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Effects of concealing vs. displaying prices on consumer perceptions of hospitality products

Abstract

This study was designed to empirically test the psychological consequences of concealing (vs. displaying) the prices of hospitality products on perceptions of expensiveness, quality, value, and purchase intention. To achieve this objective, seven hypotheses were proposed and a series of four experimental studies were conducted. It was found that a cafe that did not (vs. did) display price information was evaluated relatively highly in terms of perceived expensiveness, but relatively low in perceived quality, value, and purchase intention. Specifically, we found that the heightened perception of expensiveness of a price-concealing cafe, along with relatively weak change in quality perception, negatively influenced both perceptions of value and purchase intention in Studies 1 and 2. Further, we found that these relationships are moderated by the consumer personal trait of price consciousness (Study 3) and mediated by price fairness (Study 4).

Keywords: price, expensiveness, value, quality, purchase intention, price consciousness, price fairness

1. Introduction

Although some consumers may be sensitive to cues other than price, there is no doubt that price is one of the major drivers of purchase decisions because price information influences the perceived cost, and in turn perceived value, of a product or service (Abrate et al., 2019; Bornemann and Homburg, 2011). Due to the significance of price information in consumer behavior, much research in the hospitality field has been devoted to examining how price information influences consumers' perceived quality, perceived value, and subsequent purchase intention (Choi and Mattila, 2014; Wang and Lynn, 2017).

Prior findings in the hospitality and marketing literature suggest that a high price tag may act as an impediment to purchase likelihood (Dodds et al., 1991; Noone and McGuire, 2014; Tanford et al., 2019). Therefore, both researchers and practitioners have long been interested in how to minimize the negative impact of price on consumers' purchase intentions. Along this line, the marketing practice of simply concealing price information has recently become popularized. For instance, Amazon.com hides the prices of products in selected categories, such as high-end HDTVs; customers are unable to see the price until they add a product to their virtual shopping cart. This practice is also not uncommon in the luxury industry; many luxury brands do not display their products' prices up front.

At a glance, this price-concealing strategy makes intuitive sense because it could inhibit the negative consequence of higher prices (i.e., consumers tune themselves out in response to a high price and abandon their decision-making process). It is worth noting, however, that this practice of concealing prices is not limited to expensive product categories. For instance, the Cheesecake Factory, one of the most popular family restaurant franchises in the US, does not display the prices of its cheesecakes and desserts in its menu. Some booking sites such as Hotels.com often keep the room prices secret (promoting a "secret price") until

travelers take further steps to unlock the prices. Interestingly, two of the authors of the present research observed the same practice in a local café whose menu items are far from expensive. The authors were puzzled at first by the menu with no price information but soon found themselves evaluating and choosing items in a very different manner. This experience was intriguing and led us to develop the following research questions. Without price information, would hospitality consumers expect the price of an item to be higher or lower in terms of perceived expensiveness? Would the absence of price information influence quality perceptions of the hospitality item? Would purchase intention change, and, if so, how and why?

We aimed to investigate the effects of concealing (vs. displaying) prices on consumer perceptions of hospitality products' expensiveness, quality, value, and purchase intention. Drawing on a naïve theory (e.g., Anderson and Lindsay, 1998; Deval et al., 2013; Yorkston et al., 2010; Raghunathan et al., 2006), we predict that hospitality consumers would perceive items to be more expensive when price cues are not (vs. are) displayed. However, increased perceptions of expensiveness may not be fully carried over to quality perceptions. In other words, price-quality correlations may or may not be present when price cues are missing. As a result, without (vs. with) price cues, both hospitality consumers' value perceptions and purchase intention would be lower. Finally, we predict that the proposed effects of concealing prices would be moderated by hospitality consumers' price consciousness (Choi et al., 2018; Lichtenstein et al., 1988) and mediated by perceived price fairness (Xia et al., 2004). We conducted a series of experiments to examine our hypotheses and found evidences largely supporting them.

The current paper is organized as follows. We first review the literature on pricing in marketing and hospitality. Then we develop and present our hypotheses regarding the role of price display in consumers' evaluations, followed by four experiments. Finally, the theoretical

and practical implications of the findings are discussed. To our knowledge, this is the first empirical research to investigate how concealing prices influences hospitality consumers' perceptions of value and decision-making in inexpensive product categories.

2. Theoretical framework and background

2.1. Pricing studies in the hospitality and tourism field

Price plays a critical role in purchase decisions by influencing consumers' perceptions of value and price fairness (Litchtenstein et al. 1993; Campbell, 1999; Xia et al. 2004; Bolton and Alba, 2006). Consumers not only use price as a benchmark against which they assess an offering's value (Litchtenstein et al. 1993; Park et al., 2010), but also judge price fairness by its relationship to costs (Bolton and Alba, 2006). Although the costs of the tangible attributes of retail goods can be evaluated easily, hospitality and tourism products include diverse intangible features for which costs cannot be easily estimated (e.g., atmosphere, locations, views, or emotional encounters between customers and service providers). This peculiar characteristic of hospitality and tourism products poses a unique challenge, both for managers who set prices and consumers who judge price fairness. Consequently, the extant literature on pricing in the hospitality and tourism field can be classified into two main groups according to the primary focus.

