A TALE OF TWO BRANDS:

THE JOINT EFFECT OF MANUFACTURER BRAND AND RETAILER BRAND

ON CONSUMERS' EVALUATION OF PRODUCTS

A Dissertation

by

YING ZHU

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2011

Major Subject: Marketing

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Approved by:

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ABSTRACT

A Tale of Two Brands:

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Consumers' Evaluation of Products.

(August 2011)

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Consumers' purchase decisions typically involve *two* brands: the *manufacturer* brand (the "what brand to buy" decision) and the *retailer* brand (the "where to buy" decision). While extant research suggests that consumers' product evaluation is affected by both, much less is known about how the two brands *jointly* affect consumers' preferences. Building upon prospect theory and mental accounting principles, I hypothesize that the joint effect of the two brands on consumers' evaluation of different products depends on the reference point evoked, and whether each of the two brands is perceived as a gain or loss relative to the reference point.

Five lab experiments provide empirical support for the hypothesized effects. Study 1 reveals that the joint effect of manufacturer and retailer brands depends on the reference product in a manner consistent with prospect theory and mental accounting

principles. The results of Studies 2 and 3 show that the majority of participants use a reputable brand sold at a reputable retailer as their reference product. For this group, there is a positive interaction effect of the manufacturer and retailer brands on consumers' willingness to pay. Study 4 extends the results of Study 3 by testing the theoretical framework using a non-price measure of consumers' product evaluation (i.e., attitude toward the offer). The results provide converging support for hypothesis 1 and 2 as well as demonstrate the mediating role of gain and loss feelings, thus providing preliminary evidence for the proposed cognitive process. Finally, Study 5 provides supporting evidence for the predictions through the use of a priming method.

This research contributes to the literature on behavioral decision theory and branding by extending the study of mental accounting from quantitative information (e.g., money, time) to qualitative information such as that derived from brand reputation.

The findings have prescriptive implications as they can help managers understand how their brands can be leveraged, how consumers react to reference products available in the marketplace, and how to best price products across different outlets depending on the reputation of their brands and the reputation of the outlets.

DEDICATION

This dissertation is dedicated to my beloved family for their unconditional love, tireless support, enduring encouragement, and for being the best support system a person could ever hope for. Also, all the effort, determination, and perseverance it took to complete this dissertation is dedicated to the memory of my father, Duoqiang Zhu.

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Thank you, also, to the other faculty members and doctoral students. I am very grateful to everyone who supported my research, provided valuable comments, and offered help.

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CHAPTER I

INTRODUCTION

Brands are powerful strategic tools that firms actively leverage to make their products stand out in a competitive marketplace. Testifying to the importance of brands, researchers have sought for decades to understand the determinants and consequences of brand equity (e.g., Aaker 1991; Keller 1993; Mizik and Jacobson 2008; Simon and Sullivan 1993). The rich stream of literature focusing on factors ranging from quality perceptions (e.g., Berger, Draganska, and Simonson 2007; Dodds, Monroe, and Grewal 1991) to brand trustworthiness and brand expertise (e.g., Erdem and Swait 2004) has established that positive brand perceptions can increase consumers' likelihood of purchase, as well as the price that consumers are willing to pay for a product.

Consumers' purchase decisions typically involve *two* distinct brand decisions: the *manufacturer* brand (the "what brand to buy") and the *retailer* brand (the "where to buy"). For example, when consumers need a pair of running shoes, they face a decision of choosing a manufacturer brand such as Nike, Reebok, or a less reputable brand. They also need to decide where to buy the shoes, be it Foot Locker, Amazon.com, or a small local shoe store. Given the variety of shoe brands and the number of stores to buy the shoes from, consumers face numerous options. While extant research has shown that consumers' evaluation of a product increases with both the manufacturer brand and the retailer brand's reputation and image (e.g., Dodds et al. 1991; Grewal, Monroe, and Krishnan 1998a), little is known about how the two brands *jointly* affect consumer's

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This dissertation follows the style of *Journal of Consumer Research*.

preferences.

In addition, an important factor to consider in product evaluation is the reference point that consumers use. According to prospect theory (Kahneman and Tversky 1979), a consumer's evaluation of products depends on comparisons between the focal product and his/her reference point. A consumer who previously purchased Nike from Foot Locker may evaluate an upcoming shoe purchase differently than a consumer who previously purchased Reebok from Amazon.com because each may anchor on different brands (or reference points). Despite the importance of reference points in the above decision making process and in practice, the topic of disentangling the joint effect of manufacturer and retailer brands while considering the reference point effect has not received sufficient research attention.

I seek to fill this gap in the literature by providing theoretical predictions and empirical evidence on the joint effect of manufacturer and retailer brands on consumers' evaluation of different products while allowing for the reference point effect. In particular, I draw upon prospect theory (Kahneman and Tversky 1979) and mental accounting principles (Thaler 1985) to make predictions for the manner in which consumers' product evaluation depends on the reference point evoked, and depends on whether each of the two brands is perceived as a gain or loss relative to the reference point.

To obtain preliminary evidence for the key predictions, I analyze a dataset which contains 865 cosmetic brands selling in 28 retail stores in a large metropolitan city in China. Subsequently, a series of lab experiments are conducted to more rigorously test

the hypothesized effects. Across the studies, I obtain a positive interaction effect between the manufacturer and retailer brands on consumers' evaluation of products. I also document the moderating effect of the reference point on this interaction. These results are largely consistent with the mental accounting based predictions. In addition, the support for my key predictions is robust whether the reference point is given to participants or chosen by participants, and across different measures of product evaluation, including price based measures such as willingness to pay (WTP) and non-price based measures such as perceived product attitude.

The findings from this dissertation make several important contributions to research and practice. First, most applications of prospect theory and mental accounting in the marketing literature are in contexts that involve how consumers handle numerical information, such as money (Mazumdar and Jun 1993; Arkes and Blumer 1985), other currencies (e.g., frequent flier miles; Drèze and Nunes 2004), time (Leclerc, Schmitt, and Dube 1995), and human lives (Tversky and Kahneman 1981). In contrast, my research findings imply that consumers can classify products into mental accounts using not only quantitative information, but also qualitative information such as that derived from brand reputation. In addition, this study contributes to research in branding by theorizing and testing a brand reputation interaction effect that is likely to be prevalent in the marketplace. This novel perspective to extant research leverages prospect theory in the branding literature (e.g., Bell and Lattin 2000; Hardie, Johnson, and Fader 1993) and shows how consumers make decisions when reference points are anchored by brands. In addition, the findings empirically determine the combination of brands most likely to be

used as the reference point by consumers in purchase decisions. Finally, my research findings have prescriptive implications for marketing practitioners in terms of helping managers understand how brands can be leveraged, how consumers react to different products available in the marketplace, and how to best price products across different outlets depending on the reputation of the manufacturer as well as the reputation of the outlets.

The dissertation is structured as follows. In Chapter II, I present a brief review of the relevant literature on branding and prospect theory (including a review of mental accounting principles). In Chapter III, the conceptual framework and the key hypotheses are presented. In Chapter IV, a preliminary study and a series of lab experiments that aim at testing the predictions are reported. The results from all the studies are consistently supportive of the key predictions. In Chapter V, the dissertation concludes with a discussion of the implications of the findings to academics and managers.

CHAPTER II

LITERATURE REVIEW

The purpose of this research is to assess the joint effect of a manufacturer brand and a retailer brand on consumers' evaluation of products. For this purpose, two streams of research are reviewed below: branding and prospect theory (including mental accounting principles).

2.1. The Role of Brands in Consumers' Decision Making

Research in the branding literature has demonstrated the power of brands in influencing consumers' perceptions and purchasing decisions. Whether the focus is on the brand name (e.g., Rao and Monroe 1989), brand image (e.g., Park, Jaworski, and MacInnis 1986), reputation of the brand (e.g., Purohit and Srivastava 2001) or brand equity (e.g., Aaker 1991; Keller 1993), implicit in these studies is the fact that a stronger brand has a more positive effect on consumer perceptions and behaviors. Each of these brand-related concepts can be a component of brand reputation. For the ease of exposition, the brand and brand reputation has been used interchangeably in this research.

The reputation of the manufacturer brand (or image, or equity) has been shown to impact consumers' brand choices (Aaker and Keller 1990; Jacoby, Szybillo, and Busato-Schach 1977), their perceptions of financial risk (Shimp and Bearden 1982), and their product evaluations (Maheswaran, Mackie, and Chaiken 1992). Alternatively, *the reputation of the retailer brand* has been shown to affect consumers' quality perceptions

(Chu and Chu 1994), their product judgments (Lee and Shavitt 2006), and their perceptions of surcharges (Cheema 2008).

Few studies have examined the effects of both manufacturer and retailer brands, and those that have considered them to be independent determinants of various consumer outcomes (Dodds, Monroe, and Grewal 1991; Purohit and Srivastava 2001; Rao and Monroe 1989). For example, Dodds et al. (1991) treated price, manufacturer's brand, and retailer's brand all as cues and proposed that multiple cues should be more effective in enhancing consumers' quality perceptions, perceived value, and willingness to buy than single cues (see Rao and Monroe 1989 for a meta-analysis of the single vs. multiple cue effects on quality perceptions). They found mixed results. In addition, to test the differential effects between multiple cues and single cues, they compared the average quality perceptions of products with multiple cues (i.e., price-manufacturer brand-retailer brand combination) with that of a single cue (price or manufacturer brand or retailer brand respectively). For example, they examined the difference in effect between manufacturer-retailer brand combinations with the effect of the manufacturer brand (i.e., the retailer brand information was absent). Therefore, while Dodds et al. (1991) suggested that under certain circumstances, multiple cues may have an additive effect on consumer evaluations of branded products, their findings do not speak to the possibility that a multiplicative effect may also exist, i.e., that there may be a significant interaction between the manufacturer and retailer brands.
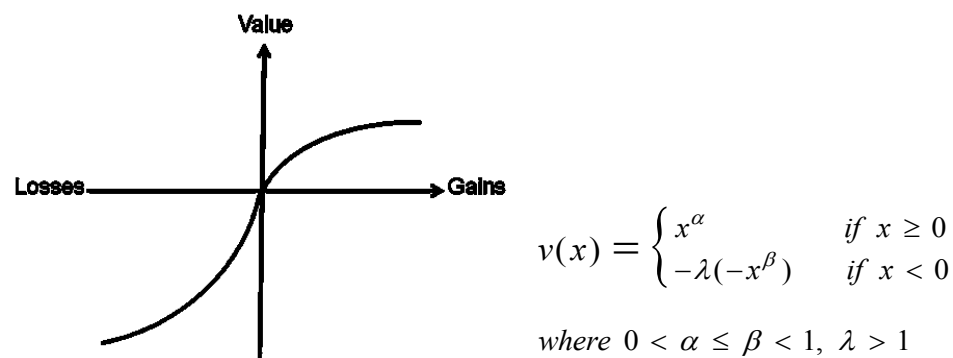
Similarly, in an examination of the effects of the two brands and price discounts on consumers' evaluations and purchase intention, Grewal et al. (1998b) hypothesized

the effects of each brand without making predictions about possible interaction effects between the two brands. Finally, Purohit and Srivastava (2001) examined the effects of each of the two brands on how product warranty affected consumers' quality perceptions without considering any interaction effect between the two brands. For literature that has incorporated both the manufacturer brand and retailer brand is silent on the reference point effect, which is caused by anchoring on different brands of manufacturer and retailer.

2.2. Prospect Theory and Mental Accounting Principles

Kahneman and Tversky's (1979) prospect theory proposes an S-shaped value function that is characterized by three key features: (1) the existence of a reference point; (2) diminishing sensitivity for both gains and losses; and (3) loss aversion (As showed in figure 1 below).

Figure 1. Kahneman and Tversky's (1979) prospect theory

$$v(x) = \begin{cases} x^{\alpha} & \text{if } x \geq 0 \\ -\lambda(-x^{\beta}) & \text{if } x < 0 \end{cases}$$

$$\text{where } 0 < \alpha \leq \beta < 1, \ \lambda > 1$$

First, people's evaluation of an option is a function of the deviation between the option and a reference point. The option is coded as a gain (loss) if it is better (worse) than the reference point. For example, a price of $100 will be perceived as expensive (a loss) for consumers who usually pay $30 and as cheap (a gain) for consumers who typically pay $200. The effects of reference points on individual decision making have been widely accepted (Brooks, Kaufmann, and Lichtenstein 2004; Saini, Rao, and Monga 2010; Tversky and Simonson 1993) and have been documented in various contexts (e.g., Leclerc et al. 1995; Mazumdar and Jun 1993). For example, Raghubir and Srivastava (2002) found that consumers use the face value of the foreign currency as their reference point while making purchases in other countries. The reference point effect has also been used to explain consumers' bargain seeking behavior (Saini, Rao, and Monga 2010). Recent research by Palmeira (2011) demonstrates that the removal of a reference point by increasing or decreasing an attribute to zero shifts a consumer's choice of products. The author found that consumers favor an inferior product (e.g., with 1 gram of fat) to a superior one (e.g., with 0 grams of fat) when each is compared to a same alternative (e.g., 5 grams of fat) because of the difficulty of comparing with zero.

A topic which has received a lot of research attention is the formation of reference prices (Kopalle, Rao, and Assunção 1996; Winer 1986). Kopalle et al. (1996) defined a reference price as an anchor level utilized by consumers in a given environment. Building on prospect theory, researchers argue that consumers frame the prices that they encounter in the marketplace as gains (losses) if their reference price is

higher (lower) than the purchase price (Bell and Lattin 2000; Erdem, Mayhew, and Sun 2001; Mayhew and Winer 1992).

