

THE SOUND SYMBOLISM EFFECT OF A BRAND'S  
POST-TRANSGRESSION APOLOGY ON CONSUMER  
FORGIVENESS

By

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Abstract: This dissertation investigates what words should be used in a brand apology to increase consumer forgiveness in case of brand transgression. Based on sound symbolism literature, which argues that sounds can convey meanings, I examined the sound symbolic effect of words used in a brand apology on increasing consumer forgiveness. I also examine the mediating role of warmth and competence on consumer forgiveness. It was proposed that voiceless sound apology would increase forgiveness more than the voiced sound apology through warmth and competence perceptions toward the brand. It was also proposed that voiceless fricative sound apology would increase forgiveness more than the voiceless plosive sound apology through warmth and competence perceptions toward the brand. Across three pretests, I generated words that differ in sound symbolism but are the same in meaning to manipulate the sound symbolism in apology. However, contrary to my predictions, in Study 1, by using a real transgression situation, I found that individuals who received an apology with the voiced sounds showed more forgiveness by signing up for the make-up session than those who received an apology with the voiceless sounds. In Study 2, by using a brand transgression scenario, I also found that individuals who received an apology with the voiced sounds showed more forgiveness than those who received the voiceless sounds.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
II. REVIEW OF LITERATURE.....	5
Brand Transgression .....	5
Brand Transgression, Service Failure, and Product/Brand Harm Crises.....	6
Consumers’ Responses to Brand Transgression .....	7
Brand Responses to Brand Transgression.....	8
Brand Apology and Its Effect on Consumer Forgiveness .....	10
<i>Apology</i> .....	10
<i>Forgiveness</i> .....	13
Warmth and Competence Perception of Apology on Consumer Forgiveness .....	15
<i>Stereotype Content Model (SCM)</i> .....	15
Sound Symbolism .....	17
<i>Vowel Sound Symbolism</i> .....	19
<i>Consonant Sound Symbolism</i> .....	22
<i>Sound Symbolism with Social Perception</i> .....	25
III. HYPOTHESES DEVELOPMENT .....	27
Primary Effect of Apology on Consumer Forgiveness.....	27
Effect of Voiceless (vs. Voiced) Consonant Sound in Brand’s Apology on Consumer Forgiveness .....	29
Consumers’ Inferential Processes of Sounds: Mediating Roles of Warmth and Competence.....	31

Chapter	Page
IV. STUDIES AND RESULTS .....	36
Study Overview .....	36
Pretest 1 The Effect of Sound on Various Perceptions.....	37
<i>Participants and Procedure</i> .....	37
<i>Results</i> .....	38
<i>Discussion</i> .....	39
Pretest 2 Synonyms Equivalence .....	39
<i>Participants and Procedure</i> .....	40
<i>Results</i> .....	40
Pretest 3 Sound Symbolic Association of Words .....	47
<i>Participants and Procedure</i> .....	47
<i>Results</i> .....	48
<i>Discussion</i> .....	48
Study 1: Sound in Apology Effect on Willingness to Re-Book a Study Session ..	51
<i>Participants and Design</i> .....	52
<i>Procedure</i> .....	52
<i>Results</i> .....	54
<i>Discussion</i> .....	55
Study 2: Sound in Brand Apology Effect on Consumer Forgiveness .....	55
<i>Participants and Design</i> .....	56
<i>Procedure</i> .....	57
<i>Results</i> .....	59
<i>Discussion</i> .....	64
V. GENERAL DISCUSSION AND CONCLUSION .....	65
Theoretical Contribution .....	67
Practical Implication .....	68
Limitations and Future Directions .....	68
REFERENCES .....	70
APPENDICES .....	81
APPENDIX A: PRETEST 1 METHODOLOGICAL DETAIL .....	81
APPENDIX B: PRETEST 2 METHODOLOGICAL DETAIL .....	83
APPENDIX C: PRETEST 3 METHODOLOGICAL DETAIL .....	84
APPENDIX D: STUDY 1 METHODOLOGICAL DETAIL .....	85
APPENDIX E: STUDY 2 METHODOLOGICAL DETAIL .....	88

## LIST OF TABLES

Table	Page
<i>1. Definitions of Apology in the Literature</i> .....	12
<i>2. Definitions of Forgiveness in the Literature</i> .....	15
<i>3. Vowel Sound Symbolism</i> .....	21
<i>4. Consonant Sound Symbolism</i> .....	25
<i>5A. Pretest 1 ‘Customers’ Word Lists</i> .....	42
<i>5B. Pretest 1 ‘Feelings’ Word Lists</i> .....	43
<i>5C. Pretest 1 ‘Adverbs’ Word Lists</i> .....	43
<i>6. Full List of Words Based on Three Considerations: 1) Factor Score, 2) Sound, 3) First Sound</i> .....	49
<i>7. Counts for Each Condition</i> .....	54

## LIST OF FIGURES

Figure	Page
1. The Bouba-Kiki Effect (Köhler 1929).....	18
2. Proposed Conceptual Model I.....	34
3. Proposed Conceptual Model II .....	35
4. Moderated Mediation Model I.....	61
5. Moderated Mediation Model II.....	64



## CHAPTER I

### INTRODUCTION

In society, individuals who have harmed others are expected to make an apology to victims in the hope of getting forgiveness which will help in restoring broken relationships. This is also the same for consumer and brand relationships. In the consumer and brand relationship, when consumers feel violated by different types of brands' actions, brands or firms make an apology in the hope of reducing consumers' negative brand attitude and evaluation, reducing negative word-of-mouth, and increasing repurchase intentions.

However, a substantial portion of published research on brand apologies merely contrasts the effect of the presence or absence of an apology, ignoring how to apologize (Smith, Bolton, and Wagner 1999; Tan, Balaji, Oikarinen, Alatalo, and Salo 2009; Gregoire, Tripp, and Legoux 2009; Choi, Mattila, and Bolton 2020).

Some literature on apology shows that when an apology makes consumers perceive warmth, which represents the degree to which a target seems to have good, friendly, sincere, and trustworthy intentions toward oneself, it is better at making them satisfied and have more favorable attitude toward the brand. Scholars have documented some of the contents of apology such as empathetic words toward the consumer and

emotional appeals in content increased perceived warmth toward the brand (Roschk and Kaiser 2013; Lee et al. 2019). However, not only can the content of an apology influence warmth but so can other subtler factors such as the baby-faceness of the CEO and female gender spokesperson in public speaking can also increase warmth perceptions.

The purpose of this dissertation is to examine what words should be used in a brand apology to increase consumer forgiveness. Based on sound symbolism literature, which argues that sounds can convey meanings, I examine the sound symbolic effect of words used in a brand apology on increasing consumer forgiveness. I also examine the mediating role of warmth and competence on consumer forgiveness.

Drawing from the literature on sound symbolism, stereotype content model, and apology that shows voiceless consonant sounds are perceived as more feminine, smaller, faster, and lighter (in weight) than voiced consonant sounds, and warmth is often associated with females. I predict that brand apology with voiceless sound (vs. voiced sound) will more likely to increase warmth and increased warmth will increase consumer forgiveness. On the other hand, voiced consonant sounds are associated with masculinity-related characteristics such as largeness, heaviness, and hardness, and competence perception is often linked to males. Thus, I predict that brand apology with voiced sound (vs. voiceless) will more likely to increase competence perceptions than warmth perceptions, and increased competence perceptions will increase forgiveness. Prior literature shows that competence perceptions are related to the perceived ability of a target to pursue its intention. Thus, this perception is linked to confidence, competitiveness, capability, and intelligence. If the sounds influence competence

perceptions, which is whether the brand has a high level of capability to prevent future transgressions, it is plausible to predict that consumers would increase their forgiveness.

In a similar vein, within the voiceless sounds, fricative consonant sounds are perceived as more feminine, smaller, faster, and lighter (in weight) than plosive consonant sounds. I also predict that brand apology with voiceless fricative (vs. plosive) will increase consumer forgiveness. In addition, voiceless fricative (vs. plosive) sounds will be more (less) likely to increase warmth perceptions, but less (more) likely to increase competence perceptions. Both warmth and competence perceptions will increase consumer forgiveness.

This dissertation provides several theoretical and managerial contributions. First, this dissertation contributes to sound symbolism literature by focusing on and developing stimuli of consonant sound symbolism and by using real words in manipulating sound in stimuli. Most previous sound symbolism research has mainly focused on vowel sound symbolism due to its easiness to design and conduct experiments and has designed experiments by using fake words. Last for brand managers, this dissertation recommends them to incorporate sound symbolism effect in choosing words in apology.

The current dissertation consists of five chapters. In the first chapter, I introduce the research context, study purpose, proposed model, and theoretical and managerial contributions. Chapter two reviews the literature, including brand transgression, brand apology effect on consumer forgiveness, stereotype contents model, and sound symbolism. Chapter three provides a detailed rationale for the development of the proposed model and hypotheses. Chapter four discusses the three pretests and two main

studies and their results. Chapter five discusses the research findings, contributions, limitations, and directions for future research.

## CHAPTER II

### REVIEW OF LITERATURE

The review of literature is organized as follows: In the first half of the literature review, the context of apology is given, a brand transgression. I also review the concept of forgiveness, which is a desired outcome of an apology. In the second half of the literature review, I will explain the theory of sound symbolism.

#### ***Brand Transgression***

The scientific conceptualization of brand transgression appeared in Aaker et al. (2004, p. 2) in which transgression is defined as “a violation of the implicit or explicit rules guiding relationship performance and evaluation.” This definition is widely used throughout the brand transgression literature (e.g., Steinman 2012; Shinha and Lu 2015; Sayin and Gurhan-Canli 2015; Ahn, Sung, and Drumright 2016; Montgomery, Raju, Desai, and Unnava 2017). A foundational premise of the brand transgression literature is that consumers interact and build relationships with brands similar to the ways they form relationships with other consumers in a social context (Fournier 1998). Thus, much like human interpersonal relationships, actions by the brand that violate the explicit or implicit relational rules between the brand and the consumer can result in serious damage

to the quality and continuity of relationships (Baxter 1986). Brand transgression is mainly operationalized in two different ways in the literature. First, when a brand provides defective products (i.e., product failure) and or poor service (i.e., service failure) (Aaker et al. 2004; Ahn et al. 2016; Khamitov, Gregoire, and Suri 2019). Second, it extends to a brand's violation of social norms such as a corporate moral/ethical transgression, which is defined as the breach of social and/or moral norms by the corporation (Xu, Bolton, and Winterich 2021; Lin and Sung 2014; Lin, Dahl, and Argo 2013).

### ***Brand Transgression, Service Failure, and Product/Brand Harm Crises***

The lines between the concepts of brand transgression, service failure, and product-harm crisis are frequently difficult to draw and thus inseparable. In fact, the definitions of three constructs are similar. For example, brand transgression is defined as a “violation of the implicit or explicit rules guiding consumer-brand relationship performance and evaluation” (Aaker et al. 2004, p.2). Similarly, service failure is defined as a service performance that falls below a consumer's expectation (Hess, Ganesan, and Klein 2003), and a product-harm crisis is defined as a “discrete event in which products are found to be defective and therefore dangerous to at least part of the product's customer base” (Cleeren, Dekimpe, and Van Heerde 2017). Based on these definitions, the three phenomena are similar in that a negative event occurs between consumers and firms/brands. Indeed, due to the focus on similar phenomena, researchers in these areas have been called to jointly collaborate and integrate to progress toward a broad and united discipline of negative events in marketing (Khamitov et al. 2019; Fournier and

Alvarez 2013). Consistent with this view, this dissertation will use the term brand transgression, as an overarching term for indicating service failure, product-harm crisis, or any negative event as perceived by the consumer.

### ***Consumers' Responses to Brand Transgression***

Responses to transgressions vary from consumer to consumer. In interpersonal relationships where individuals have been harmed or mistreated (i.e. transgressions), people experience strong negative emotions, motivations, and behaviors toward the transgressor (Fincham, Jackson, Beach 2005). Some individuals may feel anger or pain and have motivations to avoid personal and psychological contact with the transgressor or some individuals may decide to forfeit the relationship (McCullough, Fincham, and Tsang 2003; McCullough et al. 1998).

These responses can also be found in the brand transgression context. Since a transgression occurs when the brand violates implicit or explicit rules between a consumer and their brand, it brings potential negative effects on the consumer-brand relationship and subsequently, brand performance outcomes. Consumers tend to be motivated to take revenge on the brand by engaging in unethical behavior (Rotmat, Khamitov, and Connors 2018), partaking in negative word-of-mouth (Shinha and Lu 2015; Grégoire and Fisher 2006, 2008), lowering the brand evaluation (Aggarwal 2004), boycotting the brand (Klein, Smith, and John 2004), or avoiding the brand (Greigore et al. 2009) by switching to a different brand (Martin, Borah, and Palmatier 2017; Ahn et al. 2016).

In the event of a brand transgression, the brand manager would prefer to retain their consumers rather than lose them. Then what can brands do in the event of a brand transgression? In the next section, I will discuss the two main strategies that brands normally engage in to reduce the negative effects of a brand transgression and maintain the relationship between the brand and consumers.

### ***Brand Responses to Brand Transgression***

To reduce consumers' negative emotions toward and evaluation of the brand following a brand transgression, brands normally engage in two types of recovery efforts: utilitarian and/or symbolic. The first type, utilitarian recovery, involves economic compensation in the form of discounts, free merchandise, refunds, coupons, and so forth. The second type, symbolic recovery, involves making psychological or social amends by making an apology (e.g., saying "We are sorry," Smith, Bolton, and Wagner 1999) or appreciation (e.g., saying "Thank you for your understanding," You, Yang, and Wang 2020). Most research suggests that these two recovery efforts are theoretically distinct (Orsingher, Valentini, and de Angelis 2010).

Regarding the discussion on which type of effort is better than the other, one stream of research argues that the strongest recovery effect occurs when there is a match between the type of transgression (or failure) and the type of recovery effort. This is based on resource exchange and mental accounting theories (Foa and Foa 1974). Smith and colleagues (1999) suggest that consumers may classify the various types of resources lost due to a brand transgression into different resource categories or "mental accounts"



and consumers are more likely to be satisfied with the brand's recovery effort that represents a resource similar to the lost resource (hereafter I call this the "matching hypothesis"). For instance, when consumers experience *outcome* failure (i.e., failures of *core* product or service that consumers actually purchase from the brand), they prefer utilitarian recovery effort rather than symbolic recovery effort, whereas if consumers experience *process* failure (i.e., failures on the *manner* in which core product or service is delivered), they prefer to get a symbolic recovery effort such as an apology because they lost social/emotional resource which can be restored by an apology (Smith et al. 1999). Correspondingly, Roschk and Gelbrich (2017) argue that when there is match between the resources lost from failure and recovery effort, it predicts the greatest positive effect on consumer satisfaction, loyalty, and positive word-of-mouth.

