

# The Effect of Retail Shelf Position on Private-label Brand Evaluations

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# **The Effect of Relative Shelf Position on Private-label Brand Evaluations**

## **Abstract**

**Purpose** – This research examines the effects of physical proximity (close vs. distant) of retailers' private label brands (PLBs) relative to national brands (NBs) and brand display orientation (horizontal [brands occupy the same shelf] vs. vertical [brands occupy different shelves]) on consumers' PLB quality perceptions and PLB evaluations.

**Design/methodology/approach** – Two experiments involving real brands in different product categories tested the hypotheses.

**Findings** – A PLB positioned close (vs. distant) to a NB is evaluated more favorably and this effect is mediated by increased PLB quality perceptions, but only in a horizontal brand display. In a vertical brand display, a PLB positioned close (vs. distant) to a NB is evaluated less favorably and this effect is mediated by decreased PLB quality perceptions.

**Practical implications** – The findings suggest that to enhance consumers' PLB quality perceptions and evaluations, PLBs be positioned next to (rather than on separate shelves) and close to (rather than distant from) NBs in the same product category.

**Originality** – Although the literature suggests that the best shelf position for PLBs is close to NBs, there is a lack of empirical research on the effects of relative shelf positioning on consumers' quality perceptions and subsequent PLB evaluations. This research finds that both physical proximity and brand display orientation play an important role.

**Keywords** Private label brands, National brands, Shelf positioning, Shelf spacing, Physical proximity, Perceptual grouping theory, Gestalt principles

**Article classification** Research paper

## 1. Introduction

In consumer-packaged goods categories, retailers focus on optimizing profits by selling both manufacturers' national brands (NBs) as well as their own private label brands (PLBs; defined as brands exclusively owned, controlled, and sold by a retailer; Sayman *et al.*, 2002). To achieve this goal, retailers employ shelf positioning strategies to optimize the allocation of retail shelf space to product categories and brands (Hoch and Lodish, 1998). Research has developed models aimed at optimizing retail shelf displays in order to enhance sales and profits (e.g., Borin and Farris, 1995; Düsterhöft *et al.*, 2020; Flamand *et al.*, 2018; Hansen *et al.*, 2010; Hübner, 2017; Murray *et al.*, 2010; Urban, 1998; Van Nierop *et al.*, 2008) and investigated the effects of retail shelf display characteristics on consumers' information processing, attitudes, and behaviors (e.g., Chandon *et al.*, 2009; Drèze *et al.*, 1994; Grandi *et al.*, 2021; Ladeira *et al.*, 2020; Sample *et al.*, 2020; Valenzuela and Raghurir 2009; Wolgast *et al.*, 2022).

In an extension of the literature on retail shelf displays, this article examines to what extent and through what mechanism the shelf positioning of PLBs relative to NBs influences consumer responses toward PLBs. There is a notable absence of research on relative shelf positioning (Roose and Vermeir, 2023) and—despite the growth of PLBs (Moran, 2023)—factors contributing to PLB success remain underexplored (Riboldazzi *et al.*, 2021).

Consumers use a shelf positioning as a heuristic and their inferences are shaped by position-based beliefs (Barone *et al.*, 2020; Chandon *et al.*, 2009; Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013), shelf display organization (Drèze *et al.*, 1994; Ladeira *et al.*, 2023; Pizzi and Scarpi, 2016; Sample *et al.* 2020; Sevilla and Townsend, 2016), and visual orientation of displays (Eelen *et al.*, 2013; Elder and Krishna, 2012; Sample *et al.* 2020; Schmidt and Maier, 2019). Visual, extrinsic cues, such as shelf positioning, appear to be particularly

important for PLBs, according to findings that consumers' PLB evaluation and choice is more strongly influenced by extrinsic cues—such as brand name, price, and retailer quality—than intrinsic cues—such as ingredients, taste, and aroma (Bodur *et al.*, 2016; Konuk, 2020; Richardson *et al.*, 1994; Sarkar *et al.*, 2016). In this context, this article examines the impact of relative shelf positioning (i.e., physical proximity of PLBs and NBs, brand display orientation) on consumers' PLB quality inferences and evaluations.

Although empirical research on the impact of the relative positioning of PLBs and NBs on consumer inferences and evaluations is lacking, the optimal location for PLBs is often considered to be close to the competing NB (Sayman *et al.*, 2002; Hoch, 1996). This notion is consistent with perceptual grouping theory, which suggests that the proximity of objects facilitates information processing and leads to the perception that these objects represent a unified grouping (Wagemans *et al.*, 2012; Wertheimer, 1938). Building on the theoretical framework of perceptual grouping theory, this research examines two factors that likely contribute to perceived similarity and quality association spillover from NBs to PLBs in a retail shelf display: physical proximity (close vs. distant) and brand display orientation (horizontal [PLB and NB occupy the same shelf] vs. vertical [PLB and NB occupy separate shelves]). This research also probes PLB quality perceptions as the mechanism contributing to the purported benefits of locating PLBs close to NBs. In examining these factors, this article addresses the call for further empirical research on both private-label brands (Riboldazzi *et al.*, 2021) and relative shelf position effects (Roose and Vermeir, 2023).

Based on a review of the literature on shelf positioning and perceptual grouping theory, we propose and empirically demonstrate that close (vs. distant) positioning of a PLB and a NB in a horizontal brand display enhances PLB evaluations. Conversely, close (vs. distant) positioning

of a PLB and a NB in a vertical brand display mitigates both PLB evaluations. PLB quality perceptions emerge as a mediator of these effects. These findings have implications for research on shelf positioning and PLBs, as well as managerial practice.