Furthermore, the reference price literature distinguishes between internal and external reference prices. An internal reference price is defined as a price stored in consumers' memories (Grewal, Monroe, and Krishnan 1998a; Mayhew and Winer 1992). An external reference price is observed price information in the current purchase environment (Mayhew and Winer 1992), such as a manufacturer suggested price or a regular price that is displayed along with a sale price for comparison. Consumers may rely on one or both of them when making purchase decisions.

The second feature of prospect theory's value function is that it is concave in the domain of gains and convex in the domain of losses, such that it demonstrates diminishing sensitivity in both domains. For instance, happy feelings created by gaining $5 would be bigger than gaining an additional $5 after having gained $100.

Finally, the value function is steeper for losses than it is for gains. As a result, a happy feeling brought by winning $10 cannot offset a sad feeling caused by losing $10. Loss aversion has been offered as an explanation for the endowment effect, i.e., the discrepancy between consumers' willing to pay (WTP) and willingness to accept (WTA) in the marketplace (Brenner et al. 2007; Kahneman, Knetsch, and Thaler 1990; Nayakankuppam and Mishra 2005; Thaler 1980; Tversky and Kahneman 1991).

Drawing on the three features associated with prospect theory's S-shaped value function, Thaler (1985) proposed a concept of mental accounting and four mental accounting principles: (1) segregate gains (due to concavity in the gain domain); (2)

integrate losses (due to convexity in the loss domain); (3) integrate smaller losses with larger gains (due to loss aversion); (4) segregate small gains from larger losses (due to concavity in gains and convexity in losses). Marketing scholars have applied mental accounting in various contexts, such as the impact of framing on consumers' evaluation of an offer (Heath, Chatterjee, and France 1995), waiting time decisions (Leclerc et al. 1995), cost tracking for time and money (Soster, Monga, and Bearden 2010), payment (Gourville and Soman 1998), savings and debt (Prelec and Loewenstein 1998), product replacement decisions (Okada 2001), customer loyalty (Wagner et al. 2009), and emotion (Levav and McGraw 2009). As an example, consider Brooks et al.'s (2004) explanation for why consumers favored traveling farther away from their home to stores that are clustered closely together, rather than traveling to stores that are closer to home but scattered farther apart from each other. The distance travelled represents a single large loss in the former case, but represents multiple small losses in the latter case. Due to the convexity of the value function in the domain of losses, a single large loss creates less disutility than multiple small losses. Therefore, consumers' traveling preferences are consistent with the mental accounting principle of integrating multiple losses.

Prospect theory and mental accounting principles can provide arguments for hypotheses on the interaction effects of manufacturer brand and retailer brand on consumers' evaluation of products given a reference product. In order to elucidate how the manufacturer brand and the retailer brand interact to affect consumers' evaluation of different products, in the next chapter, I draw upon the framework of prospect theory

(Kahneman and Tversky 1979) and leverage the mental accounting principles (Thaler

1985) to develop my predictions.

CHAPTER III

CONCEPTUAL FRAMEWORK

When consumers shop for a product, they are constantly confronted with decisions on what brand to buy and where to buy it from. Although consumers are exposed to both manufacturer brands (i.e., Nike) and retailer brands (i.e., Foot Locker) in most of their shopping experiences, extant literature has largely ignored how manufacturer and retailer brands interact with each other to influence consumers' evaluation of products. A good understanding of potential joint effect between a manufacturer brand and a retailer brand has theoretical significance and potential managerial importance.

Another essential aspect to consider in consumers' decision making is the reference point that consumers use to evaluate products. Depending on what is used as the reference point, the focal product may then be coded as a gain or a loss and assigned certain values according to prospect theory's S-shaped value function.

As reviewed in Chapter II, a large body of literature stemming from the seminal work of Kahneman and Tversky (1979) has established that when consumers evaluate alternatives they frame alternatives relative to a reference point, code the alternatives as gains or losses, and process them accordingly by giving more weight to losses than to gains. The tendency to rely on a reference point when processing information has been termed reference dependence. Wide ranging implications of reference dependence have been documented on consumers' perceptions, intentions, choices and actual behaviors, including consumers' perceived value of money in different currencies (Wertenbroch,

Soman, and Chattopadhyay 2007), consumers' choice of shopping trip routes (Brooks, et al. 2004), and the impact of relative and referent thinking on bargain seeking behaviors (Saini, Rao, and Monga 2010). Researchers have also argued that consumers frame the prices that they encounter in the marketplace as gains (losses) if their reference price is higher (lower) than the purchase price (Bell and Lattin 2000; Erdem et al. 2001). In addition to price, quality can also serve as a reference point. In this vein, Hardie et al. (1993) proposed that both the price and quality of the last purchased or currently held product could be used by consumers as reference points. Subsequently, other products that enter the consideration set may be encoded as either a gain or a loss from that reference product on both the price and quality dimensions.

Following this stream of research, I argue that both the manufacturer brand and the retailer brand can be used as reference points and that consumers frame alternatives as either gains or losses, depending on their perceptions of the brand under consideration relative to their reference brand. For instance, if a consumer's reference manufacturer brand for purchasing toothpaste is *Aim*, the prospect of purchasing *Supersmile* would be perceived as a gain on the manufacturer brand and thus may lead to a positive evaluation (e.g., WTP). Conversely, if the consumer's reference retailer brand for toothpaste purchase is the upscale *Sephora*, purchasing toothpaste at *Walgreens* may appear as a loss on the retailer brand and thus might lead to a negative evaluation.

Since most purchase decisions involve both a manufacturer brand and a retailer brand, I coin the term "reference product" to represent a combination of a reference manufacturer brand and a reference retailer brand. To continue with the previous

example, while one consumer may use *Aim* sold at *Walgreens* as his/her reference product, another consumer may use *Supersmile* sold at *Sephora* as his/hers. Other products in the choice set will then be compared to the reference product and may be perceived as gains or losses on each of the two brand dimensions. For that matter, for consumers who use *Aim* sold at *Walgreens* as a reference product, *Aim* at *Sephora* will be perceived as a gain on the retailer brand dimension and *Supersmile* at *Walgreens* will be perceived as a gain on the manufacturer brand dimension. Conversely, the same two products will be perceived as a loss on the manufacturer brand dimension and a loss on the retailer brand dimension by the consumers who use *Supersmile* sold at *Sephora* as a reference product.

Therefore, how consumers evaluate each of these products will depend on the reference product they use and the subsequent gains and/or losses associated with the focal product relative to the reference product on each brand dimension. Given consumers may construct their mental accounts with brands and their evaluation involves multiple gains and losses, I draw on Thaler's (1985) mental accounting principles to predict that the joint effect of manufacturer and retailer brands on consumers' evaluation of products depends on the reference product evoked.

For example, if consumers use a reputable manufacturer brand sold by a reputable retailer (HH) as their reference product, they will perceive the same manufacturer brand sold by a less reputable retailer (HL) as a loss on the dimension of the retailer brand (call it $-R$). Similarly, they will perceive a less reputable manufacturer brand sold by the same reputable retailer (LH) as a loss on the dimension of the

manufacturer brand (call it -*M*). And they will perceive the less reputable manufacturer brand sold by the less reputable retailer (LL) as a larger loss (call it -*R*-*M*) because the product does not perform as well on either of the two brand dimensions. While the difference between HH and HL is the absolute value of a small loss (i.e., -*v*(-*R*)), the difference between LH and LL is the value difference between a small loss and a large loss (*v*(-*M*) – *v*(-*R*-*M*)). Due to the convexity of prospect theory's value function in the domain of losses, the former should be bigger than the latter because -*v*(-*R*) > *v*(-*M*) – *v*(-*R*-*M*). This is equivalent to Thaler's (1985) mental accounting principle of integrating multiple losses, as -*v*(-*R*) > *v*(-*M*) – *v*(-*R*-*M*) is the same as *v*(-*R*-*M*) > *v*(-*R*) + *v*(-*M*), that is, the value of integrated losses is larger than the sum of the value on each loss. Therefore, I predict that:

> **H1:** When consumers use HH as their reference product, the difference in consumers' evaluation between the more and less reputable retailer is larger for the more reputable manufacturer brand than for the less reputable manufacturer brand.

By the same logic, when HL is used as the reference product, HH will be perceived as a gain on the dimension of the retailer brand (*R*). In the meantime, LH will be perceived as a loss on the dimension of the manufacturer brand and as a gain on the dimension of the retailer brand. To the extent that the manufacturer brand is more important than the retailer brand (i.e., what you buy should be more important than where you buy it, an assumption which I later verify empirically), LH will be perceived as a net loss (*R*-*M*, where *R* < *M*). And LL will be perceived as a loss on the dimension

of the manufacturer brand (-M) comparing to the reference product HL. Therefore, the difference between HH and HL will be the value of a gain ($v(R)$), but the difference between LH and LL will be the value difference between a small loss ($v(R\text{-}M)$) and a large loss ($v(\text{-}M)$). Again, since the manufacturer brand should be more important than the retailer brand, the magnitude of the gain R should be relatively small compared to that of the loss -M. Due to the convexity of prospect theory's value function in the domain of losses, I should have $v(R) > v(R\text{-}M) - v(\text{-}M)$. In other words, the difference between HH and HL will be bigger than the difference between LH and LL. This is, in essence, the mental accounting principle of the silver lining, as $v(R) > v(R\text{-}M) - v(\text{-}M)$ is equivalent to $v(R) + v(\text{-}M) > v(R\text{-}M)$, that is, the value of a small gain and a large loss is bigger than the value of the combined loss. Therefore, I predict that:

H2:   When consumers use HL as their reference product, the difference in consumers' evaluation between the more and less reputable retailers is larger for the more reputable manufacturer brand than for the less reputable manufacturer brand.

Similarly, when LH is used as the reference product, the difference between HH and HL will be the difference between the values of two gains ($v(M) - v(M\text{-}R)$), and the difference between LH and LL will be the absolute value of a loss ($\text{-}v(\text{-}R)$). Due to loss aversion and the concavity of prospect theory's value function in the domain of gains, I should have $v(M) - v(M\text{-}R) < \text{-}v(\text{-}R)$. In other words, the difference between HH and HL will be smaller than the difference between LH and LL. Essentially, this is the mental accounting principle of integrating a mixed gain, as $v(M) - v(M\text{-}R) < \text{-}v(\text{-}R)$ is equivalent

to $v(M) + v(-R) < v(M-R)$, that is, integrating a small loss into a large gain. The sum of the value of a large gain and the value of a small loss is smaller than the value of the combined gain. Therefore, I predict that:

> **H3:** When consumers use LH as their reference product, the difference in consumers' evaluation between the more and less reputable retailers is smaller for the more reputable manufacturer brand than for the less reputable manufacturer brand.

Finally, when LL is used as the reference product, the difference between HH and HL will be the value difference between a large gain and a small gain ($v(M+R) - v(M)$), and the difference between LH and LL will be a small gain ($v(R)$). Due to the concavity of prospect theory's value function in the domain of gains, I should have $v(M+R) - v(M) < v(R)$. In other words, the difference between HH and HL will be smaller than the difference between LH and LL. This is same as the mental accounting principle of segregating multiple gains, as $v(M+R) - v(M) < v(R)$ is equivalent to $v(M+R) < v(M) + v(R)$, that is, the value of integrated two gains is smaller than the summed value of two separate gains. Therefore, I predict that:

> **H4:** When consumers use LL as their reference product, the difference in consumers' evaluation between the more and less reputable retailers is smaller for the more reputable manufacturer brand than for the less reputable manufacturer brand.

Even though I do not make a formal prediction, I anticipate that the majority of consumers will use HH as their default reference product. This is because the HH

product could serve as an aspiration level for consumers and aspiration level is a good candidate for reference point (Kahneman and Tversky 1979). To a similar effect, Puto (1987) has argued that aspiration level is analogous to the initial reference point. In addition, consumers may have more information about reputable brands sold by reputable retailers and thus may get into a habit of using them as a benchmark to evaluate other products. Therefore, I expect the majority of consumers to use the HH product as their internal reference product. As a result, I predict that for the market in general, consumers' evaluation of products will exhibit a positive interaction effect between the manufacturer brand and the retailer brand (as specified in H1).

Next, I briefly outline a preliminary study that supports H1 using price data for cosmetics products sold in a metropolitan city in China. Then, I report a series of lab experiments to test the hypothesized predictions. Study 1 tests H1 through H4 by imposing external reference products on the participants. Study 2 allows participants to use their internal reference products, and uses generic names for the manufacturer and retailer brands to avoid any potential confounds due to real brand names. Study 3 demonstrates the robustness of the results in a different product category. Study 4 extends studies 1 through 3 by revealing the joint effect of the manufacturer and retailer brands on a non-price measure as well as providing evidence for the mediating effect of consumers' gain and loss feelings. Study 5 tests H1 through H4 again using a priming method, and investigates whether a purchased brand in one product category influences the reference product and the subsequent product evaluations in an unrelated product category.

CHAPTER IV

RESEARCH METHODOLOGY

4.1. Field Data

To provide preliminary evidence for H1, I use a dataset containing monthly price

data on 865 cosmetic brands from 28 retail stores. This dataset covers 36 months (Jan

2004 to Dec 2006) and was obtained from a metropolitan area in China with a

population of more than 10 million. Bolstered by a fast economic growth rate, increasing

household income, and a surging working population, the Chinese cosmetics and

toiletries market has grown exponentially in the last two decades. It reached a total value

of $19.51 billion (USD) in 2009, an 11.4% increase from 2008 and a full 157.73%

increase since 2003 with an annual average growth rate of 14.48% (Cosmetics &

Toiletries in China 2010). China now has the seventh largest cosmetics and toiletries

markets in the world and the second largest in Asian-Pacific only after Japan. It is

projected to surpass US$ 31 billion by 2013 (Cosmetics & Toiletries in China 2010).

The field data from real consumers in this booming market highlights the practical

significance of the current research.

