experiments were conducted using all of the four pairs. However, after the study was over, an error was found in the formation of one of the pairs, Vatasig – Fadazik. It was discovered that both names in this pair contained an equal number of silent and voiced sounds (i.e. a ratio of 50%:50% of silent: voiced sounds), while the other pairs were created using unequal number of sounds (i.e. a ratio of 75%:25%). The name Vatasig contained 2 silent

sounds, /t/, and /s/, and 2 voiced sounds, /v/, and /g/. Similarly name Fadazik also contained 2

silent sounds, /f/, and /k/; and 2 voiced sounds, /d/, and /z/. Thus neither of these two names

could be clearly described as either more predominantly silent or voiced. This pair was

considered inappropriate to represent any of the two conditions of the experiment. Consequently

the data for this pair was eliminated from the analyses.

Procedure

Participants were given three tasks. In task 1 (aimed to test H1), all the participants were

presented with eight names in random order and were asked to rate each of the eight names, on

the degree to which they are associated with the metaphorical human characteristics relevant to

environmentally friendly products.

Human characteristics relevant to environmentally friendly products, generated in

preliminary study 2 (Good-hearted, Honest, Patient, Humble, and Affectionate) were used in this

task with some modifications. Category 'Affectionate' was dropped due to overlapping meaning

with 'Good-heartedness'. Also additional characteristics such as, Fresh, Healthy, Intelligent, and

Smart, which were rated highly in preliminary study 1, were included. Category 'Smart' was

added to the study to incorporate characteristics 'smart' and 'intelligent'. Environmental

products have been associated with innovation and technological advancement (Porter & van der

Linde 1995; Pujari, Wright, and Peattie 2003).As well as category 'lively' was included to

represent human characteristics of 'healthy and 'fresh'.

As a result, similar to preliminary study 2, 6 relevant human characteristics (Lively,

Good-Hearted, Honest, Humble, Patient, and Smart) were mixed with 6 irrelevant metaphorical

human characteristics (Humorous, Good-Looking, Brave, Enthusiastic, Musical, and Creative).

Participants were instructed, "In this question you are asked to evaluate a person named "Koojagad", based on the person's name. Below is a list of qualities that can be attributed to a person. For each quality, please indicate how likely "Koojagad" is to possess each quality" on a 7 point scale, definitely not (1) to definitely yes (7). Thus, each participant rated each of the 8 names on 12 human characteristics.

In the second task (aimed to test H2), participants rated each of the metaphorical human characteristics on the scale of environmental friendliness. Participants were provided with one of the 12 human characteristics at a time, and were instructed, "Please imagine that a person has the following human characteristic. Based on this characteristic, please evaluate, how likely is this person to act in an environmentally friendly way, to be an "environmentally friendly person". Thus, each participant rated each of the 12 human characteristics on a 7 point scale of environmental friendliness, definitely not environmental friendly (1) - definitely environmental friendly (7). The order of characteristics was randomized.

In task 3 (aimed to test H3), all the participants were presented with the eight names(that is, Koojagad – Goochakat; Vatasig – Fadazik; Jobichaz- Chopijas; Bazovit – Pasofid) developed for this study, in random order. Participants were told that these were brand names and were asked to rate each of the brand names on a 7-point scale of product environmental friendliness, (Definitely not environmental (1) to definitely environmental (7)).

The next task was designed to identify and control the confounding factors. The current study uses fictitious, meaningless names to test the effect of sound. However one of the potential concerns with the current research is that these fake and meaningless names could remind us of similar sounding meaningful words either in English or in other languages and evoke meanings. Thus there is a possibility that the fake brand names created for this research may communicate

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environmental friendliness through their associations with similar sounding meaningful words. For example, meaningless word 'tichapee' may bring to the mind the Romanian word 'tichie', Fadazik may sound Polish, and 'Gazab' may convey meaning in Hindi.

It can be argued though that the likelihood of occurrence of such confounding factors is very small in current research. Firstly, results of study 1 and 2 consistently supported the proposed hypothesis across 12 different variations of pairs of names, created with a variety of consonants, vowels and word formations. Additionally, an entirely new set of fictitious names is created to further test the hypothesis in the current study. However to completely eliminate the concern, participants were asked an open ended question-"indicate if any of the brand names reminds you of a meaning associated with environmental friendliness (in any language you know)". Participants were also requested to list the language it reminds them.

In the end, demographic information was collected. Participants were asked if English was their native language, and if not, for how many years they have been speaking English. This item was included to ensure that the sample consists of fluent English speakers. 98.4% of the participants were native English speakers (of 490 participants who could fill out demographic information). Remaining 1.6% (8 participants) who were non-native English speakers, had been speaking English for 26 years on average (ranged from 8 to 45 years). Thus it was concluded that all the participants were fluent in English. Later participants were de-briefed.

Data Analysis and Results

Data were analyzed using statistical analysis package SPSS. The first step in the analysis was to examine H1, which stated that the relevant human characteristics (Good-Hearted, Honest, Humble, Patient, Lively, and Smart) are associated significantly more with silent sounds (Goochakat, Chopijas, and Pasofid) than voiced sounds (Koojagad, Jobichaz, and Bazovit).

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In task 1, participants associated each of the six names (three silent and three voiced), with each of the 12 (six relevant and six irrelevant) human characteristics. Ratings for each human characteristic were aggregated across all the silent names. Similarly ratings for each human characteristic were also aggregated across all the voiced names. For example, ratings for three silent names, Goochakat, Chopijas, and Pasofid on the scale of human characteristic 'good-heartedness', were aggregated together to be compared with ratings for three voiced names, Koojagad, , Jobichaz, and Bazovit, on the scale of 'good-heartedness'. Table 5 shows the means for each human characteristic calculated across the silent as well as the voiced names.

Table 5:
Average Ratings for Silent and Voiced Names on The Scale of Each Human
Characteristic (Study 3)

Human Characteristic	Sound	Mean	Std. Dev.
Good-Hearted	Voiced	4.5703	.79904
	Silent	4.6591	.84174
Lively	Voiced	4.5984	.83829
	Silent	4.4839	.86714
Honest	Voiced	4.4921	.82510
	Silent	4.5359	.84813
Humble	Voiced	4.2084	.86808
	Silent	4.3701	.86654
Patient	Voiced	4.1605	.85846
	Silent	4.3514	.82780
Smart	Voiced	4.5873	.88276
	Silent	4.5610	.91528
Humorous	Voiced	4.3579	.88972
	Silent	4.3800	.87890
Good-Looking	Voiced	4.0508	.95490
	Silent	3.9340	.93956
Brave	Voiced	4.4729	.88158
	Silent	4.2399	.88447
Enthusiastic	Voiced	4.6322	.81326
	Silent	4.4956	.86051
Musical	Voiced	4.0899	.89513
	Silent	4.1337	.92603
Creative	Voiced	4.4699	.86474
	Silent	4.5318	.88847

Exploratory Factor Analysis was run on these aggregated ratings for the 12 human characteristic for silent names. The purpose of this analysis was to examine if the 6 relevant characteristics form a single dimension in relation to silent sounds. Results show that five relevant characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) loaded on one factor with alpha levels of more than .5 (Table 6). One human characteristic (Lively) did not load on the same factor as other relevant characteristic. All the irrelevant human characteristics (Good-Looking, Humorous, Brave, Enthusiastic, Musical, and Creative) loaded on another factor. The Kaiser-Meyer Olkin (KMO) statistic was .918.

A separate factor analysis was conducted for each silent name on the 12 relevant and irrelevant characteristics to further support the hypothesis. Factor analysis for each silent name revealed similar patterns, where all other relevant human characteristics (Good-Hearted, Honest, Humble, Patient, and Smart), except 'Lively', loaded on one factor. While all irrelevant characteristics showed inconclusive patterns (Appendix D- I). Based on the factor analysis results, human characteristic 'Lively' was excluded from the further analysis. Next four grand means were calculated and compared to test H1,

1. A mean for all the 5 relevant characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) across all the silent names (Goochakat, Chopijas, and Pasofid);

2. A mean for all the 5 relevant characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) across all the voiced names (Koojagad, Jobichaz, and Bazovit);

3. A mean for all irrelevant characteristics (Good-Looking, Humorous, Brave, Enthusiastic, Musical, and Creative) across all silent names (Goochakat, Chopijas, and Pasofid); and finally,

4. A mean for all of the irrelevant characteristics (Good-Looking, Humorous, Brave, Enthusiastic, Musical, and Creative) across all of the voiced names (Koojagad, Jobichaz, and Bazovit).

Table 6:
Exploratory Factor Analysis of Aggregate Scores of Human Characteristics
in Association with Silent Sounds (Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2
Good-Hearted	Relevant	.373	**.745**
Lively	Relevant	.797	-
Honest	Relevant	.325	**.774**
Humble	Relevant	-	**.821**
Patient	Relevant	-	**.778**
Smart	Relevant	.499	**.507**
Humorous	Irrelevant	.721	-
Good Looking	Irrelevant	.642	-
Brave	Irrelevant	.549	.317
Enthusiastic	Irrelevant	.697	.329
Musical	Irrelevant	.565	-
Creative	Irrelevant	.690	-
% Variance explained		57.70 %	
KMO		.918	
Bartlett's χ^2		3117.507	
p		.000	

A 2 (silent vs. voiced) X 2 (relevant vs. irrelevant) repeated measures ANOVA was conducted to test H1 comparing four grand means discussed above. The results indicated that, the relevant human characteristics (Good-Hearted, Honest, Humble, Patient, Smart) were associated significantly more with the silent names (M=4.49) than voiced names (M = 4.40, F (3, 1710) = 23.44, p < .000). On the contrary, irrelevant characteristics were associated significantly more with voiced names (M = 4.34) than with silent names (M=4.28, F (1.1710) = 23.44, p < .05). Effect size was 1.42% (η^2 = 0.0142). Results are illustrated in Figure 6. **Thus H1 was supported.**

The next step was to identify metaphorical associations of environmentally friendly products as predicted in H2. Based on the preliminary studies, 6 relevant human characteristics (mixed with 6 irrelevant characteristics) were used in this study to represent metaphorical associations of environmental friendliness. In task 2, participants were asked to associate each of these 12 human characteristics with environmental friendliness.
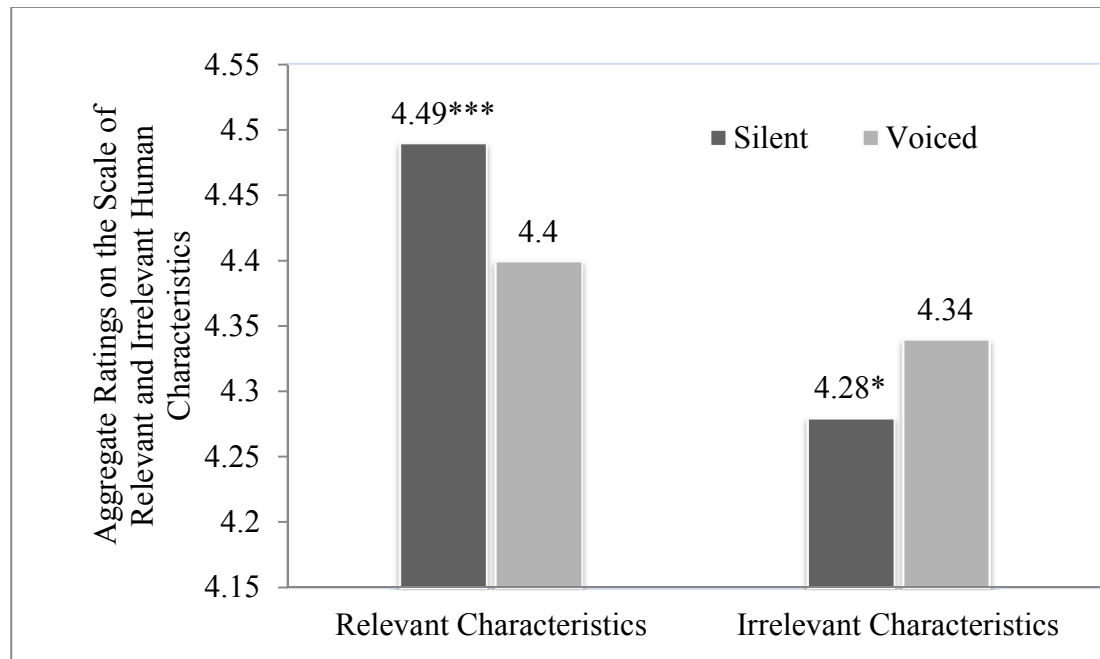
Figure 6: Results of Repeated Measures Analysis Comparing Ratings for Silent and Voiced Brand Names on The Scale of Relevant and Irrelevant Human Characteristics (Study 3).

Exploratory factor analysis, with varimax rotation, was conducted on the 12 human characteristics to test the presumption that these 6 relevant human characteristics would form a single dimension in relation to environmental friendliness. Similar to previous results, the factor analysis revealed that the 5 relevant human characteristics (Good-hearted, Honest, Humble, Patient, and Smart) loaded on one factor with alpha levels of more than .70. Once again, human characteristic 'Lively' did not load on the same factor. On the other hand, irrelevant human characteristics (Good-Looking, Humorous, Brave, Enthusiastic, Musical, and Creative) either

cross loaded on both factors or loaded on different factors. The Kaiser-Meyer Olkin (KMO) statistic of .864, and high communalities suggested that the correlation matrix was appropriate for factor analysis. Table 7 presents results of factor analysis.

