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Trademark dilution and its practical effect on purchase decision

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Abstract This work aims to analyze the effect of unauthorized use of trademarks on its consumer-based brand equity and on the consumer purchase decision, through a mediation model with structural equations. An experiment was carried out with 618 participants, who were exposed to advertising of famous brand products or senior brands, and fictitious products with the same brands or junior brands. Participants were then asked to make some purchases with a real budget of US\$5. The results show that exposure to junior brands reduces senior brand equity, i.e. results in trademark dilution, mediating a reduction in the purchase of senior brand products. In addition, similarity between junior and senior brands alleviates brand equity dilution, while consumer involvement with the product category of the famous brand has no moderating effect. The study aims to contribute to our understanding of trademark dilution, including the effect on purchase decision – a subject so far unexplored in the empirical literature. Moreover, the study pursues to highlight the importance of protecting well-known trademarks in order to avoid damage occurring not only in consumer perceptions, but also in firm's sales and brand financial value.

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PALABRAS CLAVE

Dilución de marcas;
Empañamiento;
Capital de marca;
Decisión de compra;
Marcas renombradas
y famosas

Dilución de marcas registradas y su efecto práctico sobre la decisión de compra

Resumen Este trabajo analiza el efecto del uso no autorizado de marcas registradas sobre su capital de marca y la decisión de compra de sus consumidores, mediante un modelo de ecuaciones estructurales. Se diseñó un experimento en donde 618 participantes fueron expuestos a publicidad de productos de marcas famosas (marcas *senior*) o de productos ficticios con las mismas marcas (marcas *junior*), y luego realizaron compras con un presupuesto real de US\$ 5. Los resultados muestran que la exposición a las marcas *junior* reduce el capital de marca de las

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marcas *senior* (dilución), funcionando como efecto mediador en la reducción de la compra de sus productos. Se encontró que a mayor similitud entre la marca *junior* y la *senior*, se reduce la dilución del capital de marca de esta última, mientras que el nivel de involucramiento con la categoría de producto de las marcas *senior* no tuvo un efecto moderador. El estudio contribuye al conocimiento de la dilución de marcas registradas, llegando hasta el efecto -aún no estudiado- sobre la decisión de compra, y pone de manifiesto la importancia de la protección de las marcas famosas o renombradas, con el objeto de evitar daños no sólo en las percepciones del consumidor, sino también en las ventas y el valor financiero de la marca.

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Introduction

The unauthorized use of a famous brand's distinctive elements, such as its brand name, slogan, logo, package design, etc., could negatively impact the brand that is imitated (senior brand), through cognitive, affective, or behavioral effects on its consumers (Loken & John, 2010). This phenomenon is called trademark dilution and is defined, in a general sense, as a reduction in brand equity due to the emergence of an imitator or unauthorized user (junior brand) (Simonson, 1993). From a consumer perspective, the brand equity construct cited by Simonson is defined as the perceived added value with which a given brand endows a product, beyond its functional benefits (Aaker, 1991; Farquhar, 1989; Keller, 1993). Simonson (1993) agrees with marketing scholars' opinion in the sense that brand associations in consumers' minds are "key building blocks" (p. 151) of brand equity and he explains that, through either weakening or modification of associations, junior brands may dilute senior brands' equity.

Brand equity literature suggests that consumer-based brand equity becomes economic value for the firm through transactions in the marketplace (purchase behavior), recommendations to others, positive word-of-mouth (Keller & Lehmann, 2006) or willingness to pay price premiums (Buil, Martínez, & de Chernatony, 2013). The lack of empirical analysis of brand equity and real purchase decisions in previous studies is considered an important weakness (Magid, Cox, & Cox, 2006; Steckel, Klein, & Schussheim, 2006; Tushnet, 2008); evidence is not provided to ascertain whether there is economic harm for trademark holders. Tushnet (2008), in particular, doubts whether negative effects at the consumer mind level, which include beliefs, attitudes and purchase intentions, are strong enough to reduce purchasing of senior brands. In order to address these gaps in the trademark dilution literature, the main purpose of this study is to analyze the effect that the emergence of junior brands has on real purchase decisions relating to senior brands, mediated by brand equity.

A second purpose is to test whether consumer involvement with the senior brand's product category, known as product involvement, moderates the effect of junior brands on senior brands' equity and purchase decision. Product involvement is the perceived relevance of a product category for a consumer (Coulter, Price, & Feick, 2003), in accordance with the consumer's needs, goals, and values (Nkwocha, Bao, Johnson, & Brotspies, 2005). In consonance

with the Elaboration Likelihood Model (ELM) (Petty, Cacioppo, & Schumann, 1983; Petty & Cacioppo, 1984), consumers process the information related to products in different ways, depending on their degree of involvement. Thus, product involvement is a frequently used moderator in a broad number of topics in marketing, e.g. brand loyalty (Bennett, Hartel, & McColl-Kennedy, 2005), brand country of origin recognition (Martín & Cerviño, 2011), consumer behavior (Celsi & Olson, 1988; Cooke & Sheeran, 2004) and brand extensions (Dens & De Pelsmacker, 2010; Nkwocha et al., 2005). Given that brand extensions and trademark dilution literature have common theoretical elements, we argue that involvement could condition the effect of junior brands on brand equity.

Finally, this study analyzes how perceived similarity between the junior and senior brands moderate dilution of brand equity, since this variable has shown significant moderator effects in previous studies about trademark dilution. The next section summarizes the theoretical background for the study and develops its hypotheses.