4.1.1. Description

The dataset includes the following information: brand name, store name, product

category, price, month, and year. Each record describes the price for a brand sold at a

certain store in a given month of a year. The data covers many product categories, such

as skin care, hair care, makeup, and fragrance. The brands include reputable brands such

as Dior, Chanel, Lancôme, Estée Lauder, SHISEIDO, and SK-II as well as some less

reputable local brands, such as Yi Ran Mei and Ting Fang. I coded manufacturer brands into high or low reputation categories using rating of cosmetic brands created by Chinese consumers (www.china.com).

The dataset includes a categorical variable named "Store Positioning", which includes the following four categories: target high-end consumers, target medium-high level consumers, target mass consumers, and target low-end consumers. I coded the retailer brand as high or low reputation by dichotomizing the store positioning variable that had four levels (mass/low = low, medium/high = high). I expect a positive interaction effect between the manufacturer and retailer brands, *assuming* that the majority of the consumers used HH as their reference product.

4.1.2. Results

A 2 (manufacturer brand: high vs. low) by 2 (retailer brand: high vs. low) ANOVA on the average of the monthly prices revealed a significant two-way interaction (F(1, 60694) = 44.41, $p < .0001$). In support of H1, I found that the difference in price for reputable brands sold by high vs. low reputation retailers was larger than the corresponding difference for the less reputable brands (￥104.84 > ￥43.65). These results are consistent with H1.

Given the promising result in this secondary dataset, I conducted five lab experiments to test my predictions more rigorously.

4.2. Study 1: Named Laptop and Retailer Brands

Study 1 investigates consumers' WTP for different brands of laptop computers sold by different online retailers. It tests H1 through H4.

4.2.1. Experimental Design

This study employed a mixed design with two between-subjects factors (manufacturer brand of reference product: high vs. low; retailer brand of reference product: high vs. low) and two within-subject factors (manufacturer brand of focal product: high vs. low; retailer brand of focal product: high vs. low). I used the two between-subjects factors to manipulate the four reference products: high-high (HH), high-low (HL), low-high (LH), and low-low (LL). I used the two within-subject factors to elicit consumers' WTP for the four focal products. A total of 351 undergraduate business students participated in the study in exchange for extra course credit. Participants were randomly assigned to one of the four between-subjects conditions (i.e., reference product groups). The number of participants in each cell ranged between 84 and 93.

I manipulated the manufacturer brand by using two real brands (Hewlett Packard and Wyse) and manipulated the retailer brand by using two real online retailers (Amazon.com and 9malls.com). The four products, therefore, were HP sold at Amazon (HH), HP sold at 9malls (HL), Wyse sold at Amazon (LH), and Wyse sold at 9malls (LL). Participants were first told that they were shopping for a laptop computer and were asked to consider the four products. To control for quality perceptions, they were also

told that the laptops had identical technical specifications and had a list of features that were popular at the time the study was conducted.

Then in each experimental condition, I provided participants with the price for the reference product and asked them to provide their WTP for the other three products. For example, they were told that, "Given that the HP laptop computer is selling for $1049.99 at Amazon.com, the dollar amount that I am willing to pay for the identical HP laptop computer at 9malls.com is: _____." The price associated with each reference product (e.g., $1049.99) was obtained from a pretest in which participants from the same population were asked to indicate the prices at which they would be indifferent among the four products described above. The reasons I provided the prices for the reference products to participants were to (a) strengthen the reference product manipulation and (b) reduce randomness in the responses. Since prices were provided for the reference products, I did not solicit WTP for those products. Instead, those provided prices were used as proxies for participants' WTP in that particular reference product group. In a later study (Study 3) participants were allowed to provide their WTP for all four products.

As manipulation checks, participants were asked to indicate their degree of agreement with the following two statements: "I think HP is a well-known manufacturer brand", and "I think Wyse is a well-known manufacturer brand". Their degree of agreement to these statements was measured on 7-point scales (1 = Strongly disagree to 7 = Strongly agree). The effectiveness of the retailer brand manipulation was checked using similar questions.

4.2.2. Manipulation Checks

A 2 (manufacturer brand of the reference product) by 2 (retailer brand of the reference product) by 2 (manufacturer brand of the focal product) ANOVA, with the first two factors as between-subjects factors and the last one as a within-subject factor, revealed a significant main effect of the within-subject factor ($F(1, 344) = 2115.75$, $p < .001$). As expected, HP was perceived to be a better-known brand than Wyse (6.49 > 2.07). A similar analysis on the retailer brand manipulation showed a significant main effect of the retailer brand of the focal product ($F(1, 333) = 2407.43$, $p < .001$). As expected, Amazon was perceived to be a better-known brand than 9malls (6.51 > 1.98). There were no other significant effects from these ANOVA's (all p-values > .1). Therefore, both manipulations were deemed successful.

4.2.3. Results

Since I did not solicit the WTP for the reference products, in order to use the conventional statistical analyses, I generated the WTP for the reference product in each experimental condition as follows. I used the mean value of the price given to participants for the reference product as the mean WTP. I used the pooled variance of WTP for the same product from the other three conditions as the variance of WTP. For example, in the HH condition, since the price for HH was given, I took this price as the mean value for the WTP of HH. In each of the other three conditions (HL, LH, LL), participants provided their WTP for HH respectively. I used the pooled variance of WTP for HH from the other three conditions as the variance of WTP for HH in the HH condition. Random numbers with this mean and variance were generated as the WTP for

the reference product. This method of adding variance to an experimental condition that has zero variance has been previously used in scientific and behavioral experiments (Banks 1998; Collings 1987; Andrews and Manrai 1998).

A 2 (manufacturer brand of reference product: high vs. low) by 2 (retailer brand of reference product: high vs. low) by 2 (manufacturer brand of focal product: high vs. low) by 2 (retailer brand of focal product: high vs. low) mixed ANOVA on WTP revealed a significant four-way interaction ($F(1, 347) = 6.88$, $p < .01$). To interpret this significant effect, I analyzed the WTP in each of the four experimental conditions (See Figure A1). As expected, when HP/Amazon served as the reference product, a 2 x 2 repeated-measures ANOVA revealed a significant two-way interaction effect ($F(1, 83)$ $=14.74$, $p < .001$). In support of H1, the difference in WTP for HP sold at the two different retailers is larger than the corresponding difference in WTP for Wyse ($\$122.2 > \$34.58$).

When HP/9malls served as the reference product, the two-way interaction was also significant ($F(1, 85) = 35.02$, $p < .001$), with the difference in WTP for HP sold at the two retailers being larger than the corresponding difference for Wyse ($\$103.15 > \$18.44$). This result lends support to H2. When Wyse/Amazon served as the reference product, the interaction effect was not significant ($F(1, 92) = 2.23$, $n.s.$), even though the difference in WTP for HP sold at the two retailers was smaller than the corresponding difference for Wyse as per H3 ($\$82.99 < \$100.92$). Finally, when Wyse/9malls served as the reference product, the two-way interaction was significant ($F(1, 87) =17.28$, p $< .001$), with the difference in WTP for HP sold at the two retailers being smaller than

the corresponding difference for Wyse (-\$0.37 < \$58.12). This result supports H4. In addition, the main effects of both the manufacturer and retailer brands of the focal products were significant and in the expected directions in each of the four experimental conditions.

In addition to comparing the absolute values of WTP as shown above, I also calculated the percentage difference among the four products to test whether the interaction effects I detected were due to a proportionality effect (Kahneman and Tversky 1984; Heath et al. 1995). If people think of the differences in relative terms, the absolute price difference between HP sold at Amazon and 9malls ought to be bigger than that between Wyse sold at Amazon and 9malls, since an HP computer is likely to be more expensive than a Wyse computer. To address this possibility, I computed the percentage difference for HP sold at Amazon and 9malls, i.e., ($\text{WTP}_{\text{HP/Amazon}}$-$\text{WTP}_{\text{HP/9malls}}$) / ($\text{WTP}_{\text{HP/Amazon}}$)), as well as the percentage difference for Wyse sold at the two retailers, i.e., ($\text{WTP}_{\text{Wyse/Amazon}}$-$\text{WTP}_{\text{Wyse/9malls}}$) / ($\text{WTP}_{\text{Wyse/Amazon}}$), and compared the two percentage differences in each of the four experimental conditions. The results were very similar to what I obtained using the absolute differences. Specifically, the percentage difference in WTP was bigger for HP than for Wyse in the HH and HL conditions (9% > 4.2%, $p < .05$; 11% > 1.7%, $p < .001$, respectively), and smaller for HP than for Wyse in the LH and LL conditions (9% < 12%, $p < .05$; 0.6% < 8.1%, $p < .001$, respectively), providing support for H1 through H4.

4.2.4. Discussion

The results of Study 1 are largely supportive of H1 to H4. Specifically, the joint effect of the manufacturer brand and retailer brand depends on the reference product in a manner consistent with prospect theory and mental accounting principles. In addition, the results cannot be explained by proportionality, as the relative differences in WTP yield results that are similar to those obtained with absolute differences.

While the use of real brand names in this study may have enhanced the realism of the stimuli, it may also have introduced confounds. Therefore, in the next study, I test H1 through H4 again by using generic names for the brands. In addition, in the current study the manipulation of reference products is akin to the use of external reference points. In the next study, I test the robustness of the results by allowing individuals to use their internal reference points. As discussed earlier, I expect the majority of consumers to use the HH product as their internal reference product. As a result, I predict that the majority of consumers will exhibit a positive interaction effect between the manufacturer brand and the retailer brand in their WTP (as specified in H1). The remaining consumers, in contrast, may use one of the other products as a reference product and may not exhibit the positive interaction effect to the same degree. In the market as a whole, therefore, the positive interaction effect between the two brands should prevail. In other words, if I look at the WTP of all consumers without grouping them based on their internal reference products, the positive interaction effect specified in H1 should be observed. These effects are tested in the next study. But before I

proceed, I will describe two alternative theoretical explanations that could potentially explain the results, which I seek to rule out in the following studies.

4.2.5. Alternative Explanations

      While the results in the first study are consistent with the predictions based on prospect theory and mental accounting principles, there are at least two other theories in which they can be subsumed. In the following two studies, I will examine these alternative theoretical explanations in order to gain more confidence in the proposed theoretical framework. Since both theories are mute on the reference point effect, neither one is capable of explaining *all* of the results, but both have the potential to explain the positive interaction effects between the two brands specified in H1. Since I propose that the majority of consumers will use HH as their default internal reference product, thus behaving in a manner consistent with H1, these potential rival explanations are worth serious consideration.

      A first potential explanation is derived from signaling theory (Erdem and Swait 1998). This theory proposes that a strong, credible brand can be used to signal quality and can therefore command a higher price than a less credible brand. Even though previous research has theorized that the manufacturer brand and the retailer brand are two important signals that impact consumers' quality perceptions (Dodds et al. 1991; Rao and Monroe 1989), little research provides insights into whether an interaction effect can ensue. The only exception may be Helmig, Huber, and Leeflang (2007), who speculated that the two brands combined could lead to higher product evaluations and price premiums because two brands offer greater assurance about product quality than a

single brand. To rule out signaling theory as a potential explanation, in the next study I measure consumers' quality perceptions for each product and check if they demonstrate a positive interaction effect between the two brands.

The second alternative theoretical explanation is the cue inconsistency theory proposed by Miyazaki, Grewal, and Goodstein (2005). This theory posits that if two cues are inconsistent, the negative cue is outweighed by consumers and should dominate their evaluation. In the current context, both the manufacturer and the retailer reputation can be perceived as extrinsic cues. In that sense, while both HH and LL products offer consistent cues, both HL and LH products offer inconsistent cues. With the latter products, according to the cue inconsistency theory, the negative cues, or the low reputation brands, should be weighted more heavily. Since the low reputation brands will receive more weights in consumers' evaluation of the HL and LH products, the evaluation of those products will be low, leading to a positive interaction effect between the two brands, i.e., $(HH - HL) - (LH - LL) > 0$. In the next study I measure the weights that consumers have assigned to each brand for all products in an attempt to rule out this explanation.

4.3. Study 2: Generic Laptop and Retailer Brands

As mentioned above, in this study, generic brand names are used to test H1 through H4. Also, in contrast to Study 1, I allow participants to use their internal reference products by having them self-select, rather than assigning them, into one of the four reference product groups. I anticipate that the majority of participants would use HH as their reference product, and as a result they would behave in accordance with H1.

Another purpose of this study is to examine the two rival theoretical explanations for the results mentioned above: signaling and cue inconsistency. A total of 231 undergraduate business students from the same subject pool as Study 1 participated in the study for extra course credit.

4.3.1. Experimental Design

This study employed the same 2 x 2 x (2 x 2) mixed design as in Study 1. Instead of using actual manufacturer brand names as operationalizations of the high and low brands, I manipulated the high and low manufacturer brand as "well-known" versus "unknown" manufacturer brand and the high and low retailer brand as "large" versus "small" retailer. This approach to manipulate participants' brand perceptions has been used in the literature and minimize the confounding effects of real brand names (e.g., Arora and Henderson 2007; Blair and Landon 1981; Derbaix 1995; Purohit and Srivastava 2001). I used the two between-subjects factors to manipulate the four reference products: high-high (HH), high-low (HL), low-high (LH), and low-low (LL) and used the two within-subject factors to measure participants' evaluation of the four focal products (HH, HL, LH and LL).

4.3.2. Procedures

Participants were told to consider the purchase of a laptop computer. To evoke their internal reference product, I showed participants four products and asked them to select the product that they were most interested in. Corresponding to the HH, HL, LH, and LL conditions, the four products were a well-known brand laptop sold at a large retailer, a well-known brand laptop sold at a small retailer, an unknown brand laptop

sold at a large retailer, and an unknown brand laptop sold at a small retailer. All four products were listed for the participants to choose from, and the order of the products was randomized. After participants made their choices, similar to Study 1, they were given the price for the product they selected. Then they were asked to provide their WTP for the other three products. The order of the three products was also randomized.