One line of research has been focused on different pricing strategies and their impacts on revenue management (Collins and Parsa, 2006; Rigall-I-Torrent and Fluvià, 2011; Abrate et al., 2019). For instance, Rigall-I-Torrent and Fluvià (2011) showed that a hedonic pricing strategy, where both private attributes (e.g., swimming pool) and public attributes (e.g., location, environment) are incorporated into hotel prices, may help managers improve revenue by differentiating their brands and creating value for consumers. Abrate et al. (2019) showed that a dynamic pricing strategy, when implemented with intertemporal price

discrimination and inventory control, can positively contribute to a firm's revenue while it may negatively affect consumers' price fairness perceptions. Melis and Piga (2017) found that dynamic pricing is more prevalent in higher quality hotels while uniform pricing is more pervasive in lower-tier hotels (3 stars or less), suggesting that managers need to consider diverse factors when choosing a proper pricing strategy.

Another line of research, by contrast, has been focused on how consumers perceived price fairness and purchase intentions are influenced by various factors (e.g., Gueguen et al., 2009; Wang and Lynn, 2017). For instance, researchers have investigated how pricing tactics using different digits, such as 9-ending prices, odd-ending prices, or even-ending prices, influence consumers' purchase intentions in the hospitality and tourism setting (e.g., Stiving and Winer, 1997; Gueguen et al., 2009; Jeong and Crompton, 2017, 2018; Lin and Wang, 2017). Gueguen et al. (2009) found that pizza sales were significantly higher when 9-ending prices (e.g., € 7.99) rather than 0-ending prices (e.g., € 8.00) were used. In contrast, Wadhwa and Zhang (2015) found that consumers perceive the quality of vacation-related products to be higher if the prices are rounded (i.e., 0-ending prices) because the rounded prices encourage reliance on feelings. In a hotel room pricing context, Jeong and Crompton (2017, 2018) found that a 9-ending discount was more effective than an even-ending price discount.

Previous research also examined how different framings of the price information influence consumers' perceived price fairness and willingness to pay (Wang and Lynn, 2017; Tanford et al. 2019). For instance, Wang and Lynn (2017) found that a subtle difference in the surcharge framing (i.e., service-included prices vs. automatic percentage service gratuity) influences customers' perceptions of price fairness and acceptance. In a similar vein, Tanford et al. (2019) found that consumers' willingness to pay for a hotel room was higher when they were given a high (vs. low) anchor or when exposed to an average price vs a range of prices.

These findings together suggest that consumers' perceived price fairness and purchase intentions are susceptible to the ways in which prices are presented (e.g., ending digits, framings).

Various boundary conditions have been identified as well. For instance, Choi and Mattila (2014) examined the moderating influence of consumers' sense of power in promotional framing methods (percentage-off vs dollars-off) for hotel room. Their results showed that for consumers with a low sense of power, a dollars-off promotional message was more influential than a percentage-off offering in creating a perception of savings and enhanced buying intention. Choi et al. (2018) found that female customers are more susceptible to an internal reference price, while male customers are more influenced by external reference prices, suggesting that customers' gender systematically influences which reference prices to use and methods of price evaluation. Researchers also found that product types and the degree of risk associated with the purchase of the product moderate the effect of different digits on consumers' purchase likelihood (Lin and Wang, 2017; Monroe, 1973).

Despite the existence of numerous studies on pricing in the hospitality and tourism literature, very few have examined the impact of concealing (vs. displaying) prices on hospitality consumers' evaluative judgments (see Parguel et al., 2016 as an exception).

2.2. Consumer inferences about missing price information

Previous studies have showed that, when price information is unavailable (i.e., price concealing), consumers' uncertainty about purchase decisions increases (Danziger et al., 2011; Monroe and Lee, 1999). However, limited previous research has specified how hospitality consumers perceive the expensiveness, quality, and value of a product when price information is missing.

A study by Choi and Mattila (2018) tested whether pricing characteristics for hotel

accommodation affected customers' perceptions of sensitivity to two types of reference prices, including an internal reference price (concealing) and an external reference price (displaying). Their study found that information accessibility and perceived diagnosticity determined customers' assessment of the presented prices. In a similar vein, consumers rely on their memories of previous purchases (i.e., internal reference price) or the prices of competing brands (i.e., external reference price) to assess the missing information (Parguel et al., 2016).

However, this process may not occur when consumers' internal reference price is not well established or external reference prices are not accessible in certain buying situations. In the absence of these cues, how would hospitality consumers perceive expensiveness, quality, and value? Prior findings on consumer inference may provide some clues. According to the psychological literature, people often make inferences about a missing attribute using information about another attribute (e.g., Fiske et al., 2002; Gunasti and Ross, 2009; Moon and Tikoo, 1997; Ross and Creyer, 1992). An important condition for this inference-making to occur is a pre-established strong association between the missing attribute and the other attribute on which the inference-making is based (Gunasti and Ross, 2009; Kim and Kim, 2014; Moon and Tikoo, 1997). For instance, if an individual has a strong association between price and quality, that individual will use their own quality perception to make inferences about the missing price information. However, if there is little information to assess the quality, the individual would be unable to use their perception of quality for inference-making. Instead, the person would employ another cue that the person (naively) believes to be strongly related to the missing attribute. This naïve belief about the relationships among objects or attributes is developed in the same manner as classical conditioning (Dick et al., 1990; Sanbonmatsu et al., 1992). Thus, for example, if someone has been repeatedly exposed to instances where luxury brands often conceal their prices, the person would develop a naïve theory about the relationship between concealing prices and actual prices, and subsequently

infer higher price levels in the absence of price information. Therefore, when price information is missing, hospitality consumers' perceived expensiveness, quality, and value of a product would heavily depend on their (naïve) belief about the link between price and another cue. Based on these literature reviews, in the next section we develop our hypotheses.