Conceptual framework and hypotheses

Brand equity and consumer behavior

From a consumer perspective, several authors (Aaker, 1991; Farquhar, 1989; Keller, 1993) define brand equity (BE) as the differential perceived value that a branded product offers, when compared to the same unbranded product whose value is only functional. Yoo, Donthu, and Lee (2000) add that brand equity is expressed as the difference in consumer preference between these two products. However, Keller (1993) and Aaker (1991) state the brand equity construct is based on associations between the brand and product attributes, sensations or consumption experiences. The Associative Network Model (ANM) (Anderson, 1983; Teichert & Schöntag, 2010) posits that information in consumer memory is stored in networks consisting of nodes: brand, attributes, sensations, experiences interconnected by links. In the context of brand-related networks, these links are known as brand associations, which can vary in strength. Retrieving of information from memory depends on the activation of one node and how strong it is connected to other nodes. For example, when buying a soft drink, a consumer may think about Coca Cola because of a strong association between the brand and the product category. Other

information about the brand may also be retrieved from memory if associations are strong enough (Keller, 1993). Given that brand equity is a comparative judgment of the branded product relative to the same unbranded product, therefore, not only the strength of associations but also their content – favorability and uniqueness – contribute to differentiate the brand (Buil et al., 2013) and create the incremental value for the consumer (Aaker, 1991; Keller, 1993).

For Aaker (1991), perceived quality and loyalty are two more brand equity dimensions besides associations. On the one hand, perceived quality is the global perception of superiority or excellence of the products sold by the brand, relative to alternatives (Aaker, 1991; Zeithaml, 1988). This dimension depends on a subset of associations related to product attributes and performance (Aaker, 1991). On the other hand, loyalty, in an attitudinal sense, is the commitment to consume brand products (Oliver, 1999) expressed as a low probability of the consumer switching brands, which depends on liking, past satisfactory use experiences and high perceived quality (Aaker, 1991). Keller (1993) adds that the salience and positive evaluation of consumer beliefs are necessary for positive attitude formation. Thus we can see that these two dimensions of brand equity relate to the strength and content of brand associations.

Finally, it can also be argued that as the differential preference for a brand – compared to an unbranded product – increases, it is more likely for the brand to appear in consumers' consideration sets, to be preferred instead of its competitors and to be chosen in a purchase decision situation, among other favorable behaviors (Aaker, 1991; Keller, 1993; Keller & Lehmann, 2006). Buil et al. (2013) show evidence that greater brand equity correlates positively with brand preference and purchase intention, using data from the United Kingdom and Spain.

Brand dilution and trademark dilution

Loken and John (2010) define brand dilution as the "weakening of positive brand associations, or strengthening/addition of negative brand associations" in the consumer's mind. These authors classify sources of brand dilution as internal or external to the firm. Internal sources of dilution include inconsistent marketing mix actions, like choosing a popular distribution channel (discount stores, gas stations) for an exclusive brand, or overuse of coupons or deals to promote sales, devaluing the brand. In line with the latter example, Srinivasan and Hanssens (2009) summarize that price promotions negatively affect firm value in the long run. Other internal decisions that could lead to brand dilution are: inconsistent or problematic brand alliances, as when Firestone tires on Explorer vehicles were called into question (Votolato & Unnava, 2006), and inconsistent or failed brand extensions, such as the drop in sales of Pierre Cardin after the extension to baseball caps and cigarettes (Loken & John, 2010). More recently, we have also seen a decline in Volkswagen's brand equity around the world following the company's emissions scandal (Boston & Sloat, 2015).

As Loken and John (2010) point out, brand extensions have received great attention in brand dilution literature.

The theoretical basis commonly referenced is the ANM. When a firm launches an inconsistent extension, new associations are created in the consumer's mind. When the brand name is activated, the original and the new associations compete to activate in the consumer's memory, reducing the strength of the formers. This effect is expressed in a reduction in the probability of recovery of the associations, or a delay in the retrieving time (Burke & Srull, 1988). As will be seen, something akin to these types of inconsistent "extensions" can be created by a junior brand entering the market.

As for external sources of dilution, these include – among others – activities initiated by the distribution channel, the organizing of consumer boycotts or the unauthorized use of trademarks (Loken & John, 2010). Blois (2004) suggests that another external source of brand dilution is the evolution of a brand name into a generic term, which implies a reduction in the capacity of distinguishing the brand's products from the competition. Buchanan, Simmons, and Bickart (1999) showed empirical evidence that brand dilution can result for familiar brands when they are mixed with unfamiliar brands that are placed more prominently in retail displays. Loken and John (2010) suggest that retailer's discretionary pricing reduction, which is inconsistent with the prestige image of some brands, can negatively affect consumers' perceptions about the brands. Consumer activism arises against corporate practices, e.g. animal testing, environmental pollution, or the consumption of some type of products, e.g. high saturated fat, and it can dilute brands involved in these issues. King (2011) provides evidence that consumer boycotts that warrant a minimal media coverage have significant negative effects on firms' stock returns.

Examples of unauthorized use of trademarks are product counterfeiting (Green & Smith, 2002; Loken & Amaral, 2010), the use of a famous brand name for the products of another manufacturer, either in the same or in other product category (Choy & Kim, 2013; Morrin & Jacoby, 2000; Morrin, Lee, & Allenby, 2006; Pullig, Simmons, & Netemeyer, 2006), private label brands that look like a famous brand, which generate confusion among consumers of the latter (Kapferer, 1995), or parodies of the slogan, logo, or some brand element, that affect brand reputation (Anheuser-Busch, Inc. v. Balducci Publications, 1994; cited in Jacoby, 2008). When a brand is diluted because of its unauthorized use by a third party, the phenomenon is known as trademark dilution. Unauthorized uses of famous trademarks in the U.S. are nine times greater than authorized uses (Brauneis & Heald, 2011b), which denotes the magnitude of the problem and justifies this research.

We may distinguish between two types of trademark dilution: dilution by blurring and dilution by tarnishment. Dilution by blurring is understood as the weakening of the associations between the brand and its distinctive aspects, the latter including product category (Peterson, Smith, & Zerrillo, 1999; Simonson, 1993) and distinctive attributes (Morrin & Jacoby, 2000; Morrin et al., 2006; Pullig et al., 2006). According to this interpretation, dilution by blurring relates to brand positioning in the consumer's mind. Following the ANM, when a junior brand emerges in another product category with a given set of attributes (similar or not to those of the senior brand), new associations are added to the existing network. When the consumer thinks about the brand,

all these associations compete for activation in memory, thereby weakening the senior brand associations by reducing the likelihood or speed of retrieval (Burke & Srull, 1988). For example, the existence of junior brand Hyatt Legal Services, with the same name as senior brand Hyatt Hotels, could reduce consumers' ability to recognize or associate the senior brand with its product category (*Hyatt Corp. v. Hyatt Legal Services*, 1984, cited in Morrin & Jacoby, 2000).