## 2. Conceptual Background

The effects of relative positioning of PLBs have not been investigated, yet there is a need for the investigation of both PLBs (Riboldazzi *et al.*, 2021) and relative shelf positioning effects (Roose and Vermeir, 2023). This research therefore focuses consumer responses to a PLB as a function of its positioning relative to a NB. Sample *et al.* (2020) identify object positioning and spacing as two components of spatial arrangements. They characterize positioning as the arrangement of an object in relation to another. Spacing is defined as the tangible separation between a focal item and its surrounding objects, underscoring the physical distances within the spatial context (Sample *et al.*, 2020). In this research, we utilize the term *brand display orientation* to denote the side-to-side (horizontal) or top-bottom (vertical) arrangement of PLB and NB, whereas *physical proximity* refers to the presence or absence of physical space between PLB and NB arranged horizontally or vertically on retail shelves.

### 2.1 Shelf positioning

Shelf positioning often has a more significant impact on sales than the amount of shelf space a brand occupies (Drèze *et al.*, 1994; Hübner *et al.*, 2020; Hübner *et al.*, 2021; Sample *et al.*, 2020). Shelf positioning not only helps retailers boost sales, but can also influence consumers' information processing and decision making, such as in the choice of healthier food options (Grandi *et al.*, 2021; Wolgast *et al.*, 2022). Shelf positioning influences consumer perceptions and choice through inference-based and attention-based mechanisms (Valenzuela and Raghurir,

2009). In the judgment of products, consumers often make inferences based on shelf positions: they apply position-based beliefs regarding a product's popularity when it is positioned at the center of a display (Valenzuela and Raghurir, 2009), the product's price based on its vertical position (i.e., the higher up, the more expensive; Valenzuela and Raghurir, 2009), and the presence of promotional offers at the end of the aisle (Valenzuela *et al.*, 2013). Eye-tracking studies also find support for attention-processes in shelf positioning effects, particularly in the context of horizontal shelves, such that attention to products located in the center of a horizontal array is greater than that for products at the left or right extremes (Atalay *et al.*, 2012).

Research has failed to identify a globally optimal shelf position (Valenzuela and Raghurir, 2009), possibly because several contextual factors, such as the presence of competing or copycat brands, influence positioning effects. For example, in the presence (vs. absence) of competing brands, consumers' attention to and search for visual cues, including shelf positioning increase (Chandon *et al.*, 2009; Ladeira *et al.*, 2020). In addition, the presence (vs. absence) of a copycat PLB in a shelf display enhanced choice ease and willingness to pay for the brand chosen from the display, especially among highly knowledgeable consumers and when the copycat PLB was positioned to the immediate right of the NB it was imitating (Kelting *et al.*, 2017).

These findings suggest that shelf position plays an important role in consumers' inferences and evaluations. For PLBs—which are generally perceived to be of lower quality and lower price relative to NBs (Nenycz-Thiel and Romaniuk, 2009) and therefore associated with more negative brand evaluations (Hoch and Banerji, 1993)—these insights are particularly relevant in that they suggest that shelf positioning can influence consumers' brand inferences and evaluations. The literature furthermore points to two shelf positioning characteristics that impact consumers' inferences and evaluations: Display orientation and physical proximity.

## 2.2 Display orientation

The literature has identified advantageous shelf positions in horizontal and vertical displays, but the underlying explanation for these effects remains elusive: Drèze and colleagues (1994) found that the vertical effect, involving the relocation/repositioning of products from lower shelves to eye level, exerted a more substantial positive impact on sales than the horizontal effect, which relates to positioning products in the middle of the shelving array. Other studies suggest that consumers' lay beliefs about the popularity of certain shelf positions play a role: in a horizontal display, consumers tend to believe that retailers place the most popular and higher-quality items in the center, while discounted items are positioned at the extremes (Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013). In a vertical display, consumers believe that higher-end products are typically positioned toward the top of a display (Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013). Importantly, these studies (Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013) ruled out attention as the underlying mechanism for the observed effects. Consumer beliefs regarding spatial metaphors (i.e., high positioning is better, more powerful or high-status; Chan and Northey, 2021; Machiels and Orth, 2017; Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013) also emerged in findings regarding consumers' perceptions of products in a display in which the vertical axis was emphasized. Consumers perceived products in such vertical displays as more powerful, which in turn enhanced quality perceptions and purchase intentions (Machiels and Orth, 2017). Similarly, the high (vs. low) spatial positioning of luxury brands in a display enhanced processing fluency because it matched the consumers' expectations and metaphorical beliefs (i.e., high shelf position reflects high status), and subsequently enhanced product preferences (Chan and Northey, 2021).

In addition to findings regarding consumers' position beliefs, several studies found evidence for attention-based effects of product positioning in horizontal and vertical displays. In horizontal displays, consumers' attention was greater for products located in the center as opposed to the left or right extremes (Atalay *et al.*, 2012). In vertical shelf displays, consumers' attention to products increased from bottom to top shelves, although this was not always associated with improved brand evaluations (Chandon *et al.*, 2009; Musicus *et al.*, 2015).

Overall, there is strong evidence that display orientation influences consumers' position-based inference, attention, and evaluation processes, albeit in different ways. More specifically, Deng *et al.* (2016) posit that horizontal (vs. vertical) shelf displays facilitate consumers' information processing because horizontal (vs. vertical) displays better match the human binocular vision field. The resulting processing fluency enhances variety perceptions, choice amount, choice satisfaction and confidence (Deng *et al.*, 2016). Furthermore, vertical (vs. horizontal) displays elicit more consumer attention (Nordfält *et al.*, 2014) and therefore increase the salience of product-related cues (e.g., brand name, price), while decreasing the salience of visual cues (e.g., shelf positioning). This suggests that brand positioning effects may differ in horizontal versus vertical brand displays.