As an alternative view beyond the discussion on the matching hypothesis, recent research focuses on the primary effect of symbolic recovery effort such as apology and appreciation over utilitarian recovery effort such as compensation. For instance, Xu, Bolton, and Winterich (2021) find that in the case of brand's moral transgression (e.g., labor practice), an apology with remedial actions (vs. without remedial actions or no apology) significantly reduces unfavorable attitudes toward the brand and increases purchase likelihood among low power distance belief consumers, because apology signals empathy for victims. Furthermore, You, Yang, and Wang (2020) suggest that an offending brand should always first engage in some kind of symbolic recovery effort to verbally acknowledge a brand's wrongdoing regardless of the presence of utilitarian recovery effort (e.g., compensation) by saying "Thank you" rather than "Sorry". Saying "Thank you" (vs. "We are sorry") results in better post-recovery satisfaction and

recommendation intentions because saying “Thank you” (vs. “We are sorry”) increases harmed consumers’ self-esteem. Further, Abeler, Calaki, Andree, and Basek (2010) argue that apologies have been shown to be more effective than both high and low cash payments in convincing consumers to withdraw their negative reviews.

In sum, brands normally engage in two different types of the recovery efforts in the event of brand transgression: utilitarian and symbolic efforts. The majority of research has studied the positive effect when there is a match between the type of resource lost during transgression and the expected type of resource gained from a brand’s recovery effort. On the other hand, there is a limited but growing literature focusing on the primary effect of symbolic recovery effort – apology – over utilitarian recovery effort on reducing negative outcomes from brand transgression as well. Building on the increasing interest in symbolic recovery effort, I will review the apology literature and its effect on desired consequences, and consumer forgiveness.

### ***Brand Apology and Its Effect on Consumer Forgiveness***

#### *Apology*

Definitions of apology in both social psychology and marketing are varied (see Table 1); however, I identify views used in the apology literature. First, Walster, Berscheid, and Walster (1973) define apology as a valuable reward that redistributes a social resource (i.e., esteem) in an exchange relationship. This definition focuses on the nature of apology based on equity theory. Accordingly, an apology is viewed as a tool to restore the harmed victims’ equity (Goodwin and Ross 1992; Smith et al. 1999). The second definition of apology appears in Fehr and Gelfand’s (2010) research. Here, they define

apology based on these essential components of apology. They suggest that an apology offers compensation, expressions of empathy, and acknowledgments of violated rules/norms. The offers of compensation construct refer to a restoration of equity through the exchange. Here, compensation is conceptualized as either tangible or intangible (or emotional) driven offers. Specifically, whether a company offers something that can recover, compensate, or make up for what happened (e.g., remedy or promise) is considered as compensation. Also, expression of empathy refers to the “offenders” recognition of and concern for their victims’ suffering, both socio-emotionally and cognitively” (p.38). Lastly, acknowledgments of violated rules/norms refer to a recognition that interpersonal behavior is bound by implicit or explicit rules and norms. Based on these two definitions, in this dissertation I adopt and define an apology as a tool to restore the victim’s harmed equity which includes acknowledging the wrongdoing, expressing empathy, and providing future promises.

*Table 1. Definitions of Apology in the Literature*

Authors	Definition
Walster, Berscheid, and Walster (1973)	A valuable reward that redistributes a social resource (i.e., esteem) in an exchange relationship.
Goodwin and Ross (1992)	Used Walster et al. (1973)'s.
Smith, Bolton, Wagner (1999)	Used Walster et al. (1973)'s.
Wooten (2009)	Redressing the past and extending a promise of better behavior in the future.
Fehr and Gelfand (2010)	A offers of compensation, expression of empathy, and acknowledgements of violated rules/norms.
Roschk and Kaiser (2013)	Messages containing acknowledgements of blameworthiness for negative events, which can include expressions of remorse.
Roschk and Gelbrich (2017)	Company expresses regret and empathy for the customer's distress, which reestablishes self-esteem.
Harrison-Walker (2019)	Communication of politeness, courtesy, concern, effort, and empathy to customers who have experienced a service failure and enhances their evaluation of the encounter.
Lee, Sung, Choi, and Kim (2019)	An instrument by company accepts responsibility for wrongdoings
Wei, Liu, Kei (2020)	Used Walster et al. (1973)'s.
You, Yang, Wang, and Deng (2020)	Acknowledgement of responsibility for the service failure and serves as a form of psychological compensation.
Hyodo and Bolton (2020)	Acknowledge wrongdoing on the part of a transgressor and signal a desire to avoid further transgression, which distincts from compensation.
Xu, Bolton, and Winterich (2021)	Apology is marked by the company accepting responsibility for its wrongdoing.

## *Forgiveness*

Prior conceptualizations of forgiveness do not converge on a unified definition of forgiveness. However, most agree that forgiveness refers to a psychological adjustment, which involves the process of overcoming negative emotions elicited by the related incident (see Table 2; Tsarenko, Strizhakova, and Otnes 2018). The concept of forgiveness has a rich history in philosophy, psychology and social psychology. Researchers examine numerous predictors of forgiveness (Fehr, Gelfand, and Nag 2010). For example, forgiveness is associated with dispositional characteristics such as agreeableness (i.e., tendency to get along well with others in Big Five Personality), self-esteem (McCullough and Hoyt 2002; Eton, Struthers, and Santelli 2006), and religiosity (McCullough and Worthington Jr. 1999).

Often some dispositional characteristics are correlated with gender such that females have more agreeableness and higher religiosity than males (Miller, Worthington, Jr., and McDaniel 2008; Freese 2004). Additionally, forgiveness is influenced by contextual factors as well. For instance, victims are more forgiving of an offense when the incident is less severe (Boon and Sulsky 1997) or less intentional on the part of offender (Heider 1958). Last, but not least, an apology from an offender is positively related to forgiveness such that presence (vs. absence) of an apology increases forgiveness (Darby and Schlenker 1982; Fehr and Gelfand 2010).

Generally, an apology has been shown as an effective tool to increase forgiveness which is mediated by empathy. Empathy refers to a vicarious emotion that is congruent with the emotion of another person. Accordingly, an apology shifts victims' perception of the offenders by expressing empathy. Thus it reduces both negative affect and avoidance

motivation toward offenders in interpersonal relationships (Ohbuchi et al. 1989, McCullough et al. 1997).

Between utilitarian (e.g., compensation) and symbolic (e.g., apology) recovery efforts, the apology has been closely related to consumer forgiveness. That is, the components of an apology (e.g., expressing empathy, acknowledging responsibility, and offering compensation) influence victims to shift their negative emotion toward and perception of the offender. Correspondingly, apology, as opposed to compensation, has a direct effect and an even stronger indirect effect via forgiveness, on decreasing negative word-of-mouth, increasing re-patronage intentions, and reconciliation (Harrison-Walker 2019). Moreover, apology, compared to compensation, is more effective at eliciting consumer empathy and forgiveness toward the firm (Wei et al. 2020). When an apology, as opposed to compensation, is offered after consumer's concept of religion became salient, it increased consumers forgiveness which in turn led to higher positive satisfaction, behavioral intentions, and attitudes toward the brand (Hyodo and Bolton 2020).

Throughout published research, apology has been a good strategy to reduce negative effects from brand transgression via increasing consumer forgiveness. Then is there any specific feature of apology that increases consumer forgiveness better than the others? In the next section, I will discuss the stereotype content model in which warmth and competence perceptions on affect consumer forgiveness.

Table 2. Definitions of Forgiveness in the Literature

Authors	Definition
Enright, Gassins, Wu (1992)	the overcoming of negative affect and judgement toward the offender, not by denying ourselves the right to such affect and judgement, but by endeavoring to view the offender with compassion, benevolence, and love.
McCullough, Worthington Jr., and Rachal (1997)	the set of motivational changes whereby one becomes (a) decreasingly motivated to retaliate against an offending relationship partner; (b) decreasingly motivated to maintain estrangement from the offender; and (c) increasingly motivated by conciliation and goodwill for the offender, despite the offender's hurtful actions.
Exline and Baumeister (2000)	Cancellation of a debt by the person who has been hurt or wronged
Worthington and Scherer (2004)	a person tries to behave toward the transgressor in the same manner prior to the transgression, despite negative emotions, and emotional, reflecting the victim's decrease in negative emotions that influences his or her reactions to the transgressors.

### ***Warmth and Competence Perception of Apology on Consumer Forgiveness***

#### *Stereotype Content Model (SCM)*

The Stereotype Content Model (SCM) is developed to explain differential perceptions of social groups (Fiske, Cuddy, Glick, and Xu 2002). According to SCM, people perceive and make a judgement of others on the basis of their apparent warmth and competence. Warmth perception answers whether entity has a good or ill intention toward oneself. If the entity has good intentions, people perceive them as warm, whereas if entity has ill or bad intentions, people perceive them as cold. Competence perceptions answer whether the entity has the ability to pursue its intentions. If entity has the ability to carry out their

intentions, people perceive them as competent. If entity is unable to do so, people perceive them as incompetent. Warmth thus represents the degree to which a target seems warm, friendly, tolerant, sincere, trustworthy, generous, kind, and thoughtful, whereas competence represents the degree to which a target seems competent, confident, independent, competitive, capable, and intelligent (Fiske et al. 2002),

In marketing, Li, Chan, and Kim (2019) examine how using an emoticon can influence customers' warmth and competence perceptions of service employees moderated by relationship norm orientation (e.g., communal vs. exchange relationship norm orientation). Specifically, consumers perceive service employees as warmer but less competent when they use emoticons. Further, when consumers experience unsatisfactory services, the exchange norm becomes salient in their minds which makes competence associations more accessible, thus, using an emoticon exerts a negative impact on consumers' satisfaction with the service employee.

Kervyn, Fiske, and Malone (2012) propose the brands as intentional agents framework (BIAF) which holds that, just like people perceive others in terms of warmth and competence dimensions, consumers perceive a brand based on perceived intentions (i.e., warmth) and ability (i.e., competence) and that these perceptions influence emotional and behavioral reactions. Specifically, consumers perceive well-intentioned brands warmer than ill-intentioned brands, while consumers perceive high-ability brands as more competent than low-ability brands.

Similarly, Aaker, Vohs, and Mogilner (2010) show that consumers use these two dimensions to form perception of firms such that consumers perceive nonprofit



organizations as warmer than for-profit organizations but as less competent. Further, these perceptions influence consumers purchase intentions such that they are more willing to buy a product from a for-profit (vs. nonprofit) organization because of their higher perceptions of competence.

In sum, people make sense of their surrounding with two dimensions, warmth and competence. And these two dimensions are also used when consumers perceive a brand. Warmth is judged based on brand's intention and competence is judged based on brand's ability. Further, labeling a firm as nonprofit or for-profit and/or using emoticon in service interaction can influence consumers judgement of warmth and competence of the brand.

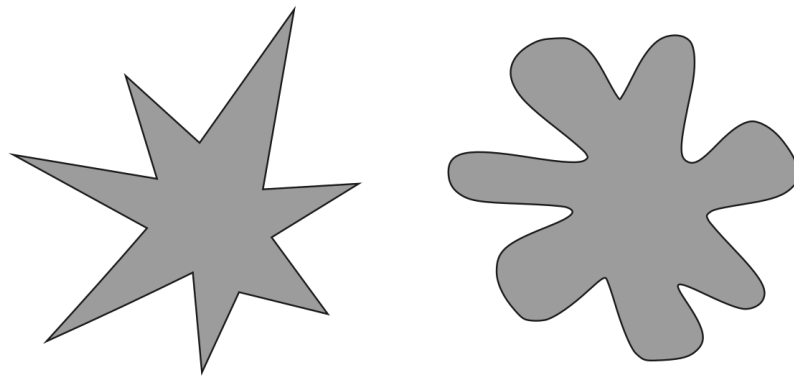
Moreover, the previous literature on brand apology shows that an apology which influences warmth perceptions is effective in increasing consumer forgiveness and favorable brand attitudes and evaluations. To increase warmth perceptions, brands apologize using empathetic words, emotional content in the message, using baby-faceness of CEO, or a female gender spokesperson in public speaking. Then what can also influence warmth perceptions of brand apology? In the next section, I will introduce sound symbolism effect in linguistic discipline.

### ***Sound Symbolism***

Historically, linguistics has suggested that language is *arbitrary*, which suggests that there is no inherent connection between the units (sounds or words) used in a language and their meaning (Hockett 1960). In this view, language is not symbolic because there is no connection between symbol and meaning. In other words, people can change those

connections and invent new ones. On the other hand, researchers have found evidence for a nonarbitrary relationship between sound and meaning, which is called sound symbolism (i.e., phonetic symbolism). Sound symbolism is an instance of the sound of a word being systematically linked to the word's referent. In another definition, it is defined as "the direct linkage between sound and meaning" (Hinton, Nichols, and Ohala 1994). Sound symbolism is distinct from onomatopoeia, which is a word that simply attempts to physically imitate a sound (e.g., "bang"). Initial evidence of sound symbolism is derived from Köhler's (1929) Bouba-Kiki effect. When respondents who speak Spanish were asked to label each figure with the appropriate name, "Bouba" or "Kiki", most of people labeled an angular shaped object as "Kiki" and a round shaped object as "Bouba" (Figure 1).

*Figure 1. The Bouba-Kiki Effect (Köhler 1929)*



Furthermore, Sapir (1929) shows that when English-speaking respondents were asked to associate two invented words, "mil" and "mal," with a small and large table, approximately 80% of the respondents associated "mil" with the small table and "mal" with the large one. These effects were found not only among the adults but also among

prelinguistic 4-month-old babies (Ozturk, Krehm, and Vouloumanos 2013). In addition, participants are faster to classify a shape's size if a sound-symbolically-congruent (vs. incongruent) vowel is simultaneously presented auditorily (Ohtake and Haryu 2013). In sum, prior works indicate that people associate certain sounds with shape and size across different languages and age.

Then which sounds specifically make these distinct associations? It depends on the phonemes, which are the smallest units of sound (e.g., the sound of letter 'k' or /k/). These phonemes are generally categorized into vowels and consonants. Consonants are further categorized into subcategories based on the place and manner of articulation and voicing. In the next section, I will explain the types of phonemes and review the sound symbolism studies in linguistics and marketing literature.

### *Vowel Sound Symbolism*

For vowels, there are generally two subcategories, front vowels and back vowels, based on the area of the mouth, and the tongue is position in the mouth, when the sound is pronounced. Consider the vowel sounds in the words, *bee, bin, bay, bet, ban, cot, home, put, and boot*. As one pronounces this list from beginning to the end, one's tongue shifts from the front to the back of the mouth. For example, when pronouncing *bee*, the tongue is more toward the front of the mouth than it is when pronouncing *boot* (Klink 2000).