Empirical studies in this field show how junior brands reduce senior brands' strength of associations, measured as consumers' accuracy and response time in tests of recognition of associations between the brand name and its distinctive aspects (Morrin & Jacoby, 2000; Morrin et al., 2006; Pullig et al., 2006). Moreover, blurring studies have also shown that brand personality (Choy & Kim, 2013), probability of inclusion of the brand in the evoked set (Pullig et al., 2006) and purchase intention (Choy & Kim, 2013; Pullig et al., 2006) could be reduced. However, even if intention decreases, real purchase decision may not necessarily decrease (Tushnet, 2008). The theory of planned behavior (Ajzen, 1991) predicts that a behavioral intention positively correlates to action, but such action could be conditioned by a person's perceived control of behavior, understood as that person's confidence or otherwise in her ability to perform the action. For example, a person could have the intention to change the usual brand he purchases to satisfy a need, but may not be confident he will succeed in finding an appropriate new brand, either because of personal limitations (lack of skills required to compare alternatives) or environmental restrictions (e.g. time or money). The question whether real purchases are affected by the emergence of junior brands remains unanswered.

Dilution by tarnishment is defined by several authors as a negative modification in senior brand evaluation, brought about either because the junior brand has added negative associations to the consumer's mental schema, or because it has negatively modified existing ones (Pullig et al., 2006; Simonson, 1993). Tarnishment is usually associated with disgusting products or services, e.g. sex, drugs, the use of the brand in violence situations, criticisms or parodies (Bradford, 2008; Long, 2006). Cases of possible tarnishment are Budweiser Laboratories Insecticide (Brauneis & Heald, 2011a), the motto "Enjoy cocaine" presented with the characteristic typography and colors of Coca-Cola (Loken & John, 2010), or Dogiva dog biscuits (Morrin & Jacoby, 2000), which could add negative associations in the consumer's memory towards the senior brands Budweiser, Coca-Cola and Godiva, respectively. Following the line of research of Choy and Kim (2013), Morrin and Jacoby (2000), Morrin et al. (2006) and Pullig et al. (2006), and with the intention to deepen the findings of these authors, this study focuses on hypothetical cases of blurring.

Dilution of brand equity and consumer behavior

The conceptualization of brand equity adopted in this study emphasizes the added value that the brand gives to consumers, in comparison to unbranded products. As explained before, this differential preference is based on positive attitudes towards the brand, which in turn are based on the strength and content of associations (Aaker, 1991; Keller,

1993; Simonson, 1993). When the senior brand's associations are weakened due to new associations that compete for activation (e.g. new product category, new attributes) or new associations modify the overall positioning of the brand in consumers' minds, the added value perception might be affected. The above reasoning leads to our first hypothesis:

H1. The emergence of a junior brand dilutes brand equity.

We have seen that greater brand equity is presumed to generate more desirable behaviors in consumers. The reduction in brand equity means that the differential preference for the brand compared to an unbranded product is reduced and could result in less preference than towards its competitors. Competitors may have a brand equity greater or equal to an unbranded product. In summary, the emergence of a junior brand could reduce the intention of consumers to purchase the senior brand and, according to the theory of planned behavior (Ajzen, 1991), it could reduce the purchases of branded products in the marketplace. Empirical studies have shown evidence in that sense; when imitators dilute brand equity, through the weakening (Pullig et al., 2006) and modification (Choy & Kim, 2013) of brand associations, there is also a reduction in probability of inclusion in the consideration set and purchase intention. The second hypothesis therefore reads:

H2. The dilution of brand equity relates to a reduction in the purchase of the branded products.

Aaker (1991) explains that the strength of associations contributes to the brand being in consumers' consideration sets when they are looking for a product or trying to satisfy some need. Therefore, a weakening of associations due to the emergence of junior brands could lead, directly, to lesser purchases of branded products in the marketplace. The next hypothesis summarizes this argument:

H3. The emergence of a junior brand reduces the purchase of the branded products.

Moderators of trademark dilution

Similarity

Regarding moderator variables in dilution studies, it has been shown that similarity between junior and senior brands' product categories (Morrin & Jacoby, 2000; Pullig et al., 2006) and attributes (Pullig et al., 2006) attenuate dilution. Similarity is the level in which product category and attributes between junior and senior brand are perceived alike (Grime, Diamantopoulos, & Smith, 2002). Based on the ANM, if there is a high similarity between aspects of the junior and senior brands, these two information networks become more interconnected (Jacoby, 2001). When consumers think about the brand, the likelihood and speed of recovery of the initial associations may not suffer a reduction in memory, and may even increase, due to higher interconnected nodes (Humphreys, Tehan, O'Shea, & Bolland, 2000; Pullig et al., 2006). Moreover, minor or no modification of actual associations is expected when high similarity junior brands enter the market. Consequently, when similarity between the junior and senior

brand increases, it is less likely to evidence a dilution of brand equity and a reduction of purchases. We propose the following hypotheses:

H4a. An increase in similarity between the junior and senior brands attenuates dilution of brand equity.

H4b. An increase in similarity between the junior and senior brands attenuates purchase reduction.

Familiarity and confusion

Greater familiarity with senior brand (Morris & Jacoby, 2000; Morris et al., 2006) and knowledge about its product category (Morris et al., 2006) reduces dilution. Choy and Kim (2013) found an interaction effect between similarity and familiarity. When consumers are familiar with a senior brand, exposure to the junior brand reinforces the senior brand's personality, regardless the level of similarity. At low familiarity levels, a similar junior brand reinforces the senior brand's personality, while a dissimilar junior brand dilutes personality, lowers consumers' favorable attitude toward the senior brand and consequently decreases purchase intention (Choy & Kim, 2013). We do not hypothesize about familiarity, since this study focuses on high familiarity brands. A theoretical significant moderating effect may not be statistically significant due to a lack of variability in the data.