### *2.3 Physical proximity in product spacing*

Another critical visual cue influencing consumer response to shelf positioning is the spacing (i.e., the physical proximity) of products. In a single product category, planned, more distant spacing between identical products in a horizontal display increased consumer perceptions of high prices for products and retailers (Huang *et al.*, 2019). Distant product spacing also increased perceived prestige of products and store, leading to enhanced product evaluations and subsequent store



sales (Sevilla and Townsend, 2016). Notably, the positive effects of more distant spacing are not driven by perceived scarcity or product popularity, which were the primary factors behind the horizontal center-stage effect (Valenzuela *et al.*, 2013). Consistent with the enhanced attention mechanism explanation for the center-stage effect (Atalay *et al.*, 2012; Chandon *et al.*, 2009; Musicus *et al.*, 2015), it appears that enhanced consumer attention plays a critical role in increasing product choice and purchase intentions resulting from the more distant spacing of products on a shelf (Zhang *et al.*, 2021). Overall, research on the effects of product spacing is relatively scarce, but suggests that more distant physical proximity between products is beneficial in terms of product perceptions, choice, and inferences regarding the retailer. It is noteworthy, however, that research on spacing considered the physical proximity between products rather than brands and is limited to horizontal display orientation. This article addresses this gap and examines how physical proximity between PLBs and NBs in both horizontal and vertical displays affects consumers' PLB perceptions and evaluations.

### *2.3 Perceptual grouping theory*

Perceptual grouping theory (Wagemans *et al.*, 2012; Wertheimer, 1938) posits that the human mind employs heuristics to simplify and organize complex visual information. In the context of visual perception, heuristic processing increases the likelihood that people perceive an array of individual elements as holistic grouping rather than isolated elements (Wagemans *et al.*, 2012; Wertheimer, 1938). Perceptual grouping follows several grouping principles, which include proximity, similarity, common fate, symmetry, parallelism, continuity, closure (Wagemans *et al.*, 2012; Wertheimer, 1938). Importantly, perceptual grouping has implications for information processing, judgment and decision-making (Wagemans *et al.*, 2012).

Of the perceptual grouping principles discussed in the visual perception literature, two are particularly relevant to research in marketing: The proximity principle, which suggests that objects that are relatively closer are more likely to be grouped together, and the similarity principle, which suggests that more similar objects are more likely to be grouped together (Wagemans *et al.*, 2012). Whereas the similarity principle underpins research on copycat brands (e.g., Van Horen and Pieters, 2012), the importance of the proximity principle has only been demonstrated more recently: Consumers paid more attention to a distracting product in an online product display when it represented a similar product category and was shown near the focal product (Huang *et al.*, 2021).

In the context of retail shelf displays, proximity and brand display orientation can impact the perceptual grouping of PLBs and NBs. In horizontal brand displays—which allow for easy visual processing (Deng *et al.*, 2016)—the proximity principle suggests that close (vs. distant) physical proximity between brands induces perceptual grouping. When the brands are positioned in close (vs. distant) physical proximity, perceptual grouping likely weakens consumers’ categorization of the PLB as being of lower quality and inferior to the NB (Nenycz-Thiel and Romaniuk, 2009) and thus enhances PLB quality perceptions and evaluations. When PLB and NB are positioned in distant physical proximity, perceptual grouping is inhibited, and consumers’ categorization of the PLB as lower quality and inferior to the NB (Nenycz-Thiel and Romaniuk, 2009) is maintained.

**H<sub>1</sub>:** When brand display orientation is *horizontal*, placing a PLB close to (vs. distant from) a NB *enhances* PLB evaluations.

**H<sub>2</sub>:** Perceived PLB quality mediates the effect of *horizontally* positioning a PLB relative to a NB, such that a PLB close to (vs. distant from) a NB is associated with *higher* PLB quality perceptions and *more* favorable subsequent PLB evaluations.

Conversely, in vertical displays, heuristic perceptual grouping of the PLB and NB is inhibited due to challenges to visual processing the vertical display orientation represents. Vertical displays increase processing difficulty (Chan and Northey, 2021; Nordfält *et al.*, 2014) and require more attention (Roose and Vermeir, 2023), because—unlike horizontal displays—they do not match the human binocular vision field (Deng *et al.*, 2016). Greater processing effort and attention required by vertical displays (Chan and Northey, 2021; Nordfält *et al.*, 2014; Roose and Vermeir, 2023) likely enhance the salience of product-related cues (i.e., brand name) and decrease the salience of heuristic visual cues (i.e., proximity between PLB and NB). This mitigates the use of the proximity heuristic and subsequent perceptual grouping of PLB and NB. In addition, the greater extent cognitive processing of brand information may increase perceived differences between the PLB and the NB, reinforce the notion that PLB and NB belong to different quality tiers (Nenycz-Thiel and Romaniuk, 2009), and lead to lower PLB quality perceptions and evaluations.

We anticipate that in vertical brand displays, information processing difficulty and degree of attention required increases when the brands are positioned in close (vs. distant) physical proximity. The visual processing challenges induced by vertical brand displays (Deng *et al.*, 2016) increase with close (vs. distant) physical proximity, as objects are more difficult to distinguish. The processing of brand information in a vertical display with close physical proximity between brands may thus require high levels of cognitive processing, leading to more attention to brand information, more impact of brand information on subsequent judgments, and

an attenuation of PLB quality perceptions and evaluations. This line of reasoning leads to the following hypotheses:

**H3:** When the brand display orientation is *vertical*, placing a PLB close to (vs. distant from) a NB *lowers* PLB evaluations.