Reliability Analysis for the relevant human characteristics demonstrated high reliability of the scale (α = .802). However, the reliability improved after removing human characteristic 'lively' (α = .833) from the scale.

Table 7:
Exploratory Factor Analysis of Aggregate Scores of Human Characteristics in Association with Environmental Friendliness (Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2
Good-Hearted	Relevant	**.804**	-
Lively	Relevant	-	.720
Honest	Relevant	**.746**	-
Humble	Relevant	**.747**	-
Patient	Relevant	**.723**	-
Smart	Relevant	**.718**	-
Humorous	Irrelevant	-	.761
Good Looking	Irrelevant	-	.708
Brave	Irrelevant	.336	.578
Enthusiastic	Irrelevant	.391	.569
Musical	Irrelevant	.315	.376
Creative	Irrelevant	.578	-
% Variance explained		50.94 %	
KMO		.864	
Bartlett's χ^2		2156.688	
p		.000	

Based on the factor analysis and the reliability analysis it was concluded that human character 'Lively' did not aptly represent metaphorical characteristic of environmental friendliness and was eliminated from further analysis. Consequently the remaining five relevant characteristics (Good-hearted, Honest, Humble, Patient, and Smart) were used in further analysis as metaphorical associations of environmental friendliness.

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To test H2, that is, environmental friendliness is associated significantly more with relevant human characteristics than irrelevant human characteristics, aggregate environmental friendliness score was calculated for each of the 12 human characteristics. Table 8 shows average ratings for each human characteristic on the scale of environmental friendliness.

Later environmental friendliness scores for 5 relevant characteristics (excluding lively) was combined together to generate an aggregate score on environmental friendliness for relevant characteristics. Similarly, environmental friendliness for all irrelevant characteristics was aggregated. Next, the grand mean for the 5 relevant human characteristics was compared with the grand mean for 6 irrelevant characteristics. Repeated measures ANOVA shows that relevant human characteristics were rated significantly higher on environmental friendliness (M = 5.64) than irrelevant characteristics (M = 4.78, F (1,570) = 623, p < .000, η^2 = 0.2045). **Results supported H2.**

Table 8:
Average Ratings for Each Human Characteristic on The Scale of Environmental Friendliness (Study 3)

Human Characteristic	Relevance	Mean	Std. Dev
Good-Hearted	Relevant	6.0228	1.11348
Lively	Relevant	4.7688	1.28792
Honest	Relevant	5.6112	1.10318
Humble	Relevant	5.4396	1.28736
Patient	Relevant	5.3818	1.21451
Smart	Relevant	5.7881	1.17381
Humorous	Irrelevant	4.2750	1.24240
Good-Looking	Irrelevant	3.8687	1.23768
Brave	Irrelevant	4.7741	1.35973
Enthusiastic	Irrelevant	5.2399	1.17289
Musical	Irrelevant	4.9737	1.26394
Creative	Irrelevant	5.5884	1.09727

Environmental friendliness ratings for silent names (Goochakat, Chopijas, and Pasofid) were aggregated and compared with aggregated environmental friendliness score for all of the voiced names (Koojagad, Jobichaz, and Bazovit). Repeated measures ANOVA was conducted to test the hypothesis. The results of the analysis shows that on aggregate, the silent names (M=4.09) were rated significantly higher on environmental friendliness than the voiced names (M = 3.90, F (1,570) = 15.63, p < .005, η^2 = 0.006). **H3 was thus supported.** Table 9 as well as Figure 7 shows environmental friendliness rating for each of the names.

Mediation analysis for Repeated measures was conducted to test H4 which suggests that use of silent sounds over voiced sounds in brand names, positively affected the mediator, that is, the ratings for relevant human characteristics, which in turn positively affected environmental friendliness ratings.

Regression analyses were conducted according to the specifications set out by Andrew Hayes' PROCESS for SPSS using model four (Hayes 2014).

Table 9:
Average Ratings for Each Fictitious Name on The Scale of Environmental Friendliness (Study 3)

Pair	Name	Sound	Mean	Std. Dev
Pair 1	Koojagad	Voiced	3.8004	1.75181
	Goochakat	Silent	3.8459	1.82979
Pair 2	Jobitaz	Voiced	4.0841	1.64368
	Chopidas	Silent	4.2364	1.74471
Pair 3	Bazovit	Voiced	3.8091	1.64167
	Pasofid	Silent	4.1804	1.74739

Hayes (2014) criticizes the repeated measures analysis procedure suggested by Judd, Kenny and McClelland 2001, as it omits the independent variable, and only considers relationship between mediator and dependent variable. Further the method does not provide any explicit quantification for indirect effect of independent variable on the dependent variable.

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Hayes (2014) suggest an improvement over the method suggested by Judd, Kenny and McClelland 2001 where the difference between mediator for two condition (M2-M1) and difference between dependent variable (Y2-Y1) in two conditions is calculated.
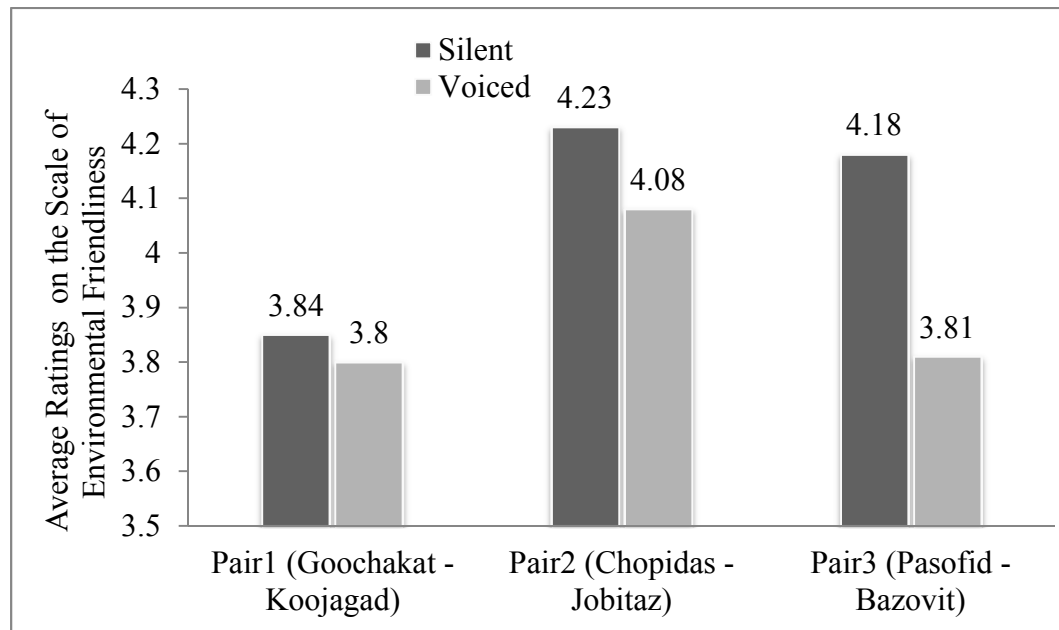
Figure 7: Results of Paired t-test Analysis Comparing Ratings for Silent and Voiced Brand Names on The Scale of Environmental Friendliness for Each Pair (Study 3).

Following this procedure, I calculated the difference between the mediators $(M_2 - M_1)$ as the difference between the association with human characteristics for silent (M2) and voiced names (M1), as well as the differences between the dependent variables $(Y_2 - Y_1)$ as the difference between environmental friendliness for silent (Y2) and voiced (Y1) conditions. Finally, I regressed dependent variable Y2-Y1, on the independent variable (X), with M2-M1 as the mediator using SPSS micro PROCESS (Hayes 2014).

The relationship between sounds and perception of environmental friendliness was mediated by the association of silent names with relevant human characteristics. The standardized regression coefficient between sounds and relevant human characteristics was

statistically significant (b = .0918, p = .001), as was the standardized regression coefficient between relevant human characteristics and environmental friendliness ratings (b = .2895, p = .000). The standardized indirect effect was (.0918)(.29) = .027. See Figure 8. I tested the significance of this indirect effect using bootstrapping procedures. Indirect relationship between sounds and perception of environmental friendliness through relevant human characteristics for each of 10,000 bootstrapped samples was significant at 95% confidence interval, ranging from .0091 to .054. Thus, the indirect effect was statistically significant. The direct effect of sound on environmental friendliness ratings was also significant (b = 0.1632, p = .007), but its coefficient was lower than it was when the mediator was not included in the analysis (b = 0.19, p = .0001). **Consequently analysis supported partial mediation and H4.**

At the end of the survey the participants were asked if they made any association related to environmental friendliness with the fictitious names. Total 93% of the participants replied to this question, out of which, on average 80% of the participants indicated that they did not make any associations with the names.
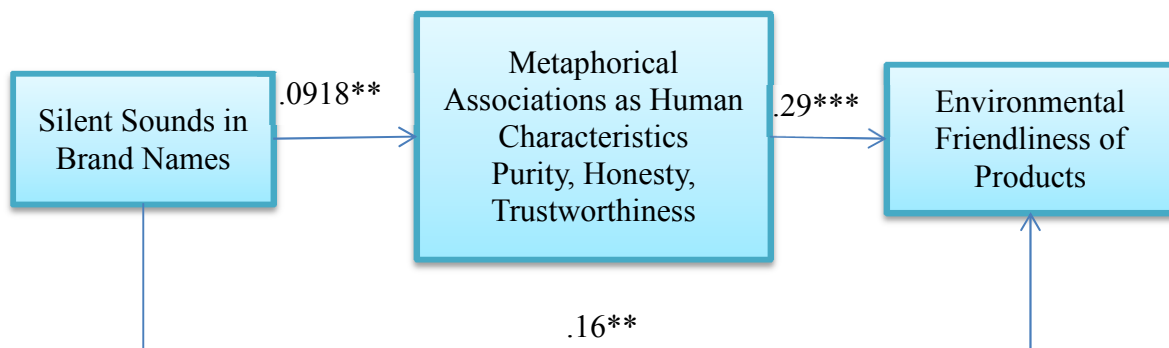
Figure 8: Effect of Sounds on Perception of Environmental Friendliness Partially Mediated through Relevant Metaphorical Associations (Study 3).

The associations provided by the participants were analyzed using frequency analysis to reveal any potential patterns and the compared using chi-square. Table 10 shows the frequency analysis and chi-square analysis for each name. The analysis shows that the percentage of meaningful association made with each of the name was statistically insignificant. Participants were also asked to list the association, if any (Appendix J - O).

Table 10:
Associations Made with Each of The Fictitious Names (Study 3)

Name	N	Yes (%)	No (%)	Chi-square	P
Koojagad	533	97 (18)	436 (82)	215.612	.000
Goochakat	533	109 (20)	424 (80)	186.163	.000
Jobitaz	534	92 (17)	442 (83)	229.401	.000
Chopidas	533	108 (20)	425 (80)	188.535	.000
Bazovit	532	90 (17)	442 (83)	232.902	.000
Pasofid	532	155 (29)	377 (70)	92.639	.000

Discussion

Study 3 was designed to generate further support for predictions of the current research with new set of fictitious names. In this study I also tried to rule out the alternative explanations for the proposed effects of brand names, other than variation in sounds. This study shows that brand names consisting of mixed sounds can also effectively convey environmental friendliness if they contain silent sounds in higher proportion than the voiced sounds. This study also reexamines the ability of silent sounds to convey metaphorical human characteristics and suggests that change in sounds from voiced to silent significantly improves perceptions of relevant human characteristics (Good-Heartedness, Honest, Humble, etc.). It also shows that improved perception of metaphorical human characteristics positively affects the perception of environmental friendliness. Further the mediation analysis for repeated measures establishes the

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causal links and suggests that association with relevant human characteristics mediated the effect of sounds on environmental friendliness.

Another important contribution of this study is that it identifies the possibility of confounding factors. The results of this study suggest that the effect of different names on the perception of environmental friendliness is indeed due to the variation in sounds and not due to its associations with the other meaningful words. Some interesting observations revealed that effect of sounds in brand names was more prominent than the effect of their associations with other meaningful words. For example, voiced name 'Koojagad' reminded participants of word 'cool or kool' which can convey 'calmness' or 'mildness' and be perceived relevant to environmental friendliness. Despite of these associations name 'Koojagad' was rated lower on environmental friendliness than its corresponding silent name 'Goochakat'. Similarly, some participants made negative associations with the silent name 'Chopidas', such as 'chopping the trees'. Nevertheless ratings for this silent name on environmental friendliness were higher than its corresponding voiced name 'Jobitaz'. These findings improve the validity of results.

CHAPTER 4: STUDY 4: INVOLVEMENT AS A MODERATOR

Introduction

Studies 1-3 support the main hypothesis of this research, that sounds can be instrumental in communicating metaphorical product attributes such as environmental friendliness and can affect consumer perceptions. However, in all of the previous experiments the effect of sound was tested in relation to a general term 'environmentally friendly products' without considering other factors that may affect relationship between brand name sounds and brand related perceptions, for example, product category, product use, price, etc.