Participants then answered two sets of questions that were intended to capture the potential alternative explanations. To examine signaling theory, I assessed participants' perception of product quality by asking the question: "Please provide a score to reflect your quality perceptions of each of the four products. Each score should be between 0 and 100, with higher scores reflecting better quality." To test the cue inconsistency theory, I measured the importance of the manufacturer brand and the retailer brand for participants in deciding each WTP. Thus, three pairs of importance measures of the manufacturer brand and the retailer brand were obtained.

Finally, I checked the manufacturer brand manipulation with the following question: "I think a well-known brand has a better reputation than an unknown brand" (1= Strongly disagree to 7= Strongly agree). Similarly, I checked the effectiveness of retailer brand manipulation by asking the following question: "I think a large retailer has a better reputation than a small retailer" (1 = Strongly disagree to 7 = Strongly agree).

As a manipulation check of the reference point, participants were asked to answer the following multiple-choice question: "When purchasing a laptop computer, you may have used one product as a benchmark, meaning that you have compared the

other three products mainly with that product. If that was the case, which product would that be?"

4.3.3. Manipulation Checks

Participants perceived the well-known brand to have a better reputation than the unknown brand (5.89 > 4, $t = 26.04$, $p < .001$), and they perceived the large retailer to have a better reputation than the small retailer (4.91 > 4, $t = 9.61$, $p < .001$). Therefore, both reputation manipulations were deemed successful.

Furthermore, as expected the majority (80%) of the participants stated that they were most interested in the HH product. Among the remaining participants, 16% were most interested in the HL product, 3% in the LH product, and 1% in the LL product (See Figure A2). And interest in a given product seemed to be translated into using that product as a reference product. Among the participants who stated that they were most interested in the HH product, 89.2% picked the HH product as their reference product, a proportion that is significantly above the chance level (89.2% > 25%, $\chi 2 (1) = 406.53$, $p < .0001$). Among the participants who were most interested in other products (HL, LH and LL), 23.9% used the HH product as their reference product, a proportion that is not statistically different from the chance level (23.9% vs. 25%, $\chi 2(1) = .01$, *n.s.*). Overall, participants were more likely to choose HH as their reference product if they were most interested in the HH product than if they were most interested in other products (89.2% > 23.9%, $\chi 2(1) = 83.05$, $p < .0001$), suggesting that "interested in" mapped onto internal reference points as expected.

4.3.4. Results

Given the small number of participants who were most interested in a product other than HH, all participants were categorized into two groups: the HH reference product group and the non-HH reference product group (i.e., HL, LH, and LL reference product group). After generating the WTPs for the reference products in the same manner as in Study 1, I ran a 2 (reference product: HH vs. non-HH) by 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) repeated-measures ANOVA on WTP, with the first factor as a between-subjects factor and the latter two as within-subject factors.

The analysis revealed a significant three-way interaction ($F(1, 229) = 4.67$, $p < .05$). To interpret this effect, I examined the two-way interaction within each of the two reference product groups (See Figure A3). In the HH condition, a repeated-measures ANOVA showed a significant interaction between the manufacturer and retailer brands of the focal product ($F(1, 184) = 39.39$, $p < .001$). The difference in WTP for the well-known manufacturer brand between the large and small retailer was larger than the corresponding difference for the unknown manufacturer brand ($154.61 > $65.42). In the non-HH reference product group, I anticipated the two-way interaction to be non-significant. This is because the non-HH group combined responses that matched to H2 through H4, and the interaction effects predicted by H2 and H4 are either weaker than H1 (as in the case of H2), or in the opposite direction of H1 (as in the case of H3 and

H4).[1] As expected, the two-way interaction in the non-HH reference product condition was marginally significant ($F(1, 45) = 3.51$, $p < .1$),

with the difference in WTP for the well-known manufacturer brand between the large and small retailer being actually smaller than the corresponding difference for the unknown manufacturer brand ($-29.88 < $17.35). Finally, in both conditions, the main effects of the manufacturer and retailer brand reputation were significant and in the expected directions (all p-values $< .001$).

Similar to Study 1, I also analyzed the percentage differences in WTP to control for the effect of proportionality. In this study, if the well-known brand is likely to be more expensive than the unknown brand, the absolute price difference for the well-known brand sold at the large and the small retailer ought to be bigger than the difference for the unknown brand sold at the same two retailers because of the proportionality. To address this possibility, I computed the percentage difference for the well-known brand sold at the large and small retailer, i.e., $(WTP_{HH}-WTP_{HL}) / (WTP_{HH})$, as well as the percentage difference for the unknown brand sold at the two retailers, i.e., $(WTP_{LH}-WTP_{LL}) / (WTP_{LH})$. The results were analogous to Study 1. Specifically, the percentage difference in WTP for the well-known manufacturer brand between the large and small retailers was bigger than that for the unknown manufacturer brand in the HH reference product condition (13% > 7.8% $p < .001$), but not in the non-HH reference product condition (1.4% vs. 3.8%, *n.s.*). Therefore, the relative differences in WTP were also supportive of the predictions.

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[1] I provide a simple mathematical proof in the Appendix to show why the positive interaction effect predicted by H2 is weaker than that predicted by H1.

4.3.5. Ruling out Rival Theoretical Explanations

Although I attempts to control for the perceptions of product quality in both Study 1 and this study by telling participants that "the two laptop brands have the same hardware and software," it is worthwhile to formally test whether product quality perceptions could explain the results. Recall that participants were asked to provide a quality score for each of the four products. A 2 (reference product: HH vs. non-HH) by 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) mixed ANOVA with perceived quality as the dependent variable showed a non-significant three-way interaction ($F(1, 229) = .08$, *n.s.*). Since signaling theory does not address the reference product issue, I ran a 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) repeated-measure ANOVA on quality perceptions and found that the two-way interaction was marginally significant ($F(1, 230) = 3.06$, $p = .08$). However, opposite to the results on WTP, the difference in quality perceptions for the well-known brand sold at the two different retailers was actually smaller than the corresponding difference in quality perceptions for the unknown brand ($7.64 < 9.43$). The results were not surprising. Given a positive price–perceived quality association (Rao and Monroe 1989), the quality perceptions of a well-known manufacturer brand (e.g., HP) may be subject to a ceiling effect. In contrast, for an unknown manufacturer brand (e.g., Wyse) for which consumers are less certain about its quality, they may rely on the retailer reputation to infer product quality (Chu and Chu 1994). Therefore, the quality perceptions of Wyse may be enhanced to a greater degree by selling through a reputable retailer.

Since the majority of the participants used HH as their reference product, I further examined the quality perceptions for the HH reference product group. The interaction between manufacturer and retailer brands on quality perceptions was again not significant ($F(1, 184) = 2.81$, *n.s.*), with the difference for the well-known manufacturer brand between the large and small retailer being smaller than the corresponding difference for the unknown manufacturer brand ($5.20 < 6.77$). For the non-HH group, the quality perceptions also showed a non-significant interaction between manufacturer and retailer brands ($F(1, 45) = 2.94$, *n.s.*). Therefore, quality perceptions cannot explain the joint effect of manufacturer and retailer brands on WTP for different reference products.

The other rival explanation offered by the cue inconsistency theory concerns the "weight" people assign to two brands that communicate inconsistent information. Specifically, participants could have outweighed the negative information which would then dominate the product evaluation. Recall that in every experimental condition, to capture the "weight", I measured the importance of the manufacturer brand and the retailer brand after each of the WTP questions. The results are summarized in Table B1.

For the HH reference product group, the negative cue (i.e., "L") was perceived to be more important than the positive cue (i.e., "H") when LH was the focal product ($5.95 > 5.57$, $p < .01$). The opposite was true when HL was the focal product ($5.91 > 5.68$, $p < .05$). Therefore, the results were not aligned with the cue consistency theory prediction that negative cues would always outweigh the positive cues. Again, since the cue inconsistency explanation is silent on the reference product effect, I collapsed responses

across the two reference product groups. The results also showed that while the manufacturer brand was perceived to be as important as the retailer brand for the HH product (5.54 vs. 5.17, *n.s.*), it was perceived to be more important than the retailer brand for the LL product (5.91 > 5.39, *p* < .001).

For the two products that contained inconsistent cues, the manufacturer brand was perceived to be more important than the retailer brand in both cases (5.89 > 5.68, *p* < .05 for HL; 5.92 > 5.45, *p* < .01 for LH). After taking the averages of the three manufacturer importance measures and three retailer importance measures in each condition, a paired *t*-test showed that the manufacturer brand was perceived as more important than the retailer brand (5.80 > 4.86, *p* < .001). Therefore, the evidence suggested that the manufacturer brand was more important than the retailer brand, regardless of whether manufacturer brand served as a negative cue or a positive cue, or whether the two brands communicate consistent or inconsistent information. This joint brands context may be perceived as a boundary condition for the cue inconsistency theory.

4.3.6. Discussion

Study 2 extended Study 1 in three important ways. First, instead of using external reference products, I evoked internal reference products by allowing participants to self-select into a reference product group. Second, the real brand names in Study 1, such as Amazon and HP, were replaced with more generic brand names. Third, two rival explanations of the results, namely signaling and cue inconsistency, were examined and ruled out. Overall, I found that the majority of the participants used HH as their

reference product. For this group of people, there was a positive interaction effect of the manufacturer and retailer brands on their WTP, supporting H1. While it was not possible to test H2 through H4 due to the small number of people who used products other than HH as their reference products, for those people as a group the positive interaction effect of the two brands on their WTP was statistically weaker. These results replicate those in Study 1 and provide further support for my theoretical predictions based on prospect theory and mental accounting principles.

In both studies 1 and 2, the price for the reference product was fixed and I used that as a proxy for people's WTP of the reference product. In the next study, participants are allowed to provide WTP price for all four products. In addition, I further test the robustness of the results by using a different product category, i.e., cosmetics.

4.4. Study 3: Generic Cosmetic and Retailer Brands

4.4.1. Experimental Design

This study examines consumers' WTP for different brands of cosmetic products sold by different retailers. Similar to studies 1 and 2, Study 3 used a 2 x 2 x (2 x 2) mixed design with the former two being between-subjects factors (manufacturer brand of reference product: high vs. low; retailer brand of reference product: high vs. low) and the latter being two within-subject factors. To take into account possible gender differences, I used different products: cologne for males and perfume for females. The scenarios and procedures were otherwise identical for both genders. A total of 102 undergraduate business students from the same subject pool as the first two studies participated in this study for extra course credit.

Similar to Study 2, participants self-selected into one of the four reference product groups, corresponding to a(n) well-known/unknown product sold at a large/small retailer. One major difference from Study 2 was that instead of giving participants a price for their reference product and using that price as a proxy for their WTP for the reference product, I asked them to provide WTP for their reference product and the other three products.

Participants were told to consider purchasing a bottle of cologne or perfume. Corresponding to the HH, HL, LH, and LL conditions, the four products were a well-known brand of cologne (perfume) sold at a large retailer, a well-known brand of cologne (perfume) sold at a small retailer, an unknown brand of cologne (perfume) sold at a large retailer, and an unknown brand of cologne (perfume) sold at a small retailer. Participants were first asked to select the product that they were most interested in. Then they were required to provide their WTP for both their reference product and the other three products.

I checked the manufacturer brand manipulation with two sets of questions. One question is: "I think the well-known brand (unknown) is likely to have a good reputation". The other question is: "I think a well-known brand has a better reputation than an unknown brand" (1= Strongly disagree to 7= Strongly agree). Similarly, I checked the effectiveness of retailer brand manipulation by asking the following two questions: "I think the large retailer is likely to have a good reputation" and "I think a large retailer has a better reputation than a small retailer" (1 = Strongly disagree to 7 = Strongly agree).

4.4.2. Manipulation Checks

I used two sets of manipulation check questions. The first set of questions was similar to the ones used in Study 1. Participants' perceptions of the manufacturer and retailer brands were measured on four 7-point scales. A 2 (manufacturer brand of the reference product) by 2 (retailer brand of the reference product) by 2 (manufacturer brand of the focal product) mixed ANOVA, with the first two factors being between-subjects and the last being within, showed a significant main effect of the manufacturer brand of the focal product. Participants perceived the well-known brand as more reputable than the unknown brand (6.25 > 2.99, $p < .001$). A similar analysis revealed a significant main effect of the retailer brand of the focal product, with the large retailer being perceived as having a better reputation than the smaller retailer (5.88 > 3.96, $p < .001$). All other effects from these ANOVAs were not significant (all p-values $> .1$). Therefore, both manipulations were deemed successful.

The second set of manipulation check questions revealed that participants perceived the well-known brand to have a better reputation than the unknown brand (5.64 > 4, $t = 13.41$, $p < .001$), and the large retailer to have a better reputation than the small retailer (4.53 > 4, $t = 3.25$, $p < .01$). Therefore, both reputation manipulations were successful.

Furthermore, consistent with the results of Study 2, the majority (62%) of the participants were most interested in the HH product. Among the remaining participants, 17% were most interested in the HL product, 13% in the LH product, and 8% in the LL

product (See Figure A4). And interest in a given product seemed to be translated into using that product as a reference product.

Specifically, participants who were most interested in the HH product were more likely to pick HH as their reference product than participants who were most interested in other products (87% > 26%, $\chi^2(1) = 10$, $p < .01$). Similarly, participants who were most interested in the HL product were more likely to pick HL as their reference product (67% in the HL condition > 10% in the non-HL conditions, $\chi^2(1) = 17.79$, $p < .001$). Participants who were most interested in the LH product were more likely to pick LH as their reference point (77% in the LH condition > 3% in the non-LH condition, $\chi^2(1) = 29.68$, $p < .001$). Finally, participants who were most interested in the LL product were more likely to pick LL as their reference product (63% in the LL condition > 0% in the non-LL condition, $\chi^2(1) = 16.60$, $p < .001$). The above results suggested that "interested in" mapped onto internal reference points as expected.