On the other hand, confusion regarding the manufacturer of junior and senior branded products reduces the probability of recalling the senior brand's product category (Morris et al., 2006) because, for the confused consumer, the same brand is associated with two or more products (Simonson, 1993). In the legal arena, confusion is another consequence of unauthorized use of trademarks, which can concur (or not) with dilution.¹ Trademark law against confusion protects consumers, while dilution law protects the rights of trademark holders (Bird & Steckel, 2011). This study addresses trademark dilution, regardless of whether there is consumer confusion.

Involvement

According to Park and Mittal (1985), individuals interested in the attributes of the product and its performance are likely to get "involved" with the task of purchasing the product. According to the Elaboration Likelihood Model (ELM), there are two alternative routes to persuasion, and the choice of route depends on the consumer's involvement with the subject – or product – to which the information relates. Applying ELM to the case of information about brands, it can be argued that when there is low involvement with the product category, consumers tend to use the peripheral route, evaluating or forming an attitude about the product based on a superficial analysis of easily accessible and perceptible cues in the stimulus presented. On the other hand, when there is high involvement with a product category, consumers are induced to take the central route, which consists of carefully analyzing the information that they consider to

¹ The U.S. Trademark Dilution Revision Act of 2006 states that dilution could occur "regardless of the presence or absence of actual or likely confusion".

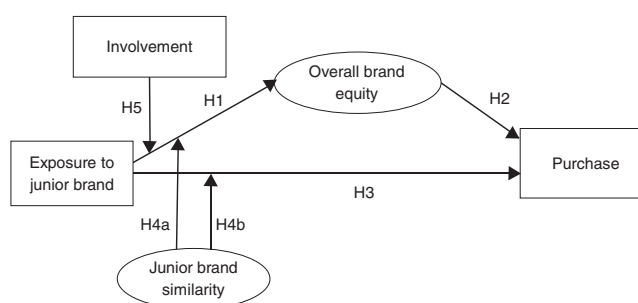


Figure 1 Conceptual model.

be relevant in forming an attitude; such consumers are, in addition, more likely to counter-argue (Petty & Cacioppo, 1984; Petty et al., 1983). Chandrashekar and Grewal (2003) explain that, in a high involvement scenario, individuals act according to assimilation-contrast theory. That is, they scrutinize and evaluate the veracity of an advocated message to make an elaborated decision about whether to accept or reject it. Petty, Haugtvedt, and Smith (1995) demonstrated that people who were more involved with a product showed greater attitude-intention consistency and were less persuaded by weak arguments for the product, compared with participants who were less involved. An explanation for this finding is that involvement produces attitudes that are based on a greater degree of processing and synthesis of relevant information, which in turn generates more accessible, assured and knowledgeable attitudes, reflected in an increase of attitude-intention consistency (Petty et al., 1995).

None of the reviewed trademark dilution studies has used involvement as a moderator variable. Brand extension literature has shown that involvement moderates the relation between fit and attitude towards brand extension (Nkwocha et al., 2005). In high involvement products, it was less likely that greater fit correlates with more attitude transfer from parent to extension brand. This result could be interpreted as the consequence of a greater level of consumer analysis occurring in a high involvement scenario. Other studies (Dens & De Pelsmacker, 2010; Maoz & Tybout, 2002) also show that consumers evaluate brand extensions from different involvement levels in different ways. In this sense, it can be argued that in high involvement situations, consumers take the central route in processing information about a junior brand, which includes evaluating its veracity. Therefore, they are less likely to modify their senior brand mental schema. Thus, the next hypothesis reads:

H5. In high product involvement situations, there is less dilution of brand equity, in contrast to low product involvement situations.

Fig. 1 illustrates the relations among constructs as described here.

Methodology

The experimental approach allows us to focus analysis on the causal relationships of interest, controlling for other variables involved in the studied phenomenon (Brewer, 2000; Crano & Brewer, 2002, chap. 1). Moreover, as Jacoby (2002)

Table 1 Selected product categories, senior brands, and distinctive attributes (pretest).

Product categories for senior brand	Level of product involvement	Senior brand (most often used)	Distinctive attributes	High product similarity junior brand	Low product similarity junior brand
Deodorant	High $\bar{X}_{PDI} = 19.50$	Rexona ^a	Great scents, high protection	<i>Eau de Toilette</i>	Body wipes
Toothpaste	High $\bar{X}_{PDI} = 18.05$	Colgate	Fresh breath, clean sensation	Buccal spray	Chewing gum
Carbonated soft drink	Low $\bar{X}_{PDI} = 12.56$	Coca-Cola	Unique flavor, refreshes	Juice	Candy
Pen	Low $\bar{X}_{PDI} = 13.16$	BIC	Inexpensive, high quality	Tablet pen	Watch

^a Known as degree in United States and Canada.

says, in trademark litigation there is a growing demand for controlling plausible explanations of the observed effects. Despite the criticism regarding the artificiality of experimental settings (Babbie, 1998), all the cited dilution studies used experiments to analyze the effect of junior brands on senior brands.

Preliminary focus groups and tests

Two focus groups formed by undergraduate men and women were completed to select the product categories and senior brands for the main study. Eight product categories were mentioned as the most often used in their daily lives: body soap, hair shampoo, deodorant, toothpaste, dental floss, notebook, pen, and carbonated soft drink. For each product category, tentative levels of involvement were identified with open questions about how relevant is for participants to make a correct selection of each product. In addition, several brands were identified for each product category. Then, a pretest involving 59 undergraduates was conducted in order to select: four product categories that differ in involvement using the Purchase Decision Involvement (PDI) scale (3 items; Mittal, 1995)²; brands most often used for each product category (senior brands); distinctive attributes³ and dissimilar product categories.⁴ Table 1 summarizes the selections made for the main study, including proposed attributes for junior brands.⁵

Sample and procedures for main study

An experimental between-subjects study was conducted to test the hypotheses. Two graphic designers prepared visual

advertisements for senior, junior and unrelated brands. Junior brands used the same brand name as the senior brand, manipulating the level of category and attribute similarity (low versus high), following the design of Pullig et al. (2006). A total of 618 undergraduate students with an average of 7.3 semesters in Economics and Business programs from a large university in Ecuador were randomly assigned to 1 of the 20 experimental groups (Table 2). Each participant was told he or she would receive 5 U.S. dollars (\$) to make purchases including at least three product categories. They were unaware that one of these products corresponded to the senior brand's product category in his or her experimental group.