Previous research suggests that the effect of brand name sound on consumer perceptions is partially moderated by product category (Lowery and Shrum 2007), perceived diagnosticity of the brand names (i.e. whether the brand name is true) (Yorkston and Menon 2003), and match between the brand name and the brand personality (Klink and Athaide 2012). These studies suggest that consumers take a variety of information into consideration in a real world product purchase scenario, and these other pieces of information may weaken the effect of the brand name sounds. One of such many factors is the level of involvement that influence consumers' product evaluation and purchase decision. A vast amount of previous literature shows that product involvement can act as a moderator in many product evaluation as well product purchase situations (Bei and Widdows 1999; Richins and Bloch, 1986; Rao and Monroe, 1989; Park and Han 2007; Kong and Zhang 2013). Previous literature particularly provides robust support for the ELM model by Petty and Cacioppo (1981) which states that when consumers make a purchase decision related to a product that they believe to be highly interesting, relevant, valuable, or risky, they invest cognitive resources in learning about the product and make a decision based on the information. Whereas consumers making a product purchase decision

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related to a less interesting, valuable, or relevant product, are not motivated to invest cognitive resources and hence rely on heuristic cues, such as brand names related to the product (Sengupta, Goodstein and Boninger, 1997).

In this study I propose that the consumers' involvement in the product will moderate the relationship between brand name sounds and perception of environmental friendliness. Particularly, as the level of involvement will increase, the effect of brand name sounds will be attenuated. Additionally this study will allow me to test the robustness of my results in more realistic situations, first by exploring the effect of the level of involvement on the findings of preliminary studies and then transfer the test to the field experiment in the next study.

Method

This study had a 3x2 mixed design with 3 between subjects conditions (Involvement: high vs. low vs. control) and 2 within subject conditions (sound: 75% silent vs. 75% voiced brand name consonants). In the current study, participants were randomly assigned to one of the three conditions, high involvement, low involvement, and control and performed three tasks. They first rated brand name sounds on the scale of human characteristics relevant to environmental friendliness. Later they rated the same human characteristics on the scale of environmental friendliness. Lastly, participants rated brand names on the scale of environmental friendliness.

An experiment was created on the Qualtrics online platform. Initially 648 participants were recruited through Amazon Mechanical Turk. The access to the study was restricted to Mturk workers in USA to achieve similarity in participants' language related habits, such as pronunciation. Participants were paid 80 cents each as compensation. 41 participants provided incomplete data and so were excluded from the analysis. Responses from 2 inattentive

participants were also removed. Thus data from 605 participants was included in data analysis. The average age of participants was 38 years and ranged from 19 to 87 years. 50% (N = 304) of the participants were males, while 49% (N = 298) were females. 9 participants chose not to disclose their gender.

Materials

Three pairs of fictitious names, used in the previous study (Study 3), containing one predominantly silent and one predominantly voiced name, were used in this study (Goochakat – Koojagad; Chopidas – Jobitaz; Pasofid – Bazovit). Each of the 3 silent names was created with 75% silent and 25% voiced consonants (e.g. Pasofid). The pattern was reversed for 3 voiced names (e.g. Bazovit). The two conditions are referred to as silent and voiced hereafter. The names were created using corresponding phonetic sounds and representing phonetic variety.

In the current study, human characteristics relevant to environmental friendliness were predicted to mediate the effect of sounds on consumer perception. Human characteristics – Good-hearted, Honest, Patient, Humble, and Affectionate – were identified to be relevant to environmental friendliness in the previous studies (Study 1, 2 and 3). The same set of 5 relevant human characteristics was utilized in the current study and the six irrelevant characteristics used in the previous studies (Humorous, Good-Looking, Brave, Enthusiastic, Musical, and Creative) were mixed together.

Involvement Manipulation

The level of involvement was manipulated by varying the importance and personal relevance of the product, following the procedure specified by previous studies (Park and Hastak 1994). Participants were presented with one of the three product purchase scenarios:

Participants in the low involvement group assessed a less relevant and less important pen purchasing situation, i.e. purchasing pens for public use. Participants in high involvement condition assessed a more personally relevant purchase scenario, i.e., purchasing a pen for their best friend. In control condition, participants were not informed about any specific product purchase situation). The purchase scenarios are described in detail in the next section.

A pen was chosen as a product because it is a commonly used product, relevant to the general population.

Involvement Manipulation Pretest

A pretest was conducted to test the effectiveness of involvement manipulation. 60 participants with average age of 32 years (ranging from 20 to 60 years, 47% males) were recruited from Amazon Mturk. Each participant was paid 80 cents as compensation. Participants were randomly assigned to one of the 3 involvement manipulation conditions –low, high, and control. Next, they were presented with one of the three purchase situations.

In the high involvement condition the participants read following scenario: "Imagine that you want to buy a pen as a gift for your closest friend for a special occasion. You need this pen as a gift to show your appreciation of your friend's uniqueness and intellect. You are considering buying an expensive, custom made pen. The pen you are considering is eco-friendly and made of 100% recycled material."

In the low involvement condition, the participants were presented with a less important and relevant product purchase scenario: "Imagine that you want to buy a pen for public use. You need this pen to keep it in the common area at your work for passersby to sign forms and papers. You are considering buying a cheap, mass produced pen. The pen you are considering is eco-friendly and made of 100% recycled material."

The participants in the control condition were not provided any details about the product purchase scenario. However they were given a brief product description consistent with the other two experimental conditions. The description read as: "Imagine that you want to buy a pen. You are considering buying an eco-friendly pen, made of 100% recycled material."

Involvement for the pen was measured on a 6 item, 7 point bipolar scale adopted from previous literature (Mantel, and Kardes 1999, Zaichkowsky's 1994). The items in the scale were: The pen is unimportant (1) – important (7) to me; the pen is irrelevant (1) – relevant (7) to me; the pen means nothing (1) – a lot (7) to me; the pen is worthless (1) – valuable (7) to me; the pen does not matter at all (1) – matters a lot (7) to me; and the pen is highly undesirable (1) – highly desirable (7) to me.

One way ANOVA analysis was performed. Results indicated that involvement manipulation was successful. Involvement was rated significantly higher in high involvement condition ($M = 5.62$) than low involvement condition ($M= 3.94$, $F(2, 57) = 5.33$, $p < .01$). Involvement in control conditions ($M= 4.84$) was between and not significantly different from involvement in high or low conditions.

Procedure for Study 4

Similar to the pretest, participants were randomly assigned to one of the three involvement conditions in study 4. Next, the participants read an introductory message including involvement manipulation.

Then participants were given three tasks. In task 1 (aimed to test H1), all the participants were asked to rate each of the six brand names (Goochakat – Koojagad; Chopidas – Jobitaz; Pasofid – Bazovit) on the scale of each of the eleven human characteristics. Similar to Study 2 and 3, a list of eleven human characteristics including five relevant (Good-hearted, Honest,

Patient, Humble, Affectionate) and six irrelevant (Humorous, Good-Looking, Brave, Enthusiastic, Musical, and creative) were presented to participants in random order. Participants were asked to rate one name at a time on the scale of human characteristics.

For example, in low involvement condition participants were instructed: **"In this question, you are asked to evaluate a pen named: Koojagad. You are considering buying this environmentally friendly and inexpensive pen for public use at your work. Now Imagine that Koojagad pen is a person. For each attribute listed below, please indicate how likely Koojagad pen is to possess that attribute?"** (7-point scale: definitely not (1) to definitely yes (7)). The same procedure was followed for each of the six names. The description of the pen and the purchase situation varied in each condition for the task.

Similarly, in the second task (aimed to test H2), participants were provided a list of 11 human characteristics and were instructed**: "Below is a list of the human attributes you just saw. Now for each attribute please evaluate, How likely that attribute is to be associated with environmentally friendliness of this inexpensive pen you are considering buying for public use? For example, to what degree a "brave" pen is likely to be environmentally friendly as well?"** Thus, each participant rated each of the 11 human characteristics on a 7-point scale of environmental friendliness, definitely not environmental friendly (1) - definitely environmental friendly (7). The order of characteristics was randomized.

In task 3 (aimed to test H3), all the participants were presented with the six brand names in random order. Participants were asked to rate each of the brand names on a 7-point scale of product environmental friendliness (definitely not environmental (1) to definitely environmental (7)).

In the last section, a manipulation check was performed to measure participants' product involvement in three experimental conditions. A 7-point, six-item bipolar scale, same as pretest, was used to measure level of involvement (Mantel, and Kardes 1999). Additionally, similar to study 3, participants were asked an open ended question-"indicate if any of the brand names reminds you of a meaning associated with environmental friendliness (in any language you know); If yes, please list the meaning and the language". In the end, demographic information was collected.

Data Analysis and Results

Involvement manipulation check. The data was analyzed using the statistical analysis package SPSS. One way ANOVA analysis was conducted to test the involvement manipulation. Similarly to the pretest, the manipulation was successful: product involvement ratings were highest in high involvement condition (*M = 5.39, sd = 1.14*), followed by control conditions (*M= 4.53, sd = 1.46*). Product involvement was reported to be the least in low involvement condition (*M= 3.78, sd = 1.29*). The differences in three conditions were statistically significant (*$F(2, 602) = 74.89, p <.001$*).

Hypotheses testing

The main goal of this study is to examine the moderating role of product involvement on the relationship between brand name sounds and consumer perceptions predicted in H5. Hence the analysis focuses on testing H5, i.e. testing how the links hypothesized in H1 to H3 and the model predicted in H4 vary at different levels of involvement.

H1 predicts that silent brand names (Goochakat, Chopijas, and Pasofid) will be rated higher on the scale of relevant human characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) than voiced brand names (Koojagad, Jobichaz, and Bazovit), as well as human

characteristics irrelevant to environmental friendliness (Humorous, Good looking, Brave, Enthusiastic, Musical, and Creative). However H5 predicts that this effect will occur in low involvement condition but not in high involvement condition.

To test the H1, first, ratings for three silent names on the scale of each of the relevant human characteristics were aggregated together. Similarly, ratings for the three voiced names on the scale of each of the relevant human characteristics were aggregated (for example, ratings for Goochakat, Chopijas, and Pasofid on the scale of good-heartedness vs. ratings for Koojagad, Jobichaz, and Bazovit on the scale of good-heartedness). Table 11 shows the means for each human characteristic calculated across the silent as well as the voiced names in three experimental conditions. Also ratings for the three silent names on the scale of each irrelevant human characteristic and ratings for the three voiced names on the scale of each irrelevant characteristic were calculated (for example, ratings for Goochakat, Chopijas, and Pasofid on the scale of brave vs. ratings for Koojagad, Jobichaz, and Bazovit on the scale of brave).

Next, four means were calculated – 1. Ratings on the scale of 5 relevant human characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) for all silent brand names (Goochakat, Chopijas, and Pasofid); 2. Ratings on the scale of 5 relevant human characteristics (Good-Hearted, Honest, Humble, Patient, and Smart) for all voiced names (Koojagad, Jobichaz, and Bazovit); 3. Ratings on the scale of 6 irrelevant human characteristics (Humorous, Good looking, Brave, Enthusiastic, Musical, and Creative) for all silent names (Goochakat, Chopijas, and Pasofid); and 4. Ratings on the scale of 6 irrelevant characteristics (Humorous, Good looking, Brave, Enthusiastic, Musical, and Creative) for all voiced names (Koojagad, Jobichaz, and Bazovit).

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Average Ratings for Silent and Voiced Names on The Scale of Each Human
Characteristic in Three Conditions (Study 4)

Human Characteristic	Sound	Low Involvement (N = 205)		High Involvement (N = 196)		Control Condition (N = 206)	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Good-Hearted	Voiced	4.4715	1.11383	4.5952	1.15297	3.4385	0.76243
	Silent	4.4748	1.10900	4.6939	1.08307	4.6553	1.05891
Honest	Voiced	4.4341	1.17324	4.6037	1.10889	4.5696	1.05217
	Silent	4.4033	1.11437	4.6599	1.03277	4.3657	1.04585
Humble	Voiced	4.1073	1.14160	4.1122	1.14623	4.4417	1.03521
	Silent	4.2894	1.06270	4.2942	1.10071	4.4498	1.07215
Patient	Voiced	4.1431	1.17764	4.2857	1.19496	3.9984	1.08425
	Silent	4.2553	1.12961	4.3759	1.06587	4.1618	1.07483
Smart	Voiced	4.3463	1.11918	4.7245	1.18155	4.1246	1.03913
	Silent	4.2634	1.13711	4.5731	1.14965	4.2735	1.04800
Humorous	Voiced	4.1724	1.14836	4.2840	1.14844	4.4822	1.11528
	Silent	4.0976	1.13338	4.2092	1.11448	4.4401	1.14026
Good-Looking	Voiced	4.0764	1.13908	4.4286	1.20066	4.2395	1.01737
	Silent	3.9512	1.11134	4.2619	1.11325	4.2460	1.06429
Brave	Voiced	4.0813	1.18170	4.3724	1.17629	4.2330	1.03052
	Silent	3.8976	1.14133	4.1463	1.12882	4.0858	1.10906
Enthusiastic	Voiced	4.3821	1.13366	4.7058	1.14088	4.2638	1.12859
	Silent	4.1870	1.15811	4.4881	1.08990	4.0307	1.08582
Musical	Voiced	3.7268	1.17581	4.0272	1.24829	4.5550	1.05663
	Silent	3.6374	1.20737	4.0510	1.09841	4.3204	1.05144
Creative	Voiced	4.4276	1.13989	4.7160	1.17396	4.0858	1.10023
	Silent	4.3561	1.16808	4.6310	1.06130	3.8706	1.02831

First, a separate Repeated Measures ANOVA Analysis was run for each condition to compare the four means in each involvement condition. The results (presented in Table 12) suggest that there was a significant effect of sound on relevant and irrelevant characteristics in low ($F (3, 609) = 20.469, p < .001$); high ($F (3, 5852) = 7.97, p < .001$), and control ($F (3, 615) = 22.80, p < .001$) conditions.