4.4.3. Results

This study had 52 male and 50 female participants. Gender was used as a between-subjects factor. Since it did not produce any significant main or interaction effects (all p-values > .10), I will not discuss it further.

Similar to Study 2, given the small number of participants in the non-HH conditions, all participants were categorized into two groups: the HH reference product group and the non-HH reference product group.

A 2 (reference product: HH vs. non-HH) by 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) mixed

ANOVA, with the first factor as between-subjects and the last two as within-subject, revealed a significant three way interaction ($F(1, 101) = 5.94$, $p < .05$). To facilitate the interpretation of this significant effect, I then examined the two-way interaction of the manufacturer and retailer brands within each reference product group (See Figure A5).

In the HH group, a repeated-measures ANOVA showed a significant interaction between the manufacturer and retailer brands ($F(1, 62) = 14.8$, $p < .001$). In support of H1, the difference in WTP for the well-known manufacturer brand between the large and small retailer was larger than the corresponding difference for the unknown manufacturer brand ($7.38 > $3.91). However, the same comparison in the group using non-HH reference products was not significant ($0.05 vs. $0.31, $F(1, 38) = 0.04$, $n.s.$). Finally, the main effects of manufacturer and retailer brands were significant and in the expected directions for both groups. These results replicated those obtained in Study 2.

The percentage differences in WTP mirrored the results in Study 1 and 2. For the HH reference product group, the percentage difference in WTP for the well-known brand, between the large and small retailer, was larger than the corresponding difference for the unknown brand (11.9% > 3.9%, $p = .06$). But, the same comparison was not statistically significant for the non-HH reference product group (0.4% vs. 8.8%, $n.s.$). Therefore, the relative differences in WTP were also supportive of the theoretical predictions.

4.4.4. Ruling out Rival Explanations

Similar to Study 2, in this study I also sought to control for potential quality differences by telling participants that "The two (cologne/perfume) brands are similar in

their scent, look, packaging, etc." Nevertheless, to rigorously test the signaling

explanation, a repeated-measures ANOVA was conducted on the quality perceptions of

the four products. The results showed a significant three-way interaction ($F(1, 100)$

$=3.91, p = .05$). I further tested the two-way interaction with each reference product

group. For the HH reference product group, the quality perceptions showed a significant

interaction between the manufacturer and retailer brands ($F(1, 62) = 13.19, p < .01$). But,

in contrast to the results on WTP, the difference in quality perceptions for the well-

known brand sold at the two different retailers was actually smaller than the

corresponding difference in quality perceptions for the unknown brand (4.73 < 12.94).

For the non-HH reference product group, the quality perceptions showed a non-

significant interaction between the manufacturer and retailer brands ($F(1, 38) = 1.25$,

n.s.). Therefore, signaling theory did not explain the joint effect of manufacturer and

retailer brands on WTP.

The results on the "weight" (or importance) that participants assigned to the two

brands were summarized in Table B2. To test this rival explanation, I employed the

same approach as in Study 2. Contrary to the predictions of the cue inconsistency theory,

for the HH reference product group, I found that the negative cue (i.e., "L") was

perceived to be equally important as the positive cue (i.e., "H") when LH was the focal

product and when HL was the focal product (4.97 vs. 4.87, *n.s.*; 5.05 vs. 5.02, *n.s.*,

respectively). Therefore, the cue inconsistency theory cannot explain the positive

interaction effect between the two brands on WTP.

Since the cue inconsistency explanation is mute on the reference product issue, I collapsed responses across the HH and non-HH reference product groups and found that the manufacturer brand was perceived to be equally important as the retailer brand for the HH product (5.08 vs. 5.11, *n.s.*) and for the LL product (4.92 vs. 4.78, *n.s.*). For the two products that contained inconsistent cues, the negative cue was again perceived to be equally important as the positive cue (5.11 vs. 4.93, *n.s.* for HL; 4.91 vs. 4.69, *n.s.* for LH). A 2 (importance of the manufacturer brand vs. importance of the retailer brand) by 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) repeated-measures ANOVA on the "weight" (or importance) measures showed only a significant main effect of the first factor ($F(1, 101) = 7.84$, $p < .01$), with the manufacturer brand being perceived as more important than the retailer brand (5.06 > 4.83). Therefore, the evidence suggested that the manufacturer brand was more important than the retailer brand, regardless of whether the two brands communicated consistent or inconsistent information. The cue inconsistency theory cannot explain the results on WTP.

4.4.5. Discussion

Study 3 tested H1 through H4 by allowing participants to choose their internal reference products and by using WTP as a measure of participants' evaluation of products. The results replicated those in studies 1 and 2 in a different product category — cosmetic products. As expected, the majority of consumers used a product made by a reputable manufacturer sold by a reputable retailer as their reference product. And for

such consumers, their WTP showed a positive interaction effect between the manufacturer brand and retailer brand.

In addition, in both studies 2 and 3, I found that due to the fact that the majority of the participants used the HH product as their reference product, there was an overall positive interaction effect of the manufacturer and retailer brands on consumers' WTP across all participants. Finally, I obtained converging evidence in studies 2 and 3 against two rival explanations based on signaling and cue inconsistency.

4.5. Study 4: Attitude Measure and Mediation Effects

One objective of Study 4 is to use a non-price measure — attitude towards the offer (Burton and Lichtenstein 1988) as the dependent measure to check the robustness of the theoretical explanation. Another purpose of this study is to measure the underlying process associated with consumers' product evaluation. My theoretical arguments suggest that feelings of gains and losses are the driving forces behind consumers' evaluation of products. Therefore, I investigate how the feelings of gains and losses mediate the joint effect of manufacturer and retailer brands on consumers' attitudes toward different products. In total, 226 undergraduate business students from the same subject pool as my earlier studies participated in this study for extra course credit.

4.5.1. Experimental Design

This study employed the same 2 x 2 x (2 x 2) mixed design as in Study 3. Participants were told to consider the purchase of a laptop computer. Instead of using WTP as the dependent measure, I measured participants' attitude towards the four focal products. Also in contrast to Study 3, I randomly assigned each participant, rather than

having them self-select, into one of the reference product groups. This approach of manipulating the reference products is analogous to the use of external reference points that consumers may encounter in a purchase (e.g., a competing brand displayed on the shelf).

Specifically, in each experimental condition I first provided participants with the information of the reference product and then asked them to report their attitude towards the reference product as well as to other three products. For example, the participants were first told that, "The HP laptop is selling for $789.99 at *Amazon.com*. Please select the answers below that best describe your feelings toward purchasing the HP laptop from *Amazon.com* at $789.99." Then they were told, "Given that the HP laptop is selling for $789.99 at *Amazon.com*, please select the answers below that best describe your feelings toward purchasing the same HP laptop from the *small* retailer *9malls.com,* for the same price of $789.99." I kept the same price for all products to eliminate the confounding effect from price differences.

Attitudes toward the product were assessed using three nine-point semantic differential scales (worth taking/not worth taking, bad/good, and attractive/unattractive). I checked the reliability of the three scales and the values for Cronbach's α in the four conditions are: HH $\alpha = 0.97$; HL $\alpha = 0.96$; LH $\alpha = 0.97$; LL $\alpha = 0.97$).

To measure participants' gain and loss feelings, I asked them to indicate their feelings with the following statement: "If I bought the HP laptop from *Amazon.com* (HP laptop from *9malls.com*, Wyse laptop from *Amazon.com*, or Wyse laptop from

9malls.com) at $789.99, I would feel that: (1 = I suffered a big loss, 5 = Neutral, 9 = I experienced a big gain).

As manipulation checks, participants were asked to indicate their degree of agreement with the following two statements: "I think the HP brand is likely to have a good reputation." and "I think the Wyse brand is likely to have a good reputation." Their degree of agreement to these statements was measured on 9-point scales (1 = Strongly disagree to 9 = Strongly agree). The effectiveness of the retailer brand manipulation was checked using similar questions.

4.5.2. Manipulation Checks

A 2 (manufacturer brand of the reference product) by 2 (retailer brand of the reference product) by 2 (manufacturer brand of the focal product) ANOVA, with the first two factors as between-subjects factors and the last one as a within-subject factor, revealed a significant main effect of the manufacturer brand of the focal product ($F(1, 222) = 742.97, p < .001$). As expected, HP was perceived to be a better brand than Wyse (7.76 > 4.12). A similar analysis on the retailer brand manipulation showed a significant main effect of the retailer brand of the focal product ($F(1, 222) = 878.52, p < .001$). As expected, Amazon was perceived to be a better brand than 9malls (8.05 > 4.11). Therefore, both manipulations were successful.

I checked the effectiveness of the reference product manipulation in a pretest with 151 participants from the same population as the main study. As expected, I found that in each reference product condition, the proportion of participants choosing that reference product was significantly higher than in the other conditions (see Figure A6).

In particular, 95% of the participants chose the HP laptop from Amazon.com as the reference product in the HH condition, which was significantly higher than the 74% in the non-HH conditions ($\chi^2(1) =7.31, p < .01$). Similarly, 13% of the participants chose the HP computer from 9malls.com as their reference product in the HL condition, which was significantly higher than the 4% in the non-HL conditions ($\chi^2(1) =4.42, p < .05$). In the LH condition, 27% choose the Wyse computer from Amazon.com as their reference product, which was significantly higher than the 4% in the non-LH conditions ($\chi^2(1) =18.37, p < .001$). Finally, in the LL condition 18% chose the Wyse computer from 9malls.com as their reference product, which was significantly higher than the 2% in the non-LL conditions ($\chi^2(1) =14.07, p <.001$). Therefore, the reference product manipulation was effective.

4.5.3. Results

A 2 (manufacturer brand of reference product: high vs. low) by 2 (retailer brand of reference product: high vs. low) by 2 (manufacturer brand of focal product: high vs. low) by 2 (retailer brand of focal product: high vs. low) mixed design ANOVA on attitude revealed a significant four-way interaction ($F(1, 222) = 2.84, p < .1$). To interpret this significant effect, I analyzed participants' attitudes in each of the four experimental conditions. As expected, when HP/Amazon served as the reference product, a 2 x 2 within-subject ANOVA showed a significant two-way interaction ($F(1, 56) =32.49, p < .001$). In support of H1, the difference in attitude for HP sold at the two different retailers is larger than the corresponding difference in attitude for Wyse (1.95> 0.26).

When HP/9malls served as the reference product, the two-way interaction was also significant ($F(1, 54) = 10.23$, $p < .01$), with the difference in attitude for HP sold at the two retailers being larger than the corresponding difference for Wyse ($1.09 > 0.25$). This result lends support to H2. However, when Wyse/Amazon and Wyse/9malls served as the reference product, the interaction effects were not significant ($F(1, 59) = 2.62$, *n.s.*; $F(1, 53) = 2.45$, *n.s.*, respectively).

Next I tested the mediation effect of gain and loss feelings on the relationship between the joint effect of two brands and consumers' attitude. I used a new analytical approach suggested by Zhao, Lynch, and Chen (2010) as well as Preacher and Hayes (2004). This new approach overcomes the limitations with Baron and Kenny's (1986) mediation method. The results revealed that the gain and loss feelings mediated the joint effect of the manufacturer and retailer brands on consumers' attitude ($a*b = .07$ with a 95% confidence interval $= (.01, .17)$; $c = .17$, $p > .10$) (See Figure A7). The findings lend support to the theory that the assessment of gains and losses is part of the underlying cognitive process associated with consumers' evaluation of products.

4.5.4. Discussion

Study 4 tested H1 through H4 by examining participants' attitudes for the four focal products and investigated the mediation effect of gain and loss feelings on the relationship between the joint effect of manufacturer and retailer brands and consumers' attitude. When HP/Amazon.com or HP/9malls.com served as the reference product, the joint effect of the manufacturer and retailer brands on consumers' attitude showed a

positive interaction consistent with the findings by using WTP as a dependent measure. The results were supportive of the predictions in H1 and H2.

This study further confirmed the robustness of the theoretical framework through using a non-price measure, attitude toward the offer. The results of the mediation effect also provided substantial evidence that consumers' evaluation is contingent upon their perception on gains and losses relative to the reference product.

4.6. Study 5: Priming Study

The primary objective of Study 5 is to test H1 through H4 using a priming method. I do so by examining whether a previously purchased product would affect consumers' reference product and correspondingly product evaluations in an unrelated product category. Specifically, participants were told that they purchased a certain product in one product category (e.g., computer), and were asked to evaluate products in a different product category (e.g., food). I expected that the reference product used for evaluation would be influenced by the previously purchased product, and that the reference product would in turn affect people's evaluation of the focal products in a manner consistent with the predictions of H1to H4. Participants were 283 undergraduate business students from the same subject pool as my earlier studies.

4.6.1. Experimental Design

This study used the same 2 (manufacturer brand of the reference product: high vs. low) by 2 (retailer brand of the reference product: high vs. low) by 2 (manufacturer brand of the focal product: high vs. low) by 2 (retailer brand of the focal product: high vs. low) mixed design as in Study 4. To prime the manufacturer and retailer brands of the

reference product, participants were first asked to complete a study disguised as a memory test with a scenario of a laptop computer purchase. In the scenario they were asked to imagine that they purchased one of the four laptop computers (i.e., HP/Amazon.com, HP/9malls.com, Wyse/Amazon.com, and Wyse/9malls.com), and were asked to recall the manufacturer brands and retailer brands that appeared in the stimuli. After that, participants were exposed to an ostensibly unrelated task, in which they would indicate their attitude towards four macaroni products that corresponded to HH, HL, LH and LL products using the same 3-item scale (worth taking/not worth taking, bad/good, and attractive/unattractive) as in Study 4. The four products were Kraft sold at Kroger, Kraft sold at Mini Mart, R&F sold at Kroger, and R&F sold at Mini Mart, respectively. I checked the reliability of the 3-item scale and the values for Cronbach's α in the four conditions were: HH α =.79; HL α = .97; LH α =.96; LL α = .97).

