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# Spatial Distance Effect in Shaping Perceived Similarity of Products in the Online Store

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## Abstract

**Purpose:** Even though arranging images of products is a common practice in the online retail context, relatively little attention has been paid to the distance effect among alternatives, that is, how distance among displayed products can impact consumers' responses. Drawing on contagion theory, the primary goal of the current study is to investigate how spatial distance between two products in a product display can influence consumers' perceived similarity. **Research design, data and methodology:** This study used a 2(spatial distance: close vs. far) experimental design and collected data from undergraduate students in Korea through an online survey using Qualtrics. ANOVA was conducted to test the proposed effect, in which the dependent variables are the perceived similarity of usage occasion/purpose (Study 1) and the indexed differences of perceived brand statuses between two products (Study 2). **Results:** The results of both experiments indicated that the displayed products were perceived to be more similar to one another when products were presented close together (vs. far). **Conclusions:** The results help to fill a research gap and provide a better understanding of the role of physical distance in diverse marketing communications. This is especially useful when designing online shopping websites to form perceptions of brand images.

**Keywords :** Product Display, Spatial Distance, Perceived Similarity, Usage Occasion, Perceived Brand Status

**JEL Classification Code:** L19, L81, M30, M31

## 1. Introduction

The global pandemic has made online shopping a dominant way to purchase products (i.e., Lee & Kim, 2020; Wang & Zhang, 2020). According to Statista (2020), approximately 88% of the adult population in the U.S. market have made online purchases since lockdowns began in March 2020. During the lockdown, lots of statistics provide additional evidence for the evidence of the growth in popularity of online shopping. For instance, online sales increased by 74% in March 2020 and 49% in April 2020

compared to the same months in 2019. More interestingly, 90% of shoppers tried to avoid shopping in stores due to the risk of COVID-19, and 45% of them expected online shopping to become a necessity. In addition, online shoppers are spending more time searching for new products, and page views increased by 25% compared to 2019, offering consumers more opportunities to purchase from new brands they are not familiar with.

As online purchasing behavior is becoming more common, retailers and marketing practitioners need to understand how website characteristics impact consumers' responses (Mallapragada, Chandukala, & Liu, 2016). According to previous literature on website characteristics (i.e., Abou-Shouk & Khalifa, 2017; Byun, & Kyung, 2020; Dai & Lee, 2018; Grose, Forsythe, & Ratner, 1998; Lai, Huang, Siang, & Weng, 2020; Shneiderman, 1992; Zhang, Fiore, Zhang, & Liu, 2020), website content and design contribute significantly to the success of online business.

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More importantly, in the online retail context, evaluating the intrinsic quality of products is very challenging because of the limited information provided (i.e., Xu, & Cheng, 2021). For instance, consumers cannot directly experience the products because all they have is a picture on the website. Due to this limitation, consumers may be more likely to rely on external clues such as the way the product is presented, which is a characteristic of the website (e.g., using videos or 360-degree rotating pictures; Kim, Back, & Yoon, 2020; Orús, Gurrea, & Flavián, 2017).

Building on the literature on product presentation, the current research focuses on one aspect of product presentation via images on the website, specifically spatial distance among products. Evidence in the advertising context shows that spatial distance contributes to the consumer's judgement of product effectiveness (i.e., Chae, Li, & Zhu, 2013), and evidence in the retailing context shows that physical distance influences the consumer's evaluation of products (Argo, Dahl, & Morales, 2006; 2008; Morales & Fitzsimons, 2007, Newman, Diesendruck, & Bloom, 2011). However, there is little research to date to explain the impact of spatial distance on the perception of products or brands in the same product category in the online retail context. This gap is noteworthy given that spatial distance, especially the proximity between/among the products on web pages, is one of the essential elements of website design that practitioners have to make decisions about.

Imagine seeing several products representing diverse brands in the same product categories on the website of an online retail store. Does the distance between two alternatives influence consumers' perception, especially in terms of similarity? In other words, if consumers encounter several shampoo brands on the website, would your perceived similarity of the products' usage occasion or brand status depend on the distance between the pictures of the offered products? More generally, does the spatial distance between the presented products affect consumers' belief that the offered products are similar?