A vast amount of sound symbolism research demonstrates that front and back vowels are associated with different sizes, genders, speeds, weights, and shapes of objects. Specifically, front vowels, produced in the front of the mouth, like the "i" in

**K**iki, and “e” in **bee** convey smallness, feminineness, fastness, lightness (in color), and angularness, while back vowels, produced in the back of mouth, like the “o” and “u” in **Bouba** put convey largeness, masculinity, slowness, darkness, and roundness.

One of the rationales behind this effect has been traced to broader sound-size relationships in physics. For example, compared to small individuals, larger individuals often produce larger sound which naturally produce sounds of lower frequency. Specifically, the vocal folds that resonates sounds are generally larger in larger-bodied individuals so this leads lower frequency voices (with both lower pitch and lower resonances) in, for example, adults compared to children and in men compared to women. Accordingly, lower frequency sounds convey a larger size, while higher frequency sounds convey a smaller size. Front vowels, by their nature, are of higher frequency and they are believed to convey “smallness,” while back vowels are of lower frequency and convey “largeness” (Morton 1994; Ohala 1994; Fitch 2000, Ghazanfar and Rendall 2008).

Vowel sound symbolism has been studied in the marketing literature. Most of the research explores the vowel sound symbolism effect in brand naming. For instance, products with brand names containing front vowels (e.g., “i,”) as opposed to back vowels (e.g., “u”), are associated with smallness, lightness (vs. darkness), thinness, softness, fastness, feminineness, friendliness, and prettiness of product (Klink 2000). Moreover, an ice cream brand name containing a back vowel, “**Frosh**” was preferred more than brand name containing a front vowel, “**Frish**” because the “o” sound is more congruent with ice cream attributes such as creaminess, sweetness, and richness than the “i” sound. This research also shows that the sound symbolism effect is an automatic process that people

are not fully aware of and cannot control (Yorkston and Menon 2004). Additionally, Lowrey and Shrum (2007) replicate this effect in the context of automobiles. In particular, participants preferred brand names with back vowels (e.g., “bromley”) for SUVs and names with front vowels (e.g., “brimley”) for a convertible because back (vs. front) vowel sounds are associated with larger (vs. smaller) size, which is more congruent with SUV (vs. convertible) attributes. They also find a boundary condition in which certain vowel sounds are generally considered negative (e.g., “yoo” sound in puke) and this negative sound association dilutes the effects of front versus back vowel sound symbolism.

Extending previous sound symbolism effects on brand naming, Klink and Athaide (2012) and Wu et al. (2013) find that brand names with front vowels (e.g., “Bilan”) make sophisticated, sincere and feminine brand personalities, while brand names with back vowels (e.g., “Bolan”) create a rugged and masculine brand personality. Recently, Klink and Wu (2017) also show higher frequency sounds (e.g., front vowels and fricative consonants) in brand names better convey the ethicality of the brand than lower frequency sounds (e.g., back vowels and plosive consonants) which further leads to higher purchase intention (see Table 3 for summary).

*Table 3. Vowel Sound Symbolism*

Vowel Sound	Example	Classification	Associated characteristics
/e/	bee	front	Front vowels (vs. back vowels) are smaller, lighter (in weight), lighter (in color), faster, angular, ethical and feminine.
/i/	hit	front	
/a/	hate	front	
/e/	test	front	
/u/	food	back	
/o/	home	back	

### *Consonant Sound Symbolism*

As we can see from Klink and Wu's research (2017), consonant sounds also carry inherent meaning in addition to vowel sounds. Consonants are often grouped into plosives (or stops), fricatives, and nasals based on the manner of articulation, which is how the airflow coming up from the lungs is disrupted when it is pronounced, and these consonants are further grouped into voiced and voiceless based on the vibration of the vocal cords.

Plosives (or stops), involve the complete stoppage of air in the mouth followed by an explosion, such as “p” in **p**at, “b” in **b**at, “t” in **t**uck, “d” in **d**ug, “k” in **c**ap, and “g” in **g**ot. On the other hand, fricatives, have a partial stoppage of airflow, such as “f” in **f**it, “v” in **v**et, “s” in **s**ad, and “z” in **z**ip. Contrary to plosives and fricatives, nasals are produced by continuous release of air from the nose rather than the mouth, such as “m” in **m**ap, “n” in **n**ap, and “ng” in **son**g.

These consonant sounds are further subdivided by being either voiced or voiceless. Voiced consonants are pronounced by vibrating the vocal cord (e.g., “b,” “d,” “g,” “v,” “th,” “z,” “m,” “n,” and “ng”), and voiceless consonants are pronounced without vocal cord vibration (e.g., “p,” “t,” “k,” “f,” “q,” “s,” and “h”). To experience this difference, pronounce the words “**b**ear” and “**p**ear” aloud while placing a finger on your “Adam’s apple”. One should notice that when pronouncing “**b**ear”, there is a vibration, whereas pronouncing “**p**ear” has no vibration presence.

There is limited research that studies the effect of consonant sound symbolism compared to vowel sound symbolism due to two reasons. One is because vowels have

fewer distinct sounds than consonants so it is easier for researchers to design and conduct experiments. Second is because vowels have provided stronger evidence for phonetic symbolism compared to consonants (Klink 2000; Shrum and Lowrey 2007). For example, Klink and Wu (2014) show that the brand meaning is better conveyed by vowels rather than consonants in a brand name.

While the majority of research on sound symbolism has focused on associated meanings with vowel sounds in marketing literature, a variety of consonants sound symbolism has been studied recently. For fricatives, they seem to have similar meaning associations with front vowels due to their higher frequency of the sounds. Thus, many researchers often expect and examine similar sound symbolism effects for fricative consonants and front vowels (Klink 2000; Klink 2003; Coulter and Coulter 2010). For example, fricatives (e.g., “f,” “s,” “v,” and “z”) compared to plosives (e.g., “p,” “b,” “t,” and “k”) are perceived as smaller, faster, lighter (in weight), and more feminine (Klink 2000; Klink 2003).

Similarly, voiceless consonant sounds (e.g., “p,” “f,” and “s”) have higher frequency of sounds than voiced consonant sounds (e.g., “b,” “v”, and “m”). Thus, just like front vowels and fricatives, voiceless consonant sounds are generally perceived as smaller, faster, lighter, sharper, softer, and more feminine than voiced consonant sounds (Folkins and Lenrow 1966; Klink 2000). For instance, voiceless fricatives (e.g., “f” and “s”) are perceived as faster, softer, and more feminine than voiced fricatives (e.g., “v” and “z”). Moreover, voiceless plosive (e.g., “p” and “t”) are perceived as sharp, while voiced plosive (e.g., “b” and “d”) are perceived as round (Ohala 1994).

Indeed, brand names that start with voiceless consonants are perceived as soft or mild, while brand names that start with voiced consonants are perceived as harsh (Pathak, Calvert, and Lim 2020). Moreover, a store name with voiceless consonants (e.g., **F**effer) and front vowels (e.g., Yendi) are perceived as smaller compared to a store name with voiced consonants (e.g., **Z**eizzer) and back vowels (e.g., Yando). Then too, when there is a match between the size perception from the store name and the actual size of the store, consumers have higher willingness to pay (Ketron and Spears 2019). Furthermore, chocolate brand names with voiceless consonant sounds (e.g., **S**atoke) are rated as more appropriated for a sweet chocolate and perceived as feminine brand as opposed to brand names with voiced consonant sounds (e.g., **Z**adoge) are rated as more appropriate for a bitter chocolate and perceived as masculine brand (Pathak and Calvert 2020).

However, there are few published articles involving investigation of the meaning associated with nasal sounds. Among the few, Johnson and his colleagues (1964) find that the nasal sounds are more common among words rated pleasant by listeners (Johnson, Suzuki, and Olds 1964). Relatedly, nasals are perceived relatively as smooth, connected, and rounded, whereas plosives are perceived as harsh, fractured, and jagged due to low arousal level associated with distinct sounds (Nielsen and Rendall 2011; Rendall and Owren 2009; Westbury 2005). Please see Table 4 for summary.



Table 4. Consonant Sound Symbolism

	Voiced	Voiceless	Associated Characteristics
<b>Plosive</b>	/b/, /d/, /g/	/p/, /t/, /k/, /q/	<Voiceless vs. Voiced> Voiceless is smaller, faster, lighter (in weight), sharper, softer, more mild, sweeter, more environmentally friendly, and more feminine than Voiced.
<b>Fricative</b>	/v/, /z/, /zh/, /th/	/f/, /s/, /h/, /th/, /sh/	
<b>Nasal</b>	/m/, /n/, /ng/		

### *Sound Symbolism with Social Perception*

Throughout the cited research, there is robust evidence of sound-meaning linkages between sounds and physical properties such as size, weight, taste, gender, and color. Recent research finds a sound symbolism effect on non-physical properties such as social perception. For instance, integrating sound symbolism with construal level theory, research shows that back vowels (e.g., “o” and “u”) evoke abstract and high-level construal while front vowels (e.g., “e”, “i”) induce concrete and low-level construal (Maglio, Rabaglia, Feder, Krehm, and Trope 2014). Similarly, a name including a front (vs. a back) vowel leads people perceive that person as more (vs. less) socially connected to themselves due to low (vs. high) construal level associated with sound of name (Maglio and Feder 2017).

In addition, Joshi and Kronrod (2019) show that voiceless consonants in brand names (e.g., “E<sup>t</sup>opal”), compared to voiced consonants in brand names (e.g., “E<sup>d</sup>opal”) are more effective in conveying environmental friendliness because voiceless consonants

are associated with relevant human characteristics such as good-hearted, honest, humble, patient, and smart.

Moreover, this sound-meaning linkage further extends to the perception of warmth and competence. A recent study in sound symbolism shows that sounds convey warmth. For instance, Garrido and Godinho (2021) find that usernames that include front vowels (e.g., “i”) are always preferred and judged as warmer than usernames that include back vowels (e.g., “u”). This effect is found because when pronouncing different phonemes, particular facial muscles or regions used are commonly associated with specific emotions. Then it may directly trigger the congruent emotional states. Specifically, when individuals produce the front vowel sounds, it activates the zygomaticus major muscle, which particularly is activated when people smile. On the contrary, when individuals produce back and rounded vowels (e.g., “o”), it activates the orbicularis oris muscle, which is also activated when people frown. Thus, such distinct muscle activation influences one’s warmth perception of, in this case, username.

## CHAPTER III

### HYPOTHESES DEVELOPMENT

In the event of a brand transgression, the offending brand normally engages in two different strategies to reduce negative effects such as anger, revenge, or avoidance motivations toward the brand. For instance, brands sometimes offer a utilitarian compensation such as coupons or discounts to harmed consumers. Also, brands sometimes apologize to harmed consumers. Expected outcomes from these two strategies are consumers' behavioral related outcomes such as satisfaction, favorable attitude toward brand, reduced negative word-of-mouth, and repurchase intentions.

#### *Primary Effect of Apology on Consumer Forgiveness*

Although cited papers in chapter two have not explicitly explored the concept of forgiveness, I argue that the in the event of brand transgression, the offending brand should focus on gaining forgiveness from consumers. That is because existing research has shown that the symbolic recovery effort (e.g., apology) is more closely related to consumer forgiveness than a utilitarian recovery effort (e.g., compensation). For instance, one of the factors that is closely related to forgiveness is an apology (Darby and Schlenker 1982; Fehr and Gelfand 2010).

Moreover, an apology, as opposed to compensation, has a direct effect and an even stronger indirect effect via forgiveness, on decreasing negative word-of-mouth, increasing repatronage intentions, and reconciliation (Harrison-Walker 2019). Furthermore, an apology, compared to compensation, is more effective at eliciting consumer empathy and forgiveness toward the firm (Wei et al. 2020). In addition, when an apology, as opposed to compensation, is offered after consumer's concept of religion became salient, it increased consumers forgiveness which in turn led to higher positive satisfaction, behavioral intentions, and attitudes toward the brand (Hyodo and Bolton 2020).

Finally, the consequences of forgiveness are surprisingly similar to the desired marketing outcomes of a successful recovery effort by the brand. For instance, when people forgive others in the context of interpersonal transgression, they are less likely to avoid a transgressor who has harmed them (McCullough et al. 1997). This low motivation of avoidance is similar to consumers repatronage or repurchase intention since a lower avoidance motivation leads consumers to maintain their relationship with the brand. Moreover, when people forgive a transgressor, they are less likely to seek revenge against the transgressor. This low motivation of revenge is similar to the desired consequences of a brand's recovery effort, such as reduced negative word-of-mouth (or increased positive word-of-mouth) and reduced hostile intentions.

Given that an apology, compared to utilitarian recovery effort, is more closely related to consumer forgiveness and the consequences of forgiveness are surprisingly similar to the brand's desired outcomes after transgression, I argue that the primary

focuses of the brand after transgression should be whether the brand's apology can effectively increase consumer forgiveness.

### ***Effect of Voiceless (vs. Voiced) Consonant Sound in Brand's Apology on Consumer Forgiveness***

Research in sound symbolism has shown that certain consonant sounds are associated with gender. For example, voiceless consonants are linked to femininity whereas voiced consonants are associated with masculinity. Indeed, feminine-related characteristics such as smallness, lightness in weight, and softness are found to be linked with voiceless consonants rather than voiced consonants. Such smallness, lightness, and softness tend to be seen as female-related characteristics based on the stereotype that women are described as being softer and more tender than men (Broverman, Vogel, Broveman, Clarkson, and Rosenkrantz 1972; Prentice and Carranza 2002). More direct evidence of this sound-gender association is found when testing more than 270 million names in both the U.S. and India, names starting with voiceless consonants are more often given to women and perceived as feminine, while names starting with voiced consonants are more often given to men and perceived as masculine. This effect is mediated by how soft (vs. hard) the name sounds (Slepian and Galinsky 2016).

As discussed in Chapter 2, research in forgiveness has identified several factors that are positively related to forgiveness. When an offender provides an apology compared to not providing an apology, it increases victim's forgiveness (Darby and Schlenker 1982; Fehr and Gelfand 2010). Moreover, when individuals have a higher

tendency to agree with others (i.e., agreeableness), they are more likely to forgive an offender (McCullough and Hoyt 2002; Eton et al. 2006). In addition, when individuals have higher religiosity, they are more likely to forgive an offender (McCullough and Worthington Jr. 1999). These two dispositional characteristics are again related to female-related characteristics such that women have more agreeableness and religiosity than men (Miller et al 2008; Freese 2004) and thus, females are expected to forgive others more readily than males.