3. Main predictions

Research on pricing has largely focused on how consumers encode, process, and retrieve price information, and how marketers can present pricing in a more favorable way (e.g., Choi and Mattila, 2018; Monroe and Lee, 1999; Zeithaml, 1988). There are few studies on displaying vs. concealing prices. Against this backdrop, a pioneering study by Parguel et al. (2016) recently concluded that price display enhances perceived brand uniqueness and conspicuousness for luxury brands. While Parguel and colleagues' study is informative, its theoretical explanations are discussed in the context of luxury products and thus lack generalizability to general hospitality products.

While price display or displaying price information has been found to be an important influencer of consumers' judgments of products within purchase decisions, it remains to be examined whether missing price information could be another important influencer. In addition, understanding consumers' perceptions is critical. Consumer perceptions vary. Past studies have suggested that consumers evaluate a product based on different perceptions, such as perceived expensiveness, perceived quality, perceived value, and purchase intention (e.g., Dodds et al., 1991; Konuk, 2019; Oh, 2003; Szybillo and Jacoby, 1974; Zeithmal, 1988). Therefore, we aim to investigate the effects of concealing (vs. displaying) prices on consumers' perceptions of products' expensiveness, quality, and value, and purchase intention. Our study provides insights into the power of concealing (vs. displaying) prices from the perspective of purchasing products in general, not just luxury

products.

We used a naïve theory as a theoretical foundation to explore the effects of concealing (vs. displaying) prices on consumers' evaluative judgments of general products. Naïve theory concerns knowledge structures with a causal component that people use to explain what social phenomena mean to them, and how they are linked to each other (Anderson and Lindsay, 1998; Deval et al., 2013; Raghunathan et al., 2006). We postulate that consumers develop a naïve theory regarding how concealing (vs. displaying) prices can be related to a product's expensiveness, quality, and value, as well as their purchase intention.

3.1. Perceived expensiveness

Regarding the impact of displaying (vs. concealing) price on perceived product expensiveness, we propose that displaying prices would negatively influence perceived expensiveness. This proposition is based on a naïve theory according to which individuals observe and interpret changes in society to update and revise their naïve beliefs about the world (with regard to people, objects, relationships, and phenomena). As concealing prices has become a common social practice in the luxury industry, individuals may have a naïve belief in a strong association between missing price information and expensiveness. Based on this logic, our overall prediction is that:

> ***H1:*** *Consumer perceptions of expensiveness will be lower in the price-displayed (vs. price-concealed) condition.*

3.2. Perceived quality

Regarding perceived quality, we propose two competing hypotheses. On the one hand, we propose that displaying prices would negatively influence perceived quality. This proposition is again based on a naïve theory people have about the relationship between price

and quality. Although there is no objective information suggesting a positive correlation between price and quality (e.g., Gerstner, 1985; Goldstein et al., 2008), Peterson (1970) showed that people use price information to infer the quality of a product, especially when there is a lack of information for assessing quality and when there is a strong association between price and quality. Therefore, when price information is missing, heightened perceived expensiveness (H1) could boost quality perception, too.

On the other hand, displaying prices may not affect perceived quality. A recent meta-analysis of the price-quality relationship from 1986 to 2006 (Volckner and Hofman, 2007) indicates that the price effect on perceived quality decreased to null, suggesting that people may be using price information less and less to infer the quality of a product. Therefore, there would be no difference in perceived quality as a result of price information display. These two competing hypotheses are formally stated as follows.

H2a: *Consumer perceptions of quality will be lower in the price-displayed (vs. price-concealed) condition.*

H2b: *Consumer perceptions of quality will not differ between the price-displayed and price-concealed condition.*

3.3. Perceived value and purchase intention

Perceived value is the result of consumers' evaluation of price in terms of "the ratio of quality received and price paid in a purchase transaction" (Lichtenstein et al., 1993, p. 235). Consumers use perceived price and quality to evaluate value (Lichtenstein et al., 1990; Zeithaml, 1988; Zhang et al., 2019). For example, based on a means-end model, Zeithaml (1988) suggested that perceived value is positively influenced by perceived quality (e.g., high perceived quality increases perceived value), but negatively affected by perceived sacrifice or expensiveness (e.g., high perceived sacrifice reduces perceived value). Based on this

theoretical framework, we predict that concealing (vs. displaying) prices will reduce perceived value mainly due to the higher perceived expensiveness. The perceived value also has a positive influence on consumers' purchase intention (e.g., Khandeparkar et al., 2020; Lichtenstein et al., 1993; McDougall and Levesque, 2000; Zhang et al., 2018). Here are our predictions:

H3: *Consumer perceptions of value will be higher in the price-displayed (vs. price-concealed) condition.*

H4: *Consumer purchase intention will be higher in the price-displayed (vs. price-concealed) condition.*

3.4. Mediating role of perceived expensiveness and value

If we combined all the hypotheses above, we could generate a serial mediation model for them:

H5: *The impact of displaying (vs. concealing) prices on purchase intention will be mediated by perceived expensiveness and value (i.e., price display → perceived expensiveness → perceived value → purchase intention).*

3.5. Mediating role of perceived fairness

Price fairness is also relevant to our argument. Prior research has demonstrated that consumers' perceived price fairness positively influences their purchase intention, willingness to buy, and likelihood of buying (Campbell, 1999; Homburg et al., 2019; Xia et al., 2004). Researchers have argued that consumers' enhanced value perception contributes to perceived price fairness (Bolton and Alba, 2006; Konuk, 2019; Xia et al., 2004). Thus, higher value perception would increase the perceived price's fairness and in turn increase the purchase intention. In other words, the displaying of price itself could increase the transparency or

perceived fairness in price (Miao and Mattila, 2007), resulting in behavioral intention. Conditional on our H3 being supported (i.e., displaying (vs. concealing) prices would increase perceptions of value), we propose that the effect of displaying prices on purchase intention would be mediated by perceived price fairness.