The current research attempted to answer this research question. Based on contagion theory, this research introduces spatial distance as a key determinant that shapes consumers' similarity perception. In other words, consumers perceive products as more similar when the product images are displayed closer together rather than farther apart. Objectively, the spatial distance between two alternatives bears no diagnostic information about similarity regarding the usage occasion or brand status. However, the findings of this research demonstrate that merely changing the spatial distance among offered products on webpages in online stores influences judgments of product similarity.

The findings of the current research provide both

theoretical and managerial contributions. Broadly, these findings contribute to the literature on the impact of spatial distance in marketing communications (Argo, Dahl, & Morales, 2006; 2008; Chae et al., 2013; Morales & Fitzsimons, 2007, Newman, Diesendruck, & Bloom, 2011) by investigating this impact in the understudied context of online retail. More importantly, these findings shed light on the influence of spatial distance on consumers' similarity perceptions in the online retail setting, thus extending previous research on the contagion theory in the context of presenting various alternatives in the same product categories (i.e., Mishra, 2009).

From a practical standpoint, although spatial distance is a fundamental element in website design, there is little systematic knowledge about its execution. Thus, the current research provides a formal explanation regarding spatial distance in perceiving similarity between products as an effective product display tactic. Consequently, for a particular purpose, retailers can use this explanation to inform their decisions about how to enhance consumers' similarity perception with the reference product without imposing considerable information.

The remainder of the article is structured as follows. A review of previous research on contagion theory and the role of spatial distance leads to two hypotheses predicting how consumers infer the similarity of products in the online shopping environment. Next, two experimental studies that tested the hypotheses are described and their results presented. The article concludes with a discussion of the theoretical and managerial implications of the findings as well as directions for future research.

## **2. Literature Review**

### **2.1. Contagion Theory**

Contagion theory is one of the laws of sympathetic magic which explains how people perceive, think about, and interpret given information (Rozin, Millman, & Nemeroff, 1986; Rozin & Nemeroff, 2002; Rozin, Nemeroff, Wane, & Sherrod, 1989). Specifically, contagion theory holds that people believe that a person's immaterial qualities or essence can be transferred from the source (person/object) to a recipient (another person/object) either directly or indirectly through physical contact (Belk, 1988; Bloom, 2010; Frazer, 1890; Mishra, 2009; Nemeroff & Rozin, 1994; Rozin et al., 1989; Tylor, 1974). Any kind of qualities or essences regardless of the effect's valence (i.e., beneficial or harmful effect) might be transmitted (Ban & Lee 2020; Hejmadi, Rozin, & Siegal, 2004; Kim, Park, & Park 2017; Kong, Ma, Ji, & Li 2020).

The research on contagion theory demonstrates that

people believe that objects considered representative of a source object possess the same qualities as the source object (Belk, 1988; Bloom, 2010; Frazer, 1890; Hejmadi et al., 2004; Mishra, 2009; Nemeroff & Rozin, 1994; Rozin et al., 1989; Tylor, 1974). In other words, contact with an undesirable source (person/object) leads to a lower evaluation of the target recipient (another person/object). In contrast, contact with a desirable source contributes to a higher evaluation of the target recipient. For example, Rozin et al. (1986) show that even a meaningless label on a bottle carries the qualities of the named material to a solution in the bottle. In their experiments, participants were instructed to pour sugar into two bottles randomly labeled sucrose (harmless material) or sodium cyanide (toxic material). Participants showed a lower tendency to drink the sugar solution in the bottle when the bottle was labeled sodium cyanide even though they themselves had put the ingredient (i.e., sugar) in the bottle. Similarly, people tend to show reluctance to eat chocolates with disgusting shapes, to throw a dart at a dartboard depicting a respected person's face, or to tear up duplicate photographs of loved ones (Rozin & Nemeroff, 2002).