First, the participants were shown the visual stimuli, i.e. senior or junior brand, and two additional advertisements about unrelated brands (Table 2). Then, a web-based questionnaire developed on Jotform[®] was applied, beginning with some demographic questions. Next, the participants were shown a list of products with three brands for each product, from which they had to make the purchase. Table 3 shows the price list of products available for purchase. It is worth mentioning that these prices were set according to market prices, and they allowed participants to buy even the most expensive brands of each required product within the budget constraint. The products selected were delivered to the participants one week after the purchase, including any change if they spent less than \$5.

Measurement of the variables/constructs

Purchase decision (PURCH) was operationalized with a dichotomous variable. The variable took the value of one when the participant bought the senior brand, and zero otherwise. After the purchase task, product involvement was checked using the PDI scale (Mittal, 1995). Then, participants were asked questions about brand equity of corresponding senior brands.⁶ Yoo et al. (2000) proposed an overall measure of brand equity (OBE), i.e. the difference in consumer choice between the branded and unbranded product, through the intention to buy or the preference for

² This scale emphasizes purchase decision of a product rather than a brand.

³ Attributes were selected with a qualitative analysis: an open question about distinctive aspects of the brand more often used was asked and, then, words with similar meaning were categorized. Finally, frequencies were calculated.

⁴ Five to six suggested categories were evaluated for product similarity to each senior brand product category, from which two junior brand categories were selected for each senior brand (low and high similarity).

⁵ The researchers defined similar and dissimilar attributes for junior brands, considering the distinctive attributes of each senior brand.

⁶ For example, all groups that saw the stimulus of toothpaste, chewing gum or buccal spray (first row in Table 2), answered questions about Colgate toothpaste.

Table 2 Experimental design: control and treatment groups' stimuli.

Level of product involvement	Control groups: exposure to senior brand (SB) + 2 unrelated brands	Treatment groups: exposure to junior brand (JB) + 2 unrelated brands			
		Low product similarity JB		High product similarity JB	
		Low attribute similarity	High attribute similarity	Low attribute similarity	High attribute similarity
High involvement (HI)	COLGATE toothpaste	COLGATE chewing gum (blackberry flavor, colorful smile)	COLGATE chewing gum (fresh mint flavor, clean sensation)	COLGATE buccal spray (cinnamon flavor, does not replace brushing teeth)	COLGATE buccal spray (fresh mint flavor, clean sensation)
	REXONA deodorant	Unrelated brands: ESTILO notebooks, ALL NATURAL bottled juice REXONA body wipes (unscented, for the moment)	REXONA body wipes (great scents, skin protection)	Unrelated brands: ESTILO notebooks, ALL NATURAL bottled juice REXONA <i>eau de toilette</i> (for kids, kids scent – lavender)	REXONA <i>eau de Toilette</i> (great scents, long lasting)
Low involvement (LI)	COCA COLA carbonated soft drink	COCA CANDY candy (lemon/orange flavor, vitamin C)	COCA CANDY candy (unique flavor, refreshes)	COCA JUICE juice (lemonade, drink it hot or cold)	COCA JUICE juice (unique flavor, quenches thirst)
	BIC pen	Unrelated brands: ESTILO notebooks, JOHNSON'S baby shampoo BIC watch (sophisticated, not water-resistant)	BIC watch (inexpensive, they never fail)	Unrelated brands: ESTILO notebooks, JOHNSON'S baby shampoo BIC tablet pen (elegant, low compatibility)	BIC tablet pen (inexpensive, they never fail)

Table 3 Items for the study constructs.

Item	Scale	Factor loadings
<i>Overall brand equity (OBE) (Yoo et al., 2000): CR = 0.828; AVE = 0.547</i>		
obe1	It makes sense to buy X instead of any other brand, even if they are the same	(1 = totally disagree to 7 = totally agree)
obe2	Even if another brand has same features as X, I would prefer to buy X	
obe3	If there is another brand as good as X, I prefer to buy X	
obe4	If another brand is not different from X in any way, it seems smarter to purchase X	
<i>Similarity (SIM) (Bhat & Reddy, 2001): CR = 0.948; AVE = 0.90</i>		
sim1	(junior brand product category) and (senior brand product category) are similar	(1 = totally disagree to 7 = totally agree)
sim2	(junior brand product category) is like (senior brand product category)	
<i>Involvement (Mittal, 1995): CR = 0.853; AVE = 0.763</i>		
inv2	In selecting from the many types and brands of (product) available in the market, would you say that:	(1 = I would not care at all to 7 = I would care a great deal) as to which one I buy
inv2	How important would it be to you to make a right choice of this product?	
inv3	In making your selection of this product, how concerned would you be about the outcome of your choice?	(1 = not at all concerned to 7 = very much concerned)

Notes: CR: composite reliability; AVE: average variance extracted.

Table 4 Price lists for the purchase decision task.