H6: *The impact of displaying (vs. concealing) prices on purchase intention will be mediated by perceived fairness (i.e., price display → perceived fairness → purchase intention).*

3.6. Moderating role of price consciousness

Price consciousness can be defined as "a consumer's reluctance to pay for the distinguishing features of a product" (Sinha and Batra, 1999, p. 238). Previous research has suggested that consumers' price consciousness is a potential influencer of the effects of price display on consumer perceptions of products. Consumers with higher price consciousness tend to process price information elaborately (Choi and Mattila, 2018; Lichtenstein et al., 1988; Monroe and Lee, 1999; Noone and Robson, 2016). Therefore, we expect that the main effect of displaying (vs. concealing) prices will be stronger for consumers with higher price consciousness.

H7: *The impact of displaying (vs. concealing) prices on purchase intention will be moderated by price consciousness. Specifically, the main effect will be stronger for those who are high (vs. low) in price consciousness.*

3.7. Study plan

Study 1 and Study 2 will test the hypotheses for four main effects (H1–H4) as well as a serial mediation analysis (H5). Study 3 will replicate Studies 1 and 2 and test the

moderating role of price consciousness (H7). Finally, Study 4 will test H6 with a different experimental design. All participants were recruited from a US online panel, their demographic information is provided in Table 1.

***** Insert Table 1 about here *****

4. Study 1

The purpose of Study 1 was to test H1 through H4. We used a coffee shop as our key target product because it is the product category 1) that is highly relevant to hospitality management, and 2) whose items (i.e., coffee menus) are generally regarded as inexpensive. In order to inhibit unintended effects of specific aspects of the stimulus, we minimized the amount of information; only the names of each menu item (along with a dollar sign ($) in the price-display condition) were presented.

4.1. Method: Participants, experimental design, and procedure

One hundred and sixty-six US adults were recruited from an online panel (Amazon MTurk) for a nominal compensation (M_{age} = 36.60, SD = 12.00, 47.6% female). Participants were randomly assigned to one of two between-subjects experimental conditions (Price display: Condition 1 [Store A – displayed price and Store B – concealed price] vs. Condition 2 [Store A – concealed price and Store B – displayed price]).

First, participants were asked to imagine that they were walking down a street and encountered two coffee shops. They were shown two mock images of menus – from Store A and Store B, respectively, as shown in Figure 1. The menu images varied in terms of the items available and whether prices were displayed. In the displayed-price condition, the menu included a dollar sign "$" next to each item, whereas in the concealed-price condition, the menu did not include any pricing information. In Condition 1, participants were informed that "the menu of Store A displays its prices, whereas the menu of Store B does not." In condition

2, participants were told the opposite – "the menu of Store B displays its prices, whereas the menu of Store A does not." Next, participants were asked to rate relative perceived expensiveness (i.e., "which store do you perceive to be more expensive/to have higher prices?"; Cronbach's α = .85), quality (i.e., "… is of better quality/sells higher quality coffee"; Cronbach's α = .87), and value (i.e., "… to have better value for money/to have a better bargain for coffee"; Cronbach's α = .96) on two scales, as well as their purchase intention (i.e., "… more likely to purchase a coffee from this store"). All measures were adapted from Dodds, Monroe, and Grewal (1991) and measured on a 101-point sliding scale (0 = definitely Store A; 100 = definitely Store B).

***** Insert Figure 1 about here *****

4.2. Results

In the analysis, we mainly focus on the relative preference for Store B (vs. Store A) when its prices were concealed (i.e., Condition A) vs. displayed (i.e., Condition B). The results confirmed our expectations, as shown in Figure 2.

First, the perceived expensiveness of Store B was higher when it concealed prices (M = 69.90, SD = 26.37) than when it displayed them (M = 34.68, SD = 25.99; F (1, 164) = 74.89, $p < .001$, $\eta^2 = .313$). Put differently, when the store did not display the prices of its menu items, customers perceived the menu to be relatively expensive, supporting H1.

Second, regarding perceived quality, the results showed some effect directionally, but this didn't reach significance. Specifically, the perceived quality of Store B was similar when it concealed prices (M = 56.40, SD = 19.35) and displayed prices (M = 52.78, SD = 20.63; F (1, 164) = 1.35, $p = .246$, $\eta^2 = .008$), suggesting that the concealing (vs. displaying) of prices did not affect perceived quality.

Third, we found a significant effect for perceived value (F (1, 164) = 81.86, $p < .001$, $\eta^2 = .333$). Specifically, perceived value was higher when Store B displayed prices (M =

70.80, *SD* = 20.12) than when it concealed them (*M* = 38.51, *SD* = 25.28), supporting H3. The result for purchase intention was very similar, in that purchase intention was higher when Store B displayed prices (*M* = 72.97, *SD* = 22.11) than when it concealed them (*M* = 35.69, *SD* = 30.58; F (1, 164) = 79.63, $p < .001$, $\eta^2 = .327$), supporting H4.

We conducted a serial mediation analysis (i.e., price display → perceived expensiveness → perceived value → purchase intention) with Hayes's (2017) model #6 with 5,000 bootstrapped samples. The results indicated a significant indirect effect of serial mediation (95% Confidence Interval [CI]: (.258, .677)). Furthermore, a reversed mediation (i.e., price display → perceived value → perceived expensiveness → purchase intention, based on Kim et al., 2018) was not significant (95% CI: (-.048, .078)), supporting H5 very strongly.