Given that voiceless consonant sounds convey meanings associated with femininity and related characteristics such as smallness, lightness, and softness, whereas voiced consonant sounds convey meanings associated with masculinity and related characteristics such as largeness, heaviness, and hardness, and females-related characteristics such as agreeableness and religiosity have a positive effect on one's willingness to forgive offenders, I argue that when a brand apology contains a higher frequency of voiceless consonant sounds relative to voiced consonant sounds would increase consumer forgiveness.

**H1:** A brand apology with relatively more voiceless consonant sounds (e.g., “p”, “t,” “f,” and “s”) than voiced consonant sounds (e.g., “b,” “d,” “v,” and “m”) will increase consumer forgiveness (hereafter, voiceless-dominant and voiced-dominant apology).

## *Consumers' Inferential Processes of Sounds: Mediating Roles of Warmth and Competence*

Research on the Stereotype Content Model (SCM) has shown that people perceive and judge individuals based on warmth and competence dimensions (Fiske et al. 2002). In marketing, consumers perceive service employees, brands, and companies based on warmth and competence dimensions as well (Aaker et al. 2010; Kervyn et al. 2012; Li et al. 2019). Warmth perception represents the degree to which a target seems warm, sincere, trustworthy, and kind, whereas competence represents the degree to which a target seems competent, confident, independent, competitive, capable, and intelligent (Fiske et al. 2002). In this dissertation, I will show that these two fundamental dimensions would mediate the effect of the sound symbolism of an apology message on consumer forgiveness.

Regarding the warmth dimension, I propose that consumers would infer greater warmth from the voiceless consonant sounds than voiced consonant sounds based on two reasons. First, voiceless consonants are often associated with femininity and femininity-related characteristics such as smallness, lightness (in weight), and softness than voiced consonants. Similarly, warmth perception is linked to femininity (Abele 2003). More direct evidence is that when Wei and Ran (2019) test the effect of the apologizer's gender on consumer forgiveness, they manipulate gender by using the apologizer's picture, personal pronouns, and names across the studies. Using names allow people to infer a gender due to phonetical differences in names across gender. For example, female names often end with a schwa vowel (e.g., "Sarah" and "Linda") compared to male names (e.g., David and Adam) and more importantly, female's names often begin with voiceless

phoneme (e.g., “k” in Carol and “f” in Fiona) whereas male’s names often begin with a voiced phoneme (e.g., “d” in Adam and in David; Slepian and Galinsky 2016). In sum, voiceless sounds in names lead listeners to infer that the target’s gender is female. Thus, voiceless consonant sounds rather than voiced consonant sounds can increase warmth perception. Second, one recent study shows that front vowels (e.g., “a,” “e,” and “i”) are judged as warmer than back vowels (e.g., “o” and “u”) (Garrido and Godinho 2021). Given that front vowels and voiceless consonants symbolize similar meaning association due to high frequency of sound and front vowels are judged as warmer, it is also plausible to predict that consumers would infer greater warmth from the voiceless consonant sounds than voiced consonant sounds.

On the other hand, regarding the competence dimension, I propose that the voiceless consonant sounds will be less likely to increase perceived competence, but voiced consonant sounds will more likely to increase competence perception of brand apology based on similar reasons indicated above. Competence perception is more linked to masculinity which is a characteristic attributed to male than female (Abele 2003). Voiced consonant sounds are associated with masculinity-related characteristics such as largeness, heaviness, and hardness. In fact, voiced phonetics are more often found in male names due to hard sounds (Slepian and Galinsky 2016). Moreover, men compared to women are generally perceived as more competent (Heflick et al. 2011). Thus, voiceless consonant sounds are less likely to infer competence perception but voiced consonant sounds are more likely to infer competence perception than warmth perception.



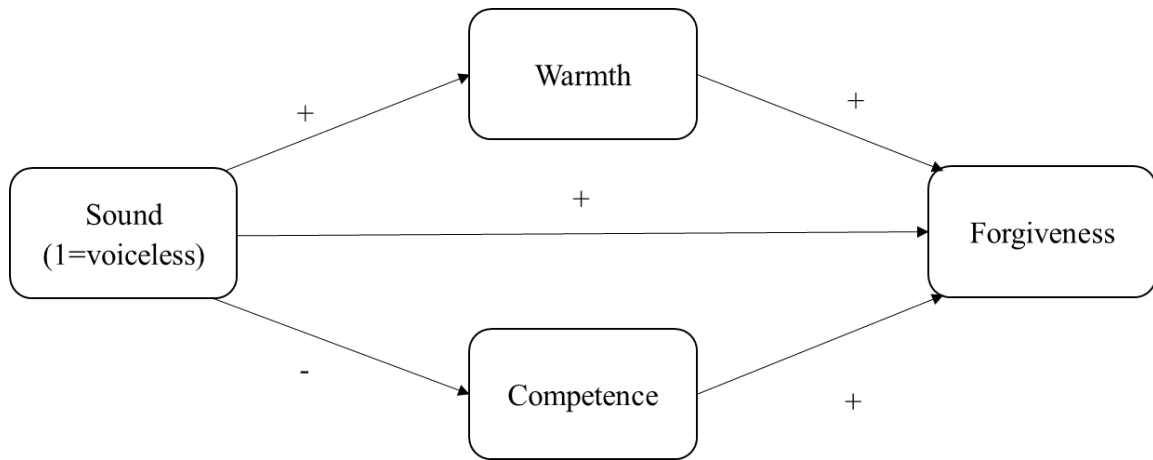
**H2:** Voiceless (Voiced) sounds will be more (less) likely to increase warmth perception, but less (more) likely to increase competence perception.

I propose that increases in warmth perceptions will increase consumer forgiveness. The positive relationship between warmth perception and forgiveness is found in many studies. For instance, previous literature shows that when a brand's apology increases warmth perceptions, it has a positive effect on consumer attitude and evaluation toward the offending brand. Moreover, when responding to an unintentional brand transgression, a baby-faced CEO (e.g., large eyes, small nose, and small chin) leads to a more favorable attitude toward the company because baby-faceness is associated with honesty, credibility, and warmer perceptions than mature-faceness (Gorn, Jiang, and Johar 2008). More importantly, the effect of apology on forgiveness is mediated by empathy is well known (Ohbuchi et al. 1989; McCullough et al. 1997). Indeed, apology messages including empathetic words are associated with warmth and lead to higher consumer satisfaction (Roschk and Kaiser 2013).

I further propose that a positive relationship between competence and consumer forgiveness. Prior literature show that competence perceptions are related to the perceived ability of a target to pursue its intention. Thus, this perception is linked to confidence, competitiveness, capability, and intelligence. If the sounds influence competence perceptions, which is whether the brand has a high level of capability to prevent future transgressions, it is plausible to predict that consumers would increase their forgiveness.

**H3:** The warmth and competence perceptions will increase consumer forgiveness.

Figure 2. Proposed Conceptual Model I



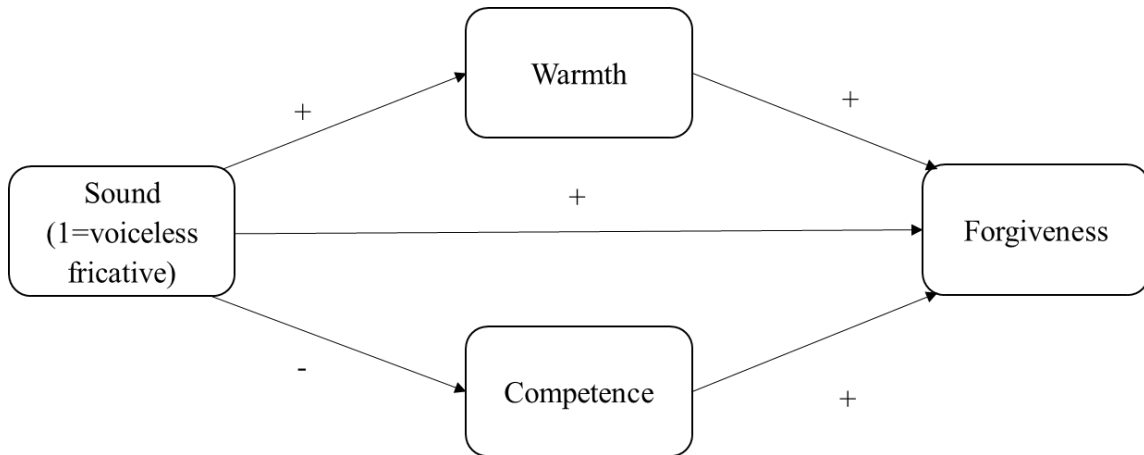
Furthermore, the voiced versus voiceless consonant categorization can be further subdivided into fricatives and plosives. To my knowledge, there is no literature that studies the sound symbolism effect of this categorization. However, as discussed in chapter 2, fricatives have meaning associations similar to front vowels due to the high frequency of the sound. Relatedly, fricatives compared to plosives are perceived as smaller, faster, softer, lighter (in weight), and more feminine. Thus, fricatives sound symbolism effects are a lot more related to voiceless sounds symbolism than voiced sound symbolism, whereas plosives are more related to voiced. If so, it is plausible to predict that within the voiceless consonant, fricatives compared to plosives would increase consumer forgiveness. Moreover, the voiceless fricatives will be more likely to increase warmth perception than voiceless plosives.

**H4:** Within the voiceless consonant sounds in brand apology, voiceless fricative (e.g., “f,” “q,” “s,” and “h”) sounds compared to voiceless plosives (“p,” “t,” and “k”) would increase consumer forgiveness.

**H5:** voiceless fricative (vs. plosive) sounds will be more (less) likely to increase warmth perception, but less (more) likely to increase competence perception.

**H6:** The warmth and competence perceptions will increase consumer forgiveness.

*Figure 3. Proposed Conceptual Model II*



## CHAPTER IV

### STUDIES AND RESULTS

#### *Study Overview*

Three pretests and two main studies were conducted to test the hypotheses. The purpose of three pretests was to choose the best words to be employed in the main studies that are distinct in sounds but not in semantic meanings. Pretest 1 aims to test an association between voiceless or voiced consonant sound and various perceptions. Pretest 2 tests to see the equivalence of synonyms which will be used to manipulate sound in apology message in main studies. Pretest 3 tests the association between selected words from Pretest 2 and various perceptions. Based on these three pretests, four different sets of words that are distinct in sound are selected. Study 1 develops a real transgression in the behavioral lab and examines forgiveness by using behavioral response (e.g., response rate to an apology email). Study 2 examines the link between the sound of brand apology and consumer forgiveness and the mediating role of warmth and competence perceptions.

### *Pretest 1 The Effect of Sound on Various Perceptions*

The purpose of pretest 1 was to test an association between voiceless and voiced consonant sound and various perceptions. Seven semantic differential scale items were generated from previous sound symbolism literature. In pretest 1, I expect that participants in voiceless consonant sound condition would perceive the sound smaller, faster, lighter (in color), more angular, more feminine, lighter (in weight), and sweeter than participants in voiced consonant sound condition.

#### *Participants and Procedure*

A total of 117 undergraduate students at Oklahoma State University (67.2% female;  $M_{\text{age}} = 20$ ) participated in pretest 1 for an exchange of course credit. Participants were randomly assigned to listen to either a list of nine voiceless consonant sounds (e.g., /ch/ /f/, /h/, /k/, /p/, /s/, /sh/, /t/, and /th/) or a list of twelve voiced consonant sounds (e.g., /b/, /d/, /g/, /j/, /m/, /n/, /ng/, /v/, /w/, /z/, /zh/, and /th/). The order of each sound presented was randomized. Then participants' perceptions of each sound were measured by seven semantic differential scale items on a 9-point scale which was anchored by items: "small/large," "fast/slow," "light (in color)/dark," "angular/round," "feminine/masculine," "light (in weight)/heavy," and "sweet/bitter". See Appendix A for methodological detail.

## *Results*

Because each participant rated same 7 semantic different perceptions measures of different consonant sound repeatedly, I restructured the dataset in order to account for within subject variance for these measures.

It was predicted that participants in voiceless consonant sound condition would perceive the sound smaller, faster, lighter (in color), more angular, more feminine, lighter (in weight), and sweeter than participants in voiced consonant sound condition. A one-way MANOVA with consonant sound (voiceless vs. voiced) and subjects as the predictor variables and six out of seven semantic differential measures test revealed a significant effect of sound on perceptions. Specifically, as expected, participants who listened to a list of voiceless consonant sounds perceived these sounds as smaller ( $M_{\text{voiceless}} = 4.32$  vs.  $M_{\text{voiced}} = 4.71$ ;  $F(1, 1218) = 10.33, p < .01$ ), faster ( $M_{\text{voiceless}} = 4.13$  vs.  $M_{\text{voiced}} = 4.72$ ;  $F(1, 1218) = 16.78, p < .001$ ), more angular ( $M_{\text{voiceless}} = 4.73$  vs.  $M_{\text{voiced}} = 5.02$ ;  $F(1, 1218) = 4.13, p < .05$ ), more feminine ( $M_{\text{voiceless}} = 3.7$  vs.  $M_{\text{voiced}} = 4.21$ ;  $F(1, 1218) = 16.38, p < .001$ ), and lighter in weight ( $M_{\text{voiceless}} = 4.77$  vs.  $M_{\text{voiced}} = 5.05$ ;  $F(1, 1218) = 4.42, p < .05$ ) than those in the voiced consonant sound condition. However, the sound effect on taste perception (e.g., sweet vs. bitter) was significant in the opposite way as I predicted ( $M_{\text{voiceless}} = 5.87$  vs.  $M_{\text{voiced}} = 5.22$ ;  $F(1, 1218) = 27, p < .001$ ). In other words, participants in the voiceless sound condition perceived the sound as bitter as opposed to sweet compare to those in the voiced sound condition. Finally, the effect of sound on color perceptions (light vs. dark) was not significant ( $M_{\text{voiceless}} = 4.96$  vs.  $M_{\text{voiced}} = 5.06$ ;  $F(1, 1218) = .678, p > .05$ ).

## *Discussion*

Pretest 1 showed the effect of different consonant sounds on various perceptions. As expected, listening to voiceless sounds led participants to perceive the sound as relatively smaller, faster, more angular, more feminine, lighter in weight than the voiced sound. However, there was no sound effect on light/dark perceptions. Moreover, voiceless sounds were perceived as significantly more bitter than voiced sounds which is opposite to my prediction based on the sound symbolism literature.