Groups →	Colgate		Rexona		Coca Cola		BIC	
	Product	Price, \$	Product	Price, \$	Product	Price, \$	Product	Price, \$
Required product 1	<i>Soap</i>		<i>Toothpaste</i>		<i>Toothpaste</i>		<i>Deodorant</i>	
	Lux, 110 g	1.00	Colgate, 50 ml	0.90	Colgate, 50 ml	0.90	Speed Stick, roll on, 30 ml	1.40
	Protex, 110 g	1.10	Fortident, 70 ml	1.15	Fortident, 70 ml	1.15	Rexona, roll on, 50 ml	2.50
Required product 2 ^a								
	Dove, 90 g	1.45	Oral-B 123, 75 ml	1.65	Oral-B 123, 75 ml	1.65	Dove, roll on, 50 ml	2.85
	<i>Toothpaste</i>		<i>Deodorant</i>		<i>Carbonated soft drink</i>		<i>Pen</i>	
Required product 3	Oral-B 123, 75 ml	1.65	Speed Stick roll on, 50 ml	2.30	Tropical, 500 ml	0.60	Pelikan Pointec	0.30
	Colgate, 100 ml	2.00	Rexona, roll on, 50 ml	2.50	Coca Cola, 500 ml	0.70	BIC Cristal	0.40
	Fortident, 100 ml + 40%	2.50	Dove roll on, 50 ml	2.85	Sprite, 500 ml	0.70	Faber Castell	0.40
Additional products	<i>Pen</i>		<i>Pen</i>		<i>Deodorant</i>		<i>Soap</i>	
	Pelikan Pointec	0.30	Pelikan Pointec	0.30	Speed Stick roll on, 30 ml	1.40	Lux, 110 g	1.00
	BIC Cristal	0.40	BIC Cristal	0.40	Sutton, stick, 45 cc	2.05	Protex, 110 g	1.10
Additional products	Faber Castell	0.40	Faber Castell	0.40	Rexona roll on, 50 ml	2.50	Dove, 90 g	1.45
	Tortolines (plantain chips)	0.45	Tortolines (plantain chips)	0.45	Tortolines (plantain chips)	0.45	Tortolines (plantain chips)	0.45
	Ruffles (potato chips)	0.45	Ruffles (potato chips)	0.45	Ruffles (potato chips)	0.45	Ruffles (potato chips)	0.45
	Trident (chewing gum)	0.45	Trident (chewing gum)	0.45	Trident (chewing gum)	0.45	Trident (chewing gum)	0.45
	Manicho (chocolate)	0.40	Manicho (chocolate)	0.40	Manicho (chocolate)	0.40	Manicho (chocolate)	0.40
	Galak (white chocolate)	0.40	Galak (white chocolate)	0.40	Galak (white chocolate)	0.40	Galak (white chocolate)	0.40

^a Senior brand product category.

the famous brand in comparison with a competing brand that shares all brand characteristics, except its brand name (4 items). Similarity (SIM) questions were asked for participants in the treatment conditions only, using [Bhat and Reddy's \(2001\)](#) scales about perceived product fit (2 items). All items relating to involvement, OBE and similarity were measured on seven point-Likert scales ([Table 4](#)). Items were translated by a professional translator from Ecuador, then checked by a Marketing professor for conceptual equivalence, as suggested by [Douglas and Craig \(2007\)](#), and finally back-translated to English by a professional translator from the United States. Both translators work for the Center for Foreign Languages (CELEX) of the *Escuela Superior Politécnica del Litoral (ESPOL)* in Guayaquil. The back-translated and original versions of the items showed a high level of coincidence.

Methods for data analysis

After data collection, one questionnaire was removed because of incomplete responses and data from 617 participants were used (Female = 60.5%; Mean_{AGE} = 20.98; SD = 2.73), with group sample sizes ranging from 30 to 34. Hypotheses were tested using a structural equation model (SEM) in AMOS, with a dichotomous variable as dependent variable (PURCH). AMOS uses a probit model for categorical outcomes. The Bayesian analysis with the Markov Chain Montecarlo (MCMC) tool is needed when fitting the probit model in AMOS ([Arbuckle, 2013](#)). Exposure (EXPOS) to the junior brand was also represented with a dichotomous variable, which took the value of one when the participant was assigned to a treatment group, following [Arbuckle \(2013\)](#) and [Bagozzi and Yi's \(1989\)](#) suggestions for SEM. A two groups approach was conducted in order to test the moderator effect of involvement (low versus high). Since similarity between senior and junior brands could only be measured for treatment groups, its items were included as interaction terms, taking the value of zero for each observation belonging to control groups. For this reason, the covariance between exposure and similarity was not set to zero, but freed.

Results

Checks

The information about the dependent variable, purchase decision, was collected with a different method (purchase order) than the one used for independent variables (Likert scale items), in order to avoid common-method variance issues, as suggested by [Podsakoff, MacKenzie, Lee, and Podsakoff \(2003\)](#). On the other hand, checking for the manipulation of product involvement showed significant differences (ANOVA one way $F_{\text{BRAND}} = 32.353$; p -value = 0.000), with two levels of involvement: Colgate and Rexona together ($\bar{X}_{\text{PDI_toothpaste}} = 16.78$; $\bar{X}_{\text{PDI_deodorant}} = 17.56$; $p_{\text{TUkeyHSD}} = 0.195$), and Coca-Cola and BIC together ($\bar{X}_{\text{PDI_pen}} = 14.16$; $\bar{X}_{\text{PDI_softdrink}} = 14.91$; $p_{\text{TUkeyHSD}} = 0.220$). There was no statistically significant difference among most of the similarity levels. Thus, similarity was not used as a categorical

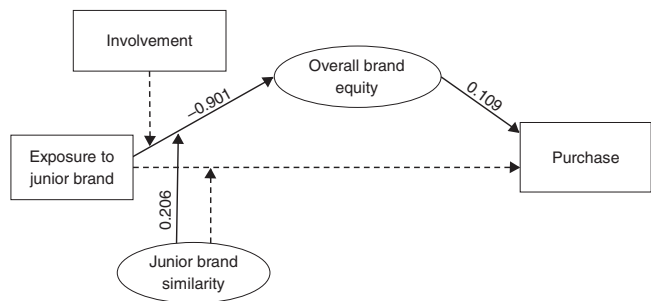


Figure 2 Empirical model. *Notes:* estimates for total sample; Involvement was used for a multi group analysis; - - -: 95% C.I. includes zero; →: 95% C.I. does not include zero.

variable to separate the sample in groups; however, it was used as an interval variable.