**H4:** Perceived PLB quality mediates the effect of *vertically* positioning a PLB relative to a NB, such that a PLB close to (vs. distant from) a NB is associated with *lower* PLB quality perceptions and *less* favorable subsequent PLB evaluations.

### **3. Method**

Two experiments using real brands in different product categories empirically tested the hypotheses. Study 1 tested the prediction that consumers evaluate more favorably a PLB located close to (vs. distant from) a NB when brand display orientation is horizontal (H<sub>1</sub>) and that this effect is mediated by enhanced PLB quality perceptions (H<sub>2</sub>). Study 2 replicated and extended these findings by demonstrating that when brand display orientation is vertical, consumers evaluate less favorably a PLB placed close to (vs. distant from) a NB (H<sub>3</sub>) due to decreased PLB quality perceptions (H<sub>4</sub>).

#### *3.1 Study 1*

*3.1.1 Participants and design.* Seventy-seven students from a large metropolitan university in the U.S. (68.8% females,  $M_{\text{age}} = 24.47$ ,  $SD = 7.08$ ) participated in this study in exchange for course credit. The study employed a 2 (physical proximity: close vs. distant) between-participant design. Brand display orientation was horizontal. Participants were told that they would evaluate brand information and images taken from a retail context. The product

category presented was tomato ketchup, with Kroger serving as the PLB and Hunt's serving as the NB. In the close physical proximity condition, participants viewed a shelf image in which the PLB was positioned in close proximity to the NB. In the distant physical proximity condition, participants viewed a shelf image in which the PLB was placed at a distance from the NB, with empty space separating the brands. The shelf display images were designed to allow for a stringent test of the hypotheses in that the PLB was located to the left of the NB rather than in the strategically advantageous position to the right of the NB (Hoch, 1996). Appendix A shows the stimuli.

Participants provided ratings of brand evaluations ("How attractive is the [PLB] ketchup? 1 = extremely unattractive, 100 = extremely attractive; adapted from Bodur *et al.*, 2016) and perceived PLB quality (How would you rate the overall quality of the [PLB] ketchup? 1 = low quality, 7 = high quality). To rule out the potential effect of product category familiarity, we asked participants to indicate their familiarity with ketchup brands (1 = not at all familiar, 7 = very familiar). Participants also provided demographic information.

*3.1.2 Results.* A one-way ANOVA with physical proximity (close, distant) as a between-participants factor and PLB evaluation as the dependent variable showed a significant main effect of physical proximity. In support of H<sub>1</sub>, the PLB was evaluated more favorably when it was placed close (vs. distant) from the NB ( $M_{close} = 51.92$ ,  $M_{distant} = 37.41$ ;  $F(1, 75) = 7.49$ ,  $p < .01$ , partial  $\eta^2 = .09$ ). Figure 1 illustrates these results. Product category familiarity did not emerge as a significant covariate ( $p > .1$ ) when included in the ANOVA, and results did not change.

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INSERT FIGURE 1 HERE

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To test the prediction that placing a PLB close to (vs. distant from) a NB leads to higher perceived PLB quality and more positive subsequent PLB evaluations (H<sub>2</sub>), we conducted a mediation analysis (SPSS PROCESS model 4, 10,000 bootstrap samples, 95% CIs; Hayes, 2018). Physical proximity (1 = close, -1 = distant) served as predictor, perceived PLB quality as the mediator, and PLB evaluation as the criterion. The coefficient for the relationship between physical proximity and perceived PLB quality was significant and positive, such that close physical proximity was associated with higher perceived PLB quality ( $\beta = .30, t = 2.12, p < .05$ ). Perceived PLB quality was positively and significantly associated with PLB evaluations. In support of H<sub>2</sub>, the indirect effect of physical proximity through quality perceptions was positive and significant ( $\beta_{\text{indirect}} = 3.38, SE = 1.63, 95\% CI = [.31, 6.71]$ ). Figure 2 shows path coefficients and illustrates results.

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INSERT FIGURE 2 HERE

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*3.1.3 Discussion.* Study 1 supports the hypothesized effect of physical proximity between a PLB and a NB in a horizontal brand display. When the PLB was positioned close to (vs. distant from) the NB, it was evaluated more favorably. A mediation analysis established that positioning of the PLB close to (vs. distant from) the NB resulted in higher PLB quality perceptions, which in turn positively influenced PLB evaluations. These findings are consistent with H<sub>1</sub> and H<sub>2</sub>.

### *3.2 Study 2*

Study 2 empirically examined the joint effects of physical proximity (close, distant) and brand display orientation (horizontal, vertical) on perceived PLB quality and subsequent PLB evaluations (H<sub>1</sub> – H<sub>4</sub>).

*3.2.1 Participants and design.* Three hundred and seven participants (59.5% males,  $M_{\text{age}} = 38.58$ ,  $SD = 12.19$ ) were recruited from an online consumer platform (Amazon Mechanical Turk) for monetary compensation. Participants were randomly assigned to one condition in a 2 (physical proximity: close vs. distant)  $\times$  2 (brand display orientation: horizontal vs. vertical) between-participant design. Study 2 focused on a different product category (i.e., orange juice). Kroger served as the PLB and Minute Maid as the NB. The experimental procedure was identical to Study 1, with a modification only to retail shelf displays shown to participants.

In the horizontal brand display orientation condition, participants saw an image of the PLB placed next to (or distant from) the NB across two shelves. In the vertical brand display orientation condition, participants saw an image of the PLB placed on the shelf below the NB. The vertical shelves were either closely spaced (close physical proximity condition) or spaced further apart (distant physical proximity condition). To allow for a conservative test of the hypotheses, the PLB occupied shelf positions regarded as less desirable (Hoch, 1996; Valenzuela et al., 2013), namely either to the left of the NB (horizontal display orientation conditions) or below the NB (vertical display conditions). Appendix A shows the shelf display images.