Follow up paired sample t tests were run. Results show that ratings for silent brand names on the scale of relevant human characteristics ($M_{low\ involvement} = 4.34; M_{high\ involvement} = 4.52$) were not statistically different from the ratings for voiced brand names ($M_{low\ involvement} = 4.30; M_{high}$

involvement = 4.50) in both low and high involvement conditions. In control condition, the ratings on the scale of relevant characteristics for silent (*M = 4.38*) brand names were significantly higher than and voiced (*M = 4.18, t (205) = 5.88, p < .001*) brand names.

Table 12:
Results of Repeated Measures Analysis Comparing The Effect of Sounds on Perceptions Related to Relevant and Irrelevant Human Characteristics (Study 4)

Condition (N)	Dependent Variable	M	Std. Dev.	F	df	p
Low Involvement (n = 204)	Silent brand names on relevant characteristics	4.34	.99	20.47	(3,609)	.000
	Voiced brand names on relevant characteristics	4.30	1.01			
	Silent Brand Names on irrelevant characteristics	4.02	.95			
	Voiced brand names on irrelevant characteristics	4.14	.96			
High Involvement (n = 195)	Silent brand names on relevant characteristics	4.52	.95	7.98	(3, 582)	.000
	Voiced brand names on relevant characteristics	4.47	1.25			
	Silent Brand Names on irrelevant characteristics	4.29	.90			
	Voiced brand names on irrelevant characteristics	4.42	.97			
Control (n = 206)	Silent brand names on relevant characteristics	4.38	.86	22.79	(3, 615)	.000
	Voiced brand names on relevant characteristics	4.11	.79			
	Silent Brand Names on irrelevant characteristics	4.16	.87			
	Voiced brand names on irrelevant characteristics	4.31	.84			

Ratings for silent brand names on the scale of relevant human characteristics ($M_{low\ involvement} = 4.33$; $M_{high\ involvement} = 4.52$, $M_{control} = 4.38$) were significantly higher than ratings on

irrelevant human characteristics ($M_{low\ involvement}$ = 4.02, t(203) = 7.38, p <.001; $M_{high\ involvement}$ =

4.30, t(194) = 5.65, p < .001; $M_{control}$ = 4.16, t(205) = 6.63, p < .001) in all the three conditions.

Mixed Repeated Measures ANOVA was performed to assess the effect of sound (within

subject: silent, and voiced) and involvement (between subjects: high, low, and control) on

association with relevant human characteristics. A significant sound x involvement interaction

effect was found (F (6, 602) = 9.56, p < .001). Post-hoc tests revealed that contrary to the

prediction, association with relevant human characteristics for silent brand names improved in

high involvement condition (M = 4.52) from low involvement condition, however the effect was

marginal (M = 4.33, F (2, 397) = 3.54, p = .061). Ratings for voiced brand names improved

significantly in high involvement condition (M = 4.46) from control condition (M = 4.11, F

(2,602) = 6.95, p < .01). Figure 9 illustrates the results. **Results suggest that H1 was partially**

supported and H5 was not supported.

H2 posited the relationship between relevant human characteristics and environmental

friendliness. The environmental friendliness was predicted to be associated more with the

relevant human characteristics than the irrelevant human characteristics. Though as proposed by

H5, this effect was expected to be seen in only low involvement condition and not in high

involvement condition.

To test the hypothesis, first, the aggregate environmental friendliness score was

calculated for each of the 11 (5 relevant, and 6 irrelevant) human characteristics. Later,

environmental friendliness scores were aggregated across the 5 relevant human characteristics.

Similarly environmental friendliness scores were aggregated across the 6 irrelevant human

characteristics. A one-way repeated measures ANOVA was calculated to compare environmental

friendliness ratings for relevant and irrelevant characteristics in the three involvement conditions.
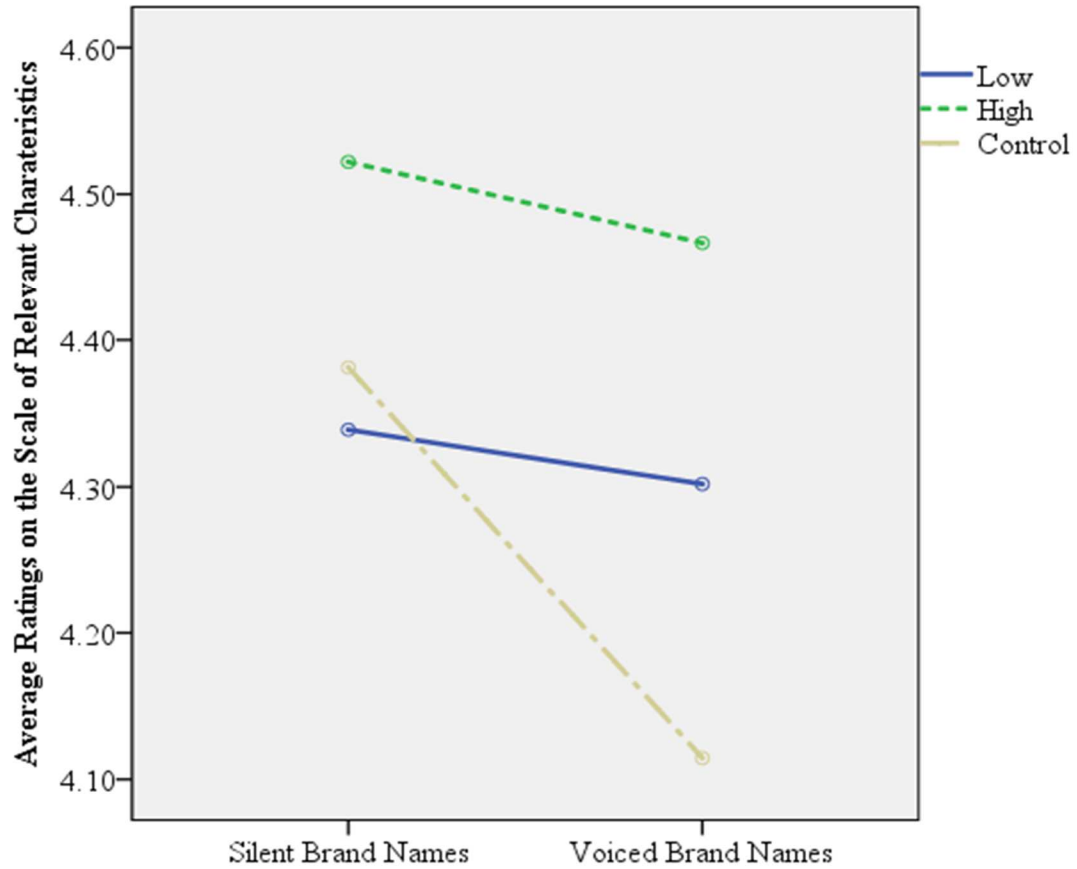
Figure 9: Results of Mixed ANOVA Analysis Comparing Ratings for Silent and Voiced Brand Names on The Scale of Relevant Human Characteristics (Study 4).

A significant effect of the type of characteristics (relevant or irrelevant) was found on environmental friendliness ratings in low involvement ($M_{relevant}$ = 5.51, and $M_{irrelevant}$ = 4.34, F (1, 203) = 252.016, $p < .001$); high involvement ($M_{relevant}$ = 5.67, and $M_{irrelevant}$ = 4.53, F (1, 194) = 254.197, $p<.001$); and control conditions ($M_{relevant}$ = 4.88 and $M_{irrelevant}$ =4.44, F (1, 205) = 60.951, $p<.001$).

Mixed Design ANOVA analysis was performed to assess the effect of sound (within subject: silent, and voiced) and involvement (between subjects: high, low) on association with relevant human characteristics. Control condition was excluded from the analysis to assess differences in high and low involvement conditions, relevant to hypothesis. No significant

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interaction effect of sound x involvement was found ($F (1, 397) = 1.84, p = .175$). **Thus H2 was supported, however H5 was not supported.**

The effect of sound on perception of environmental friendliness was proposed in H3. H3 postulated that use of silent sounds would significantly improve environmental friendliness ratings for brand names compared to voiced sounds. Once again, according to predictions in H5, the effect was expected to occur only in low involvement condition.

A one-way repeated measures ANOVA was calculated comparing the environmental friendliness ratings for silent and voiced brand names. A statistically significant effect was found in low involvement condition ($M_{silent} = 4.47$ and $M_{voiced} = 4.33, F(1,203) = 5.202, p < .05$); in high involvement condition the effect was only marginally significant ($M_{silent} = 4.63$, and $M_{voiced} = 4.49, F (1, 194) = 3.22, p < .10$). The effect was significant in control condition, however, contradictory to the prediction, ratings for voiced brand names ($M = 4.70$) were significantly higher than silent brand names ($M = 4.15, F(1, 205) = 47.364, p < .001$). Table 13 shows environmental friendliness rating for each of the names. **The results support H3 and H5.**

Table 13:
Average Ratings for Each Fictitious Name on The Scale of Environmental Friendliness in Three Conditions (Study 4)

Pair	Name	Sound	Low Involvement (N = 205)		High Involvement (N = 196)		Control Condition (N = 206)	
			Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
1	Koojagad	Voiced	4.36	1.45	4.59	1.55	5.18	1.35
	Goochakat	Silent	4.45	1.52	4.52	1.54	4.26	1.48
2	Jobitaz	Voiced	4.52	1.36	4.54	1.54	4.41	1.56
	Chopidas	Silent	4.41	1.38	4.70	1.50	4.13	1.46
3	Bazovit	Voiced	4.12	1.46	4.36	1.54	4.52	1.53
	Pasofid	Silent	4.56	1.47	4.68	1.59	4.07	1.51

Mixed Design ANOVA analysis was performed to assess the effect of sound (within subject: silent, and voiced) and the 2 involvement conditions (between subjects: high, low) on

association with relevant human characteristics. No significant interaction effect of sound x involvement was found ($F (1, 397) = .005, p = .942$). Results are illustrated in Figure 10.
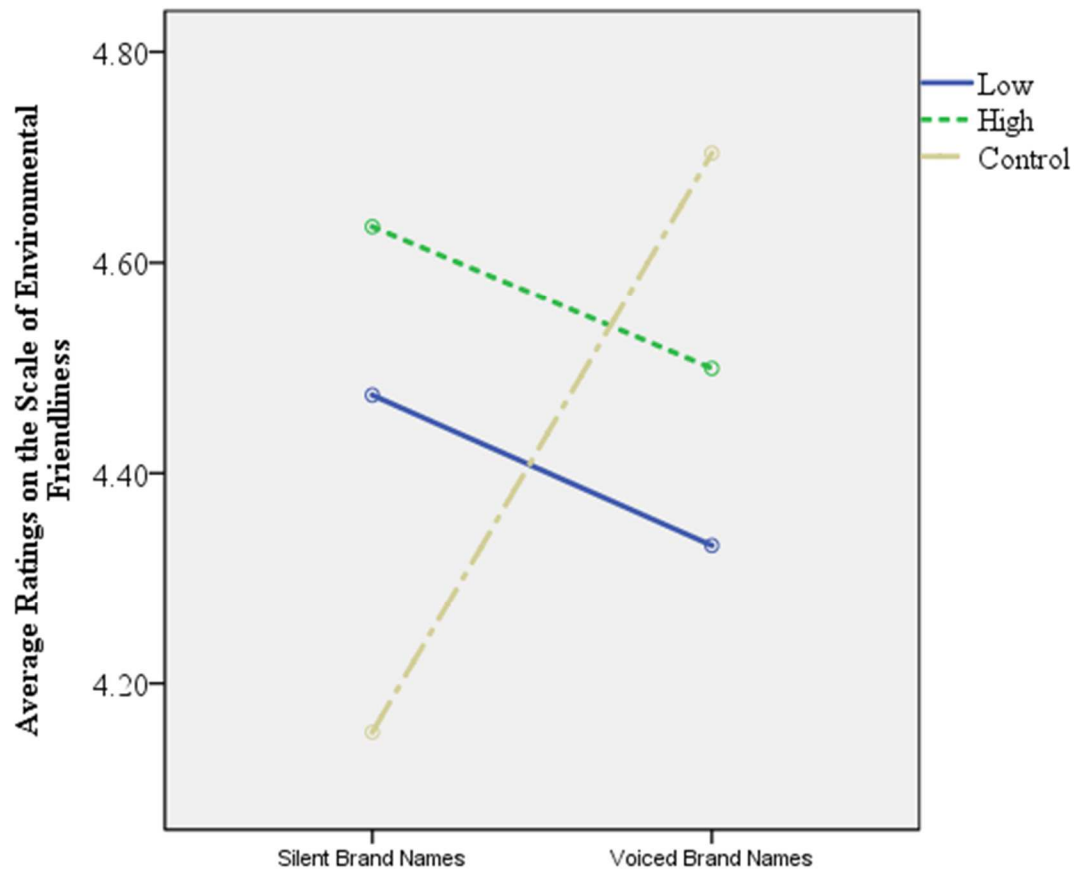
Figure 10: Results of Mixed ANOVA Analysis Comparing Ratings for Silent and Voiced Brand Names on The Scale of Environmental Friendliness (Study 4).