## ***Pretest 2 Synonyms Equivalence***

The purpose of pretest 2 is to establish the equivalence of meaning of synonyms that I will use to manipulate sounds in an apology message in the main studies. In the main study, I will use synonyms that differ in consonant sound but have the same or similar word meaning so that I can rule out that the hypothesized effect is derived from different meanings in words. To see whether the pairs of synonyms have equivalent meanings, in pretest 2, I presented participants pairs of synonyms and ask them to rate to what extent these two words mean same to them. The list of synonym pairs is generated from dictionary by Merriam-Webster. There are three categories of synonyms based on the usage of words and within each category, pairs of synonyms are randomly presented to participants. The first category consists of adjective pairs that are commonly used to describe *customers* such as “dear-respected” and “admired-special”. Second category consists of synonym pairs that describe the apologizer’s *feelings* toward the incident and customers such as “broken-hearted-penitent” and “regretful-remorseful”. The last

category consists of *adverbs* that modify or qualify feelings synonyms such as “sincerely-thoroughly” and “deeply-exceedingly”. The reason why I created three word categories is because in main study, I would like to use more words (i.e., repeat the key sound of interest) to reduce the chance that individual words are having an effect because of their meaning. For the ease of use, I will refer to the first category of synonyms as ‘customers,’ second category of synonyms as ‘feelings’, and the last category as ‘adverbs’ later in this dissertation.

### *Participants and Procedure*

A total of one hundred and one undergraduate students at Oklahoma State University (66.3% female;  $M_{\text{age}} = 21$ ) participated in pretest 2 in exchange for course credit.

Participants were asked to indicate the degree to which the two terms have the same meaning on a 11-point scale (1=Completely different, 11=Completely same). Three pairs out of 19 pairs of customers-related synonyms, 16 pairs out of 114 pairs of feelings-related synonyms, and four pairs out of 29 pairs of adverb synonyms were randomly shown to each participant to rate. See Table 1 for full list of synonyms pairs presented to participants. Demographics such as gender, age, race, as well as primary language spoken at home (1 = English, 2 = Other) and English fluency (1 = Not at all fluent, 7 = Very fluent) were measured at the end of the study.

### *Results*

In order to account for the language proficiency of each participant, participants who indicated their primary language is not English and fluency of English is rated less than 6



on seven-point scale (1=Not at all fluent, 7=Very fluent) were excluded in the analysis, leaving ninety-one participants. The word pairs that were rated significantly lower than 6, which is the mid-point of the 11-point similarity scale were dropped (1=Completely different, 11= Completely same).

**Customers synonyms:** For customer words, though nine out of nineteen-word pairs were significantly different from 6, the mean scores of these word pairs were 5.82 or above, which means that all of the word pairs were meaning similar to one another, so I decided to keep word pairs that were rated 5.82 and above. The pair rated 5.82 was ‘precious’ and ‘respected,’ and 5.82 was not significantly different than 6 ( $p = .85$ ).

**Feelings synonyms:** For feelings, word pairs of ‘apology-let off ( $M = 2.83, p < .001$ ),’ ‘apology-confess ( $M = 3.25, p < .000$ ),’ ‘temper-grief ( $M = 3.46, p = .001$ ),’ ‘temper-sorrow ( $M = 3.55, p = .002$ ),’ ‘explain-sorry’ ( $M = 3.58, p = .004$ ), ‘let off-account for ( $M = 3.75, p = .001$ ),’ ‘dejection-temper ( $M = 3.82, p = .003$ ),’ ‘account for-sorry ( $M = 3.94, p = .004$ ),’ ‘justify-confess ( $M = 4.00, p = .007$ ),’ ‘apology-justify ( $M = 4.07, p = .025$ ),’ ‘miserable-temper ( $M = 4.10, p = .018$ ),’ ‘make allowance for-apology ( $M = 4.42, p = .035$ ),’ ‘ashamed-rueful ( $M = 4.50, p = .008$ ),’ and ‘sorry-absolve ( $M = 4.5, p = .067$ ) were dropped from the list.

**Adverbs synonyms:** For adverbs, word pairs of ‘desperately-greatly ( $M = 2.58, p < .001$ ),’ ‘thoroughly-awfully ( $M = 3.64, p = .006$ ),’ and ‘terribly-sincerely ( $M = 4.75, p = .096$ )’ were dropped. See Table 5s for full list of synonyms pairs and the results.

Table 5A. Pretest 1 ‘Customers’ Word Lists

Word 1	Word 2	N	Mean	Std.Error	Difference
admired	appreciated	15	7.87	0.70	1.87**
admired	esteemed	13	6.69	0.67	0.69
admired	special	15	7.67	0.79	1.67*
appreciated	precious	13	6.46	0.77	0.46
appreciated	respected	15	7.73	0.71	1.73**
dear	admired	17	8.06	0.49	2.06***
dear	precious	15	8.00	0.51	2.00***
dear	respected	7	6.57	0.72	0.57
esteemed	precious	11	5.91	0.81	-0.09
esteemed	respected	13	7.00	0.56	1.00*
precious	respected	11	5.82	0.91	-0.18
respected	special	11	6.55	0.85	0.55
special	appreciated	14	6.07	0.82	0.07
special	dear	9	8.11	0.72	2.11**
treasured	appreciated	15	7.47	0.68	1.47**
treasured	dear	11	8.18	0.55	2.18***
treasured	special	10	9.40	0.40	3.40***
valued	appreciated	19	9.26	0.37	3.26***
valued	special	14	8.29	0.52	2.29***

Note. “Difference” indicates the difference between mean and 6.

\* indicates  $p < .1$ , \*\* indicates  $p < .05$ , \*\*\* indicates  $p < .01$

Table 5B. Pretest 1 'Feelings' Word Lists

Word 1	Word 2	N	Mean	Std.Error	Difference
abject	penitent	13	5.00	0.49	-1.00
abject	contrite	11	5.36	0.47	-0.64
abject	rueful	19	5.37	0.37	-0.63
absolve	account for	10	4.60 <sup>a</sup>	0.67	-1.40*
absolve	justify	12	6.08	0.63	0.08
absolve	apology	11	6.09	0.90	0.09
account (for)	sorry	16	3.94 <sup>a</sup>	0.60	-2.06***
account (for)	absolve	13	6.15	0.60	0.15
account (for)	explain	11	6.36	0.77	0.36
anguish	vindicate	13	5.46	0.54	-0.54
anguish	dejection	12	6.17	0.32	0.17
anguish	grief	9	8.56	0.50	2.56***
apologetic	ashamed	16	4.75 <sup>a</sup>	0.46	-1.25**
apologetic	repentant	14	8.00	0.58	2.00**
apology	let off	12	2.83 <sup>a</sup>	0.39	-3.17***
apology	confess	12	3.25 <sup>a</sup>	0.63	-2.75***
apology	justify	14	4.07 <sup>a</sup>	0.76	-1.93**
ashamed	rueful	16	4.50 <sup>a</sup>	0.49	-1.50***
ashamed	abject	9	6.00	0.53	0.00
ashamed	remorseful -	11	6.36	0.90	0.36
atone	apology	7	6.00	0.72	0.00
atone	compunctious	10	6.10	0.35	0.10
atone	account (for)	11	7.73	0.60	1.73**
broken-hearted	penitent	12	5.92	0.42	-0.08
broken-hearted	contrite	8	6.13	0.85	0.13
compunctious	explain	19	4.95 <sup>a</sup>	0.46	-1.05**
compunctious	make allowance for	14	5.64	0.29	-0.36
confess	make allowance for	11	4.55	1.08	-1.46
confess	account (for)	14	5.14	0.68	-0.86
contrite	guilty	9	4.78 <sup>a</sup>	0.64	-1.22*
contrite	regretful	13	5.85	0.56	-0.15
contrite	repentant	16	5.88	0.34	-0.13
dejection	temper	13	3.92 <sup>a</sup>	0.55	-2.08***
dejection	lamentation	8	5.38	0.53	-0.63
dejection	sadness	13	6.31	0.55	0.31
dejection	unhappy	15	6.73	0.44	0.73
depressed	upset	19	5.53	0.69	-0.47
depressed	despondent	13	5.77	0.75	-0.23

Table 5B. continued

Word 1	Word 2	N	Mean	Std.Error	Difference
depressed	downcast	18	6.50	0.64	0.50
despairing	distressed	12	6.67	0.68	0.67
despairing	downhearted	10	7.00	0.61	1.00
despairing	mourning	19	8.47	0.33	2.47***
despondent	upset	15	5.40	0.63	-0.60
despondent	disconsolate	13	5.69	0.44	-0.31
disappointment	despondent	15	6.07	0.77	0.07
disappointment	downcast	14	7.79	0.60	1.79**
disconsolate	distressed	7	5.00 <sup>a</sup>	0.65	-1.00*
disconsolate	woe	9	5.11 <sup>a</sup>	0.39	-0.89*
disconsolate	despairing	17	6.00	0.34	0.00
dismay	anguish	18	6.11	0.60	0.11
dismay	miserable	6	6.17	0.98	0.17
dismay	dejection	13	6.69	0.50	0.69
distressed	disappointment	14	5.07	0.68	-0.93
distressed	woe	15	6.33	0.64	0.33
distressed	downcast	10	6.40	0.48	0.40
downcast	mourning	12	5.83	0.75	-0.17
downcast	despairing	10	6.30	0.78	0.30
downhearted	disconsolate	17	6.29	0.25	0.29
downhearted	depressed	10	7.40	0.91	1.40
explain	sorry	12	3.58 <sup>a</sup>	0.68	-2.42***
explain	atone	14	4.93	0.55	-1.07
grief	vindicate	14	4.93	0.68	-1.07*
grief	unhappy	11	6.27	0.59	0.27
grief	dismay	11	6.45	0.84	0.46
grief	sorrow	9	8.89	0.59	2.89***
guilty	penitent	8	6.75	0.80	0.75
guilty	guilty	13	10.62	0.38	4.62***
justify	confess	14	4.00 <sup>a</sup>	0.62	-2.00***
lamentation	temper	11	4.82	0.75	-1.18
lamentation	unhappy	16	5.13 <sup>a</sup>	0.46	-0.88*
lamentation	dismay	10	6.00	0.84	0.00
lamentation	sorrow	11	6.55	0.49	0.55
let off	account (for)	16	3.75 <sup>a</sup>	0.55	-2.25***
let off	compunctious	14	6.36	0.27	0.36
make allowance for	apology	12	4.42 <sup>a</sup>	0.66	-1.58**
make allowance for	atone	10	4.90	0.89	-1.10
miserable	temper	10	4.10 <sup>a</sup>	0.66	-1.90**

Table 5B. continued

Word 1	Word 2	N	Mean	Std.Error	Difference
miserable	lamentation	14	6.07	0.44	0.07
miserable	sadness	19	6.95	0.58	0.95
mourning	despondent	11	4.73 <sup>a</sup>	0.41	-1.27**
mourning	upset	19	6.11	0.61	0.11
penitent	regretful	8	6.38	0.75	0.35
penitent	apologetic	13	6.54	0.46	0.54
regretful	rueful	14	6.29	0.58	0.26
regretful	remorseful	12	7.75	0.66	1.75**
regretful	ashamed	12	8.00	0.74	2.00***
remorseful	abject	17	5.29	0.48	-0.71
remorseful	contrite	13	5.38	0.70	-0.62
remorseful	broken-hearted	16	5.44	0.79	-0.56
repentant	penitent	12	5.25	0.55	-0.75
repentant	guilty	12	5.67	0.76	-0.33
repentant	regretful	15	7.07	0.64	1.07
rueful	apologetic	12	4.92	0.78	-1.08
rueful	repentant	14	5.64	0.61	-0.36
sadness	vindicate	14	5.00	0.56	-1.00
sadness	dismay	14	6.86	0.81	0.86
sadness	grief	14	8.21	0.38	2.21***
sadness	sorrow	12	9.58	0.42	3.58***
sorrow	anguish	9	4.56	0.87	-1.44
sorrow	dejection	13	6.15	0.61	0.15
sorrow	miserable	12	7.58	0.82	1.58*
sorry	absolve	10	4.50	0.72	-1.50*
temper	grief	13	3.46 <sup>a</sup>	0.65	-2.54***
temper	sorrow	11	3.55 <sup>a</sup>	0.61	-2.46***
temper	dismay	14	4.64	0.75	-1.36*
temper	vindicate	16	5.94	0.39	-0.06
unhappy	anguish	11	6.27	0.76	0.27
unhappy	miserable	12	8.33	0.43	2.33***
upset	woe	17	6.12	0.53	0.12
upset	disappointment	12	7.00	1.02	1.00
upset	despairing	10	7.50	0.52	1.50**
vindicate	lamentation	14	5.36	0.48	-0.64
woe	downhearted	9	6.33	0.78	0.33
woe	mourning	15	7.33	0.65	1.33*

Note. "Difference" indicates the difference between mean and 6.

<sup>a</sup>Omitted words are significantly less than 6.

\* indicates  $p < .1$ , \*\* indicates  $p < .05$ , \*\*\* indicates  $p < .01$

**Table 5C. Pretest 1 ‘Adverbs’ Word Lists**

Word 1	Word 2	N	Mean	Std.Error	Difference
awfully	enormously	7	6.71	0.87	0.71
awfully	extremely	11	4.82	0.92	-1.18
deeply	exceedingly	13	7.38	0.75	1.39*
deeply	from the bottom of one's heart	12	9.08	0.56	3.08***
desperately	greatly	12	2.58 <sup>a</sup>	0.45	-3.42***
desperately	intensely	14	5.57	0.75	-0.43
enormously	strongly	16	7.38	0.43	1.38***
enormously	tremendously	8	8.75	1.18	2.75*
extremely	greatly	19	9.11	0.37	3.11***
extremely	intensely	13	9.15	0.55	3.15***
from the bottom of one's heart	strongly	11	6.73	1.03	0.73
from the bottom of one's heart	tremendously	9	5.67	0.65	-0.33
greatly	enormously	12	8.67	0.54	2.67***
greatly	thoroughly	14	5.29	0.66	-0.71
heartily	immensely	10	6.20	0.90	0.20
heartily	from the bottom of one's heart	18	7.39	0.54	1.39**
immensely	sincerely	7	5.43	0.65	-0.57
immensely	thoroughly	12	7.00	0.64	1.00
intensely	awfully	13	5.31	0.78	-0.69
intensely	enormously	12	6.67	0.60	0.67
profoundly	from the bottom of one's heart	12	7.17	0.92	1.17
profoundly	immensely	19	6.47	0.62	0.47
sincerely	thoroughly	10	6.10	0.99	0.12
terribly	immensely	17	6.12 <sup>a</sup>	0.70	-1.25*
terribly	sincerely	12	4.75 <sup>a</sup>	0.69	-2.36***
thoroughly	awfully	14	3.64	0.72	1.83**
very	immensely	12	7.83	0.69	-0.71
very	sincerely	14	5.29	0.72	-2.27

Note. “Difference” indicates the difference between mean and 6.