Participants provided PLB evaluations (1 = extremely unattractive, 100 = extremely attractive; adapted from Bodur et al., 2016) and perceived PLB quality ratings (1 = low quality, 7 = high quality), as well as demographic information.

*3.2.1 Results.* A two-way ANOVA with physical proximity and brand display orientation serving as the independent variables, and PLB evaluations serving as the dependent variable, revealed a marginally significant main effect of brand display orientation ( $F(1, 303) = 3.10$ ,  $p < .1$ , partial  $\eta^2 = .01$ ) and a significant interaction of physical proximity and brand display orientation ( $F(1, 303) = 28.73$ ,  $p < .001$ , partial  $\eta^2 = .09$ ). In the horizontal brand display

orientation condition, planned contrasts show that the PLB was evaluated more favorably when it was placed close to (vs. distant from) the NB ( $M_{close} = 73.67$ ,  $M_{distant} = 63.77$ ;  $F(1, 303) = 8.62$ ,  $p < .01$ , partial  $\eta^2 = .03$ ). This replicates study 1 findings and supports H<sub>1</sub>. In the vertical brand display orientation condition, PLB evaluations were significantly less positive when the PLB was located close to (vs. distant from) the NB ( $M_{close} = 65.12$ ,  $M_{distant} = 80.67$ ;  $F(1, 303) = 21.64$ ,  $p < .001$ , partial  $\eta^2 = .07$ ). These results provide support for H<sub>3</sub>. Figure 3 illustrates these results.

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INSERT FIGURE 3 HERE

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A PROCESS model (Model 8, 10,000 bootstrap samples, 95% CIs; Hayes, 2018) tested the moderated mediation of the interactive effect of physical proximity and brand display orientation through PLB quality perceptions. Physical proximity (1 = close, -1 = distant) served as predictor, brand display orientation (-1 = vertical, 1 = horizontal) as the moderator, perceived PLB quality (continuous variable) as the mediator, and PLB evaluation (continuous variable) as the criterion. The moderated mediation analysis showed a significant direct effect of brand display orientation ( $\beta = -.22$ ,  $SE = .08$ ,  $p < .01$ , 95%  $CI [-.37, -.06]$ ) and a significant interaction of physical proximity and brand display orientation ( $\beta = -.37$ ,  $SE = .08$ ,  $p = .00$ , 95%  $CI [.22, .53]$ ) on perceived PLB quality. However, the direct effect of physical proximity on perceived quality was not significant ( $\beta = -.12$ ,  $SE = .08$ ,  $p > .1$ , 95%  $CI [-.27, .03]$ ). The lack of a significant direct effect of physical proximity is not surprising in that physical proximity exerts opposing effects depending on brand display orientation, and the direct effect reflects its impact across both the vertical and the horizontal brand display orientation conditions.

Consistent with predictions (H<sub>2</sub>, H<sub>4</sub>), perceived PLB quality mediated the interactive effect of physical proximity and brand display orientation on PLB evaluation (index of total



indirect effect = 7.42,  $SE = 1.68$ , 95%  $CI [4.30, 10.83]$ ). The conditional indirect effect of physical proximity on PLB evaluation through the mediator was positive for the horizontal brand display orientation (conditional indirect effect = 2.50,  $SE = 1.19$ , 90%  $CI [ .25, 4.87]$ ). This suggests that placing a PLB close to (vs. distant from) a NB horizontally improves perceived PLB quality and subsequently enhances PLB evaluations. This supports H<sub>2</sub>. Consistent with H<sub>4</sub>, the conditional indirect effect of physical proximity on PLB evaluation through the mediator was negative for vertical brand display orientation (conditional indirect effect = -4.92,  $SE = 1.11$ , 95%  $CI [ -7.22, -2.86]$ ). The positive impact of physical proximity between PLB and NB observed in a horizontal brand display is reversed when brand display orientation is vertical: placing the PLB at a distance from (vs. close to) the NB vertically improves perceived PLB quality and subsequently improves PLB evaluations. Figure 4 illustrates these results.

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INSERT FIGURE 4 HERE

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*3.2.3 Discussion.* Extending the results of study 1, study 2 demonstrates that the effect of physical proximity between a PLB and a NB on a retail shelf is moderated by brand display orientation. It provides additional support for the mediating role of PLB quality perceptions. More specifically, study 2 shows that in a horizontal brand display orientation, placing a PLB close to (vs. distant from) a NB resulted in enhanced PLB quality perceptions and more favorable brand evaluations. In a vertical brand display orientation, however, placing a PLB close to (vs. distant from) a NB reduced PLB quality perceptions and harmed brand evaluations. These results support H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, and H<sub>4</sub>.

## 4. Conclusion

Two experiments supported the predictions that a PLB benefits from positioning close to (vs. distant from) a NB due to enhanced PLB quality perceptions, but only in horizontal brand displays. In vertical brand displays, close (vs. distant) positioning of a PLB relative to a NB decreased PLB quality perceptions and subsequent PLB evaluations.

### 4.1 Theoretical implications

This article offers several theoretical contributions. First, it extends the retailing literature by empirically testing the role of physical proximity to a NB and brand display orientation as two novel antecedents to consumers' PLB evaluations. Although literature has pointed toward the importance of physical proximity to NBs (Sayman *et al.*, 2002; Hoch, 1996), the effect of physical proximity between NBs and PLBs has not been empirically examined. Importantly, this research shows that the purported positive effect of physical proximity between PLB and NB (Sayman *et al.*, 2002; Hoch, 1996) is contingent on brand display orientation and emerges only when the PLB and NB are displayed horizontally (rather than vertically) on retail shelves.