H4 suggests that the effect of sounds on the perception of environmental friendliness is mediated through metaphorical meanings. Specifically it proposes that the use of silent sounds over voiced sounds in brand names improves the perception of metaphorical human characteristics relevant to environmental friendliness which in turn improves the perception of environmental friendliness. H5 extends this basic model and suggests that involvement may act as a boundary condition and moderate the effect of sounds on perception of environmental friendliness.

Particularly, the model proposed in H5 predicts that the effect of sound hypothesized in H4 would occur in the low involvement condition, but not in the high involvement condition.

The design of the proposed model in H5 was a mixed model with a within subject mediation effect and a between subjects moderation effect. Hence Repeated Measures Regression Analysis was be performed separately for 3 involvement conditions using SPSS MEMORE macro (Montoya and Hayes 2017). Three models were later compared to assess the effect of involvement manipulation.

Model 1, Low involvement

The results of Repeated Measures Regression Analysis for low involvement condition are presented in Figure 11. The results indicate that the use of silent brand names over voiced brand names improved the perception of association with relevant human characteristics by $a = 0.0369$ units, this improvement is not statistically significant *t (203) = .888, p = .3756, 95% CI [-.0451, .1189]*. Although every one unit difference in perceived association with the relevant characteristics resulted in *b = .3251 (t (201) = 3.1625, p = .0018, CI [.1224, .5278])* statistically significant increase in brand's perceived environmental friendliness. So the more the brand was associated with relevant human characteristics, the more it was perceived environmentally friendly. Thus the estimated indirect effect of sounds used in brand names on perception of environmental friendliness was *ab = (.0369) (.3251) = .0120 CI [-.0163, .0463]*, which means silent brand names were perceived as more environmentally friendly as a result of effect of sounds on relevant characteristics which in turn improved the perception of environmental friendliness. The significance of indirect effect was tested using bootstrapping procedures. The indirect effect for each of 10,000 bootstrapped samples was significant at 95% confidence interval, ranging from -.0163 to .0463. The direct effect of brand name sounds on perception of

environmental friendliness was also significant, *c' = .1302, t (201) = 2.134, p = .0340, CI [.0099, .2504]*, which indicates that the use of silent sounds in brand names directly improved the perception of environmental friendliness of brand by .1302 units. As predicted, the total effect of sounds on perception of environmental friendliness was statistically significant, *c = .1422, t (203) = 2.28, p = .0236, CI [.0193, .2651]*.
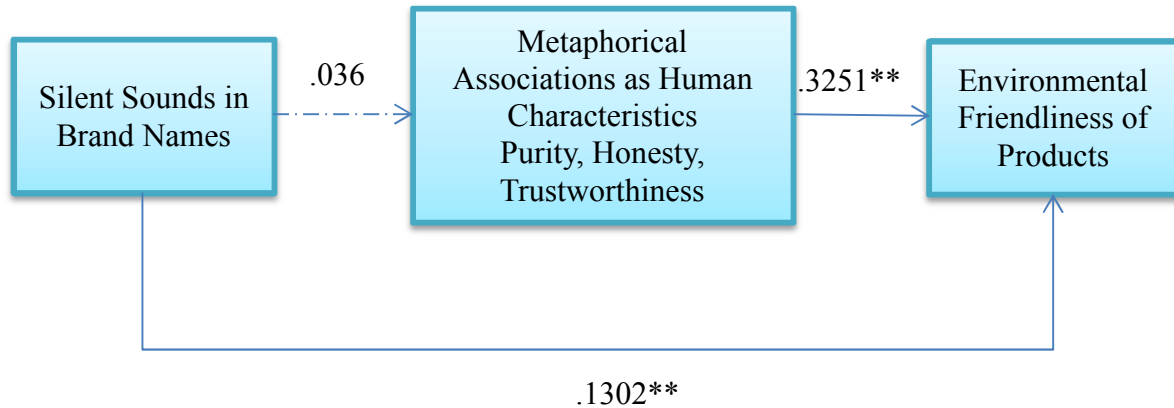
Figure 11: Effect of Sounds on Perception of Environmental Friendliness Partially Mediated through Relevant Metaphorical Associations (Study 4, Low Involvement Condition).

Model 2, High involvement

In high involvement condition the use of silent brand names over voiced brand names improved the perception of their association with relevant human characteristics by *a = 0.0554* units, this improvement is not statistically significant *t (194) = 1.1489, p = .2520, 95% CI [-.0133, .2833]*. Also, every one unit difference in perceived association with relevant characteristics resulted in *b = .3419 (t (192) = 3.09244, p = .0023, CI [.1238, .5600])* increase in the brand's perceived environmental friendliness. The estimated indirect effect of brand name sounds on perception of environmental friendliness was *ab = (.0554) (.3419) = .0189 CI [-.0140, .0626]*. The indirect effect for each of the 10,000 bootstrapped samples was significant at 95% confidence interval, ranging from -.0140 to .0626. The direct effect of the brand name sounds on

perception of environmental friendliness was not significant, *c' = .1161, t (192) = 1.5686, p = .1184, CI [-.0299, .2621]*, The total effect of sounds on the perception of environmental friendliness was insignificant as well *c = .1350, t (194) = 1.7960, p = .0741, CI [-.0133, .2833]*. The results are presented in Figure 12. **Therefore it can be concluded that H5 was partially supported.**
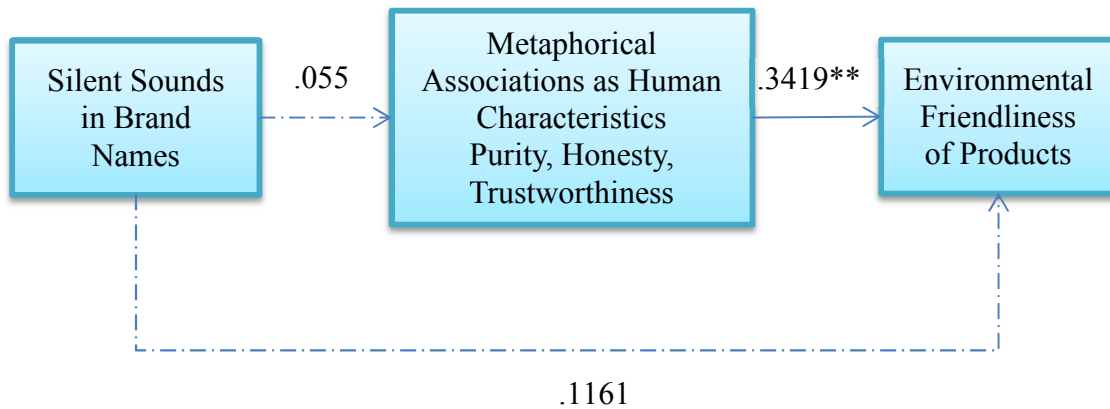
Figure 12: Effect of Sounds on Perception of Environmental Friendliness Partially Mediated through Relevant Metaphorical Associations (Study 4, High Involvement Condition).

Model 3, Control condition

Model in the control condition (Figure 13) revealed results contrary to the low and high involvement conditions. Unlike the other two conditions, in the control condition, the use of silent brand names over voiced brand names statistically significantly improved the perception of their association with relevant human characteristics by *a = .2667 t (205) = 7.7623, p = .000, 95% CI [.1989, .3344]*. However every one unit difference in perceived association with relevant characteristics resulted reduction in brand's perceived environmental friendliness by *b = -.3010 (t (203) = -1.8514 p = .0656, CI [.0656, -.6216])*. The estimated indirect effect of brand name sounds on perception of environmental friendliness was *ab = (.2667) (-.3010) = -.0803 CI [-.2047, .0365]*. The indirect effect for each of the 10,000 bootstrapped samples was significant

at 95% confidence interval, ranging from -.2047 to .0365. The direct effect of brand name sounds on the perception of environmental friendliness was in the direction contrary to the prediction and statistically significant, $c' = -.4699, t (203) = -5.2054, p = .000, CI [-.6479, -.2919]$, indicating that the use of silent sounds over voiced sounds in brand names reduced the perception of environmentally friendliness. The total effect of sounds on perception of environmental friendliness was significant as well $c = -.5502, t (205) = -6.8821, p = .000, CI [-.7078, -.3926]$.
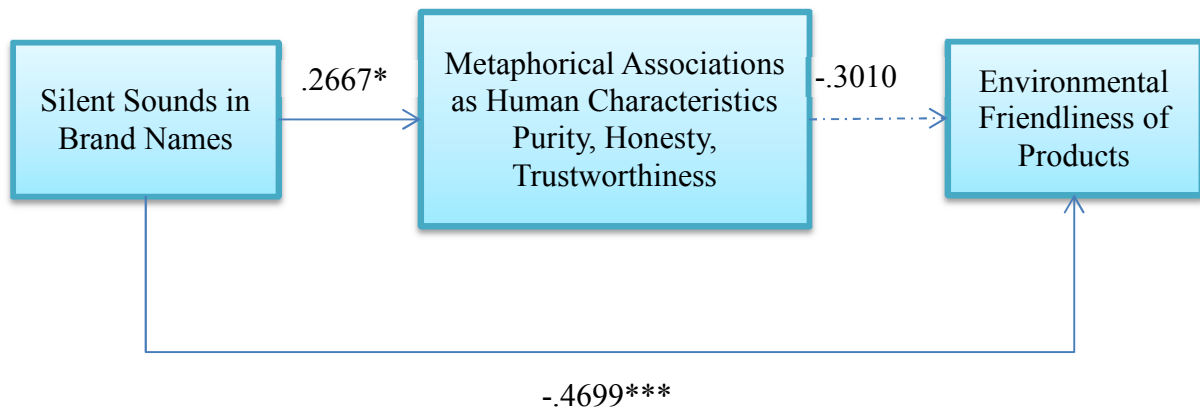
Figure 13: Effect of Sounds on Perception of Environmental Friendliness Partially Mediated through Relevant Metaphorical Associations (Study 4, Control Condition).

In conclusion it can be said that **the overall results partially support H5**. A significant direct effect of sounds on the environmental friendliness in the low involvement condition weakened in the high involvement condition, weakening the total effect of sound on environmental friendliness.

However, it was observed that in both high and low conditions, the silent sounds did not significantly improve ratings for the relevant human characteristics compared to voiced sounds. In other words, silent and voiced brand names were associated equally with the relevant metaphorical associations. This is surprising because in all previous studies silent sounds were

found to be associated significantly more with relevant characteristics than voiced sounds. One of the possible reasons for the lack of difference may be the context specified to the participants. In all prior studies, participants rated mere names, considering them as names of people. Whereas in the current study participants evaluated all the brand names and the perceptions associated with those names in relation to an environmentally friendly pen. Therefore, it is possible that some of the brand names in the study were perceived as more suitable, favorable or likeable as brand names for environmentally friendly pens which confounded the effect of sounds used in the brand names, altering the relationship between the brand names and their associations.

At the end of the survey, participants were asked if any of the names reminded them of any meaning associated with environmental friendliness and in which language. 603 participants replied to the question. Out of which, on average 90% (N = 542) of the participants replied that the names did not remind them of any associations with environmental friendliness. Chi-square analysis comparing the number of participants 'yes and 'no' was performed for each name. The results are summarized in Table 14.

Table 14:
Associations Made with Each of The Fictitious Names (Study 4)

Name	N	Yes	Yes%	No	%	Chi-Square	df	P
Koojagad	604	47	7.8%	557	92.2%	430.629	1	.000
Goochakat	604	62	10.0%	542	90.0%	381.457	1	.000
Jobitaz	603	45	7.5%	558	92.5%	436.433	1	.000
Chopidas	602	57	9.5%	545	90.5%	395.588	1	.000
Bazovit	603	42	7.0%	561	93.0%	446.701	1	.000
Pasofid	601	110	18.3%	491	81.7%	241.532	1	.000

Posttest

A posttest was conducted to test the aforementioned impact of possible confounding variables: 1. Easiness to pronounce; 2. Familiarity, 3. Likeability, and 4. Suitability. The purpose of this posttest was to find out the underlying reasons for insignificant differences in the ratings for silent and voiced brand names on the scale of human characteristics relevant to environmental friendliness, which in previous studies were observed to be significantly different as a results of the effect of sounds in the brand names. Although the brand names used in this study were slightly modified from a pretested set of names, and used in previous study in relation to environmentally friendly products; they were not pre-tested particularly in relation to the environmentally friendly pens. There is a possibility that the participants found some names disproportionately favorable or unfavorable in relation to the pen, which affected their ratings for the relevant human characteristics overriding the effect of the sounds in those brand names. The current pretest was conducted to examine occurrence of any such effect.

Method

A survey was designed using Qualtrics online software. Data was collected using Amazon Mturk online marketplace. 100 participants (average age = 33 years, ranging from 21 to 72 years; 56% males) voluntarily filled out a survey. Participants were paid 50 cents each as compensation.

After obtaining the consent from the participants, they were presented with an introductory statement: "We appreciate your participation in this study. In the following questions, you will see a list of brand names for **an environmentally friendly pen** which is made from recycled plastic bottles. You will be asked to **rate the set of brand names** on different scales. There are no right or wrong answers."