<sup>a</sup>Omitted words are significantly less than 6.

\* indicates  $p < .1$ , \*\* indicates  $p < .05$ , \*\*\* indicates  $p < .01$

### *Pretest 3 Sound Symbolic Association of Words*

The purpose of pretest 3 is to create a table so that I can select words based on sound symbolic association. The words from pretest 2 will be rated on seven semantic differential items that were used in pretest 1 (e.g., small/large, fast/slow, and feminine/masculine). Three data collections were conducted with semantically equivalent words from the three different word categories that were generated from pretest 2 (e.g., customers-related, feeling-related, and adverbs).

### *Participants and Procedure*

For customers-related words, a total of 902 participants were recruited from Amazon's Mechanical Turk (female = 57%,  $M_{\text{age}} = 33$ ). Then they were randomly given three out of nine words to rate on seven semantic differential scale items on a nine-point scale which was anchored by items: "small/large," "fast/slow," "light (in color)/dark," "angular/round," "feminine/masculine," "light (in weight)/heavy," and "sweet/bitter".

For feelings-related words, a total of 873 participants were recruited from Amazon's Mechanical Turk (female = 54%,  $M_{\text{age}} = 34$ ). Then they were randomly given nine out of thirty-seven words to rate on a same seven semantic differential scale item.

For adverbs, a total of 601 participants were recruited from Amazon's Mechanical Turk (female = 52%,  $M_{\text{age}} = 39$ ). Then they were randomly given eight out of sixteen words to rate on a same seven semantic differential scale item.

### *Results*

The analysis began with a factor analysis. The purpose of the factor analysis was to generate a single variable from the set of seven items to represent the masculinity-femininity of the words. Individual exploratory factor analyses for the three-word categories were conducted. The seven items were not highly correlated. But because the theory indicates that consonant sounds should affect all of the seven items, I forced each EFA to extract single factor solutions, and captured the factor scores for use in discriminating between words. For customers-words, the EFA yielded a one-factor solution accounting for 45% of total variance. For feelings-words, the EFA yielded a one-factor solution account for 45% of total variance. For adverbs, the EFA yielded a one-factor solution account for 43% of total variance. Because the total variance explained seemed low, I reran the EFAs with a reduced set of the seven items. While the variance explained improved, the resulting factor scores were highly correlated with the factor scores obtained from all seven. Thus, I opted to use the factor scores from the EFAs with all seven variables. All the regressed factor scores based on EFA were generated and saved. These scores were used as one of the criterion for selecting a sound for use in the main studies.

### *Discussion*

Based on three pretests, I selected words that will be used to manipulate the sound in study 1 and study 2. Words were selected based on three considerations. First is the factor score from pretest 3. The lower the score indicates relatively femininity (e.g., small and



light weight) of the word whereas the higher the score indicates relatively masculinity of the word. Second, I calculated net voiced values of each word by subtracting the number of voiceless sounds from the number of voiced sounds after transforming words into sounds based on the international phonetic alphabet (i.e., IPA). A positive value indicates the voiced nature of the word and negative value indicates the voiceless nature of the word. Third is the first consonant sound of the word. According to sound symbolism literature, changing the first sound of the word is a common way to manipulate sound symbolism (Klink 2017; Joshi and Kronrod 2019; Ketron and Spears 2019). Therefore, I selected ‘admired,’ ‘deeply,’ and ‘dismayed’ to manipulate voiced plosive sounds, ‘precious,’ ‘exceedingly,’ and ‘contrite’ to manipulate voiceless plosive sound, ‘valued,’ ‘enormously,’ and ‘regretful’ to manipulate voiced fricative sound, and ‘special,’ ‘sincerely,’ and ‘sad’ to manipulate voiceless fricative sound. See full list of words with factor score, sound categories, and first sound category in Table 6.

*Table 6.* Full List of Words Based on Three Considerations: 1) Factor Score, 2) Sound, 3) First Sound

Category	Words	Factor Score <sup>a</sup>	Voiced <sup>b</sup>	First Sound
Customers	dear	-2.63	2	Voiced & Plosive
	precious	-2.57	-2	Voiceless & Plosive
	special	-2.44	-2	Voiceless & Fricative
	valued	-1.33	4	Voiced & Fricative
	appreciated	-1.17	-1	Voiceless & Plosive
	admired	-1.02	4	Voiced & Plosive
	treasured	-0.73	3	Voiceless & Plosive
	esteemed	-0.71	0	Voiceless & Fricative
	respected	-0.54	-2	NA
Feelings	explain	-1.23	-1	Voiceless & Plosive
	atone	-0.72	0	Voiceless & Plosive
	rueful	-0.68	1	NA
	woe	-0.66	1	NA

Table 6. Continued

Category	Words	Factor Score <sup>a</sup>	Voiced <sup>b</sup>	First Sound
Feelings	let off	-0.65	-1	NA
	justify	-0.45	-2	NA
	contrite	-0.43	-1	Voiceless & Plosive
	apology	-0.41	1	Voiceless & Plosive
	penitent	-0.37	-1	Voiceless & Plosive
	repentant	-0.33	0	NA
	account for	-0.26	-1	Voiceless & Plosive
	sad	-0.22	0	Voiceless & Fricative
	absolve	-0.16	4	Voiced & Plosive
	compunctious	-0.01	-3	Voiceless & Plosive
	dismayed	0.29	2	Voiced & Plosive
	remorseful	0.30	2	NA
	lamentation	0.33	2	NA
	distressed	0.46	-2	Voiced & Plosive
	upset	0.66	-3	Voiceless & Plosive
	disconsolate	0.69	-1	Voiced & Plosive
	despairing	0.73	1	Voiced & Plosive
	regretful	0.79	2	NA
	downcast	0.87	-1	Voiced & Plosive
	guilty	0.90	1	Voiced & Plosive
	unhappy	0.92	-1	NA
	anguish	0.96	2	NA
	mourning	1.03	4	NA
	ashamed	1.03	1	Voiceless & Fricative
	dejection	1.05	1	Voiced & Plosive
	despondent	1.09	1	Voiced & Plosive
	grief	1.16	1	Voiced & Plosive
	broken-hearted	1.19	2	Voiced & Plosive
	downhearted	1.31	2	Voiced & Plosive
	sorrowed	1.51	1	Voiceless & Fricative
disappointment	1.58	0	Voiced & Plosive	
depressed	1.66	-1	Voiced & Plosive	
miserable	2.05	5	NA	
Adverb	sincerely	-1.18	1	Voiceless & Fricative
	from the bottom of one's heart	-1.02	6	Voiceless & Fricative
	very	-0.76	2	Voiced & Fricative
	heartily	-0.64	0	Voiceless & Fricative
	greatly	-0.62	2	Voiced & Plosive

Table 6. Continued

Category	Words	Factor Score <sup>a</sup>	Voiced <sup>b</sup>	First Sound
Adverb	exceedingly	-0.50	1	Voiceless & Plosive
	profoundly	-0.07	2	Voiceless & Plosive
	immensely	-0.07	2	NA
	awfully	-0.02	0	Voiceless & Fricative
	intensely	0.01	1	NA
	deeply	0.05	1	Voiced & Plosive
	extremely	0.11	0	Voiceless & Plosive
	strongly	0.26	1	Voiceless & Fricative
	thoroughly	0.39	1	Voiceless & Fricative
	enormously	0.43	3	NA
	terribly	0.83	2	Voiceless & Plosive

<sup>a</sup>: Lower the score indicate relatively femininity of word (e.g., small, light weight), higher the scores indicate relatively masculinity of the word.

<sup>b</sup>: number is generated by subtracting voiceless sound from voiced sound. Positive value indicates voiced nature of the word and negative value indicates voiceless nature of the word.

### ***Study 1: Sound in Apology Effect on Willingness to Re-Book a Study Session***

Study 1 aims to provide behavioral evidence for the effect of sound symbolism of the word used in an apology on forgiveness by using a real transgression situation and behavioral measure of forgiveness. In the behavioral lab at Oklahoma State University, participants experienced technical failure so that they could not complete the study (i.e., real transgression). As detailed below, the behavioral lab manager sent out four different versions of apology emails that are different in sound (e.g., voiced plosive, voiceless plosive, voiced fricative, or voiceless fricative) and asked if they are willing to sign-up for the make-up session (i.e., behavioral measure of forgiveness). In measuring which apology email – voiced plosive, voiceless plosive, voiced fricative, or voiceless fricative- lead to more sign-ups for the make-up session, I predicted that apology with voiceless

(vs. voiced) and voiceless fricative (vs. voiceless plosive) should receive more (vs. less) sign-ups for make-up session.

### *Participants and Design*

A total of 136 undergraduate students at Oklahoma State University (45% female;  $M_{age}=21$ ) participated in study 1 for an exchange of course credit. The experiment was a single-factor with four-levels (sound: voiced plosive, voiceless plosive, voiced fricative, or voiceless fricative) between-subject design.

### *Procedure*

Participants came to the lab for 15-minute study session. The sessions were held on four consecutive days from Monday to Thursday. The number of participants per session was limited to three in order to ensure proper interactions between participants and research assistants. As participants came to the lab, research assistants thanked them for participating and told them to raise their hands if they have an issue during the session. Participants were informed that the study consists of multiple different studies. After participants provided demographic information in the beginning of the study, participants were then asked to click the link where they will watch a TV commercial advertisement and to evaluate the commercial. As they clicked the link, however, all participants experienced a technical failure in which they saw the error message, “not found” (See Appendix D for detail). When participants raise their hands to get help from a research assistant, the research assistant tried to fix the problem by clicking the link and refreshing

the website several times. After one or two minutes, the research assistant informed the participant that the technical issue cannot be fixed so that participants could not conduct the rest of the study at that time. The research assistant also informed the participants to expect an email regarding this issue by the same evening. Importantly, the research assistant did not use any language to apologize.

At the end of each day, all participants received an apology email with a link to rebook a session. The three different words that are used in emails are the experimental manipulation of the sound. Participants were randomly assigned to one of four conditions. In the voiced plosive sound condition, participants received an apology email with three words that are dominant in voiced and plosive sound: “**Admired** Participants, we are **deeply dismayed** about the technical issue that you experienced today.” In the voiced fricative condition, participants received an apology email with three words that are dominant in voiced and fricative sound: “**Valued** Participants, we are **enormously regretful** about the technical issue that you experienced today.” In the voiceless plosive condition, participants received an apology email with three words that are dominant in voiceless and plosive: “**Precious** Participants, we are **exceedingly contrite** about the technical issue that you experienced today.” In voiceless fricative condition, participants received an apology email with three words that are dominant in voiceless and fricative: “**Special** Participants, we are **sincerely sad** about the technical issue that you experienced today. All four emails ended with “If you are willing, please sign-up for the make-up session from the link below. This can be completed online from home”. When participants who are willing to sign-up for the make-up session clicked the link, the same apology message showed up as well as a text box where they could leave their

identification number that was generated only for the experiment purpose. This information was used to match participants who came to the lab and who were willing to reschedule the make-up session. See Appendix D for details.

On Friday, all participants received a full debriefing emails that all participants would receive the course credit without having to schedule a make-up session for the study.

### Results

The raw data from the experiment are given in the Table 7.

Table 7. Counts for Each Condition

Sign-Up		VP	VF	VLP	VLF	Total
NO	N	5	10	13	11	39
	% of Total	3.7%	7.5%	9.7%	8.2%	29.1%
YES	N	29	24	20	22	95
	% of Total	21.6%	17.9%	14.9%	16.4%	70.9%
Total	N	34	34	33	33	134
	% of Total	25.4%	25.4%	24.6%	24.6%	100%

Notes. “VP” stands for voiced and plosive “VF”: voiced fricative, “VLP”: voiceless plosive, “VLF”: voiceless fricative

A binary logistic regression with a voiced/voiceless sound as independent variable and the respond rate to reschedule a make-up session (0 = no, 1 = yes) as dependent variable was estimated. Contrary to my prediction that voiceless sound apology will lead to more rescheduling rate to a make-up session than voiced sound apology, participants who received an apology with a *voiced* sound were more likely to reschedule a make-up

session (29/49, 59%) than those who received a voiceless sound apology (20/49, 40%), (Wald  $\chi^2(1) = 2.273, p = .096$ ). But, this difference was just marginally significant.

In addition, despite my prediction that the voiceless fricative sound apology will lead to more rescheduling than the voiceless plosive sound apology, the effect was not significant (Wald  $\chi^2(1) = .261, p = .609$ ).

### *Discussion*

Study 1 explored behavioral evidence for the effect of sound in an apology on forgiveness by using a real transgression situation and a behavioral measure of forgiveness. Neither hypothesized nor predicted, study 1 showed that the voiced sound apology increased forgiveness by increasing the rescheduling make-up session, though this effect was marginally significant. This shows that participants who received the voiced sound apology forgave the transgressor more than those who received voiceless sound apology.

### ***Study 2: Sound in Brand Apology Effect on Consumer Forgiveness.***

Study 2 aims to provide further evidence to test the effect of voiceless (vs. voiced) and voiceless fricative (vs. voiceless plosive) sound in brand apology on consumer forgiveness (H1 and H4). Moreover, study 2 tests the mediating effect of warmth and competence on consumer forgiveness (H2, H3, H5, and H6). Although not hypothesized, study 2 tests the effect of two different modalities of how the apology is communicated on forgiveness. I predict that a brand apology with voiceless sounds than voiced sounds

will increase consumer forgiveness. The voiceless (vs. voiced) brand apology has a positive (vs. negative) effect on warmth perceptions but a negative (vs. positive) effect on competence perceptions, and the both warmth and competence perceptions further have a positive effect on consumer forgiveness. I also predict that a brand apology with voiceless fricative sound than voiceless plosive sounds will increase consumer forgiveness. The voiceless fricative (vs. plosive) brand apology has a positive (vs. negative) effect on warmth perceptions but a negative (vs. positive) effect on competence perceptions, and the both warmth and competence perceptions further mediates the effect on consumer forgiveness. Moreover, I predict that the effect of voiceless (vs. voiced) sounds and voiceless fricative (vs. plosive) in apology will be greater when the apology is given in audio format than in text-format. That is because the mirror neuron effects showed that people activate the parts of their brain for articulating language when listening to speech. For at least some people speech articulation parts of the brain do activate when reading it silently. I expect to find an effect from a text-version of apology on forgiveness too.

### *Participants and Design*

1063 participants were recruited from MTurk in exchange for monetary payment ( $n = 1063$ , 45% female,  $M_{age} = 38$ ). The study was a 4 (Sound: voiced plosive, voiced fricative, voiceless plosive, or voiceless fricative) x 2 (Modality: Audio vs. Text) between-subject design.