Contagion has been examined in a wide range of contexts, and the research has demonstrated various predictors as critical characteristics in contagion (Rozin et al. 1986; Rozin & Nemeroff, 2002). Morales and Fitzsimons (2007) show how physical distance impacts the sense of contagion, finding that the closer the distance between two objects (i.e., source and recipient in an entitative group), the greater the perception that essences are transferred among the objects. Similarly, two or more objects with similar (vs. dissimilar) backgrounds or appearance are perceived to share similar qualities and to cohere as a group (Crawford, Sherman, & Hamilton, 2002). In addition, entitative groups can be characterized based on proximity, similarity, symmetry, collective movement, and shared fate (Yzerbyt, Rogier, & Fiske, 1998). Higher entitative groups enhance the sense of contagion among the members because people perceive them as belonging to the same group; thus, people perceive that members in the group possess the same qualities and characteristics (Crawford et al., 2002). However, this sense of contagion is hindered for low entitative groups (Spencer-Rodgers, Hamilton, & Sherman, 2007). Research on entitativity has studied the spread of characteristics among group members in the social judgment context, and these findings can be extended to a more general context of other types of groups, such as brands.

The role of contagion in retail settings has recently become a topic of interest in the marketing literature. This research stream has emphasized the negative as well as positive contagion effect in diverse purchase contexts. For instance, Argo et al. (2006) find that consumers showed a

less favorable evaluation toward products they want to purchase when others had previously touched them because touch can be considered a signal of increased perceived contamination in the retail environment. Using a scenario in which products in a shopping cart were presented to consumers, Morales and Fitzsimons (2007) demonstrate that consumers respond negatively to items that have come into physical contact with disgusting products such as trash bags, cat litter, feminine napkins, and so forth because they believe that the offensive properties of the disgusting products can be transferred to other products by physical contact. Similarly, Mishra (2009) defined a contagious group as containing products that were arranged close together, were similar in appearance, or presented symmetrically close product. In an experiment using this definition, Mishra found that consumers are more likely to choose products from a group considered less contagious (i.e., distant product arrangement) when they were instructed to choose product arrangements in which one of the products may be a defective bottle, inducing \$3 potential loss. Participants in Mishra's study considered that the negative quality of the defective bottle may transfer to the other products, especially in a close product arrangement. Superficial packaging damage has also been shown to play a role as a contamination cue that facilitates the activation of health and safety concerns as well as thoughts of contamination, engendering negative consumer responses (White, Lin, Dahl, & Ritchie, 2016).

Argo et al. (2008) found positive contagion effects in an actual retail shopping environment: consumers in their study showed a more favorable evaluation of products when attractive others touched the same products they wanted to purchase. Mishra (2009) indicated that consumers are more likely to choose a product from the group considered more contagious (i.e., close product arrangement) when one of the products in the product arrangement had a \$3 coupon as potential gain. Similarly, Newman et al. (2011) found that consumers exhibited greater willingness to pay for objects that a celebrity had physically touched, providing evidence that contagion can be a significant factor in the valuation of celebrity possessions. Newman and Dhar (2014) demonstrated that items from the original factory are perceived to be more authentic and valuable than identical items produced elsewhere because people consider the original factory to be the source of essence. Fajardo and Townsend (2016) found that people consider the marketing message on packaging to be more believable than messages in advertisements, which contributes to greater purchase intention. This effect was explained based on the proximity of marketing message and product, that is, the spatial distance between the message on the package (vs. advertisement) and the product is closer, so the message

seems more verifiable (Fajardo & Townsend, 2016).

In sum, the contagion theory posits that people believe that qualities/essences are transferable and can influence perception, preferences, and behavior.

## 2.2. Spatial Distance as a Crucial Predictor for Contagion

Of particular relevance to this research is the literature on physical contagion and essence transfer (Argo et al., 2006; 2008; Fajardo & Townsend, 2016; Morales & Fitzsimons, 2007, Newman & Dhar, 2014; Newman et al., 2011; White et al., 2016). Studies on physical contagion in the retailing context suggest that physical proximity enhances the sense of contagion; that is, consumers are more likely to ascribe qualities of sources (e.g., disgusting, attractive, etc.) to other products when the spatial distance between the source and other products is proximal than when it is distant. This reliance on spatial distance plays a crucial role in inferring contagious qualities or essences because people consider proximal objects to be a higher entitative group (Crawford et al., 2002; Spencer-Rodgers et al., 2007). In sum, a higher entitative group with close physical distance among objects enhances the quality transfer from a source object to a recipient object in the group. In contrast, a lower entitative group with distant physical distance among objects hinders the contagion effect. As of yet, however, no contagion effect across different brands in the same product category has been experimentally documented. In general, retailers provide several alternative brands for potential customers. Thus, brand owners and retailers offering several brands in the same product category need to understand how consumers perceive the similarity of the alternatives when they see the products.