Later, participants rated a set of six brand names, 3 silent (Goochakat, Chopidas, Pasofid), and 3 voiced (Koojagad, Jobitaz, Bazovit), presented in random order, on the scale of: 1. How easy it is to pronounce?, measured on a 7 point Likert scale (very difficult (1) – very easy (7); 2. How familiar does it sound?, measured on a 7 point Likert scale (Not familiar at all(1) – extremely familiar (7) 3. How much do you <u>like</u> each of these brand names for an environmentally friendly pen?, measured on a 7 point Likert scale (do not like at all (1) – like it very much (7); and 4. How <u>suitable</u> is each of these brand names for an environmentally friendly pen?, measured on a 7 point Likert scale not suitable at all (1) – very suitable (7). In the end of the survey, participants recorded their age and gender.

Analysis and results

Paired sample t-tests were conducted to compare ratings for the silent and voiced brand names in each pair. The results are presented in Table 15. It was found that in all the three pairs, the silent and voiced brand names did not significantly differ on the scale of likeability, familiarity, and suitability to the pen. Also ratings on the scale of easiness to pronounce, for brand names in two pairs, Koojagad- Goochakat, and Bazovit – Pasofid, were not significantly different from each other. Although, in pair 2, silent brand name Chopidas *(M = 3.87)* was rated significantly higher on the scale of easiness to pronounce than the voiced brand name Jobitaz *(M = 3.45, t (99) = -2.436, p < .05)*.

This difference in pronounceability for one pair, however, is unlikely to have affected the results in the main study. As in Study 4, the ratings for the two names – Chopidas and Jobitaz were not significantly different on the scale of relevant characteristics *(M_{Chopidas} = 4.42, M_{Jobitaz} = 4.37)*, irrelevant characteristics *(M_{Chopidas} = 4.41, M_{Jobitaz} = 4.35)*, or on the scale of environmental friendliness *(M_{Chopidas} = 4.41, M_{Jobitaz} = 4.49)*. Which shows that the name

Chopidas was not favored by study participants more than its voiced counterpart, Jobitaz on any of the criteria.

<div align="center">

Table 15:

Results of Paired t-Tests Comparing Silent and Voiced Names on The Scales of Pronounceability, Familiarity, Likeability, and Suitability (Study 4, Posttest)

</div>

Dependent Variable	Pair	Brand name	Mean	Sd	t	df	p
Pronounceability	1.	Koojagad	2.8800	1.61608			
		Goochakat	2.9200	1.62481	-0.313	99	0.755
	2.	Jobitaz	3.4500	1.70783			
		Chopidas	3.8700	1.70948	-2.436*	99	0.017
	3.	Bazovit	3.8200	1.74877			
		Pasofid	3.5500	1.83333	1.568	99	0.120
Familiarity	1.	Koojagad	1.9900	1.50081			
		Goochakat	1.9400	1.53623	0.486	99	0.628
	2.	Jobitaz	2.3200	1.70489			
		Chopidas	2.4300	1.73645	-0.807	99	0.421
	3.	Bazovit	2.1200	1.55232			
		Pasofid	2.1000	1.60492	0.150	99	0.881
Likeability	1.	Koojagad	2.5200	1.78931			
		Goochakat	2.5000	1.72035	0.128	99	0.898
	2.	Jobitaz	2.7400	1.70927			
		Chopidas	3.0000	1.90162	-1.571	99	0.119
	3.	Bazovit	2.9200	1.78478			
		Pasofid	2.6400	1.76681	1.721	99	0.088
Suitability	1.	Koojagad	2.6900	1.84059			
		Goochakat	2.7200	1.93886	-0.269	99	0.788
	2.	Jobitaz	2.9600	1.86363			
		Chopidas	3.0000	1.89097	-0.300	99	0.765
	3.	Bazovit	2.8900	1.79165			
		Pasofid	2.8800	1.87638	0.082	99	0.935

Conclusion (Post-test)

The results of the posttest confirm that the factors: pronounceability, familiarity, likeability, or suitability of brand names – which can be some of the most common confounding factors affecting effects of sounds – did not affect the participants' brand name related perceptions.

Discussion

There were two main goals of Study 4. First, to examine the effect of sounds on consumer perceptions in context to a close to real life product purchase scenario. Secondly, I wanted to test the relationship between sounds, metaphorical associations, and consumer perception, in the light of a possible boundary variable – product involvement. It was proposed that the effect of sound will persist in a low involvement product purchase situation but not in a high involvement situation.

The results of the current study partially support the hypothesis. It was observed that in the low involvement condition, use of silent sounds in brand names improved the perception of brand's environmentally friendliness compared to voiced sounds, directly, as well as indirectly through association with metaphorical human characteristics. On the contrary, in high involvement condition the direct effect of silent brand names on brand's environmental friendliness ratings was not significant. Yet it should be noted that the indirect path was not affected by involvement manipulation. This finding is particularly interesting in the light of previous research which suggests that the effect of sounds on consumer perception is uncontrollable and automatic yet it may fade away with additional information about the brand names and the product (Yorkston and Menon, 2004). While results of this study suggest that the direct effect of brand name sounds did fade away with the increasing level of involvement, the indirect effect remained unchanged.

A possible explanation for this interesting effect may lie in consumers' information processing and decision making. It is possible that while there is a direct effect of sounds which is processed peripherally; consumers allocate cognitive resources to process associations, especially metaphorical associations, in relation to sounds and products. Future studies

examining the neural processing of sounds are required to understand how sounds are processed by consumers.

Another surprising result of this study was the lack of significant effect of sounds on the mediator, i.e. brand's association with human characteristics relevant to environmental friendliness. While the posttest ruled out some obvious confounding factors such as pronounceability, likeability, familiarity, and likeability; it is possible that the context of an environmentally friendly pen used in the study altered participants' perceptions, future studies are needed to understand the underlying reasons.

In the current study I used a set of human characteristics relevant to environmentally friendly products from my previous studies. This set was derived in relation to a common term 'environmentally friendly product' and not specifically in relation to a pen. It is possible that consumers associate different human characteristics relevant to environmental friendliness with different products. For example, consumers may expect an environmentally friendly car to be honest and good hearted when it comes to protecting the nature, but they may not appreciate it being 'patient', as it connotes tolerating delays.

Similarly, it is possible that consumers associate a different set of human characteristics relevant to environmental friendliness of a pen. As a result, when presented with a common list of human characteristics associated with environmental friendliness and not particularly with a pen, the participants may have rated voiced and silent brand names around 4 indicating that its neither desirable or undesirable (on a 7 point scale, refer Table 13). However further studies are warranted to test this proposition.

CHAPTER 5: STUDY 5: FIELD EXPERIMENT

Introduction

A field experiment was conducted to test the effect of sounds on the actual product choice in a real-world setting where participants were asked to evaluate and actually choose a product based on its brand name. In my previous studies the effect of sounds was tested in controlled experiments using fictitious situations. Hence, in this study, I expect to replicate my findings from the lab settings in an actual product choice situation. This field experiment complements my previous studies and substantiates the theoretical findings of laboratory based studies in a realistic situation. Such demonstration of the effects of sound on consumer perception and actual product choice, in a natural setting, strengthens the external validity of my research (Gneezy 2017; Grinstein and Kronrod 2016).

Method

The design of this study included 2 conditions, i.e. 2 (Silent vs. Voiced sound). The experiment was conducted on the campus of a large Midwestern University in a library centrally located on the campus. A booth was set up in the hallway of a library to distribute free samples of environmentally friendly writing pens. This product was chosen because it is particularly relevant to college students.

The booth was divided in two areas. There was one open area, visible to people passing through the hallway. Another area was enclosed with a panel. A table was set up in the area visible to people. Two research assistants were available beside the table. The procedure of the experiment was explained to the research assistants prior to the experiment and they were trained to conduct the experiment, but they were blind to the conditions and the hypothesis.

A sign was placed in front of the table which read 'Care for a free eco-friendly pen? We are promoting two brands of eco-friendly pens, made from 80% recycled plastic. Ask here for your free eco-friendly pen."

One of the research assistants approached people passing through the hallway and asked them if they were interested in getting a free eco-friendly pen. Interested participants were directed to the booth. 200 participants voluntarily participated in the study.

Another research assistant then read information (same as the sign mentioned above) regarding the free sample to the participant and the participant's oral consent.

One participant was taken to the enclosed area of the booth at a time. The purpose of the enclosed area of booth was to maintain confidentiality about participants' choice of journal. Also to avoid the possibility of influencing the participant's choice by presence of other participants.

There were two covered boxes set up on the table in the area. Both boxes looked exactly the same, except for the brand names on the boxes. One box was labeled "Jobiza" and the other was labeled as "Sekato". Both the brand names were fictitious. The names were chosen from a list of brand names pretested for a previous study. The names were slightly modified from their previous form (Jobaz and Sokat) . Jobiza was made of voiced sounds, while Sekato was made of silent sounds.

Both boxes contained the same type of writing pens. The participant were asked to choose one pen from one of the boxes, i.e. either Jobiza or Sekato. The participants were not able to see the product before making a choice (the experimental set up is illustrated in Appendix P). After the participant made a choice, the research assistant gave away a pen from the box preferred by the participant and recorded participant's product choice.

After handing out a pen, the participants were asked if they were willing to fill out a survey. The survey collected demographic information from participants. It also included questions related to the participant's attitudes related to the brand names and the pen.

The first question on the survey asked participants to rate the brand name of the pen they chose on following scales 1. I like the brand name of the pen I chose. 2. The brand name suits the pen. And 3. The brand name sounds eco-friendly. The responses to all three questions were measured on a 7 point scale, completely disagree (1) – completely agree (7).

The second question asked participants how much they would like to pay for the pen. The next question asked about their perceptions and attitudes related to the product, i.e. the pen. The pen was rated on the following scales: Not Eco friendly at all (1) – Extremely Eco-Friendly (7); 2. Unfavorable (1) – Favorable (7); 3. Unlikeable (1) – Likeable (7); 4. Not Useful (1) – Useful (7); 5. Low Quality (1) – High Quality (7); 6. Undesirable (1) – Desirable (7). In the end participants recorded demographic information. The participants were asked to use the pen they just received to fill out the survey so they can evaluate it.

Data Analysis and Results

In line with the predictions of this research, participants were expected to prefer the pen with brand name 'Sekato (Silent name) over 'Jobiza (Voiced name). Data about participants' product choices for silent and voiced brand names was compared using Chi-Square analysis. Out of 199 participants, 115 (58%) chose Sekato, while 84 (42%) chose Jobeza. A chi square test revealed that significantly more participants chose Sekato over Jobeza (*Chi square = 4.83, p<.05*). The results supported the hypothesis of the study.

171 (89.5%) participants filled out the survey. Some of the surveys were incomplete. 160 participants recorded their age. The average age of the participants was 24 years (ranging from

17 to 74 years). Out of 170 participants that disclosed their gender, 49% were women. 151

participants revealed their occupation, out of which 99 (65%) were students.

Each participant rated only one pen that they chose and consequently only one brand

name. Thus the design of the study was between subjects. Ratings for the pens (Sekato vs.

Jobeza) on the scale of each of the dependent variables (price, brand name likeability, brand

name suitability, brand name eco-friendliness, as well as ratings for the pen on the scale of eco-

friendliness; favorability; likeability; usefulness; quality; and desirability) were compared with

Univariate ANOVA analysis.

Table 16:							
Results of Univariate ANOVA Analysis for Silent and Voiced Brand Names (Study 5)							
Dependent Variable	**Brand name**	**Sound**	**Mean**	**Std. Dev.**	**F**	**df**	**p**
Price	Sekato	Silent	1.64	1.49			
	Jobeza	Voiced	1.94	1.69	1.40	1, 150	.238
Brand Name Likeability	Sekato	Silent	5.17	1.73			
	Jobeza	Voiced	5.01	1.39	.629	1, 169	.429
Brand Name Suitability	Sekato	Silent	4.64	1.11			
	Jobeza	Voiced	4.76	1.44	.383	1, 169	.537
Brand Name Eco-Friendliness	Sekato	Silent	4.25	1.47			
	Jobeza	Voiced	4.28	1.55	.016	1, 168	.901
Pen Eco-Friendliness	Sekato	Silent	4.79	1.30			
	Jobeza	Voiced	5.22*	1.36	4.156	1,163	.043
Pen Favorability	Sekato	Silent	5.45	5.27			
	Jobeza	Voiced	5.21	1.28	.145	1,168	.704
Pen Likeability	Sekato	Silent	5.37	5.34			
	Jobeza	Voiced	5.41	1.28	.003	1, 168	.957
Pen Usefulness	Sekato	Silent	6.04	5.25			
	Jobeza	Voiced	5.84	1.32	.094	1, 168	.760
Pen Quality	Sekato	Silent	5.18	4.27			
	Jobeza	Voiced	4.90	1.34	.286	1, 168	.594
Pen Desirability	Sekato	Silent	5.38	5.31			
	Jobeza	Voiced	5.27	1.34	.030	1, 167	.863

Results indicate that changes in brand name sounds did not result in significant changes

on any of the dependent variables except eco-friendliness of the pen. Interestingly, the pen with

voiced brand name 'Jobeza' was perceived more environmentally friendly ($M = 5.22$) than pen with silent brand name 'Sekato' ($M = 4.79, F (1, 163) = 4.156, p < 0.5$). The results are summarized in Table 16.

Discussion

While previous studies focused on the effect of sounds on consumer perceptions in controlled experimental, this field study supported the proposition of the research in a natural setting. In this study the silent brand name 'Sekato', when described as a brand name for an environmentally friendly pen, was clearly preferred over the voiced brand name 'Jobeza'. The current study is particularly important from a marketer's point of view as it shows that brand names, built applying linguistic psychology, can be effective not only in communicating product attributes, but also in motivating consumers to try their product.