### *Procedures*

Participants were informed that the purpose of this study is to understand how consumers respond to various consumption situations so that they will be asked to read or listen to a scenario and answer multiple questions related to that. Participants first read a brand transgression scenario adopted from Hyodo and Bolton (2020) about a brand, ‘NIME’ and its recent campaign which received extensive criticism and which they eventually put a stop to because it strongly offended several groups of customers (See Appendix E for a full scenario). Then as an attention check, participants were asked to indicate whether two statements of scenario are true or false (“A recent campaign by this brand was successful” and “A recent campaign by this brand offended several groups of customers.”).

Next, participants were randomly assigned to either audio or text modalities conditions of how brand apology is presented. Participants in an audio condition received brand apology in audio format where they heard a recorded brand apology in a female or male voice. This recording was automatically played when they proceed to the next page. In text condition, they received brand apology in text format. To check the audio system for participants in audio condition, they completed a soundcheck task where they listened to the word and asked to choose a word that they heard from a word list. When they failed to choose the exact word that they heard, they were redirected to the same task until they choose the right word. Participants in text condition did not do soundcheck task and proceeded to the next page.

Then, participants in both audio and text conditions read a sentence about a statement the brand issued shortly after the campaign. The statement was one of four

brand apologies that differ in sound symbolism: voiced plosive, voiced fricative, voiceless plosive, or voiceless fricative. The words that are implemented to manipulate each sound were the same as that used in study 1. Participants were randomly assigned to listen to or read one of four brand apologies. For voiced plosive apology, they listen to or read “**Admired** Customers, we are **deeply dismayed** about running this campaign,” for voiced fricative apology, they listen to or read “**Valued** Customers, we are **enormously regretful** about running this campaign,” for voiceless plosive apology, they listen to or read “**Precious** Customers, we are **exceedingly contrite** about running this campaign,” and for voiceless fricative apology, they listen to or read “**Special** Customers, we are **sincerely sad** about running this campaign.”

After listening to or reading one of the four brand apologies, participants’ willingness to forgive was measured by using three items adopted from Hyodo and Bolton (2021) (e.g., “I forgive this brand”, “I accept this brand’s apology,” and “I absolve this brand”,  $\alpha = .91$ ) on a seven-point scale (1= “Strongly disagree”, 7= “Strongly agree”), perceived warmth and competence toward a brand were measured by using six items adopted from Fiske et al. (2002) (e.g., warm, generous, sincere, competent, efficient, and competitive,  $\alpha = .94$ ) on a seven-point scale (1= “Not at all”, 7= “Very much”), negative word of mouth intentions was measured by using three items (e.g., “I would spread negative word of mouth about this brand,” “I would bad-mouth this brand to my friends,” and “When my friends are looking for a similar product or service, I would tell them not to buy from this brand”  $\alpha = .91$ ), punishment intentions was measured by using three items (e.g., “This brand should be punished,” “This brand deserves payback,” and “I am angry at this brand,”  $\alpha = .90$ ).

In addition, participants were asked to indicate to what extent they will keep subscribing to or following this brand's social media account, to what extent they are willing to buy this brand in the next 30 days, and to what extent they are willing to recommend this brand to their friends (1= "Not at all", 7=" Very much").

Finally, participants were asked to indicate their perceptions of the brand apology on the same seven semantic differential scale used in pretests one and three on a seven-point scale which was anchored by these items: "small/large," "fast/slow," "light (in color)/dark," "angular/round," "feminine/masculine," "light (in weight)/heavy," and "sweet/bitter". Then their blame toward the brand ( $a = .84$ ), severity of brand transgression ( $a = .86$ ), empathy toward the brand ( $a = .94$ ), and perceived violation of the brand transgression were measured (See Appendix). Demographics were measured and participants were debriefed.

### *Results*

Thirty-two participants, whose standardized residuals that are larger than three (in absolute value) were deemed as statistical outliers and excluded from the analysis, the remaining 1033 observations were 45% female and the mean age was 38.

It was predicted that participants who received an apology with voiceless sounds would forgive the brand more than those who received an apology with voiced sounds (H1). The sound symbolism effect on forgiveness would be mediated by warmth and competence perceptions that voiceless (voiced) sound have positive (negative) influence on warmth but negative (positive) influence on competence (H2). While both warmth and competence perceptions should have positive influence on consumer forgiveness (H3).

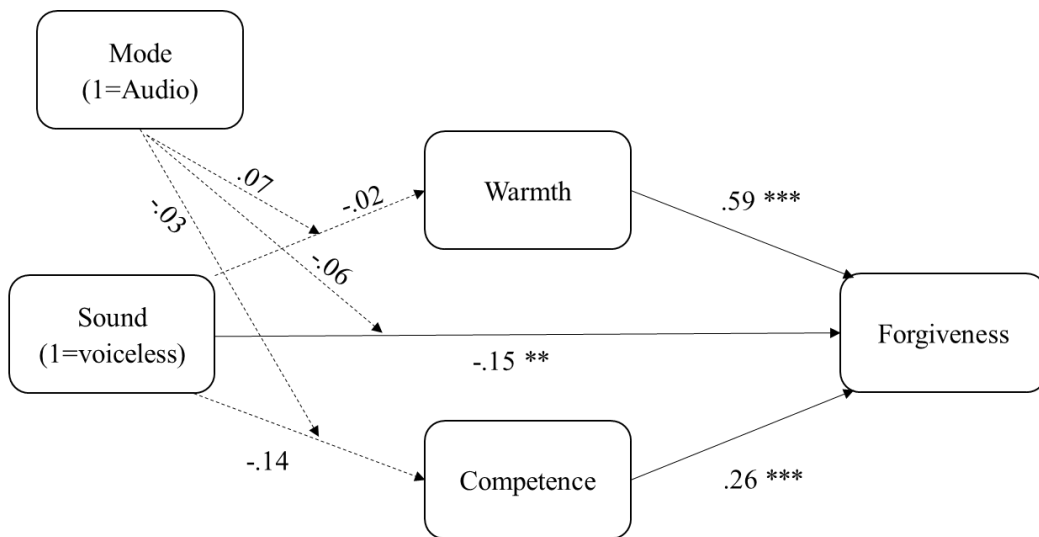
Moreover, I predict that the effect of sound symbolism on forgiveness will be greater when the apology is presented in audio mode compared to text mode. To test these predictions, I employed moderated mediation analysis using SPSS PROCESS macro (Model 8 with 5,000 bootstrap samples, Hayes 2018) with sound (0=voiced, 1=voiceless) as the independent variable, perceived warmth and competence as two parallel mediators (continuous variables), forgiveness (continuous variable) as the dependent variable, and mode (0=text, 1=audio) as the moderator (See Figure 4).

**Forgiveness:** The results showed that the interaction effect of sound symbolism and mode on forgiveness was not significant ( $b = -.06, SE = .08, p = .49$ ). Opposite to my prediction, the main effect of sound on forgiveness was significant in negative direction ( $b = -.15, SE = .06, p < .05$ ), indicating that *voiced* (vs. *voiceless*) consonant sounds increased forgiveness. The main effect of mode on forgiveness ( $b = .05, SE = .06, p = .35$ ) was not significant. As predicted, the main effect of warmth on forgiveness ( $b = .59, SE = .07, p < .001$ ) and the main effect of competence on forgiveness ( $b = .26, SE = .03, p < .001$ ) were both significant.

**Moderated mediations with warmth perceptions:** The moderated mediation index with warmth perception as a mediator was not significant (index = .04; CI = -.1948, .2788). Specifically, there was no indirect effect from consonant sound → warm → forgiveness when mode is text ( $b = -.01, SE = .08, CI = -.1831, .1597$ ) or audio ( $b = .04, SE = .09, CI = -.1422, .1978$ ). Specifically, the interaction effect of sound and mode on warmth perceptions ( $b = .06, SE = .21, p = .73$ ) was not significant. The main effect of sound symbolism on warmth was not significant ( $b = -.01, SE = .15, p = .90$ ). The main effect of mode on warmth was not significant ( $b = .07, SE = .15, p = .62$ ).

**Moderated mediations with competence perceptions:** The moderated mediation index with competence perceptions as a mediator was not significant (index = -.01; CI = -.0978, .0875). There was no indirect effect from sound → competence → forgiveness in when mode is text ( $b = -.00$ ,  $SE = .03$ , CI = -.0713, .0614) or audio ( $b = -.01$ ,  $SE = .03$ , CI = -.0726, .0566). The interaction effect of sound and mode on competence was not significant ( $b = -.03$ ,  $SE = .18$ ,  $p = .87$ ). The effect of sound on competence was not significant ( $b = -.01$ ,  $SE = .12$ ,  $p = .96$ ). The effect mode on competence was not significant ( $b = .17$ ,  $SE = .12$ ,  $p = .17$ ).

Figure 4. Moderated Mediation Model I



\*\*  $p < .05$ ; \*\*\*  $p < .001$

Dash dot lines indicate non-significant paths. Solid lines indicate significant paths.

It was also predicted that participants received an apology with voiceless fricative sound would forgive the brand more than those who received an apology with voiceless plosive sound (H4). The sound symbolism effect on forgiveness would be mediated by warmth and competence perceptions that voiceless fricative (plosive) sounds should have

a positive (negative) influence on warmth but negative (positive) influence on competence (H5). Both warmth and competence perceptions have positive influence on consumer forgiveness (H6). Moreover, this effect of sound symbolism on forgiveness will be greater when the apology is presented in audio mode compared to text mode.

Because H5, H6, and H7 contemplate differences only in the voiceless consonant sound conditions, the sample size for the tests reported below is 515 (48% female,  $M_{age} = 38$ ). To test these predictions, I employed moderated mediation analysis using SPSS PROCESS macro (Model 8 with 5,000 bootstrap samples, Hayes 2018) with sound (0=voiceless plosive, 1=voiceless fricative) as the independent variable, perceived warmth and competence as two parallel mediators (continuous variables), forgiveness (continuous variable) as the dependent variable, and mode (0=text, 1=audio) as a moderator (See *Figure 5*).

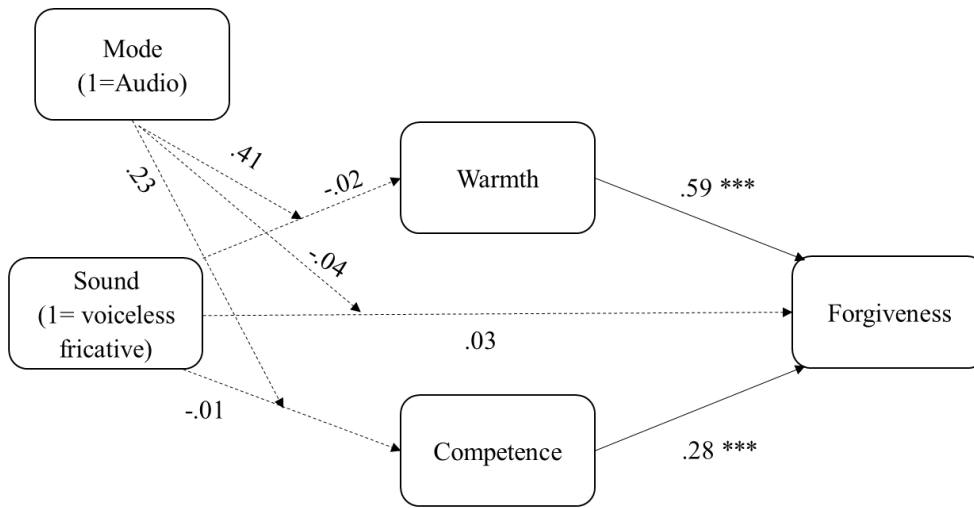
**Forgiveness:** The results showed that the interaction effect of sound and mode on forgiveness was not significant ( $b = -.04, SE = .11, p = .71$ ). The main effect of sound on forgiveness was not a significant ( $b = .03, SE = .08, p = .70$ ), indicating that voiceless fricative and voiceless plosive sound apology have no significant differences in increasing forgiveness. The main effect of mode on forgiveness was not significant ( $b = .02, SE = .08, p = .84$ ). As predicted the main effect of warmth on forgiveness ( $b = .59, SE = .03, p < .001$ ) and competence on forgiveness ( $b = .28, SE = .04, p < .001$ ) were both significant.

**Moderated mediations with warmth perceptions:** The moderated mediation index with warmth perception as a mediator was not significant (index = .25; CI =

-.0912, .5820). There was no indirect effect from sound → warm → forgiveness when mode is text ( $b = -.01, SE = .09, CI = -.1831, .1597$ ) or audio ( $b = .03, SE = .09, CI = -.1422, .1978$ ). The interaction effect of sound and mode on warmth perceptions ( $b = .41, SE = .29, p = .15$ ) was not significant. The sound effect on warmth was not significant ( $b = -.28, SE = .20, p = .15$ ). The effect of mode on warmth was not significant ( $b = -.06, SE = .31, p = .75$ ).

**Moderated mediations with competence perceptions:** The moderated mediation index with competence perceptions as a mediator was not significant (index = .06;  $CI = -.0677, .2094$ ). There was no indirect effect from sound → competence → forgiveness in when mode is text ( $b = -.04, SE = .05, CI = -.1335, .0527$ ) or audio ( $b = .06, SE = .07, CI = -.0677, .2094$ ). The interaction effect of sound and mode on competence was not significant ( $b = .23, SE = .24, p = .35$ ). The sound effect on competence was not significant ( $b = -.14, SE = .17, p = .43$ ). The mode effect on competence was not significant ( $b = .02, SE = .17, p = .88$ ).

Figure 5. Moderated Mediation Model II.



\*\* p< .05; \*\*\* p<.001

Dash dot lines indicate non-significant paths. Solid lines indicate significant paths.

### Discussion

In study 2, I found the positive influence of warmth and competence perceptions on forgiveness, supporting H3 and H6. However, I could not find supporting evidence for the remaining hypotheses. Contrary to my prediction, I found that when consumers receive a brand apology with *voiced* sound, they are more likely to forgive the brand than those who receive a brand apology with *voiceless* sound. Also contrary to my prediction, the effect of the voiced consonant sounds on forgiveness was directed, and not mediated through either warmth or competence. This was opposite to what I predicted, but is consistent with the study 1 result.



## CHAPTER V

### GENERAL DISCUSSION AND CONCLUSION

What words should be used when brands need to apologize in case of brand transgression is very important in order to obtain consumer forgiveness. In this dissertation, I looked at the very sound in words that are used in an apology to understand how the sound symbolism could influence consumer's forgiveness. Across three pretests, I generated words that differ in sound symbolism but are the same in meaning to manipulate the sound symbolism in apology. In Study 1, by using a real transgression situation, I found that individuals who received an apology with the voiced sounds showed more forgiveness by signing up for the make-up session than those who received an apology with the voiceless sounds. In Study 2, by using a brand transgression scenario, I also found that individuals who received an apology with the voiced sounds showed more forgiveness than those who received the voiceless sounds.