The current research would like to elaborate and apply this rationale to the online retail context, which is a prevalent environment for consumers' buying behavior, especially in light of the restrictions imposed by the COVID-19 pandemic. More importantly, this research narrows down product similarity to two subdimensions: perceived similarity of usage occasion/purpose and brand's market status. These perceptions can be considered meaningful nonfinancial outcomes when a company tries to build a brand image compared to other competitors or reference products. In the domain of product presentation by an online retail store, consistent with previous findings, the following hypotheses can be posited regarding consumers' perceived similarity of products with close versus far distance in an online product display:

**H1:** Consumers tend to perceive greater similarity when products are displayed with close (vs. distant) distance.

**H1a:** Consumers tend to perceive greater similarity of usage occasion/purpose among offered products when products are displayed with close (vs. distant) distance.

**H1b:** Consumers tend to perceive greater similarity of brand's market status among offered products when products are displayed with close (vs. distant) distance.

Study 1 tests the proposed effect on inferring similarity regarding usage occasion/purpose Study 2 replicates Study 1 to demonstrate the effect on inferring brand's market status.

## 3. Study 1: Spatial Distance Effect in the Perceived Similarity of Usage Occasion / Purpose

Based on contagion theory, it is expected that a close distance between two products would result in a greater perceived similarity. To investigate the role of spatial distance, an experiment was conducted by manipulating the spatial distance between two displayed products. Study 1 tested Hypothesis 1a in an online retail context. The spatial distance between two competing products presented in an online retail store may influence respondents' perception of the similarity between them. It is predicted that when the presented products are held constant, the subjective perception of similarity is likely to vary depending on the spatial distance between them. Participants in Study 1 looked at images of two products together with far distance versus close distance and then responded to questions about their perception of the similarity of the products' usage occasion/purpose.

### 3.1. Research Design and Participants

Study 1 used a single factor 2 (spatial distance: close vs. far) between-subjects experiment to explore Hypothesis 1. A total of 112 undergraduate students from Korea (38.4% female,  $M_{\text{age}} = 23.40$  years;  $SD = 3.50$ ) were asked to complete an online survey using Qualtrics. Respondents participated voluntarily and filled out the survey for extra course credit. Participants were assigned to one of two conditions.

### 3.2. Stimuli

Shampoo was selected as the target product due to its common use among people of all ages and genders. It is a commonly purchased good in everyday situations and does not require in-depth knowledge to understand visual



information. The brands featured in this research are similarly familiar: PANTENE and L'ORÉAL. More importantly, they are not likely to be the dominant brands in the market; specifically, their brand reputations ranked in the mid-20s among dozens of shampoo brands in Korea in 2019. Previous research has found that people with rich knowledge (i.e., expert) are less likely to rely on nondiagnostic attributes compared to people with poor knowledge (i.e., novice) (Chae et al., 2013; Maheswaran & Sternthal, 1990). Because the current research focuses on the effect of spatial distance, which is a type of nondiagnostic information, nondominant brands such as PANTENE and L'ORÉAL are more appropriate stimuli to address the proposed effect. In other words, the current study tests the proposed spatial distance effect by using nondominant brands. Thus, consumers may rely on distance information to judge the products' similarity.

All participants observed two identical products on the computer monitor. To manipulate the spatial distance, two versions of product display as stimuli were created by referring to how to create stimuli in previous research (Chae et al., 2013; Fishbach & Zhang, 2008). The only difference was the relative position of the two products. In the close condition, the two products were placed next to each other; in the far condition, they were placed far away from each other. In addition, to ensure that the location of the particular brand did not influence consumers' responses, the location (left vs. right) of brands was counterbalanced (see Appendix 1).

### 3.3. Procedure

Upon arrival, participants were randomly assigned to one of the two conditions of distance. They looked at the manipulated images (one of the stimuli depending on the experimental conditions; see Appendix 1) on a computer monitor. All participants were instructed: "This is a consumer survey by which a company would like to understand consumers' general perceptions about products in the online shopping context." Each participant then viewed one of the product pairs with different distances between presented products (i.e., either far distance or close distance).