Second, whereas research has examined the impact of shelf positioning on consumer attention to, attitudes toward, or choice of products in a visual display (e.g., Drèze *et al.*, 1994; Valenzuela and Raghurir, 2009; Valenzuela *et al.*, 2013), this is—to our knowledge—one of the first investigations of the effect of shelf positioning of a brand (in this case, a PLB) relative to another (NB) on consumers' quality inferences and brand evaluations. This research shows that several relative shelf positioning characteristics (i.e., physical proximity and brand display orientation) interact to influence brands within a product category, such that consumers evaluate a target brand placed horizontally close to a reference as more similar in quality than brands

placed further apart or vertically close. This contributes to a more nuanced understanding of how visual characteristics of brand displays influence consumers' brand perceptions and preferences, particularly in brick-and-mortar stores.

Third, this research provides empirical support for the applicability of perceptual grouping theory (Wertheimer, 1938) and Gestalt principles, such as the principle of proximity, to retail displays. It draws on the proximity principle and extends them to consumer perceptions and evaluations in a retail shelf display context. Two studies support the joint effect of physical proximity and brand display orientation, such that horizontal proximity (vs. distance) benefits a PLB, yet vertical proximity does not. This research adds to previous findings on the impact of physical proximity of a distracting product to the focal product on consumer attention in an online context (Huang *et al.*, 2021) by considering a retail shelf display context and effects on consumers' quality perceptions and brand evaluations.

#### *4.2 Managerial implications*

This research has several implications for retail and brand managers. First, it provides evidence that shelf positioning of PLBs matters in shaping consumers' PLB quality perceptions and evaluations. This suggests that retailers can use relative shelf positioning of PLBs to enhance quality perceptions and brand evaluations. This research suggests that it is beneficial to position PLBs horizontally close to NBs in terms of enhancing perceived PLB quality and evaluations, potentially leading to increased sales. Conversely, when PLBs are positioned below NBs on parallel shelves, avoidance of negative quality inferences and evaluations may be worth the additional space allocated to distancing the shelves. Overall, the current findings—in conjunction

with the need to maximize shelf space—favor horizontal, close shelf positioning of PLBs relative to NBs, if support of the PLB is of primary concern.

Second, brand managers can utilize the beneficial effects of horizontal and vertical brand display orientation and incorporate them in developing promotional strategies in line with national brands, such as promotion pairing, bundle promotions, or bundle communication. For instance, in horizontal brand displays, private label brand managers may consider pairing price discounts with national brands or create bundle promotions with national brands to reinforce positive associations and perceptions of comparable quality between the two brands. In vertical brand displays, private label managers can consider offering exclusive promotions and communications that emphasize the distinctiveness of PLBs, boosting the perceptions of uniqueness and premium quality of PLBs.

Third, in extending these findings to online shopping contexts, brand managers can explore innovative ways to display PLBs and NBs in virtual retail environments (Chan and Northey, 2021; Huang *et al.*, 2019). Based on the findings that physical proximity and brand display orientation can influence how consumers perceive and evaluate PLBs, brand managers can design product displays and page layouts that resemble horizontal and vertical brand displays on retail websites, social media, or mobile apps. Furthermore, in these contexts, brand managers have more flexibility in leveraging personalized digital promotional content to adjust the relative display location for brands and can monitor effects in terms of consumer engagement and sales in real time. Retailers can utilize this approach in omni-channel strategies.

#### *4.3 Limitations and future research directions*

We acknowledge several limitations of this research. First, although the use of real brands (i.e., Kroger, Hunt's, Minute Maid) in this research aimed at increasing the external validity of this research, hypothesis tests occurred in the context of only two consumer packaged goods categories (i.e., ketchup and orange juice). To increase the generalizability of the findings, the use of additional product categories (e.g., apparel, fashion accessories, personal care, home and kitchen accessories, pet supplies) could be beneficial. Similarly, the experimental stimuli in this research consisted of images that depicted retail shelves most typically found in brick-and-mortar stores. The effect of physical proximity and brand display orientation could nonetheless be examined in an online or app context to extend the current findings.

Second, the experimental manipulation of physical proximity and brand display orientation in this research did not include other variables that may affect consumers' brand evaluations at the point of purchase, such as assortment size, eye-level, bottom-top, or left-right positioning of brands in relation to competitors. Based on the initial findings regarding the joint effects of physical proximity and brand display orientation, these unexplored factors present promising avenues for future research on shelf location effects on PLB quality perceptions and evaluations.

Third, the current research investigated relative shelf positioning effects in the presence of one PLB and one NB. In practice, retailers often use multi-tier private label strategies that include a premium brand (i.e., higher priced, high quality PLBs competing directly against NBs; e.g., Walmart's Sam's Choice) and a value brand (i.e., lower priced; e.g. Walmart's Great Value)

in certain product categories (De Wulf *et al.*, 2005). Whether the presence of a NB influences multi-tier private label brands differentially is an unresolved question.

Fourth, this article focused on consumers' quality perceptions and evaluations of a PLB based on its shelf positioning relative to a NB. It is conceivable that the NB might be affected (albeit in a different way) by the presence and relative shelf positioning of a competing PLB, or multiple PLBs and competing NBs. Further research is nonetheless necessary to investigate potential reciprocal effects. Finally, a potential extension to the current research pertains to the type of brands investigated. It is possible that the observed effects may generalize to the relative shelf position of two brands that differ in perceived quality. In other words, the findings of this research may hold for lower-quality NBs that are positioned close to (vs. distant from) and horizontally (vs. vertically) relative to higher quality NBs. Empirical tests of this generalization would be insightful for managerial practice, in particular.