These two results are contrary to my prediction that voiceless sound apology would increase forgiveness more than the voiced sound apology through increased warmth and decreased competence perceptions toward the brand. One of the reasons why the voiced sound in an apology increased forgiveness could be due to the effect of nasal sounds (e.g., /m/, /n/, /ing/). In my main studies, there were five nasal sounds used in voiced plosive and voiced fricative apology conditions (VP: Admired Customers,

We are deeply dismayed about running this campaign, VF: Valued Customers, We are enormously regretful about running this campaign.), whereas there were three nasal sounds used in voiceless plosive and fricative apology conditions (VLP: Precious Customers, We are exceedingly conntrite about running this campaign, VLF: Special Customers, We are sincerely sad about running this campaign). Though research on nasal sound symbolism is very limited but showed that /m/ is associated with maternal warmth across languages (Blasti et al. 2016; Johansson et al. 2020). Moreover, social psychology literature showed that nasals are more common among words rated pleasant by the listeners (Johnson et al. 1964). Thus, having more nasals in voiced apology compared to voiceless apology could lead to forgiveness due to its pleasant association. Another plausible reason is that the association between voiceless sounds and angularness. Previous sound symbolism research as well as pretest 1 in this dissertation showed that the voiceless sounds are perceived as angular, whereas voiced sounds are perceived as round (Kawahara and Shinohara 2012; Nielsen and Rendall 2011). But other meanings that can be associated with voiceless sounds compatible with the notion of angularity are unfriendly and aggressive whereas voiced sounds compatible with the notion of roundness are friendly and peaceful (Kawahara 2021; Sidhu and Pexman 2019). If voiceless sound apology induced unfriendliness and aggressiveness whereas voiced sound apology induced friendliness and peacefulness, increased forgiveness from voiced sound apology could be stemmed from this association.

### *Theoretical Contribution*

The current dissertation contributes to existing research on sound symbolism and brand apology. First, this dissertation contributes to sound symbolism literature by focusing and developing stimuli of various consonant sound symbolism including voiced/voiceless, plosive/fricative. Most previous sound symbolism research has mainly focused on vowel sound symbolism due to its easiness to design and conduct experiments. However, this dissertation attempted to broaden the understanding of sound symbolism literature by investigating not just vowel sound but also consonant sound.

Second, this dissertation provides deeper understanding of sound symbolism by using real words in manipulating sound symbolism. Most prior sound symbolism literature has designed experiment by using fake words. For instance, most of sound symbolism research in marketing focuses on developing a better brand name. However, examining sound symbolism on fake words has its own weakness in terms of generalization. Stimuli that were used in sound symbolism literature were often just changing one single sound or syllable, which makes it hard to examine whether the effects of sound symbolism demonstrated in the lab translate to more real-world scenarios. However, by conducting three pretests to find real words that differ in sound but the same mean helps overcome this chronic weakness on sound symbolism.

Third, this dissertation contributes to brand apology literature by showing the nuanced factor – sound - in brand apology could increase consumer forgiveness. Previous studies showed that increasing warmth perceptions of the brand such as baby-facedness of CEO or a female gender spokesperson in public speaking could increase

consumer forgiveness due to its femininity association. However, in this dissertation, increasing masculinity associated perception stem from voiced sound could have positive influence on gaining consumer forgiveness.

### ***Practical Implication***

Though it was opposite to my prediction, this dissertation shows that having more voiced sound symbolism in an apology have a positive effect on gaining consumer forgiveness. Therefore, brand managers and companies should incorporate sound symbolic meaning associated with voiced sound (e.g., masculine, large, round, and slow) and select words based on these will be useful in increasing consumer forgiveness. Results from Pretest 3 generated ratings of perceived masculinity and femininity for each word. Using this information may help in selecting words that are masculine and voiced in nature.

### ***Limitations and Future Directions***

Despite its contributions, the present dissertation has a few limitations. One of the limitations for this dissertation is using real words to manipulate sound symbolism. Though I tried to control for any semantic meaning of word's effect, it is difficult to control this completely. For the future study, study should include a measure where researcher asks how similar the meaning of selected words to participants and include that as a control variable in the analysis. Furthermore, though I employed three criteria (e.g., factor score, and first sound) to select words that are differ only in sound, I could

not create conditions that are orthogonal to each other. Real words are structured with different sounds.

In conclusion, although this dissertation showed opposite results to what I hypothesized, the results showed that the sound symbolism effect on apology affects consumer forgiveness. Future study will be needed to understand the underlying mechanism of why voiced sound apology lead to more forgiveness than voiceless sound apology. I hope this dissertation can be used as a foundational work on this topic.

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## APPENDICES


### APPENDIX A: PRETEST 1 METHODOLOGICAL DETAIL


#### Voiced Consonant Sound:


 Pronounce b sound  
— Pronuncian Amer


 Pronounce d sound  
— Pronuncian Amer


 Pronounce g sound  
— Pronuncian Amer


 Pronounce j sound  
— Pronuncian Amer


 Pronounce m  
sound — Pronuncia


 Pronounce n sound  
— Pronuncian Amer


 Pronounce ng  
sound — Pronuncia


 Pronounce v sound  
— Pronuncian Amer

 Pronounce w  
sound — Pronuncia


 Pronounce z sound  
— Pronuncian Amer


 Pronounce zh  
sound — Pronuncia


 How-to-pronounce  
-the-th-sounds-i (1).


 How-to-pronounce  
-the-th-sounds-i (1).


#### Voiceless Consonant Sound:


 Pronounce ch  
sound — Pronuncia


 Pronounce f sound  
— Pronuncian Amer


 Pronounce h sound  
— Pronuncian Amer


 Pronounce k sound  
— Pronuncian Amer


 Pronounce p sound  
— Pronuncian Amer

 Pronounce s sound  
— Pronuncian Amer

 Pronounce sh  
sound — Pronuncia

 Pronounce t sound  
— Pronuncian Amer

 How-to-pronounce  
-the-th-sounds-i.mp

 How-to-pronounce  
-the-th-sounds-i.mp

## 7 semantic differential scale

Please indicate the extent to which this sound is perceived as \_\_\_\_\_?

small (1) – large (9)  
fast – slow  
light (in color) - dark  
angular – round  
feminine – masculine  
light (in weight) – heavy  
sweet - bitter

## **APPENDIX B: PRETEST 2 METHODOLOGICAL DETAIL**

Please indicate on the scale the degree to which the two terms have the same meaning.  
(1=Completely Different, 11: Completely Same)

**Term 1** []

**Term 2:** []

## APPENDIX C: PRETEST 3 METHODOLOGICAL DETAIL

### Text Condition

Please read this word out loud then indicate your opinions on the following items.

[ word ]

Please indicate the extent to which you perceive the sound of this word as \_\_\_\_\_?

small (1) – large (9)  
fast – slow  
light (in color) - dark  
angular – round  
feminine – masculine  
light (in weight) – heavy  
sweet - bitter

### Audio Condition

Please listen to this sound and evaluate it on the following scale.

[Audio recording of word]

Please indicate the extent to which you perceive the sound of this word as \_\_\_\_\_?

small (1) – large (9)  
fast – slow  
light (in color) - dark  
angular – round  
feminine – masculine  
light (in weight) – heavy  
sweet – bitter

## **APPENDIX D: STUDY 1 METHODOLOGICAL DETAIL**

### **[At the Behavioral Lab]**

Thank you for participating this study. This study is consisting of multiple different studies. There is no right or wrong answer. We just want your honest opinions.

If you are ready, please click next button to start the study.

### **Demographic**

#### **PID**

Please type your pID below.

Hint: Your two digit birth month, two digit birth day, and the last four digits of your CWID.

#### **Gender**

What is your gender? Male/Female/Decline to answer

#### **Age**

What is your age?

#### **Language**

Please enter the primary language spoken in your home. English/Other (Please specify)

#### **Country**

In what country was the high school you graduated from located? United States/ Other (Please specify)

#### **Fluency**

How fluent are you in English? (1=Not at all fluent, 7=Very fluent)

#### **Religiosity**

To what extent do you consider yourself a religious person? (1= Not at all religious, 9=Very religious)

-----page break-----

### **Technical Failure**

In this study, you will going to evaluate different advertisements.

Please click below to watch a TV commercial advertisement that has recently aired.

[CLICK HERE](#)

**[Later in the evening]**

### **Apology Emails**

Email Subject Line: Follow-up from today's lab study

### **Version A (Voiced Plosive)**

Admired Participants,

We are deeply dismayed about the technical issue that you experienced today.

If you are willing, please sign-up for the make-up session from the link below. This can be completed online from home.

[https://okstatebusiness.az1.qualtrics.com/jfe/form/SV\\_9T4Rhx32eV2ui9w](https://okstatebusiness.az1.qualtrics.com/jfe/form/SV_9T4Rhx32eV2ui9w)

### **Version B (Voiced Fricative)**

Valued Participants,

We are enormously regretful about the technical issue that you experienced today.

If you are willing, please sign-up for the make-up session from the link below. This can be completed online from home.

[https://okstatebusiness.az1.qualtrics.com/jfe/form/SV\\_3t2m8pwBnY1EKIS](https://okstatebusiness.az1.qualtrics.com/jfe/form/SV_3t2m8pwBnY1EKIS)

### **Version C (Voiceless Plosive)**

Precious Participants,

We are exceedingly contrite about the technical issue that you experienced today.

If you are willing, please sign-up for the make-up session from the link below. This can be completed online from home.

[https://okstatebusiness.az1.qualtrics.com/jfe/form/SV\\_78Vr8Q2f61xz9Sm](https://okstatebusiness.az1.qualtrics.com/jfe/form/SV_78Vr8Q2f61xz9Sm)

### **Version D (Voiceless Fricative)**

Special Participants,

We are sincerely sad about the technical issue that you experienced today.

If you are willing, please sign-up for the make-up session from the link below. This can be completed online from home.

[https://okstatebusiness.az1.qualtrics.com/jfe/form/SV\\_5irwtRSSEdVEHQO](https://okstatebusiness.az1.qualtrics.com/jfe/form/SV_5irwtRSSEdVEHQO)

## APPENDIX E: STUDY 2 METHODOLOGICAL DETAIL

### Brand Transgression Scenario

NIME is a popular brand.

Imagine that you are familiar with this brand and have been subscribing to or following its social media.

A recent campaign by NIME, which included both traditional advertising and social media, made the news when it received extensive criticism for its advertising. The campaign was felt to be in very poor taste and strongly offended several groups of customers. After initially resisting suggestions to change to the campaign, the controversy continued to grow and the company eventually put a stop to the campaign.

### Attention Check

Please indicate whether each statement about the scenario that you just read is true or false.

A recent campaign by this brand was successful (True/False)

A recent campaign by this brand offended several groups of customers (True/False)

### Text Voiced Plosive Apology Condition

Shortly after cancelling the campaign, this brand made a statement regarding this issue:

*Admired Customers,*

*We are deeply dismayed about running this campaign.*

### Text Voiced Fricative Condition



Shortly after cancelling the campaign, this brand made a statement regarding this issue:

*Valued Customers,*

*We are enormously regretful about running this campaign.*

### **Text Voiceless Plosive Condition**

Shortly after cancelling the campaign, this brand made a statement regarding this issue:

*Precious Customers,*

*We are exceedingly contrite about running this campaign.*

### **Text Voiceless Fricative Condition**

Shortly after cancelling the campaign, this brand made a statement regarding this issue:

*Special Customers,*

*We are sincerely sad about running this campaign.*



VP\_W (Salli).mp3

**Audio Voiced Plosive Women:**



VP\_M  
(matthew).mp3

**Audio Voiced Plosive Men:**



VF\_W (Salli).mp3

**Audio Voiced Fricative Women:**



VF\_M.mp3

**Audio Voiced Fricative Men:**



VLP\_W (Salli).mp3

**Audio Voiceless Plosive Women**



VLP\_M.mp3

**Audio Voiceless Plosive Men:**



VLW\_W (Salli).mp3

**Audio Voiceless Fricative Women:**



VLW\_M.mp3

**Audio Voiceless Fricative Men:**

### **Forgiveness**

For each statement below, please indicate how strongly you agree or disagree by clicking the circle that best represents your opinion. (1= Strongly disagree, 7=Strongly agree)

- I forgive this brand.
- I accept this brand's apology.
- I absolve this brand.

### **Warmth and Competence**

To what extent do you perceive this brand is: (1=Not at all, 7= Very much)

- Warm
- Generous
- Sincere
- Competent
- Efficient
- Competitive

### **Negative Word of Mouth**

For each statement below, please indicate how strongly you agree or disagree by clicking the circle that best represents your opinion. (1= Strongly disagree, 7=Strongly agree)

- I would spread negative word of mouth about this brand.
- I would bad-mouth this brand to my friends.
- When my friends are looking for a similar product or service, I would tell them not to buy from this brand.

### **Punish**

For each statement below, please indicate how strongly you agree or disagree by clicking the circle that best represents your opinion. (1= Strongly disagree, 7=Strongly agree)

- This brand should be punished.
- This brand deserves payback.
- I am angry at this brand.

**Follow** (1= Not at all, 7=Very much)

To what extent will you keep subscribing to or following this brand's social media account?

**Repurchase** (1= Not at all, 7=Very much)

To what extent are you willing buy this brand in the next 30 days?

**Recommend** (1= Not at all, 7=Very much)

To what extent are you willing to recommend this brand to your friends?

### **Association**

Please indicate the extent to which you perceive this brand's apology message was \_\_\_\_\_?

small (1) – large (9)  
fast – slow  
light (in color) - dark  
angular – round  
feminine – masculine  
light (in weight) – heavy  
sweet - bitter

### **Blame**

Please indicate your thoughts about the recent incident involving this brand.

- NIME is not at all responsible for the incident. (1) - NIME is totally responsible for the failure. (7)

- No way is this NIME's fault - This is completely NIME's fault.

- I do not blame NIME for what happened - I completely blame NIME for what happened.

### **Severity**

How would you rate the incident involving this brand?

- Not at all severe (1) - Extremely severe (7)
- Minor problem (1) – Major problem (7)
- Insignificant problem (1) – Significant problem (7)

### **Empathy**

How would you assess the response given by this brand?

- Insincere (1) – Sincere (7)
- Express no regret (1) – Express deep regret (7)
- Unempathetic (1) – Empathetic (7)

**Violate** (1= Extremely unlikely, 7= Extremely likely)

Please indicate the how likely or unlikely is it that this brand violated explicit/implicit rule(s).

VITA

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