***** Insert Figure 2 about here *****

4.3. Discussion

In Study 1, the results were mainly consistent with our hypotheses. Consumers' perceived expensiveness was higher in the concealed- (vs. displayed)-price condition while perceived quality did not differ across conditions, consistent with H1 and H2b. Both consumers' perceived value and purchase intention were also higher in the displayed (vs. concealed) condition, which supports H3 and H4. Taken together, the results of Study 1 thus lend initial support for H1, H2b, H3, and H4.

Some may argue that the observed result for perceived expensiveness (H1) may be driven by the order of measurement. In other words, subjects expected higher prices in the concealed (vs. displayed)-price condition because their price judgments were made *before* they made judgments about quality. This argument assumes that if subjects had responded to the quality perception question first, their expensiveness perception would have been adjusted accordingly. In sum, the pattern of the results might have been different if the perceived

quality question had been asked before the perceived expensiveness question.

We disagree for two reasons. First, this view is based on the assumption that the two measures (i.e., perceived expensiveness and perceived quality) are strongly associated, which was not the case in Study 1. There is no reason to expect the measures to show a strong association when the order of the questions is reversed. Second, this view does not provide any rationale for the results of Study 1 – it is silent on why people should expect prices to be higher in the concealed (vs. displayed)-price condition. If the observed significant difference arguably resulted from the fact that the subjects responded to the question without much elaboration, the pattern should have been reversed (i.e., higher perceived expensiveness in the displayed price condition) because dollar signs in the displayed price condition could have worked as a priming cue (Herr, 1989). Taken together, this measurement-order argument seems unlikely. Nevertheless, we conducted Study 2 in order to rule out this explanation.

5. Study 2

The purpose of Study 2 was to replicate the findings of Study 1 with a different order of measurement. Therefore, the only difference between Study 1 and 2 was the order of the two measurements, perceived expensiveness and perceived quality. In Study 1B, we put the perceived quality questions before the perceived expensiveness questions. All the other procedures were exactly the same as Study 1.

5.1. Method: Participants, experimental design, and procedure

One hundred and ninety-one US adults were recruited from an online panel (Amazon MTurk) for a nominal compensation (M_{age} = 34.69, SD = 10.28, 35.1% female). Similar to Study 1, the participants were randomly assigned to one of two between-subjects experimental conditions (Price display: Condition 1 [Store A – displayed price and Store B –

concealed price] vs. Condition 2 [Store A – concealed price and Store B – displayed price]).

5.2. Results

The results were quite similar to those of Study 1A. The details of the pattern are shown in Figure 2. First, perceived expensiveness of Store B was higher when it concealed prices (M = 71.54, SD = 21.66) rather than displaying them (M = 31.81, SD = 25.37; F (1, 189) = 135.58, $p < .001$, $\eta^2 = .418$), supporting H1. Second, perceived quality of Store B was similar when it concealed (M = 55.04, SD = 24.92) and displayed (M = 55.53, SD = 23.96; F (1, 189) = .02, p =.890, $\eta^2 = .001$) prices, supporting H2b rather than H2a. Third, perceived value was higher when Store B displayed prices (M = 68.15, SD = 22.11) then when it concealed them (M = 38.05, SD = 24.65; F (1, 189) = 78.91, $p <.001$, $\eta^2 = .295$). The result for purchase intention was very similar as well, in that it was higher when Store B displayed prices (M = 72.03, SD = 23.07) than when it concealed them (M = 40.20, SD = 31.06; F (1, 189) = 64.54, $p < .001$, $\eta^2 = .255$). Therefore, the results supported H3 and H4.

The results of a serial mediation (i.e., price display → perceived expensiveness → perceived value → purchase intention) indicated the significant indirect effect of serial mediation (95% CI: (.400, .790)). Furthermore, a reversed mediation (i.e., price display → perceived value → perceived expensiveness → purchase intention) was not significant (95% CI: (-.178, .004)), very strongly supporting H5.

5.3. Discussion

The fact that the pattern of results was the same in Study 1 and 2 suggests that our results are not due to the measurement order. Indeed, the results of both studies show that perceptions of expensiveness and quality are independent of each other. It is noteworthy that this seemingly counter-intuitive pattern occurred in a context where information on one

attribute was missing. Our conjecture is that people did not make *double* inferences (i.e., making another inference from an inferred perception). Generally, people make inferences about quality when quality is ambiguous or difficult to evaluate and when price information is given. However, when price information is not given, even with some prediction of expensiveness, people seem to be reluctant to make secondary inferences about quality, and vice versa. This issue is discussed further in our general discussion, below.

The results of Study 1 and 2 suggest that consumers' perceived expensiveness is the key driver of the subsequent variables. In other words, significant differences in perceived value and purchase intention resulted from the combination of perceived expensiveness and perceived quality. The former changed with price display while the latter remained the same. Therefore, the degree to which perceived expensiveness varies influences the subsequent variables. In the next study, we examine whether the observed effect of concealing prices on perceived expensiveness is amplified or attenuated by hospitality consumers' price consciousness (H7).

6. Study 3

The purpose of Study 3 was to examine the moderating role of consumers' price consciousness. We predicted that the observed pattern of results in Study 1 and 2 would be amplified as consumer price consciousness increased.

6.1. Method: Participants, experimental design, and procedure

Three hundred and sixty US adults were recruited from an online panel (Amazon MTurk) for a nominal compensation (M_{age} = 36.34, *SD* = 12.30, 47.5% female). Participants were randomly assigned to one of two between-subjects experimental conditions (Price display: Condition 1 [Store A – displayed price and Store B – concealed price] vs. Condition

2 [Store A – concealed price and Store B – displayed price]).