After looking at the product pair, participants were asked to indicate their perceived similarity of the two brands with the items "the usage situation of the two products is similar" and "the usage purpose of the two products is similar". Each item was rated on a scale from 1 (not at all) to 7 (very much), and these two items were averaged to formulate a perceived similarity of usage occasion index (Cronbach's  $\alpha = .812$ ,  $M = 2.85$ ,  $SD = 1.07$ ).

Finally, participants provided general demographic information such as gender and age. They were then debriefed and thanked for their participation.

### 3.4. Results

To test H1a, which suggested the effect of spatial distance on perceived similarity regarding usage occasion, one-way ANOVA was conducted. The results indicated a significant main effect of spatial distance on perceived similarity ( $F(1,112) = 6.329$ ,  $p = .013$ ). Concretely, participants perceived that usage occasion/purpose is more similar when the two products were placed closer together ( $M_{\text{close}} = 3.10$ ,  $SD = 1.02$ ) rather than farther apart ( $M_{\text{far}} = 2.60$ ,  $SD = 1.06$ ) (see Figure 1). This result supports H1a.

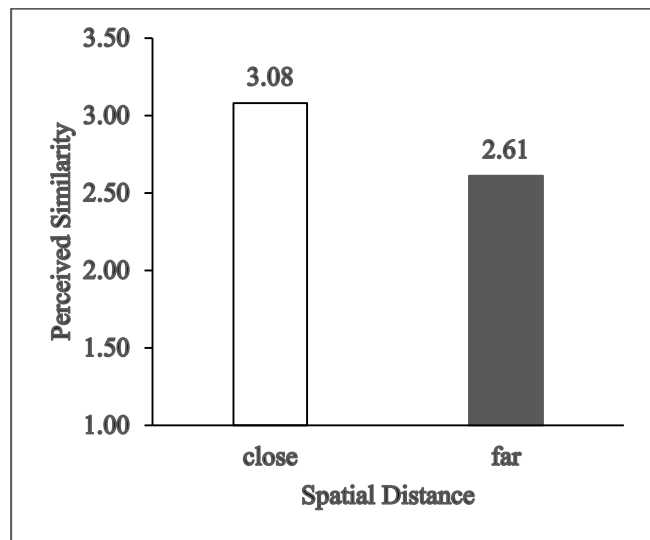


Figure 1: Spatial Distance and Perceived Similarity of Usage Occasion/Purpose

### 3.5. Discussion

Study1 investigated the influence of online retailing strategies, specifically product display tactics, on consumers' perception of similarity. The results show that consumers were more likely to perceive greater similarity between the two presented products when they were displayed with close rather than far distance.

The observed spatial distance effect may be difficult to account for on the basis of the proximity between two alternatives. In an effort to strengthen external validity, the stimuli used in Study 1 were real product packages from the market. Unintentionally, the two packages had similar color schemes. Previous research has established that perceptual similarity such as color or shape may facilitate the sense of contagion (Crawford et al., 2002; Mishra, 2008). In sum, a potential alternative explanation for the findings of Study 1 is a perceptual similarity that leads to an impression of greater similarity in terms of a qualitative aspect (similarity of usage occasion/purpose in this case), irrespective of whether the distance between the presented products is

close or distant. Hence, Study 2 eliminated this alternative explanation and, more importantly, replicated the results by using another dependent variable, the perception of similarity in terms of the brand's market status. The main research question of the current study is about the effect of spatial distance on consumers' perception of the similarity of the presented products on a website. Testing another dimension of similarity may capture the generalizability of the proposed effect, as the perception of a brand's market status is another meaningful indicator of marketing performance.

#### 4. Study 2: Spatial Distance Effect in the Perceived Similarity of Brand's Market Status

Study 2 investigates a possible explanation regarding the alternative predictor of the observed results in Study 1. Because the potential effect of similar package color and the effect of spatial distance may be embedded in the stimuli, Study 2 attempted to isolate the effect of spatial distance, the main focus of this research. Specifically, as in Study 1, the physical proximity between displayed products was manipulated as close versus far distance. More importantly, different colors of products were used. If spatial distance plays an independent role as a predictor of similarity, the findings of Study 2 should show the same effect as Study 1. The results would provide a more rigorous and clearer explanation regarding the observed effect.