Measurement model

Similarity and overall brand equity are the two latent constructs that were used to establish paths in the structural model, so the measurement model includes only these two constructs. The other variables are exposure to junior brand (dichotomous), purchase decision (dichotomous) and involvement (used forward for a multi-group analysis). Measurement model fit was not assessed with Chi-Square, since this statistic tends to reject models with large sample sizes (>200) ([Hair, Black, Babin, & Anderson, 2010](#)). Checking other set of indicators, the level of fit is adequate (CMIN/df = 4.822; GFI = 0.977; AGFI = 0.947; CFI = 0.982; RMSEA = 0.079). Construct reliability was assessed with composite reliability (CR), showing levels above the suggested threshold of 0.70 ([Hair et al., 2010](#)) for the two constructs ([Table 3](#)). Average Variance Extracted (AVE) by the latent constructs exceed 0.50, showing convergent validity ([Fornell & Larcker, 1981](#)). A low correlation between the constructs ($\rho_{\text{SIM, OBE}} = 0.112$) ensures discriminant validity.

Structural model

[Fig. 2](#) illustrates the results of the empirical model tested in AMOS. A negative coefficient for EXPOS (β_{EXPOS}) represents a dilutive effect of JB on the dependent variable, independent of its similarity to SB. A coefficient for SIM (β_{SIM}), different from zero, multiplied by the similarity level should add to the coefficient of EXPOS in order to estimate the net effect of JB on the dependent variable ($\beta_{\text{EXPOS}} * 1 + \beta_{\text{SIM}} * \text{SIM}$). For example, let SIM_H and SIM_L denote high and low levels of similarity between JB and SB, respectively. A negative coefficient for EXPOS and SIM means that dilution is more severe when similarity increases: $|\beta_{\text{EXPOS}} * 1 + \beta_{\text{SIM}} * \text{SIM}_H| > |\beta_{\text{EXPOS}} * 1 + \beta_{\text{SIM}} * \text{SIM}_L|$. On the other hand, a negative coefficient for EXPOS and a positive coefficient for SIM means that dilution is alleviated when similarity increases: $|\beta_{\text{EXPOS}} * 1 + \beta_{\text{SIM}} * \text{SIM}_H| < |\beta_{\text{EXPOS}} * 1 + \beta_{\text{SIM}} * \text{SIM}_L|$. For consumers exposed to senior brands only, EXPOS and SIM take the value of zero and, consequently, no effect is expected on the dependent variable: $\beta_{\text{EXPOS}} * 0 + \beta_{\text{SIM}} * 0 = 0$.

As explained previously, purchase decision is operationalized with a two-category variable. If variables are dichotomous, it is necessary to impose additional parameter constraints in order to make the model identified (Arbuckle, 2013). If the two-category variable is endogenous, as is the case with purchase decision, the MCMC algorithm performs best when the variable's error variance is fixed at a constant (Arbuckle, 2013). Therefore, variance for PURCH's error was fixed at 1. Since a probit model is tested, the regression weights towards PURCH are interpreted as effects of one unit change in corresponding independent variables on the probability that the consumer purchases the senior brand. MCMC output for the probit model is shown in Table 5.

Exposure to the junior brand dilutes OBE ($\beta_{EXPOS} = -0.901$; C.I._{.95%}: -1.267, -0.539), moderated by similarity ($\beta_{SIM} = 0.206$; C.I._{.95%}: 0.119, 0.296), while OBE relates positively to purchase decision ($\beta_{OBE} = 0.109$; C.I._{.95%}: 0.05, 0.169). 95% credible intervals for the coefficients from EXPOS and SIM to PURCH include the zero value. Table 6 presents an analysis of direct and indirect effects with 95% credible intervals. There are direct effects from EXPOS to OBE and from OBE to PURCH. EXPOS exert only an indirect effect on PURCH, which means that there is full mediation of OBE. There is, also, a moderated mediation effect: SIM operates in the relationship between the independent variable (EXPOS) and the mediator (OBE).

The signs of path coefficients are the same in both involvement conditions and there are no significant differences between path coefficients of the two groups. Further analysis shows that, in low involvement conditions, there is a medium effect size, while in high involvement conditions, there is a small effect size over PURCH, according to Cohen (1992) thresholds (Table 7). Finally, all C.I. for factor loadings exclude zero.

Discussion

The evidence shown above gives support to H1, which means that junior brands reduce the overall perception of added value for senior brands' consumers. Results also show that greater perceived product similarity reduces dilution (H4a). These results agree with previous literature that demonstrates there is a dilutive effect of imitators, but that this effect is reduced when consumers perceive greater similarity between junior and senior brand products (Morrin & Jacoby, 2000; Pullig et al., 2006). A more relevant finding from this study is that, although indirectly, purchase decisions favoring senior brands are also affected by the emergence of junior brands. According to this study's results, the reduction in brand purchase is completely mediated by the reduction in brand equity, confirming H2. This demonstrates that the negative effect at consumer's mind level, brand equity, translates into a negative behavioral effect, purchase, as theorized by Loken and John (2010), and answers Tushnet's question of whether trademark dilution generates a practical effect on firms' sales. However, we discuss a plausible explanation regarding the absence of a direct effect of JB on purchase. Peterson et al. (1999) explain that associations possess directionality; particularly, dominance is the strength of the category-to-brand association. Dominance represents "the extent to which a

Table 5 Coefficients, 95% credible intervals and differences between groups.