The general procedure was quite similar to that of Study 1. First, after participants were shown two coffee shops, they were asked to rate their relative perceived expensiveness (Cronbach's α = .90), quality (Cronbach's α = .92), value (Cronbach's α = .91), and their own purchase intention. Finally, participants were asked to rate their general price consciousness on a 5-point scale ("I usually buy things when they are on sale"; 1 = strongly disagree, 5 = strongly agree; Cronbach's α = .84; Lichtenstein et al., 1988).

6.2. Results and discussion

In the analysis, we mainly focus on the relative preference for Store B (vs. Store A) when its prices were concealed (i.e., Condition A) vs. displayed (i.e., Condition B). The results confirmed our expectations, as shown in Figure 3.

First, perceived expensiveness of Store B was higher when it concealed prices (M = 70.66, SD = 24.95) than when it displayed them (M = 34.49, SD = 26.83; F (1, 358) = 175.61, $p < .001$, $\eta^2 = .329$). Put differently, when the store did not display the price of its menu items, customers perceived the menu to be relatively expensive, supporting H1.

Second, the pattern of perceived quality was similar, but the effect on perceived expensiveness was weak. Specifically, perceived quality of Store B was higher when it concealed prices (M = 56.22, SD = 20.17) than when it displayed them (M = 50.89, SD = 18.14; F (1, 358) = 6.95, p = .009, $\eta^2 = .019$), suggesting that a store that concealed (vs. displayed) its prices was evaluated to be higher quality, supporting H2a.

Third, the pattern of perceived value was the opposite. Specifically, participants' perceived value was higher when Store B displayed prices (M = 71.04, SD = 18.37) than when it concealed them (M = 37.79, SD = 23.48; F (1, 358) = 223.21, $p < .001$, $\eta^2 = .384$), supporting H3. The pattern of purchase intention was very similar, in that it was higher when

Store B displayed prices (M = 74.92, SD = 21.63) than when it concealed them (M = 35.87, SD = 29.14; F (1, 358) = 207.76, p < .001, η^2 = .367), supporting H4.

Furthermore, the result of a serial mediation (i.e., price display → perceived expensiveness → perceived quality → perceived value → purchase intention, with Hayes model #6) indicated a significant indirect effect of mediation (95% CI: (-.136, -.038)). In addition, a serial mediation (i.e., price display → perceived expensiveness → perceived value → purchase intention) was significant (95% CI: (.275, .483)), supporting H5. A second serial mediation (i.e., price display → perceived quality → perceived value → purchase intention) was also significant (95% CI: (.004, .087)).

***** Insert Figure 3 about here *****

To investigate the moderating role of price consciousness on various judgments, we conducted Hayes's (2017) moderation analysis (model #1 with 5,000 bootstrapped samples). The results revealed a significant interaction effect between price consciousness and 1) perceived expensiveness (95% CI: (-13.224, -3.531)), 2) perceived value (95% CI: (4.415, 12.270)), and 3) purchase intention (95% CI: (8.626, 18.006)), suggesting that the above effects were stronger for consumers with high price consciousness (see Figure 4). However, the interaction between price consciousness and perceived quality was not significant (95% CI: (-2.116, 5.140)). In sum, the results generally supported H7.

***** Insert Figure 4 about here *****

7. Study 4

The purpose of Study 4 was to provide additional empirical evidence for our theoretical argument with a few modifications from the previous studies. First of all, the participants in the previous studies were shown both stores with a different price displayed and concealed. In this study, participants shown only one condition. Second, the type of coffee was the only information in the price-concealed condition. Put differently, the

complexity of information across the two conditions could influence the subsequent response. In order to reduce this problem, participants in both conditions were given calorie information. Third, this study provided the actual price information for the price-displayed condition. Finally, we measured the perceived fairness of the two different price-display conditions and tested H6.

7.1. Method: Participants, experimental design, and procedure

One hundred and seven US adults were recruited from an online panel (Amazon MTurk) for a nominal compensation (M_{age} = 34.90, SD = 11.88, 47.7% female). Participants were randomly assigned to one of two between-subjects experimental conditions (Price display: concealed price vs. displayed price).

First, participants were asked to imagine that they were walking down a street and encountered a coffee shop. They were shown one mock image of the menu, as shown in Figure 5. The menu in the displayed-price condition included prices and calories, whereas the menu in the concealed condition only included information on the calories. Next, participants were asked to rate their purchase intention (i.e., "I really want to buy a coffee from this store"), value (i.e., "the value for money of this store is very high"), and price fairness (i.e., "the price of this store is very fair"; Xia et al., 2004) on a seven-point scale (1 = strongly disagree; 7 = strongly agree).

***** Insert Figure 5 about here *****

7.2 Pre-test

Participants in this study were given the actual price information in the price display condition, whereas those in Studies 1-3 were not given the actual price, but given the same product information with a $ sign. In order to show no difference between two price display conditions, we conducted a pre-test (n = 63, M_{age} = 38.81, SD = 10.51, 42.9% female) by

modifying the stimuli of Study 4. Participants in the pre-test were randomly exposed to one of two price display conditions (i.e., price display with actual price information [the same as the main study condition] vs. price display without the actual price, but with a $ sign) and were asked to rate the products on the same scale that was used the main study.