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## FIGURES

Figure 1: Effect of Physical Proximity between PLB and NB on PLB Evaluation (Study 1)

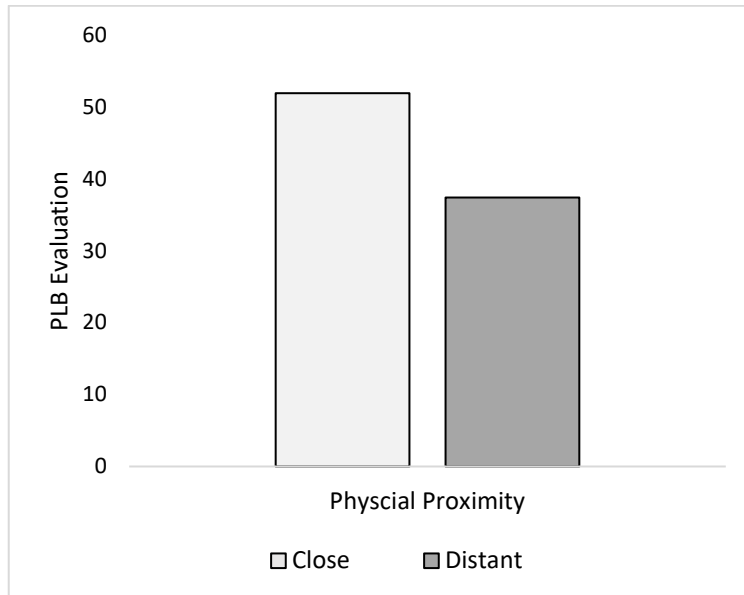


Figure 2: Perceived PLB Quality Mediates the Physical Proximity Effect (Study 1)

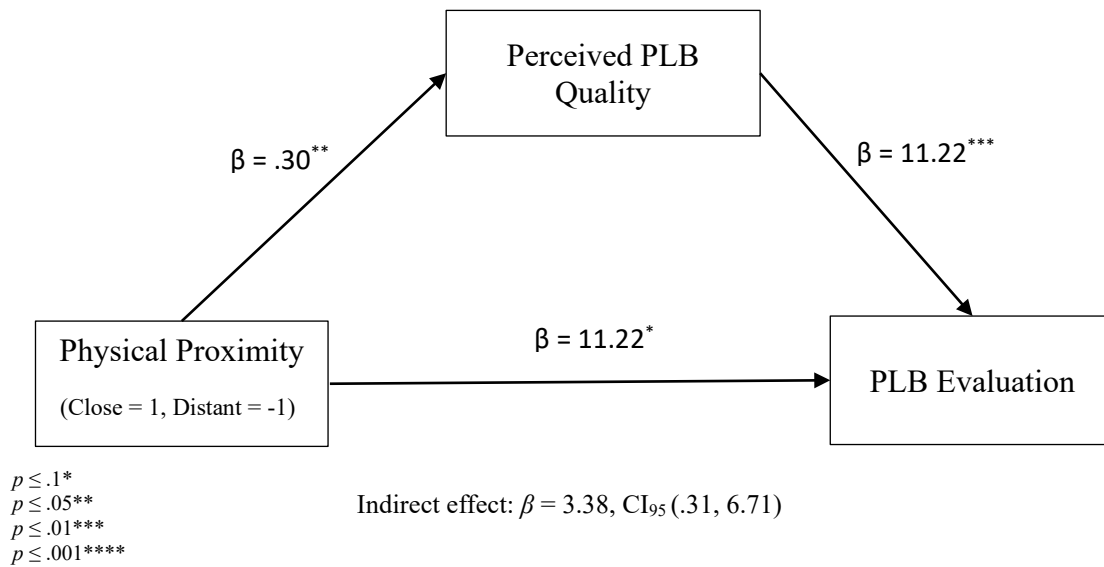


Figure 3: Physical Proximity × Brand Display Orientation Interaction (Study 2)