The data from the survey reveals interesting results. Even though more participants preferred a pen with a silent name, they did not rate the pen higher on any of the product evaluation scales than the pen with the voiced name. It should be noted that although participants chose the pen based on the brand names, they rated it after using it personally. These results suggest that while sounds in brand names can affect consumer perceptions and product trial; consumer's evaluation of the actual product, decisions related to repeat purchase and consequently brand loyalty still largely depends on product quality and consumer experience.

CHAPTER 6: GENERAL DISCUSSION

Marketers find it particularly difficult to convey product attributes of environmental products. The market trends indicate that there is a significant economic opportunity for green products (Ottman, Stafford, and Hartman 2006). However, in reality green marketing does not always receive the desired positive response from consumers (Tucker et al 2012). This research attempts to find a potential way to indirectly influence consumers' environmentally friendly product purchase decisions.

The overarching goal of this work was to examine the ability of brand name sounds to convey environmental friendliness via metaphorical associations with relevant human characteristics. As well as studying the strength of this capability in different product purchase situations. This study is a first attempt to examine the ability of sounds to convey indirect or metaphorical attributes of products, such as 'environmentally friendly'. The discovery that sounds can convey not only literal meanings but also metaphorical meanings is a novel contribution to the study of branding and consumer behavior. Additionally, the current research not only tests the theoretical phenomenon but also takes it to the next level by testing it in different purchase scenarios as well in a natural setting to strengthen external validity of results.

The results of the two preliminary studies demonstrated that silent sounds (k/p/t) are associated with metaphorical associations (Affectionate, Good-Hearted, Honest, Humble, Patient), related to their literal meaning (brightness, lightness, mildness etc.). On the other hand, the environmental friendliness of products is also associated with similar set of human characteristics related to the literal product attributes (safe, mild, natural ingredients, etc.). Consequently, when silent brand names are used in relation to environmental friendly products, they are perceived more environmental friendly than voiced sounds.

The third study shows that the effect of brand name sounds on perception of environmental friendliness is mediated by these relevant metaphorical associations. In other words, the use of silent sounds over voiced sounds in the brand names significantly improves the ability of names to convey relevant metaphorical attributes and in turn the ability to convey environmental friendliness. Current research also establishes that sounds in the meaningless brand names can be more effective in conveying environmental friendliness even when these meaningless names are associated with other similar meaningful words.

In the next study, study # 4, the moderating role of involvement on the relationship between sounds and consumer perceptions related to environmentally friendly products was studied. Also in this study, the effect of sounds was studied in relation to a specific product (a pen) rather than a loose term 'environmentally friendly products'. This study suggests that the effect of sounds may vary with changes in the level of product involvement such as, the effect may be prominent in low involvement situation but not in high involvement situation. This finding makes a theoretical contribution to the literature related to involvement and particularly ELM, as it provides support for ELM in relation to yet another peripheral cue.

The last study, conducted outside of the controlled laboratory environment strengthens the propositions of this research. This study confirms the ability of sounds in conveying product related attributes of environmentally friendly products in a product purchase situation very close to reality. In conclusion, this research not only repeatedly demonstrates the ability of sounds to convey metaphorical meanings of environmental friendliness, but also identifies boundary conditions. In this research I also validate my predictions with the use of diverse word formations, in different product purchase scenarios, including a natural setting, and eliminate the possibility of confounding variables.

Marketing Implications

Sound symbolism can be an effective tool for marketers to convey green benefits of a brand. This can be used as an indirect way of conveying a message, which marketers often find difficult to directly convey.

The strategy of using sounds to convey indirect meanings can be highly useful for global brands, as the meaning of sounds is same universally (Klink 2000, Lowrey and Shrum 2007). Silent sounds will be able to convey similar meaning across the globe, which gives an additional power to the brands. It should be noted, though, that the same consonants and vowels can be pronounced differently across the globe. There can be local cultural influences on how a particular brand name is pronounced. Thus the same brand name may be produced differently in different countries and languages. Such difference in pronunciation may lead to producing different sounds and consequently different perceptions of brand names. Further, a meaningless brand name created in one language may be meaningful in another language. Thus care must be taken while designing the brand names for international markets.

Also this tool can be especially effective for low involvement products, where consumers are not motivated to allocate cognitive resources towards information processing and thus rely more on peripheral cues for assessment of products (Dawar and Parker, 1994; Sengupta, Goodstein and Boninger, 1997). For example, the decision of buying an environmentally friendly household cleaner usually does not involve deep thinking, long product search or comparison between competing brands (Petty and Cacioppo 1983). In such a scenario, an indirect or subtle way of conveying product attributes can play a major role. Sounds in the brand names can be instrumental in providing such heuristic cues about the product that are processed subconsciously.

However it can also be argued that individual differences in consumers' environmental concern may affect the level of involvement in environmentally friendly products and in turn moderate the effect of sounds on perceptions of environmental friendliness. Consumers with higher environmental concern are highly involved in the purchasing process of environmentally friendly products. Thus these consumers may rely more on cognition and less on heuristic cues while purchasing environmentally friendly products. Previous research supports these predictions in the context of linguistic cues and indicates that metaphors, and figurative language can only improve persuasiveness of ads in low involvement scenarios (Toncar and Munch, 2001). Although current research tests the effect of product involvement arising from a specific purchase situation, further empirical research is needed to test the effect of sounds on consumers with individual differences in the level of environmental concern as well as types of personalities.

It should be noted, though, that applying sound symbolism can be challenging. Current research, particularly Study 4, suggests that marketers should take utmost care while using sound symbolism in brand names as the effect of sounds may vary with type of product and product category. This research shows that the effect of sounds on perception of environmentally friendliness of a product is mediated through metaphorical human associations. Which means consumers assign metaphorical human characteristics to environmentally friendly products and prefer a brand name containing sounds that can also be associated with the same human characteristics. However consumers may assign different types of metaphorical associations to different types of products. For example, consumers may assign good-heartedness to an environmentally friendly body soap, as it denotes being kind and friendly to skin. However good-heartedness may denote 'inefficiency' in case of an environmentally friendly bathroom

cleaner. Also consumers may associate 'smartness' more with innovative environmentally friendly products such as electric cars than with traditional environmentally friendly products such as, paper products.

Additionally, there can be multiple meanings and consequently multiple perceptions associated with sounds, and products, including certain perceptions that marketers may not want to convey. Therefore it is utmost necessary for marketers to apply sound symbolism in brand names only after conducting appropriate research.

Limitations and Future Research

The findings of this study should be received in the light of its limitations. This study is the first step in identifying ability of sounds to convey environmental product benefits. The current study focuses only on silent consonants and ignores vowels and other sounds. Another limitation of this research is that I studied the effect of sounds only in relation to environmentally friendly pens and fictitious brand names. For the generalization of the use of sounds to convey metaphorical meanings, further studies are required to test this notion in relation to different types of sound and product categories, for example, metaphorical associations of voiced sounds in relation to suitable product categories.

Conclusion

In summary, the present work suggests that subtle differences in sounds can be highly influential in communicating not only literal product attributes, but also second level metaphorical meanings. Field study further substantiates the causal relations examined in this study in real market situations. This work provides a very innovative approach to marketers as well as improved understanding of the theory of sound symbolism. Further empirical

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investigation is needed to test ability of sounds to convey metaphorical associations of products, other than environmentally friendly.

APPENDICES

APPENDIX A: Fictitious Names Used in Study 1

Table 17:
List of Silent and Voiced Names (Study 1)

Pair	Silent Consonant Name	Voiced Consonant Name
1	Katos	Gadoz
2	Sokat	Zogad
3	Tichapee	Dijabee
4	Fokita	Vogida
5	Chopas	Jobaz
6	Kasap	Gazab
7	Sook	Zoog
8	Posk	Bozg
9	Seest	Zeezd
10	Chapp	Jabb
11	Pefa	Beva
12	Tachup	Dajub

APPENDIX B: Shortlisting of Metaphorical Human Characteristics

Table 18:
Human Characteristics Associated with Environmentally Friendly Products

Pretest Study	**Preliminary study 1**	**Preliminary study 2**
N=50	N=35	N=164
Open ended survey Generated 29 Human characteristics associated to environmental friendly products	Closed ended survey Shortlisted 26 Human characteristics associated to environmental friendly products	Closed ended survey 5 Human characteristics associated to environmental friendly products, 23 Human characteristics generated in study 1 were grouped into 5 categories, based on similarity of meaning
Altruistic	Healthy ($M = 5.92$)	Humble
Affectionate	Clean ($M = 5.89$),	Patient
Good hearted	Safe ($M = 5.84$)	Affectionate
Kind	Pure ($M = 5.76$)	Honest
Pure	Responsible ($M = 5.76$)	Good-hearted
Genuine	Fresh ($M = 5.76$)	
Clean	Good-hearted ($M = 5.70$)	
Unspoiled	Smart ($M = 5.64$)	
Honest	Trustworthy ($M = 5.62$)	
Trustworthy	Gentle ($M = 5.68$)	
Reliable	Intelligent ($M = 5.59$)	
Responsible	Harmless ($M = 5.59$)	
Fresh	Calm ($M = 5.54$)	
Cheerful	Kind ($M = 5.51$)	
Lively	Genuine ($M = 5.51$)	
Pleasant	Reliable (M = 5.49)	
Smart	Honest (M = 5.46)	
Wise	Wise (M = 5.46)	
Intelligent	Pleasant (M = 5.43)	
Rational	Rational (M = 5.43)	
Simple	Affectionate (M = 5.32)	
Modest	Humble (M = 5.30)	
Quite	Lively (M = 5.22)	
Humble	Simple (M = 5.16)	
Safe	Cheerful (M = 5.11)	
Harmless	Altruistic (M = 5.00)	
Calm		
Gentle		
Healthy		

Table 19:
Pairwise Exploratory Factor Analysis of Relevant and Irrelevant Human Characteristics (Study 2)

Human Characteristic	Pair 1: Sokat-Zogad			Pair 2: Kasap-Gazab			Pair 3 Chapp-Jabb				Pair 4 Seesk-Zeezg		
	Factors			Factors			Factors				Factors		
	1	2	3	1	2	3	1	2	3	4	1	2	3
Good-Hearted	.663	-	-	.693			.608				.630		
Honest	.602	-.413	-.323	.721			.826				.800		
Patient	.555	-.384	-	.709			.657	-.337			.694		
Affectionate	.718	-	-	.677			.446			-.579	.487		.503
Humble	.690			.565			.717		-.317		.575	-.417	.335
Good-Looking	-	.510	-		.834				.796			.633	
Brave	-	-	-.678		.696				.581	.395		.320	-.612
Enthusiastic	-	.768	-		.542	.534		.802				.668	
Humorous	-	.719	-			.779		.718				.693	
Musical	-	-	.777			.534				.780			.699
% Variance explained	54.05%			54.62%			61%				53.43%		
KMO	.670			.686			.634				.673		
Bartlett's χ^2	254.27			273.89			222.40				.264.66		
p	.000			.000			.000				.000		

Table 20:
Exploratory Factor Analysis of Human Characteristics in Association with 'Koojagad'
(Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2	Factor 3	Factor 4
Good-Hearted	Relevant	.669	.438	-	-
Lively	Relevant	-	.808	-	-
Honest	Relevant	.761	-	-	-
Humble	Relevant	.804	-	-	-
Patient	Relevant	.713	-	-	-
Smart	Relevant	-	-	.641	-
Humorous	Irrelevant	-	.679	-	.307
Good Looking	Irrelevant	-	-	.709	-
Brave	Irrelevant	-	-	.707	-
Enthusiastic	Irrelevant	-	.835	-	-
Musical	Irrelevant	-	-	-	.821
Creative	Irrelevant	-	.411	-	.681

% Variance explained		64.74 %
KMO		.815
Bartlett's χ^2		1830.911
p		.000

APPENDIX E: Factor Analysis #2 (Study 3)

Table 21: Exploratory Factor Analysis of Human Characteristics in Association
with 'Goochakat' (Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2	Factor 3
Good-Hearted	Relevant	.463	.649	-
Lively	Relevant	.788	-	-
Honest	Relevant	-	.774	-
Humble	Relevant	-	.777	-
Patient	Relevant	-	.740	-
Smart	Relevant	-	.363	.677
Humorous	Irrelevant	.797	-	-
Good Looking	Irrelevant	-	-	.705
Brave	Irrelevant	-	.322	.625
Enthusiastic	Irrelevant	.792	-	-
Musical	Irrelevant	.522	-	.466
Creative	Irrelevant	.625	-	.386

% Variance explained		60.58 %		
KMO		.864		
Bartlett's χ^2		2306.068728		
p		.000		

Table 22:
Exploratory Factor Analysis of Human Characteristics in Association
with 'Jobitaz' (Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2
Good-Hearted	Relevant	.324	.676
Lively	Relevant	.821	-
Honest	Relevant	-	.780
Humble	Relevant	-	.803
Patient	Relevant	-	.747
Smart	Relevant	-	.600
Humorous	Irrelevant	.685	-
Good Looking	Irrelevant	.549	-
Brave	Irrelevant	-	.482
Enthusiastic	Irrelevant	.757	-
Musical	Irrelevant	.673	-
Creative	Irrelevant	.627	.323

% Variance explained	51.62 %
KMO	.863
Bartlett's χ^2	2168.384
p	.000

APPENDIX G: Factor Analysis #4 (Study 3)