The results indicated that the two experimental conditions did not influence purchase intention ($M_{with\ actual\ price}$ = 5.50, SD = 1.32 vs. $M_{without\ actual\ price}$ = 5.45, SD =1.29, F (1, 61) = .02, p =.883, η^2 = .001), value ($M_{with\ actual\ price}$ = 5.25, SD = 1.37 vs. $M_{without\ actual\ price}$ = 5.26, SD =1.22, F (1, 61) = .01, p =.979, η^2 = .001), expensiveness ($M_{with\ actual\ price}$ = 4.59, SD = 1.68 vs. $M_{without\ actual\ price}$ = 4.87, SD =1.34, F (1, 61) = .52, p =.472, η^2 = .008), and price fairness ($M_{with\ actual\ price}$ = 5.00, SD = 1.17 vs. $M_{without\ actual\ price}$ = 5.06, SD =1.34, F (1, 61) = .04, p =.839, η^2 = .001). Therefore, the pre-test confirmed that our specific manipulation of price display would not produce a different result across different studies.

7.3. Results and discussion

First, participants' purchase intention was higher when the price was concealed (M = 5.17, SD = 1.42) than when the price was displayed (M = 4.37, SD = 1.73; F (1, 105) = 6.80, p = .010, η^2 = .061). Second, the perceived value of the store was higher when the price was concealed (M = 4.77, SD = 1.38) than when the price was displayed (M = 4.37, SD = 1.03; F (1, 105) = 2.93, p = .090, η^2 = .027). Finally, the perceived price fairness of the store was higher when the price was concealed (M = 5.09, SD = 1.38) than when the price was displayed (M = 4.20, SD = 1.09; F (1, 105) = 13.82, p < .001, η^2 = .116), as shown in Figure 6.

Furthermore, the result of a mediation (i.e., price display→ perceived fairness → purchase intention, with Hayes's model #4) indicated a significant indirect effect of mediation (95% CI: (.089, .506)), whereas the direct effect of price display on purchase intention was not significant (95% CI: (-.225, .983)), supporting H6.

***** Insert Figure 6 about here *****

8. General Discussion

8.1. Summary of findings

In four experiments, we found that consumers perceived that stores that did not (vs. did) display price information to be relatively expensive, but relatively low in quality and value, and their purchase intention was also low. The first two studies (Study 1 and 2) provided similar results regardless of the measurement order. We found that this heightened perception of expensiveness along with relatively weak change in quality perception affected negatively both perceptions of value and purchase intention. Further, we found that these relationships were moderated by a consumer personal trait – price consciousness (Study 3) – and mediated by price fairness (Study 4).

8.2. Theoretical contributions

The current research contributes to the hospitality literature in several important ways. First, as evident in our series of experiments, our results showed that a subtle difference in price presentation (i.e., with a $ sign vs. no $ signs) can lead to significant differences in customer's perception, evaluation, and purchase intention. By demonstrating how a simple change in price display significantly influences consumer behavior in the hospitality context, our findings contribute to the burgeoning literature on behavioral pricing in hospitality (e.g., Andreu et al., 2020; Choi et al., 2018; Noone and Robson, 2016) and tourism (e.g., Kim, Cui et al., 2020; Kim, Franklin et al., 2020; Kim, Kim, and Kim, 2018).

Second, although the aforementioned literature on behavioral pricing has largely focused on how different frames or presentation formats of prices influence hospitality consumers' information processing or decision-making, far fewer have examined the context

of missing price information (see Noone and Robson, 2016 for an exception). By exploring the effect of "no price information" on hospitality consumes' behavior, the current research has pioneered this under-researched area.

Our research also contributes to the marketing literature. To the best of our knowledge, this is the first empirical study to find a *negative* relationship between no price information and consumers' evaluative judgments of an *inexpensive* product. By juxtaposing our results with Parguel et al.'s (2016) findings that concealing prices *positively* influences consumers' perceived brand uniqueness and the conspicuousness of *luxury* brands, our research provides a deeper understanding of the ways in which no price information exerts influences on consumers.

Additionally, our findings contribute to the literature on missing attribute information. The literature on missing attribute information has demonstrated in various settings that products are rated less positively when an information attribute is missing (Cronley et al., 2005; Gunasti and Ross, 2009; Kim and Kim, 2014; Khandeparkar et al., 2020). Researchers have long conjectured that this negative evaluation is driven by consumers' negative inferences about the missing attribute (e.g., price information). Surprisingly this conjecture about the underlying mechanism has not been empirically tested. Our research provides empirical results supporting this conjecture – participants perceived the missing attribute (i.e., price) negatively (i.e., expensive).

Finally, our research contributes to the Zeithaml (1988) means-end model in two ways. Our significant serial mediational model (i.e., price display → perceived expensiveness → perceived value → purchase intention) confirmed the relationship among various variables. Additionally, we extend Zeithaml's (1988) work by introducing a new antecedent variable (i.e., price concealing) to her framework.

8.3. Practical implications

From small restaurants to large resorts, most business owners and marketers desire to build an impeccable reputation by providing customers with high-quality products and services. Unfortunately, prices need to go up with quality. Some restaurant, bar, or cafe owners may attempt to hide price information in the hope that the quality of their products and services is evaluated on its own, or that customers do not tune out due to high prices. Our results suggest not. Consumers seem to anticipate even higher price levels if price information is missing. Moreover, consumers' value perception and purchase intention are also lower when price information is missing. This may sound counter-intuitive because the items sold at restaurants or bars are in most cases less expensive than so-called prestigious brands. Very few people seem to expect high price levels in these categories, but our results showed that hospitality customers expect higher prices if price information is missing.