##### 4.1. Research Design and Participants

As in Study 1, Study 2 also had a 2 (spatial distance: close vs. far) between-subjects design. A different set of 111 undergraduate students from Korea (37.5% female;  $M_{\text{age}} = 23.309$  years,  $SD = 3.61$  years) were recruited and given extra course credit for participating in the online survey using Qualtrics. The survey required less than 3 minutes to complete. Participants were assigned to one of two conditions.

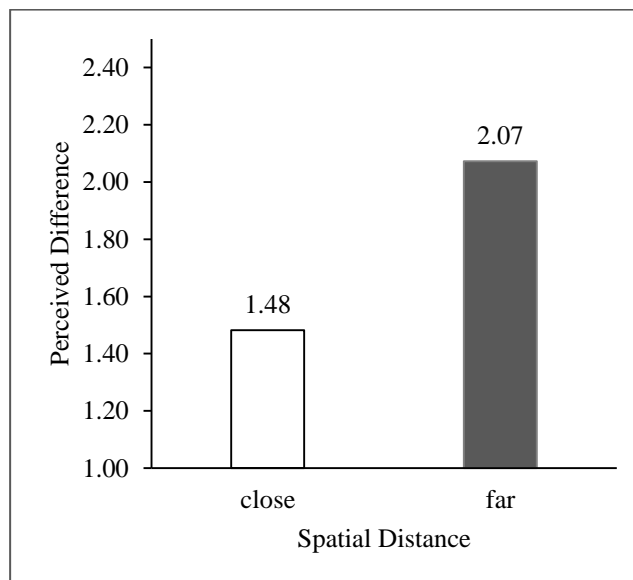
##### 4.2. Stimuli and Procedure

The stimuli and procedure for this study were essentially identical to those of Study 1 except for the following differences. First, the colors of the products used as stimuli were different, though Study 2 also used real shampoo brands (PANTENE and L'ORÉAL) as the target products. Second, instead of the perceived similarity of usage occasion/purpose, another qualitative aspect was measured, specifically the brand's perceived status in the current market.

Participants were presented with instructions for the survey and a picture of two competing products. They were asked to assume an online purchase context and to view the provided stimuli depending on the experimental condition. They then estimated the market status of the two brands ("What is the estimated market status of PANTENE (L'ORÉAL)?") using a 10-point semantic scale on a scrolling bar. The location of brands as well as the two questions of brand's market status were counterbalanced (see Appendix B). At the end of the study, participants reported their demographic information. They were then debriefed and thanked for their participation.

#### 4.3. Results

Before conducting the analysis, it was necessary to index the similarity of market status between the two provided brands. The difference score was calculated first. The topic of interest in this study is only the perceived similarity in terms of the relative difference between two options. Thus, the absolute value of the calculated difference score was considered the index of perceived similarity of market status, the dependent variable in Study 2. A high score indicates a relatively greater difference in perceived brand market status of two displayed products in the online purchase context.



**Figure 2:** Spatial Distance and Perceived Difference of Brand's Market Status

To test H1b, ANOVA was conducted with the perceived similarity of brand's status index as the dependent variable and the spatial distance manipulation as the independent variable. Similar to the findings of Study 1, there is a

significant main effect of spatial distance, that is, the spatial distance manipulation influenced participants' perceived similarity of the brand's market status ( $F(1,110) = 4.816$ ,  $p = .030$ ). Participants perceived the brand statuses to be more similar when the two products were placed closer ( $M_{\text{close}} = 1.48$ ,  $SD = 1.28$ ) rather than farther apart ( $M_{\text{far}} = 2.07$ ,  $SD = 1.48$ ) (see Figure 2). This result supports H1b.

#### 4.4. Discussion

These results provide vital evidence for the theoretical claim related to the perceived similarity of brand status in the marketplace while purchasing products online. Study 2 confirms that the close distance of two presented products leads to a stronger perception of similarity in market status.

Study 2 replicated the finding that distance between the products affected the perception of similarity even when the products had very different appearances. By doing so, Study 2 ruled out the possibility that the similarly colored packages affected the similarity perception. To address this issue further, the stimuli featured relatively contrasting colors of the packages. In addition, to generalize the proposed effect of spatial distance on the perception of similarity, a different dependent variable (i.e., the perceived similarity of brand's market status) was used.