As a manipulation check for the manufacturer brand reputation, participants were asked to indicate their degree of agreement with the following two statements: "I think Kraft brand is likely to have a good reputation." and "I think R&F brand is likely to have a good reputation." Their degree of agreement to these statements was measured on 9-point scales (1 = Strongly disagree to 9 = Strongly agree). The effectiveness of the retailer brand manipulation was checked using similar questions.

As manipulation check for the reference product, participants were asked to indicate which of the four macaroni products was used as a reference product to form

their attitudes toward the other products: "In this survey, which product did you use as a reference product to form your attitudes toward the other products?"

4.6.2. Manipulation Checks

The manipulation check question on the reference product showed that 70% of the participants chose the HH macaroni product (i.e., Kraft/Kroger) as the reference product in the HH condition, which was marginally higher than the 59% in the non-HH conditions (χ^2 (1) =2.63, *p* = .10) (See Figure A8). This difference was statistically weak, presumably because the majority of participants chose HH as their reference product in all four conditions. In addition, 25% of the participants chose the HL product in the HL condition as their reference product, which was significantly higher than the 10% in the non-HL conditions (χ^2 (1) =4.49, *p* <.05). In the LH condition, 28% choose the LH product as their reference product, which was significantly higher than the 6% in the non-LH conditions (χ^2 (1) =10.66, *p* < .001). Finally, in the LL condition, 31% chose the LL product as their reference product, which was significantly higher than the 7% in the non-LL conditions (χ^2 (1) =17.69, *p* < .001). Therefore, the manipulation of reference product was successful.

To check the manipulation of the manufacturer brand, a 2 (manufacturer brand of the reference product) by 2 (retailer brand of the reference product) by 2 (manufacturer brand of the focal product) mixed ANOVA, with the first two factors being between-subjects and the last being within, on the two-item measure of manufacturer brand (Wilks' lambda = .28, *p* <.001) showed a significant main effect of the manufacturer brand of the focal product with Kraft being perceived as more reputable than R&F brand

(8.26 > 4.98, $p < .001$; all other p-values $> .10$). A similar analysis revealed a significant main effect of the retailer brand of the focal product on the two-item measure of retailer brand (Wilks' lambda $= .28$, $p < .001$), with Kroger being perceived as more reputable than Mini Mart (8.04 > 4.81, $p < .001$; all other p-values $> .10$). Therefore, the manipulations of brand reputation were successful.

4.6.3. Results

A 2 (manufacturer brand of reference product: high vs. low) by 2 (retailer brand of reference product: high vs. low) by 2 (manufacturer brand of focal product: high vs. low) by 2 (retailer brand of focal product: high vs. low) mixed design ANOVA on the 3-item attitude scale revealed a significant four-way interaction ($F(1, 279) = 7.21$, $p < .01$). To interpret this significant interaction effect, I analyzed the attitude in each of the four reference product conditions. As expected, in the HH condition, a 2 x 2 within-subject ANOVA revealed a significant two-way interaction ($F(1, 69) = 61.04$, $p < .001$). In support of H1, the difference in attitude for Kraft sold at Kroger and Mini Mart is larger than the corresponding difference in attitude for R&F (2.05 > 0.36).

In the HL condition, the two-way interaction was also significant ($F(1, 68) = 5.96$, $p < .05$), with the difference in attitude for Kraft sold at the two retailers being larger than the corresponding difference for R&F (0.43 > 0.22). This result lends support to H2. However, in the LH and LL conditions, the interaction effects were not significant ($F(1, 79) = 0.45$, *n.s.*; $F(1, 63) = 1.75$, *n.s.*, respectively).

As an additional test of my predictions, I rearranged the participants into four new groups based on their self-reported reference product. A 2 (manufacturer brand of

self-reported reference product: high vs. low) by 2 (retailer brand of *self-reported*

reference product: high vs. low) by 2 (manufacturer brand of focal product: high vs. low)

by 2 (retailer brand of focal product: high vs. low) mixed design ANOVA on attitude

revealed a significant four-way interaction ($F(1, 279) = 3.02, p < .1$). To better interpret

the significant four-way interaction, I analyzed the attitude in each of the four newly

formed reference product groups. As expected, when Kraft/Kroger was used as the

reference product, a 2 x 2 within-subject ANOVA showed a significant two-way

interaction ($F(1, 174) = 16.93, p < .001$). The difference in attitude for Kraft sold at

Kroger and Mini Mart is larger than the corresponding difference in attitude for R&F

(0.47 > 0.26). These results again support H1.

　　　When Kraft/Mini Mart was used as the reference product, the two-way

interaction was also significant ($F(1, 37) = 11.41, p < .01$), with the difference in attitude

for Kraft sold at the two retailers being larger than the corresponding difference for R&F

(1.28 > 0.04). This results support H2. When R&F/Kroger served as the reference

product, the two-way interaction was significant as well ($F(1, 34) = 7.29, p < .05$), with

the difference in attitude for Kraft sold at the two retailers being smaller than the

corresponding difference for R&F (.18 < .55). This result supports H3. However, when

R&F/Mini Mart was used as the reference product, the interaction effect was not

significant ($F(1, 34) = .02, n.s.$).

4.6.4. Discussion

　　　The results of Study 5 provide additional evidence for the theoretical predictions

through a priming method. I find that when participants are primed to think of a certain

(e.g., HH) computer product, they are more likely to use a similar (i.e., HH) macaroni product as their reference product when evaluating macaroni. And the reference product affects participants' attitude towards the other macaroni products. The results are largely supportive of the predictions. A similar pattern of results was obtained when I grouped participants based on their self-reported reference product, providing further evidence for my predictions. And the evidence was obtained using a priming method. Namely, a purchased product in one product category leads consumers' to use a reference product with similar brand levels for a subsequent purchase in an unrelated product category, and the reference product in turn affects people's evaluation of the focal products in the predicted fashion. Similar to Study 4, the support for H3 and H4 is again absent. As I have mentioned before, I suspect such results are due to the fact that consumers may be uncomfortable purchasing less reputable manufacturer brands, even though they may be comfortable purchasing from less reputable retailers.

CHAPTER V

GENERAL DISCUSSION AND CONCLUSIONS

5.1 Discussion

When making purchase decisions, consumers typically consider two brands: the brand of the manufacturer that makes the product and the brand of the retailer where the product is sold. The evaluation of product alternatives is therefore likely to involve both of these brands as well as a reference product either retrieved from memory or observed in the environment. Recall that in the shoe example, a consumer needs to decide what brand of shoe to buy (i.e., Nike or Rebook) and where to buy the shoe (i.e., Amazon or Foot Locker). In addition, a customer who bought Nike at Foot Locker may evaluate Reebok at Amazon differently from a customer who bought Reebok at Amazon. This difference in evaluation results from the coding schema of gains and losses that is based on the reference point.

While most purchase decisions involve both a manufacturer brand and a retailer brand, extant research has focused on the independent effects of each brand and has not considered the possibility of an interaction effect between the two brands. In addition, the topic of investigating the joint effect of manufacturer and retailer brands while considering the effects of reference point has not received sufficient attentions. Building upon prospect theory and mental accounting principles, I make predictions on the joint effect of the manufacturer and retailer brands on consumers' evaluation of products using price (e.g., WTP) and non-price (e.g., attitude) measures. Consistent with the predictions derived from the conceptual framework I develop in this dissertation, five lab

experiments have shown that the joint effect of the manufacturer and retailer brands on consumers' evaluation of products is moderated by the reference product used in the evaluation.

The results of Study 1 are largely supportive of the predictions. Specifically, the interaction effect of the manufacturer and retailer brands on consumers' WTP depends on the reference product in a manner that is consistent with the mental accounting predictions. Study 2 replicates the results of Study 1 but also extends it by evoking participants' internal reference products, using more generic brand names, and ruling out two rival explanations (i.e., signaling and cue inconsistency). In addition, I find that the majority (80%) of participants use a reputable manufacturer brand sold at a reputable retailer (HH) as their reference product. For this group, there is a positive interaction effect of the manufacturer and retailer brands on consumers' WTP. For the remaining people who use other products as their reference product, the positive interaction effect between the two brands is significantly weakened. I also measured quality perceptions and "weight" (or importance) of each brand and ruled out two rival explanations of the results (i.e., signaling and cue inconsistency).

Study 3 replicates the results of Study 2 in a different product category (i.e., cosmetic products). Similar to Study 2, I find that the majority (62%) of participants use a product made by a reputable manufacturer sold through a reputable retailer as their reference product. The WTP of such consumers shows a positive interaction effect between the manufacturer brand and retailer brand. The interaction effect is significantly weakened for consumers who use other products as their reference. However, since the

majority of participants use HH as their reference product, there is an overall positive interaction effect between the two brands across all consumers.

Study 4 extends the previous studies by testing the theoretical framework using a non-price measure of consumers' product evaluation (i.e., attitude toward the offer). Consistent with the findings obtained in studies 1 through 3, this study provides converging support for H1 and H2. The results also demonstrate that the gain and loss feelings mediate the relationship between the joint effect of two brands and consumers' attitude considering the reference point effect. Specifically, consumers' evaluation is contingent upon their perceptions on gains and losses relative to a reference product that is composed of a manufacturer brand and a retailer brand.

Study 5 examines H1 to H4 using a priming method. The results demonstrate that a purchased product in one product category leads consumers' to use a reference product with similar brand levels for a subsequent purchase in an unrelated product category. Specifically, when participants were primed to think of HH (HL, LH, or LL) computer, they were more likely to use HH (HL, LH, or LL) macaroni product as their reference product when purchasing macaroni. For those who used HH or HL as their reference product, the joint effect of the manufacturer and retailer brands on consumers' attitude showed a positive interaction effect. The findings are in agreement with that of studies 1 through 4. The same patterns of results are also obtained based on participants' self-reported reference products, providing further support for H1, H2, and H3. The use of priming method in Study 5, therefore, provides converging evidence for my predictions.

The consistency of the results in studies 1 to 5 across different dependent measures, different experimental designs, and different product categories, suggests that these results are likely to be a general pattern of consumers' decision making rather than an idiosyncratic phenomena of any single experiment. In general, consumers are more likely to choose a reputable manufacturer brand sold at a reputable retailer as their reference product in evaluating alternative products. And given such reference product, the reputable retailer brand enhances consumers' evaluation more when the manufacturer brand is also reputable (vs. less reputable). These lab findings also echo the pattern observed in the field data that consumers are willing to pay a price premium for reputable cosmetic brands sold through reputable retailers.

This dissertation contributes to the academic literature by leveraging prospect theory and mental accounting principles in a branding context. Most applications of prospect theory and mental accounting in the marketing literature are conducted in the context of numerical information, such as cost (Soster, Monga, and Bearden 2010), distance (Brooks et al 2004), and quantifiable product attributes (e.g., mpg of cars, Chen and Rao 2007). My research adds to this growing body of literature by proposing that consumers could use qualitative perceptions such as the information derived from a brand reputation to classify products into mental accounts and derive their evaluations on product alternatives based on the brand levels of their reference product.

The results of this dissertation may also provide important managerial implications. Given that the majority of consumers use the high-high brand combination as their reference product, and given the positive interaction effect of the manufacturer

and retailer brands on consumers' product evaluation, reputable manufacturers may want to partner with reputable retailers so they can enjoy a price premium that consumers are willing to pay. Furthermore, the increase in this premium is multiplicative, rather than additive, of the increase in the reputation of the two brands. In contrast, managers of unknown brands need to be cautious of paying their ways into top retailers, as such a strategy may not generate enough price premium to justify the cost. Such findings have prescriptive implications for managers trying to leverage their brands and seeking to select the best outlets that would maximize their profits. Finally, the research results also suggest that leverage consumers' preferences in other related or even unrelated product category can help marketing managers to better price their products and manage their channels of distribution.

5.2 Limitations and Future Research

One limitation of my study is a consistent lack of support for H4. This may be because the difficulty consumers have in using LL as a reference product, as reflected in the small number of participants who chose LL as their reference product when given the choice. From the theory testing perspective, it would be useful to exhibit the effect proposed in H4 by identifying a product category for which a large proportion of consumers would choose a less reputable manufacturer brand sold through a less reputable retailer as their reference product.

Another limitation of this research is the focus on situations in which the manufacturer and the retailer are independent brands. Future research could study how consumers respond to retailers selling private labels or manufacturers selling through

their own online and offline stores. In addition, whether different promotion strategies (e.g., warrantee, Chen, Kalra and Sun 2009) would have the same impact on the joint effect of manufacturer and retailer brands is also worth studying.

Another avenue for future research lies in seeking a better understanding of the formation of reference products. For example, more research on multi-dimensional reference points that include various brands or product characteristics may lead to richer predictions concerning consumers' reference dependence in the marketplace. As another example, given that the majority of consumers choose a reputable brand sold at a reputable retailer as their reference product when making a purchase decision, future research can shed light on the cognitive processes through revealing the mechanism that underlie this choice, be it aspiration (Kahneman and Tversky 1979; Puto 1987), awareness, or a mere exposure effect (Zajonc 1968).

Finally, my dissertation examines existing brands on the market. Questions as to how consumers choose their reference product in a completely new product category or for radical innovative products remain unaddressed. Furthermore, with the growing literature on co-branding, it would be interesting to investigate the joint effect of manufacturer and retailer brands in the context of co-branding. Specifically, what do consumers select as their reference brand given a primary brand and secondary brand? Additional research can also examine whether using a primary brand versus a secondary brand as the reference brand would lead to any asymmetric effects in consumers' evaluation of the co-branded product selling through different retailer stores.