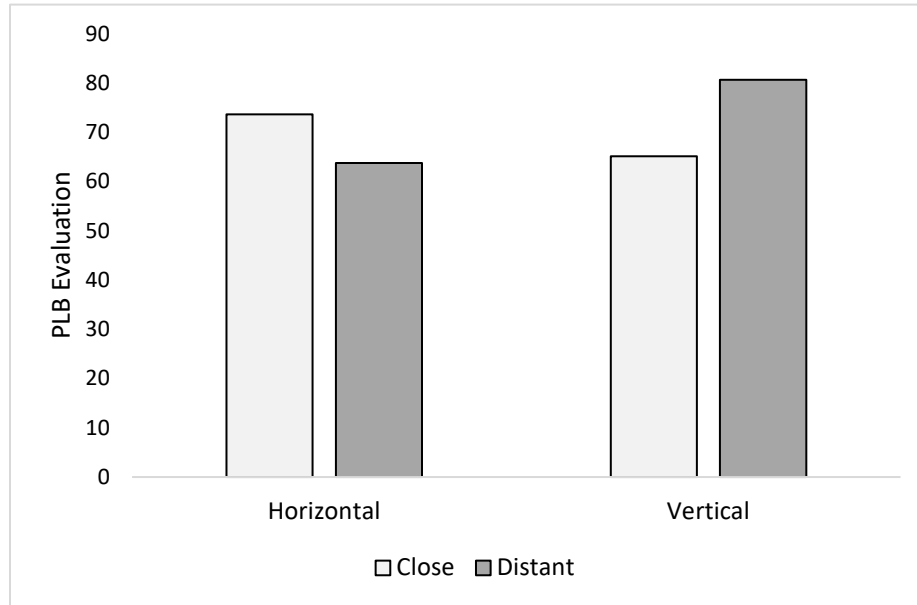
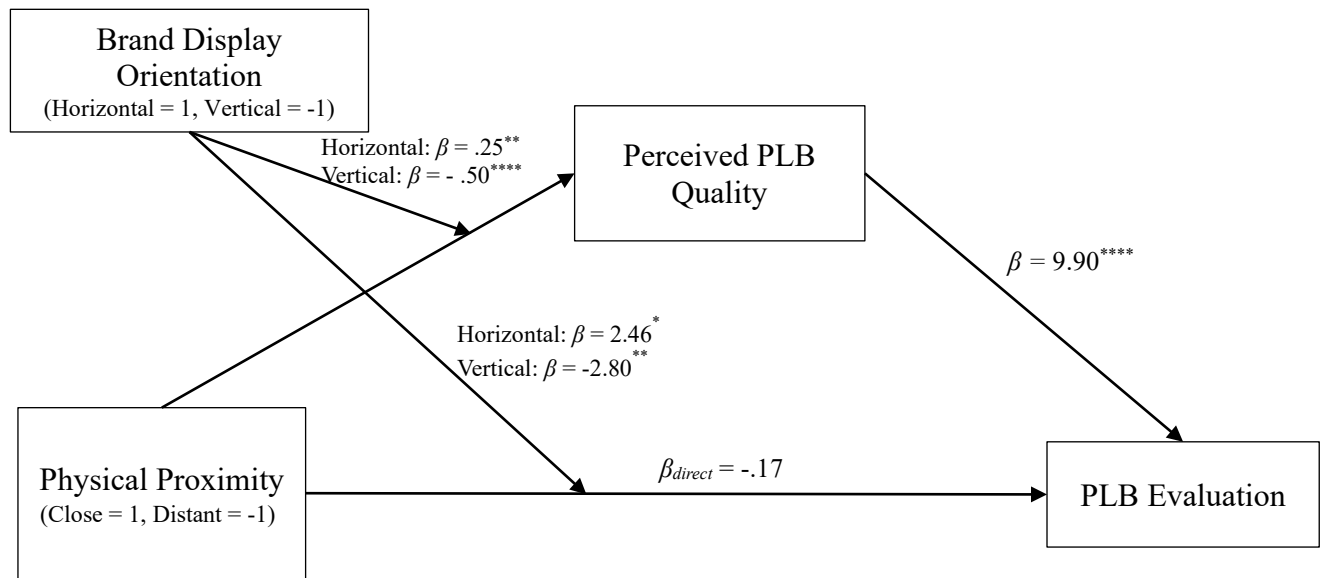


Figure 4: Moderated Mediation Through Perceived PLB Quality (Study 2)



$p \leq .1^*$   
 $p \leq .05^{**}$   
 $p \leq .01^{***}$   
 $p \leq .001^{****}$

Brand Display Orientation → Perceived PLB Quality → PLB Evaluation

Horizontal  $\beta = 2.50$ , CI<sub>95</sub> [.25, 4.88]

Vertical  $\beta = -4.92$ , CI<sub>95</sub> [-7.22, -2.86]

Moderated Mediation Index  $\beta = 7.42$ , CI<sub>95</sub> [4.30, 10.83]

# Appendix A

## Experiment 1 Stimuli



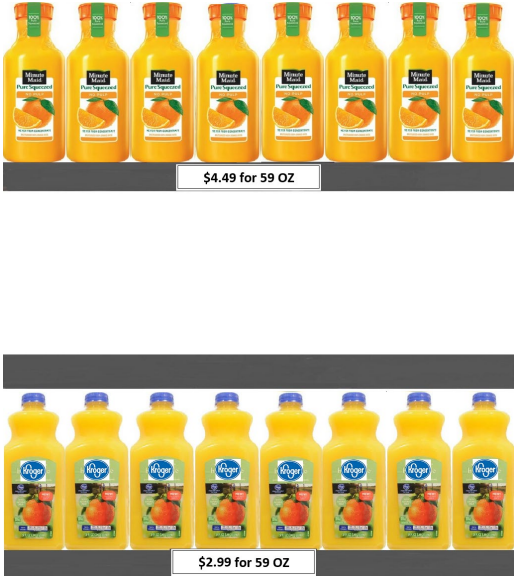

### Distant Physical Proximity



### Close Physical Proximity



Experiment 2 Stimuli

	Distant Physical Proximity	Close Physical Proximity
Horizontal Brand Display Orientation	 <p>Two shelves of Kroger Pure Squeezed orange juice. The top shelf has three large bottles on the left and three smaller bottles on the right. The bottom shelf has three large bottles on the left and three smaller bottles on the right. Price tags are \$2.99 for 59 OZ and \$4.49 for 59 OZ.</p>	 <p>Two shelves of Kroger Pure Squeezed orange juice. The top shelf has three large bottles on the left and four smaller bottles on the right. The bottom shelf has four large bottles on the left and four smaller bottles on the right. Price tags are \$2.99 for 59 OZ and \$4.49 for 59 OZ.</p>
Vertical Brand Display Orientation	 <p>Two shelves of Kroger Pure Squeezed orange juice. The top shelf has eight smaller bottles. The bottom shelf has eight large bottles. Price tags are \$4.49 for 59 OZ and \$2.99 for 59 OZ.</p>	 <p>Two shelves of Kroger Pure Squeezed orange juice. The top shelf has eight smaller bottles. The bottom shelf has eight large bottles. Price tags are \$4.49 for 59 OZ and \$2.99 for 59 OZ.</p>