Based on this result, it is concluded that consumers may perceive more contagion of a qualitative aspect in the close condition than in the far condition. The results of Studies 1 and 2 confirm the theoretical claim related to contagion and spatial distance of two alternatives in the online purchase context.

#### 5. Conclusions

This research provides noteworthy findings that the spatial distance between the offered products in an online retail store, which does not bear any diagnostic information about the products' similarity, still influences consumers' similarity judgment.

Understanding how consumers form perceptions of product similarity is crucial to marketing practitioners because such judgments not only determine consumers' evaluation but can also boost their comprehension of brand positioning compared to reference products via product displays online. The current study provides novel evidence of the influence of one external perceptual cue on similarity judgment in the online retailing context. Specifically, the findings of this research show that spatial distance between two offered alternatives in an online store can influence similarity judgments regarding usage occasion/purpose as well as brand's market status. Two experiments demonstrate that, in online retailing contexts, consumers judge the product to be more similar when two competing products

are placed closer to (vs. farther away from) each other.

Even though the result provides evidence that spatial distance plays a significant role in perceived similarity, there is still another possibility that gender would influence participants' perceptions of occasion/purpose similarity and market status (i.e., Choi, Yoo, Kwon, & Kwon, 2019; Lim, 2020). Specifically, shampoo may be more familiar to females than males in general. According to past research, knowledgeable people are less likely to use external clues as information while making a decision (Chae et al., 2013; Maheswaran & Sternthal, 1990), that is, the spatial distance effect may be attenuated for female consumers compared to male consumers. To remove this possibility, ANOVA was conducted by employing gender and ages as covariates. The results show that there are no substantial gender differences or age differences in perceived similarity (all  $ps > .10$ ; for details see Appendix C). This provides evidence that the observed effect in the studies was not influenced by gender or age. It is concluded that the current results are due to the spatial distance, not the other variables.

#### 5.1. Theoretical Implications

The findings of the current research provide several theoretical contributions. First, this research contributes to the literature on contagion theory (Argo et al., 2006; 2008; Morales & Fitzsimons, 2007; Newman et al., 2011). To my knowledge, this is the first study to provide empirical evidence that close distance between/among presented alternatives (i.e., different brands) in the same product category leads to perceived entitativity, which influences consumers' perception of similarity in the online shopping context.

Second, drawing on and extending the research on contagion theory, the current research demonstrates that visual presentation of products can influence similarity judgment in the online retail context, specifically similarity of usage occasion/purpose and brand's market status.

Lastly, the findings of the current research have implications for the literature on physical proximity. Researchers have identified the effect of physical proximity in several marketing contexts. Physical proximity strengthens perceived relationships such as the causal relationship between product and product effect (Chae et al., 2013) and the complementary relationship between vice and virtue products (Fishbach & Zhang, 2008). In light of this body of research, the current investigation illustrates an additional type of relationship, that is, relatedness or similarity between different competing brands.

#### 5.2. Practical Implications

The findings also offer insightful managerial implications. First, in the online retail context, managers

must understand the subtle effect of the spatial distance between product images on consumers' similarity perception. When managers or marketers want to build a brand image in terms of quality level or a particular positioning concept, images of a well-established product as a source and the target product as a recipient need to be put closer to each other on the website. This tactic can strengthen the perception of entitativity and lead to a positive contagion effect.

Second, in this study, spatial distance was manipulated in the context of a webpage of an online store to offer a cleaner test of the relationship between spatial distance and product similarity perception. However, the implications from the findings can go beyond product display in webpage design, since the findings reflect human beings' fundamental tendency to group objects or sense contagion among closely-grouped objects. Thus, this result indicates that companies need to understand and pay attention to specific dimensions of similarity with another well-established brand when they develop new products if they wish to communicate a particular positioning concept or a certain level of quality.

### 5.3. Limitations and Further Research

There are some limitations to the current research that can suggest other avenues for future investigations. First, the current research did not investigate the boundaries of the suggested effect. There are possible potential moderators. For instance, knowledge level is a possible moderator. As previous researchers have demonstrated that people with higher domain knowledge are less likely to use nondiagnostic information such as spatial distance (i.e., Chae et al., 2013), the strength of the effect can be expected to vary for high- versus low-knowledge customers. Because people with lower knowledge cannot consider critical information in evaluating the products (i.e., Byun, 2018). Another potential moderator is the level of involvement (Segev, Wang, & Fernandes, 2014). Consistent with knowledge level, the observed effect of spatial distance should be more dominant for consumers with low involvement than for those with high involvement.