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APPENDEX A

FIGURES

Figure A1

Study 1 — The Joint Effect of Two Brands on WTP

Panel A: HP/Amazon Served as Reference Product
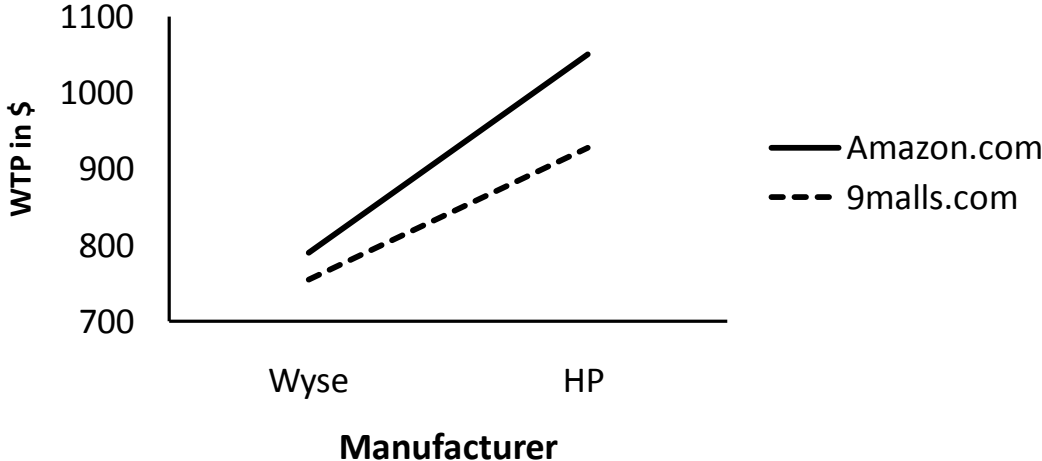
Panel B: HP/9malls Served as Reference Product
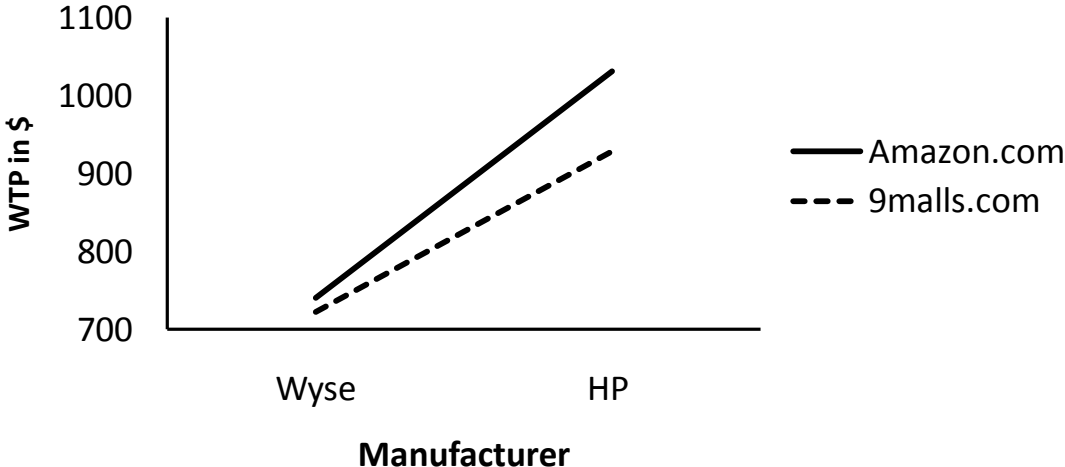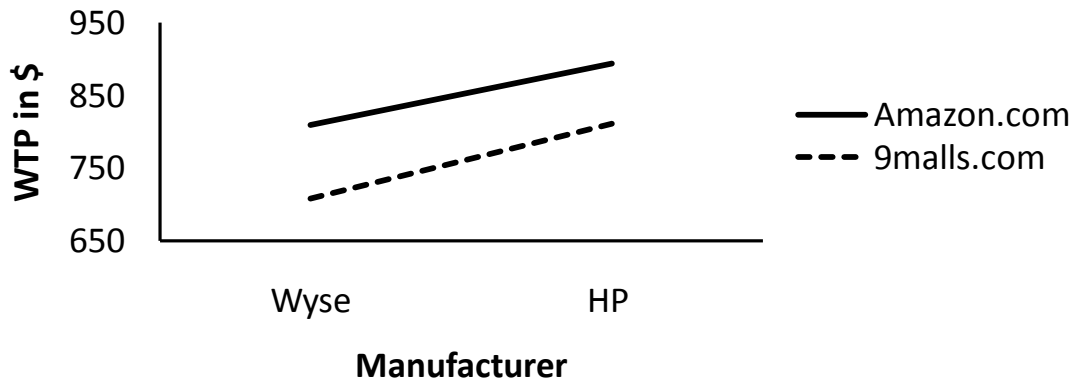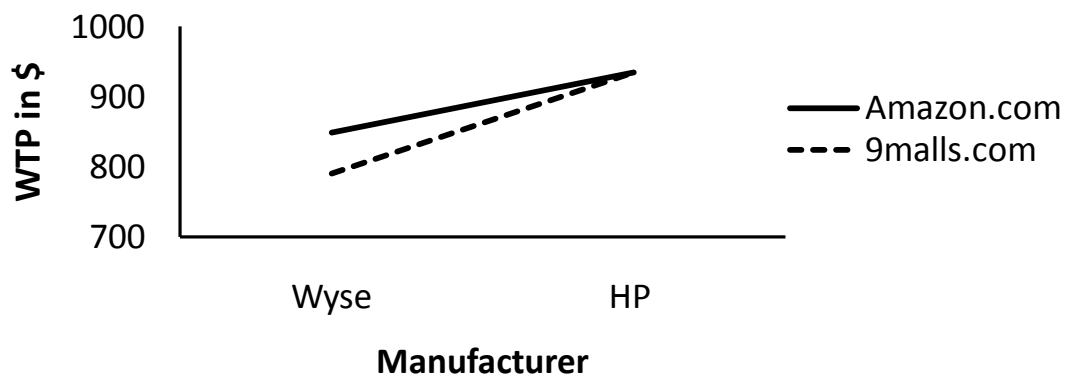
Figure A1 Continued

Panel C: Wyse/Amazon Served as Reference Product

Panel D: Wyse/9malls Served as Reference Product

Figure A2

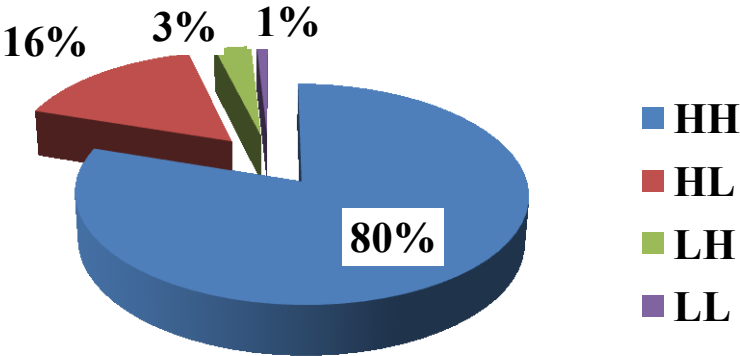Study 2 — Proportion of Reference Products Used

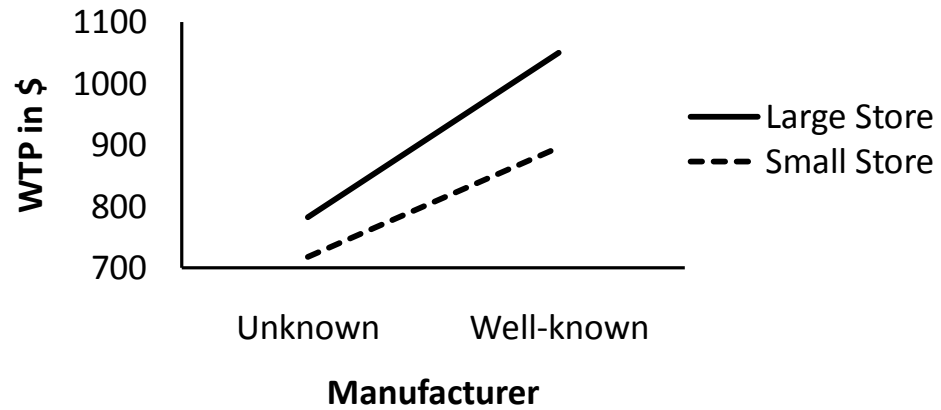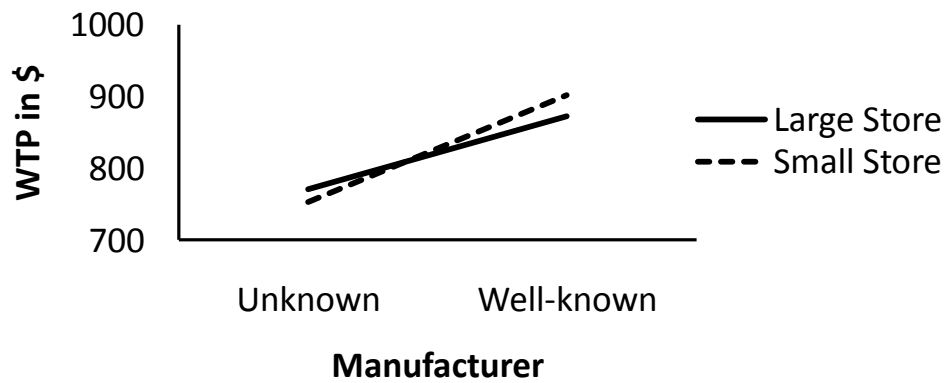Figure A3

Study 2 — The Joint Effect of Two Brands on WTP

Panel A: High-High Served as Reference Product

Panel B: HL, LH, and LL Served as Reference Products
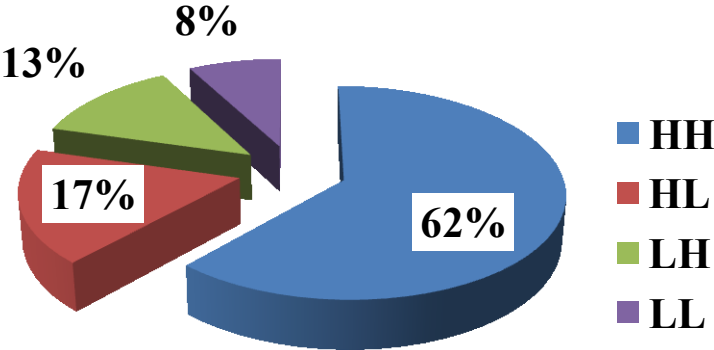
Figure A4

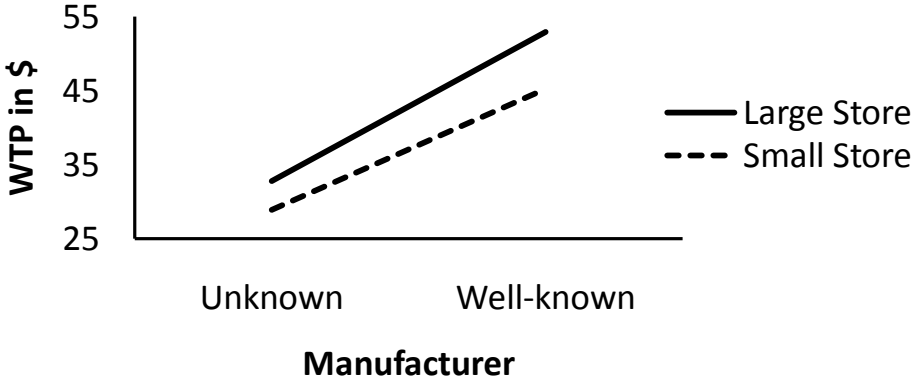Study 3 — Proportion of Reference Products Used

Figure A5

Study 3 — The Joint Effect of Two Brands on WTP

Panel A: High-High Served as Reference Product

Panel B: HL, LH, and LL Served as Reference Products
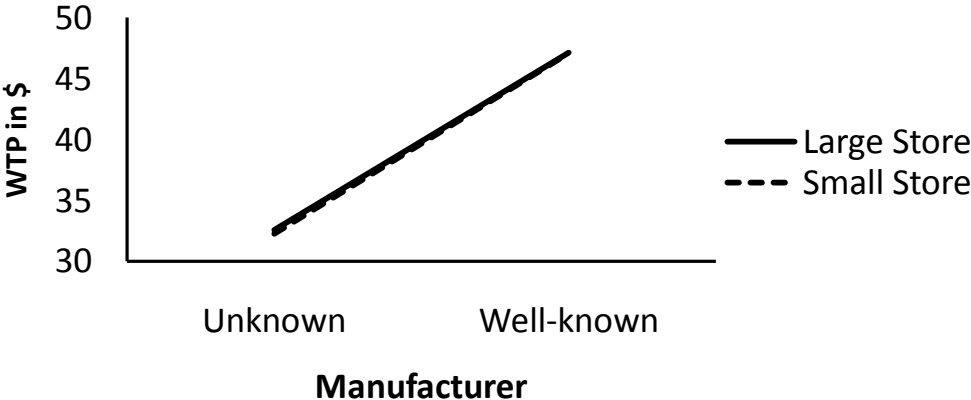
Figure A6