Table 23:
Exploratory Factor Analysis of Human Characteristics in Association with
'Chopidas' (Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2	Factor 3
Good-Hearted	Relevant	.606	.421	-
Lively	Relevant	-	.714	.382
Honest	Relevant	.706	.309	-
Humble	Relevant	.819	-	-
Patient	Relevant	.784	-	-
Smart	Relevant	.488	.335	-
Humorous	Irrelevant	-	.630	.386
Good Looking	Irrelevant	-	.567	-
Brave	Irrelevant	-	.680	-
Enthusiastic	Irrelevant	-	.706	-
Musical	Irrelevant	-	-	.823
Creative	Irrelevant	-	-	.739
% Variance explained		59.03 %		
KMO		.871		
Bartlett's χ^2		2235.345		
		.000		
p				

APPENDIX H: Factor Analysis #5 (Study 3)

Table 24:
Exploratory Factor Analysis of Human Characteristics in Association with 'Bazovit'
(Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2	Factor 3
Good-Hearted	Relevant	-	.687	-
Lively	Relevant	.701	-	.378
Honest	Relevant	-	.651	.435
Humble	Relevant	-	.793	-
Patient	Relevant	-	.752	-
Smart	Relevant	-	.309	.537
Humorous	Irrelevant	.748	-	-
Good Looking	Irrelevant	.327	-	.531
Brave	Irrelevant	-	-	.808
Enthusiastic	Irrelevant	.656	-	.380
Musical	Irrelevant	.647	-	-
Creative	Irrelevant	.673	-	-

% Variance explained	56.82 %	
KMO	.847	
Bartlett's χ^2	1927.012	
p	.000	

Table 25:
Exploratory Factor Analysis of Human Characteristics in Association with 'Pasofid'
(Study 3)

Human Characteristic	Relevance	Factor 1	Factor 2
Good-Hearted	Relevant	.307	.723
Lively	Relevant	.821	-
Honest	Relevant	-	.787
Humble	Relevant	-	.822
Patient	Relevant	-	.819
Smart	Relevant	.370	.431
Humorous	Irrelevant	.687	-
Good Looking	Irrelevant	.625	-
Brave	Irrelevant	.555	-
Enthusiastic	Irrelevant	.766	-
Musical	Irrelevant	.543	-
Creative	Irrelevant	.559	-

% Variance explained		51.75 %	
KMO		.867	
Bartlett's χ^2		2248.174	
p		.000	

APPENDIX J: Meaningful Associations List #1 (Study 4)

Table 26:
List of Associations for Name 'Koojagad'(Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
a rapper	1	0.18
African/ Africa	6	1.05
alien	1	0.18
animal	1	0.18
Arab/ Arabian/ Arabic	10	1.75
austrilian	1	0.18
Babys	1	0.18
Canadian	1	0.18
Chinese	1	0.18
cool (English)/ kool English/ Kool thing to save earth/ Kool-Aid/cool water and jagged peaks (english)	15	2.63
crazy English	1	0.18
detective English	1	0.18
dumping (English)	1	0.18
ebonics	1	0.18
English	2	0.35
excuse	1	0.18
Finnish	1	0.18
Fiord Iceland	1	0.18
French	1	0.18
Gadgets English	1	0.18
German	3	0.53
good	1	0.18
Gulag	1	0.18
Hindu	1	0.18
Indian/ India	7	1.23
It sounds Swedish, I thought of Ikea	1	0.18
Jagged/ jagged edge (english)	2	0.35
jewelry	1	0.18
kangaroo/ english	1	0.18
Ken	1	0.18
kierkegaard (english)	1	0.18
king (german)	1	0.18
kooj - africanis	1	0.18

Table 26 (cont'd)

Korean	1	0.18
Madrid	1	0.18
metal	1	0.18
Muslim	1	0.18
Norway	1	0.18
polish	1	0.18
Recycle	1	0.18
refridgerator	1	0.18
Russian	5	0.88
someone strict	1	0.18
something kind of jovial, in Russian	1	0.18
Sounds like an earth-friendly name (English)	1	0.18
Spanish	1	0.18
Swedish	4	0.70
This name remind me of coming to Nature's Aid	1	0.18
Town Name, Farsi	1	0.18
Tribal (African)	1	0.18
Turkish	1	0.18

APPENDIX K: Meaningful Associations List #2 (Study 4)

Table 27:
List of Associations for Name 'Goochakat' (Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
"goo" - English/ "Goo" isn't very friendly./Goo / food/Goo Mandarian (my name is goo- poo)/Industrial goo (English)/Slimy goo - English	7	1.23
A male sheep, Farsi	1	0.18
a pokemon character	1	0.18
a silly bird (english)	1	0.18
Afghanistan	1	0.18
African	2	0.35
alien	1	0.18
Animals English	1	0.18
Arab/ Arabic	4	0.70
Baby (english)/ Babys	2	0.35
British	1	0.18
carrot	1	0.18
Cat (english)	2	0.35
clean	1	0.18
clean (English)	1	0.18
comedy	1	0.18
Czech	1	0.18
English	2	0.35
Fair trade chocolate	1	0.18
Farcy	1	0.18
finish	1	0.18
French	1	0.18
George	1	0.18
German	5	0.88
Global	1	0.18
gooch	1	0.18
gooche	1	0.18
Good (English)/Good as in quality/good cat/good chocolate/Good earth (Indian)/Good morning!/good or geek (english)/good start	23	4.03
Google	1	0.18
Gord : English	1	0.18

Table 27 (cont'd)

gotcha english	1	0.18
Green	4	0.70
Hindi/ hindu	4	0.70
Hungarian	1	0.18
Indian/sounds like a indian name so it made me think environment	8	1.40
island	1	0.18
Israel	1	0.18
japan	1	0.18
jewish	1	0.18
lazy	1	0.18
man	1	0.18
middle eastern	1	0.18
Norway	1	0.18
polish	1	0.18
recycling	1	0.18
Russian	5	0.88
scat	1	0.18
Slavick	1	0.18
sneezing	1	0.18
something Eastern European	1	0.18
Spanish	1	0.18
Sun	1	0.18
swedish	1	0.18
Tough (Russian)	1	0.18
trampoline	1	0.18
UKRAINIAN	1	0.18

Table 28:
List of Associations for Name 'Jobitaz' (Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
a candy	1	0.18
Afghanistan	1	0.18
African	2	0.35
animal friendly	1	0.18
Arab/ Arabic	6	1.05
Cubin	1	0.18
dilligent	1	0.18
English	6	1.05
French	1	0.18
German	3	0.53
get the job done	1	0.18
Green job	2	0.35
hard worker	1	0.18
HEBREW	1	0.18
Indian	2	0.35
Iranian	1	0.18
Italian	1	0.18
Jabba the Hutt	1	0.18
Jaded English	1	0.18
Japan	1	0.18
Jar-Jar Binks (English)	1	0.18
jewelry	1	0.18
JEWISH	1	0.18
Jewish Job like in the Bible/ From the bible Job?/job (bible)	4	0.70
Job/ jobless English/"Job" makes me think commercialism/ having a job / purpose/ jobs as in recycling creates jobs (English)/job = work - cleaning up environment	20	3.50
jobo	1	0.18
Joe	1	0.18
jojoba oil	1	0.18
Jovial (English)	2	0.35
Joy (Czech)	1	0.18

Table 28 (cont'd)

middle eastern/ MID EAST	2	0.35
Muslim	1	0.18
PEACEFUL	1	0.18
person	1	0.18
Polish	3	0.53
pure (English)	1	0.18
recycle	1	0.18
Religous Name, English	1	0.18
Russian	7	1.23
RYSSIAN	1	0.18
South American	1	0.18
Spanish	4	0.70
Swahili	1	0.18
Thai	1	0.18
topaz	2	0.35
work, in English/ working	2	0.35

Table 29:
List of Associations for Name 'Chopidas' (Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
a helicopter	1	0.19
a muscian	1	0.19
a type of food in Spanish	1	0.19
Arab/ Arabic	5	0.97
beach	1	0.19
Brazil	1	0.19
Charlie	1	0.19
Cheerful, change (English)	2	0.39
chinchilla/ english	1	0.19
Chinese	1	0.19
chipata	1	0.19
Chipoltle	2	0.39
Choice (Indian	1	0.19
Chop/ chopin/ Choper/ chop is bad/ chop it down/ chopping down a tree/ chopping, destroying/ cuting trees down	19	3.68
chop sticks (english)	3	0.58
Chopan	1	0.19
Chopin and Lysidas, the composer and poet	1	0.19
chores : english	1	0.19
Clean	2	0.39
composer/ composing	2	0.39
Cooks English	1	0.19
Earth loving	1	0.19
elimination	1	0.19
English	6	1.16
feeding homeless	1	0.19
fish	1	0.19
Food (Mexico)	1	0.19
French	2	0.39
fundraising concert to bring alternative energy to	1	0.19
German	2	0.39
hammer english	1	0.19

Table 29 (cont'd)

hunGARIAN	1	0.19
INDIA/ Indian	6	1.16
Indigenous mexican	1	0.19
It reminds me of Chipotle (restaurant) which seems	1	0.19
LATIN	1	0.19
Looks like a type of vegetable	1	0.19
Mexican	7	1.35
NAPAL	1	0.19
Polish	2	0.39
Progressive	1	0.19
recycles	1	0.19
Russian	2	0.39
some sort of health food	1	0.19
something vaguely Indian	1	0.19
soothing music	1	0.19
Spanish	15	2.90
stagnant (English)	1	0.19
Swedish	1	0.19
Tex-mex food	1	0.19
greek/ Greek God, English/ greek hero (english)/greek yoghurt/ Greek-Roman Demigod	6	1.16

APPENDIX N: Meaningful Associations List #5 (Study 4)

Table 30:
List of Associations for Name 'Bazovit' (Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
A disease	1	.2
Africa/African	2	.4
anger	1	.2
Arab/Arabic	4	.7
bad	2	.4
Badguy	1	.2
baited English	1	.2
Balthazar, the Magus	1	.2
base	1	.2
Basil English	2	.4
Bass	1	.2
Basura, Spanish	1	.2
Beethoven - English	2	.4
Ben	1	.2
Bioclean	1	.2
bizarre	1	.2
Bleach	1	.2
bottom English	1	.2
Brave/English	6	1.1
brazen	1	.2
breeze	1	.2
cautious	1	.2
clean (English)	1	.2
Composer (Russian)	2	.4
Cubin	1	.2
dirty (English)	1	.2
dont chop trees	1	.2
Egyptian	1	.2
English	4	.7
fit (English)	3	.5
free hospitalization	1	.2
French	2	.4
German	4	.7
GREEK	2	.4

Table 30 (cont'd)

Hebrew	1	.2
Hungarian	2	.4
Indian	4	.7
Irish	1	.2
Jewish	2	.4
Latin	1	.2
money	1	.2
natural	1	.2
Norway/ Norwiegan Blabbermouth	3	.5
PAKASTAN	1	.2
piano player	1	.2
polish	1	.2
recycles	1	.2
Russian/ Balvartic/ something Russian, perhaps vodka	14	2.5
Sabastian	1	.2
Spanish	2	.4
Swedish	1	.2
turkish	1	.2
unsure	1	.2
Vital/ vit - vital - environmentally vital	2	.4
Vitamins English	1	.2
zit (english)	1	.2

APPENDIX O: Meaningful Associations List #6 (Study 4)

Table 31:
List of Associations for Name 'Pasofid' (Study 4)

Association/ Language	Frequency	% (based on total 571 participants)
Arabic	7	1.23
calm (English)	1	0.18
Chinese	1	0.18
Clean	1	0.18
disease	1	0.18
Dutch	1	0.18
English	4	0.70
fields, or pacifier	1	0.18
French	3	0.53
German	2	0.35
Greek	2	0.35
Hebrew	2	0.35
Hindu	1	0.18
horses	1	0.18
Indian	5	0.88
Italian	5	0.88
Japanese	1	0.18
Jewish	1	0.18
Like a natural passage	1	0.18
Mexican	1	0.18
mythical water god	1	0.18
Pacific	2	0.35
Pacific Ocean	1	0.18
Pacify/ Pacifist/ Pacified/ Pacifier/Pacifism	48	8.41
paso - spanish	1	0.18
pass	1	0.18
passing gas (English)	1	0.18
Passion/ Passionate	3	0.53
Passive/ passivity	22	3.85
past (English)	1	0.18
pasteurize	1	0.18
pasture	1	0.18
Paul	1	0.18
Paz	1	0.18

Table 31 (cont'd)

Paz-peace	1	0.18
Peace/ peaceful/ Peaceful Earth	4	0.70
Persival, German	1	0.18
Peruvian	1	0.18
Peso in Spanish	2	0.35
plastic recycling	1	0.18
Plug	1	0.18
Polish	2	0.35
preservation (English)	1	0.18
Pure	1	0.18
responsible (English)	1	0.18
Russian	7	1.23
Scientific Name, Latin	1	0.18
some sort of pill	1	0.18
someone who doesn't like fighting	1	0.18
spa or sandal	1	0.18
Spanish	2	0.35
Sudafed	1	0.18
This name makes me think of "nature's beauty"	1	0.18
unsure	1	0.18
usa	1	0.18
Weed killer? In English	1	0.18

APPENDIX P: Field Experiment Set-up

Figure 14: Field Experiment Set-up in Study 5.

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