Second, the studies in this research focused on enhancing the internal validity to show the isolated effect of the special distance. To that end, only two alternatives with different distance (close vs. far) were provided as stimuli. Participants were instructed to imagine that the images they were viewing were part of an online retail shopping website. Because the stimuli were created following the previous research on spatial distance (Chae et al., 2013; Fishbach & Zhang, 2008), it was assumed that consumers would perceive the different spatial distances. However, the perceived distance across the two experimental conditions

(close vs. far) can be a crucial predictor of this study. Thus, a manipulation check would be needed in future studies to provide a rigorous test. Moreover, future researchers may wish to strengthen the external validity by offering participants more realistic stimuli that more closely resemble a real online shopping environment.

Third, it is debatable whether various degrees of spatial proximity affect similarity perception or how spatial distance affects different aspects of similarity in the marketing context. Similar results are likely, but future researchers should seek to enhance generalizability by providing empirical findings and evidence.

Lastly, the experimental study used only one type of target product (i.e., shampoo) to observe the effect of spatial distance in the online retailing context. Although this product category may be valid to test the proposed effect and help maximize control in the research setting, different sorts of products with various involvement levels should be considered in future research.

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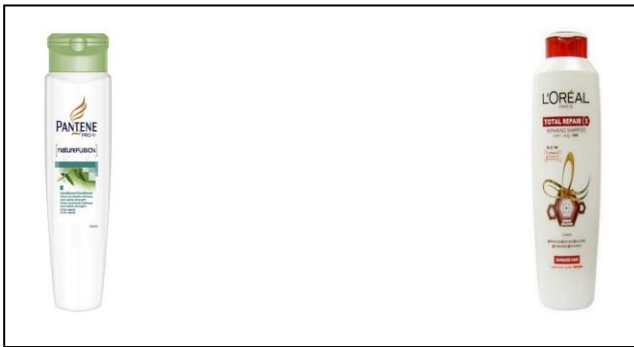


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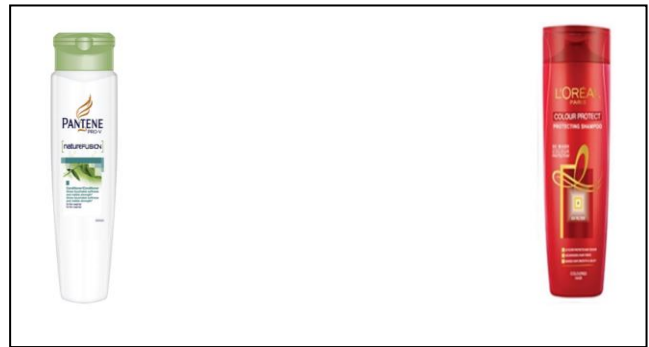
## Appendixes

### Appendix 1: Stimuli for Study 1



Note: Far Distance Condition

### Appendix 2: Stimuli for Study 2



Note: Far Distance Condition



Note: Close Distance Condition

Note: Close Distance Condition

**Appendix 3: Result Tables of Additional ANOVA in Conclusion**

<b>Additional ANOVA Results of Study 1</b>					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9.194 <sup>a</sup>	3	3.065	2.811	.043
Intercept	30.147	1	30.147	27.648	.000
Age	.547	1	.547	.502	.480
Gender	2.155	1	2.155	1.976	.163
Distance	5.657	1	5.657	5.188	.025
Error	115.581	106	1.090		
Total	1018.250	110			
Corrected Total	124.775	109			

<b>Additional ANOVA Results of Study 2</b>					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.464a	3	4.488	2.355	.076
Intercept	5.434	1	5.434	2.851	.094
Age	3.398	1	3.398	1.783	.185
Gender	.292	1	.292	.153	.696
Distance	10.088	1	10.088	5.294	.023
Error	203.905	107	1.906		
Total	567.000	111			
Corrected Total	217.369	110			