Parameter	Total sample			Low involvement (LI)			High involvement (HI)			Difference (HI - LI)	S.E.	C.R.			
	Estimate	S.E.	95% C.I.	Estimate	S.E.	95% C.I.	Estimate	S.E.	95% C.I.						
OBE ← SIM	0.206	0.045	0.119	0.296 ^a	0.176	0.063	0.056	0.303 ^a	0.256	0.067	0.128	0.391 ^a	0.080	0.092	0.870
OBE ← EXPOS	-0.901	0.186	-1.267	-0.539 ^a	-0.763	0.293	-1.354	-0.197 ^a	-0.966	0.246	-1.461	-0.502 ^a	-0.203	0.383	-0.531
PURCH ← OBE	0.109	0.03	0.050	0.169 ^a	0.237	0.062	0.122	0.364 ^a	0.157	0.05	0.061	0.258 ^a	-0.080	0.080	-1.004
PURCH ← SIM	-0.01	0.029	-0.067	0.046	-0.036	0.049	-0.132	0.061	-0.008	0.049	-0.105	0.088	0.028	0.069	0.404
PURCH ← EXPOS	-0.024	0.124	-0.271	0.218	-0.085	0.223	-0.511	0.355	-0.031	0.178	-0.380	0.321	0.054	0.285	0.189
obe4 ← OBE	1.036	0.065	0.914	1.168 ^a	0.968	0.081	0.816	1.140 ^a	1.112	0.11	0.910	1.345 ^a	0.144	0.137	1.054
obe3 ← OBE	0.987	0.066	0.865	1.124 ^a	0.867	0.084	0.709	1.039 ^a	1.17	0.112	0.966	1.404 ^a	0.303	0.140	2.164
obe2 ← OBE	1.113	0.07	0.984	1.258 ^a	0.968	0.085	0.813	1.144 ^a	1.342	0.12	1.128	1.595 ^a	0.374	0.147	2.543
obe1 ← OBE	1.000			1.000	1.000			1.000	1.000						
sim2 ← SIM	0.926	0.032	0.864	0.989 ^a	0.964	0.042	0.884	1.050 ^a	0.879	0.046	0.792	0.974 ^a	-0.085	0.062	-1.365
sim1 ← SIM	1.000			1.000	1.000			1.000	1.000						

Notes: C.I.: credible interval; C.R.: approximate critical ratio.

^a C.I. does not include zero.

^b C.R. > 1.96.

Table 6 Standardized direct and indirect effects.

Dependent variables	Independent variables								
	EXPOS			SIM			OBE		
	Estimate	95% C.I.		Estimate	95% C.I.		Estimate	95% C.I.	
<i>Direct effects:</i>									
OBE	-0.607	-0.805	-0.383	0.384	0.222	0.548	-	-	-
PURCH	-0.022	-0.259	0.214	-0.028	-0.18	0.123	0.157	0.073	0.24
<i>Indirect effects:</i>									
OBE	-	-	-	-	-	-	-	-	-
PURCH	-0.095	-0.165	-0.039	0.06	0.024	0.106	-	-	-

Notes: C.I.: credible interval.

Table 7 Fit calculations.

	Involvement	
	Low	High
Implied variance for PURCH	1.242	1.078
Error variance ^a	1.000	1.000
Pseudo-R ²	0.195	0.072
Effect size	0.242	0.078
	Medium ^b	Small ^b

^a Model restriction.

^b Cohen (1992).

trademark is in consumers' evoked sets for a target product category" (Peterson et al., 1999, p. 261), which influences brand purchase probability. For Peterson et al. (1999), dominance could be diluted when the JB emerges in the same or in a very high-related category (very high substitutability or complementarity in common-usage situations),⁷ creating the following links: SB product category ↔ JB product category → JB. This could break down or weaken the association SB product category → SB, because, when thinking about a given product category, SB and JB compete for activation in consumer memory. Most of the junior brands in this study were created in product categories without such a level of relatedness, so the category-to-SB association would not have been diluted, which may explain the absence of a direct effect of JB on SB purchase.

Finally, there was no evidence for H5. The multi-group analysis and the test for difference in the coefficient for EXPOS → OBE did not find significant differences between low and high involvement samples. If involvement is indeed a moderator, a possible explanation for its lack of significance here could be a lack of variability in the variable, or a range restriction problem (Aguinis, 1995). Although two levels of product involvement were used in this study, these product categories belong to "convenience" or "preference" types (Murphy & Enis, 1986), which could relegate them to

⁷ Relatedness differs from the similarity construct used in this study. The former focuses on "conceptual coherence", while the latter focuses more on physical relationships (Herr, Farquhar, & Fazio, 1996). For example, athletic shoes and tennis rackets possess high relatedness, but low physical similarity.

a low involvement level among a broader classification that includes "shopping" and "specialty" products.

Conclusions, limitations and suggestions for future research

This study contributes to the expanding trademark dilution literature regarding behavioral effects on the consumers of famous brands deriving from the unauthorized use of such brands by third parties. The study shows a negative effect on purchase behavior mediated by a negative effect on consumer-based brand equity, reflected in a reduction in overall evaluation of the perceived added value with which the senior brand invests its products. Two limitations of this study should be considered. First, the use of undergraduate students in the experiment reduces the generality of the results. However, the study's validity is strengthened by the careful selection of products and brands more often used by this sample. Future research could analyze if this effect holds when other types of consumers are used. Second, products permitting higher levels of involvement, such as electronics and appliances, would need to be used in order to effectively test whether the level of involvement moderates trademark dilution, as was hypothesized here.

Finally, these results have implications for management and for public institutions involved in trademark protection. Trademark protection against unauthorized use of brands is a legitimate concern of a company, not only because of the effects at the level of consumers' minds, but also because of the impact over purchase decision, and, consequently, over the firm's cash flow and value. Managers should frequently use BE-related metrics in order to detect erosion of consumers' associations, attitudes, intentions and behavior, due to internal or external activities. Additionally, further research should explore how the effect shown in consumer behavior persists over time, in order to model the longer-term impact of trademark dilution on a firm's value.

From a legal perspective, and given the fact that well-known and famous brands are powerful intangible assets for companies and consumers, the international legal framework⁸ calls for special treatment for so-called

⁸ Article 6 Bis of the Paris Convention for the Protection of Industrial Property, Article 16(3) of the Agreement on Trade-Related

“well-known trademarks”, in the form of an extra scope of protection afforded to famous trademarks. In this respect, the results of this study support the increasing pressure from the legal community and public institutions to reinforce trademark laws in relation to the protection of famous brands. Unlike ordinary trademark law, dilution protection extends to trademark uses that are not necessarily likely to confuse consumers regarding the manufacturer of the product. Instead, dilution protection law aims to protect sufficiently famous and well-known trademarks from losing their singular association in the mind of the public with a particular product, which ultimately affects overall brand equity and brand financial value.

Conflict of interest

None declared.

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