Study 4 — Proportion of Participants Choosing Difference Reference Products

Choosing HH as a Reference Product

Choosing HL as a Reference Product

Choosing LH as a Reference Product

Choosing LL as a Reference Product
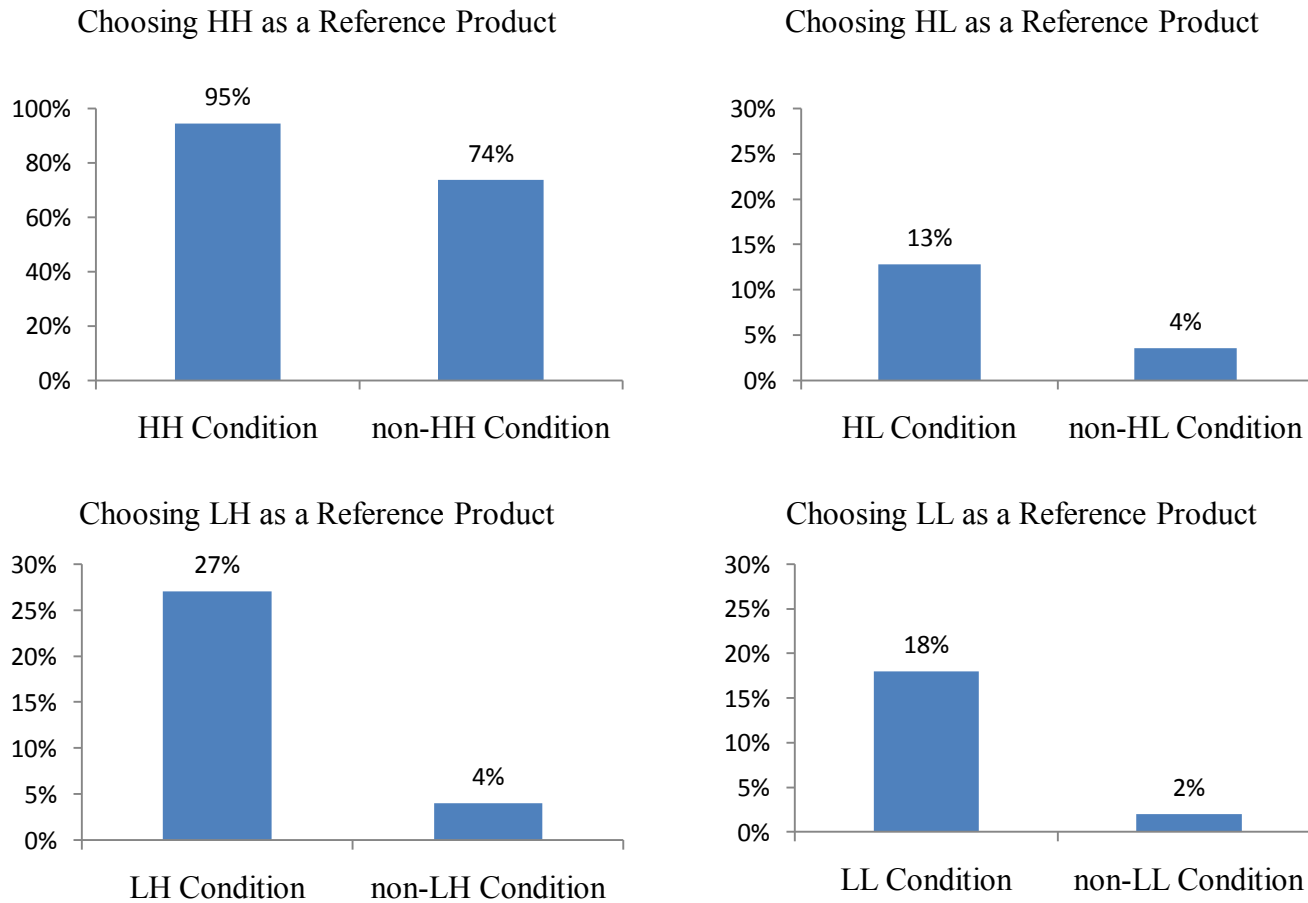
Figure A7

Study 4 — Mediation Analysis

$ab = .07^*$

Gain and Loss Feelings

$a = .21^*$

$b = .33^{**}$

Manufacturer and Retailer Brands of **Focal Products** **&** **Reference Products**

$c = .17$

Attitude

$c' = .25^*$
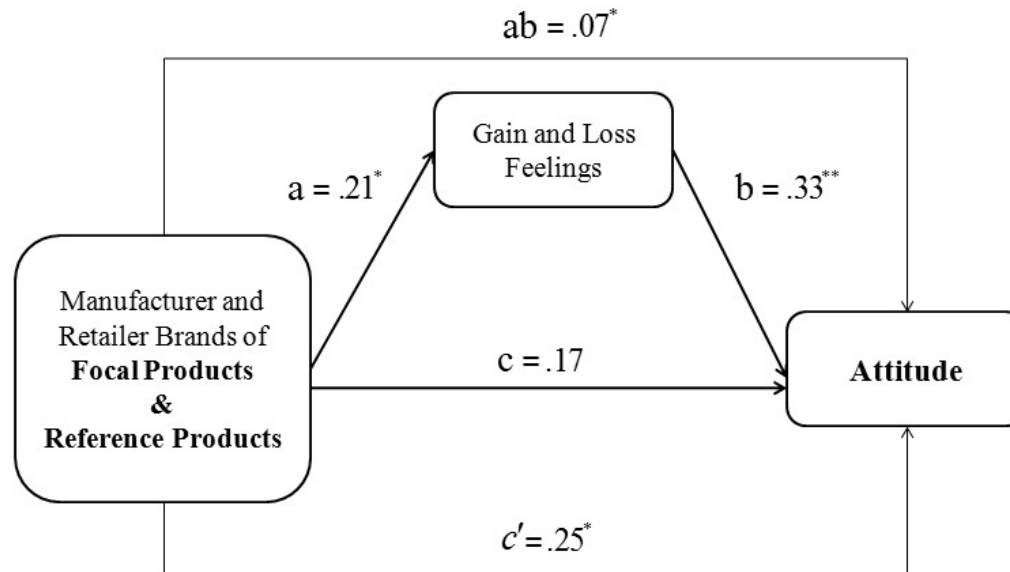
$*$: $p < .05$

$**$: $p < .01$

Figure A8

Study 5 — Priming Effect

Choosing HH as a Reference Product

Choosing LH as a Reference Product

Choosing HL as a Reference Product

Choosing LL as a Reference Product
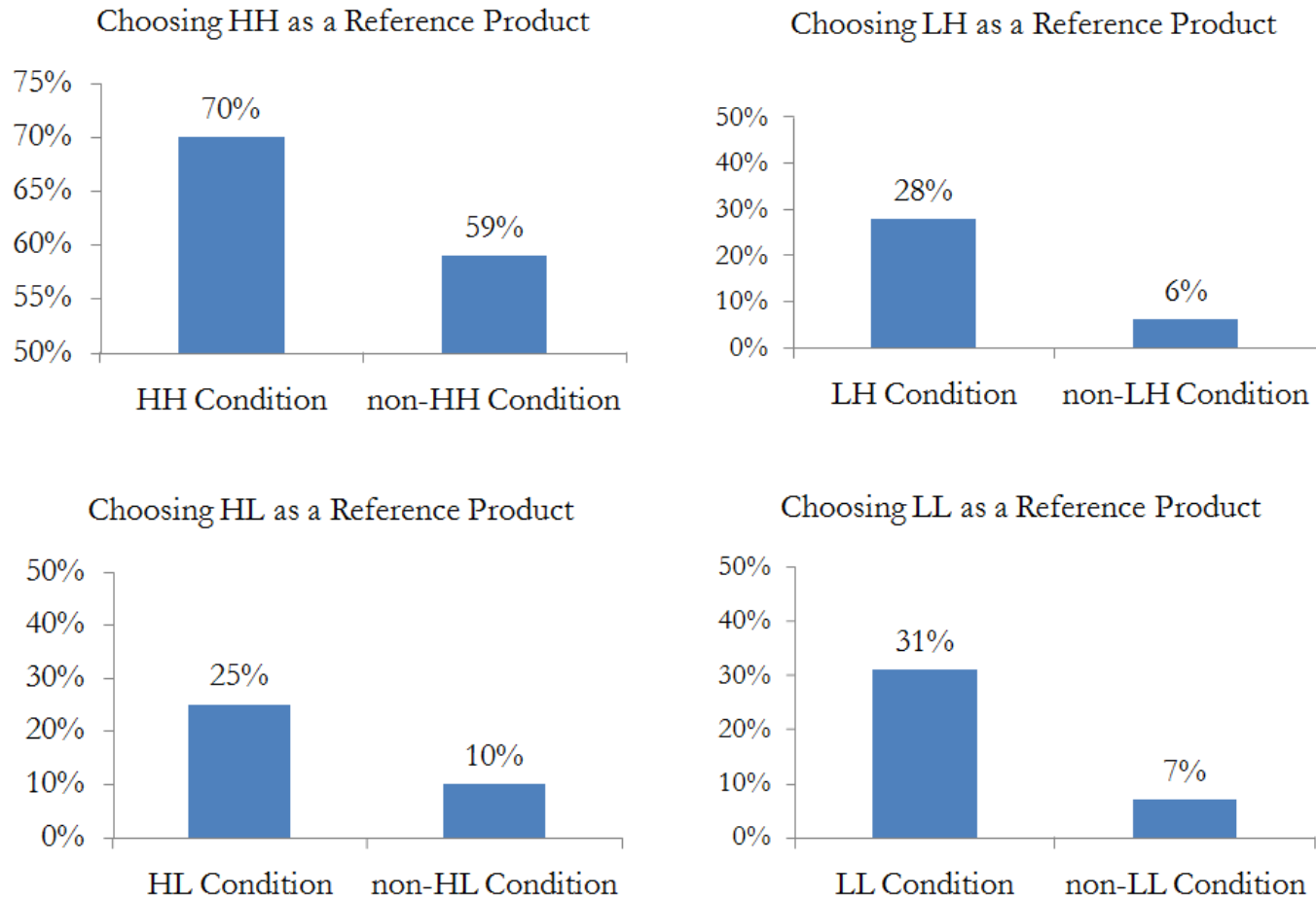
APPENDIX B

TABLES

Table B1

Study 2 — Importance Scores of Each Brand

Reference product	Focal product	Manufacturer Means (S.D.), Sample size	Retailer Means (S.D.), Sample size	P-value Paired t-test on two cues
HH	HL	5.91 (1.23), 185	5.68 (1.27), 185	.05
	LH	5.95 (1.13), 185	5.57 (1.3), 185	< .001
	LL	6.01 (0.97), 185	5.47 (1.36), 185	< .001
HL, LH and LL combined	HH	5.54 (1.79), 46	5.17 (1.69), 46	.22
	HL	5.16 (1.72), 46	4.53 (1.98), 46	.12
	LH	5.77 (1.25), 46	5.01 (1.63), 46	< .001
	LL	4.99 (1.64), 46	2.38 (1.74), 46	< .001
Overall	HH	5.54 (1.79), 46	5.17 (1.69), 46	.22
	HL	5.89 (1.24), 194	5.68 (1.26), 194	.05
	LH	5.92 (1.16), 224	5.45 (1.4), 224	<.001
	LL	5.91 (1.07), 229	5.39 (1.43), 229	<.001

Table B2

Study 3 — Importance Scores of Each Brand

Reference product	Focal product	Manufacturer Means (S.D.), Sample size	Retailer Means (S.D.), Sample size	P-value Paired t-test on two cues
HH	HH	5.44 (1.22), 63	5.11 (1.36), 63	.05
	HL	5.05 (1.57), 63	5.05 (1.29), 63	1.00
	LH	4.94 (1.56), 63	4.71 (1.36), 63	.25
	LL	4.97 (1.49), 63	4.87 (1.68), 63	.59
HL, LH and LL combined	HH	4.51 (1.57), 39	5.10 (1.47), 39	.05
	HL	5.21 (1.61), 39	4.74 (1.53), 39	.17
	LH	4.87 (1.66), 39	4.64 (1.63), 39	.45
	LL	4.85 (1.76), 39	4.64 (1.69), 39	.51
Overall	HH	5.09 (1.43), 102	5.11 (1.39), 102	.90
	HL	5.11 (1.58), 102	4.93 (1.39), 102	.33
	LH	4.91 (1.59), 102	4.69 (1.46), 102	.17
	LL	4.92 (1.59), 102	4.78 (1.68), 102	.39

APPENDIX C

The following proof is to show that the positive interaction effect predicted by H2 is weaker than that predicted by H1.

Notations:

[1]: WTP for HH, a reputable manufacturer brand sold by a reputable retailer

[2]: WTP for HL, a reputable manufacturer brand sold by a less reputable retailer

[3]: WTP for LH, a less reputable manufacturer brand sold by a reputable retailer

[4]: WTP for LL, a less reputable manufacturer brand sold by a less reputable retailer

For H1, it is known from the text that:

$$[1] - [2] = 0 - V(-R)$$

$$[3] - [4] = V(-M) - V(-R-M)$$

where $M > R > 0$.

Therefore, the interaction effect specified in H1 is captured by:

$$([1] - [2]) - ([3] - [4]) = -V(-R) - [V(-M) - V(-R-M)] \qquad [5]$$

For H2, it is known from the text that:

$$[1] - [2] = V(R) - 0$$

$$[3] - [4] = V(R-M) - V(-M)$$

Therefore, the interaction effect specified in H2 is captured by:

$$([1] - [2]) - ([3] - [4]) = V(R) - [V(R-M) - V(-M)] \qquad [6]$$

It is known that $-V(-R) > V(R)$ because of loss aversion. It is also known that

$[V(\text{-}M) - V(\text{-}R\text{-}M)] < [V(R\text{-}M) - V(\text{-}M)]$ because of the convexity of the value function in the domain of losses. Therefore, the positive interaction effect predicted by H1 is stronger than that predicted by H2.

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