In addition, our finding of the significant mediating role of perceived fairness suggests that hospitality providers or marketers could boost the value and purchase intention for their brand by increasing price fairness. Specifically, displaying (rather than concealing) price is considered to represent a high level of price fairness. This association could be related to the concept of a social norm regarding pricing practice and trust between buyers and sellers (e.g., Xia et al., 2004). Therefore, if restaurant or bar owners have to conceal their prices for some reason, they may consider various practices (e.g., loyalty programs) to attenuate the negative effect of no-price information by improving hospitality customers' perceived price fairness.

8.4. Limitations and future research

Several limitations should be addressed. First, we demonstrated our findings only in one product category (i.e., coffee). Although we believe that our findings would generally

hold in diverse hospitality contexts, we have not provided empirical results supporting generalizability. Thus, one fruitful future direction would be to replicate our findings with different product categories or in another domain (e.g., tourism).

Second, our experimental materials were too simple. They contained little information, which may lead some to question the external validity of our study. For instance, in real environments when price cues are missing, people use information from various other dimensions, such as brands, the atmosphere of the store, or the other shoppers. Although few controlled experiments would be immune to this criticism, we think that a better experimental design might have increased the external validity by capturing more complicated processes. Although examining these complicated processes is beyond the scope of the current research, future research could explore more dynamic interactions among diverse cues and their impact on perceived expensiveness and quality.

Third, using "$" rather than using the actual price could be problematic in Studies 1-3. The pre-test and main Study 4 could reduce the weaknesses of this manipulation. Future studies need to investigate this issue with highly realistic stimuli or contexts.

Fourth, we have demonstrated the negative impact of concealing prices on consumers' perceived value and purchase intention, but never discussed 1) how store managers can reduce this negative impact or 2) when concealing price information may have a positive impact on purchase intention. There might be specific individual characteristics, situational factors, or cross-cultural differences that would shape hospitality customers' reactions to pricing presentation types differently (see Jeong and Crompton, 2017, 2018). Future research investigating these potential boundary conditions would greatly benefit practitioners in the hospitality industry.

Finally, the empirical studies have some weaknesses, such as using a similar attributes format for competing options and using a different manipulation of the price display.

Further studies will be needed to overcome these weaknesses. Finally, even though the empirical finding could be explained by the naïve theory, the direct evidence for the naïve theory is limited. Future research could provide strong empirical evidence of this underlying mechanism by measuring this concept or manipulating some aspects related to the concept (Kim et al., 2018).

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Figure 1

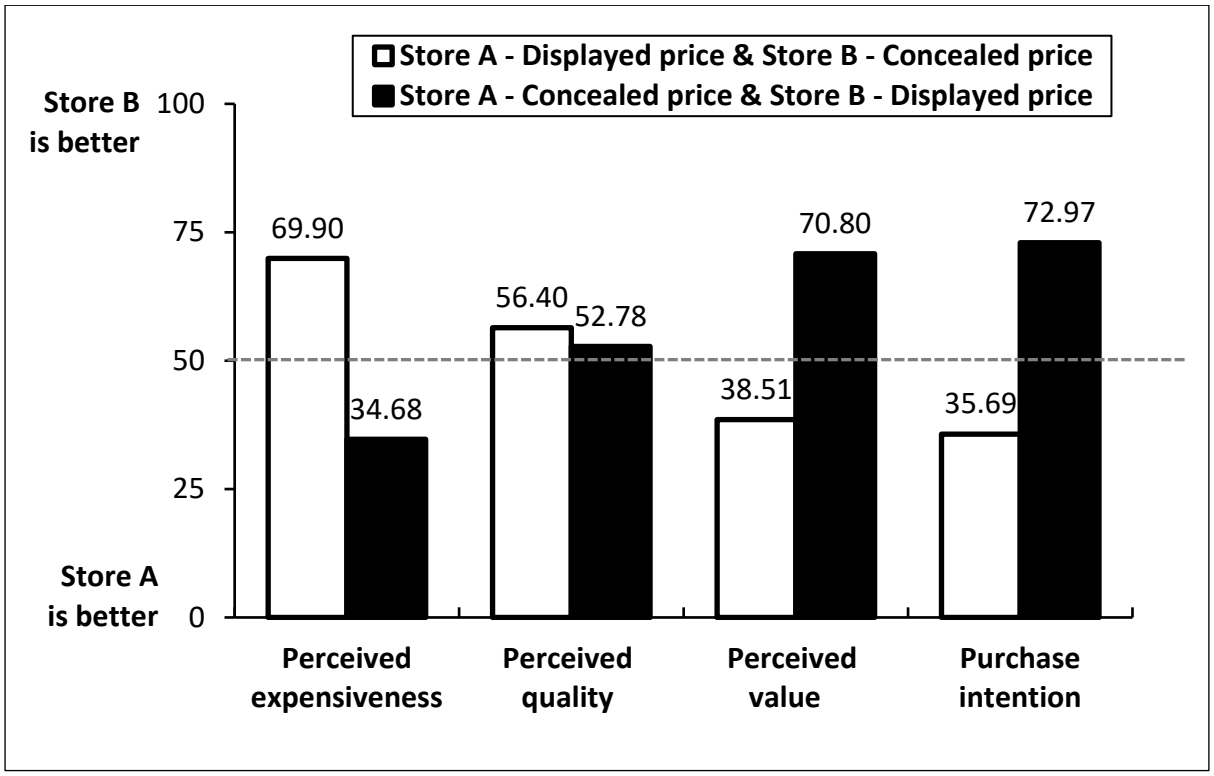
Stimuli of Study 1, 2 & 3

Condition 1

Condition 2

Figure 2

Results of Study 1



Results of Study 2

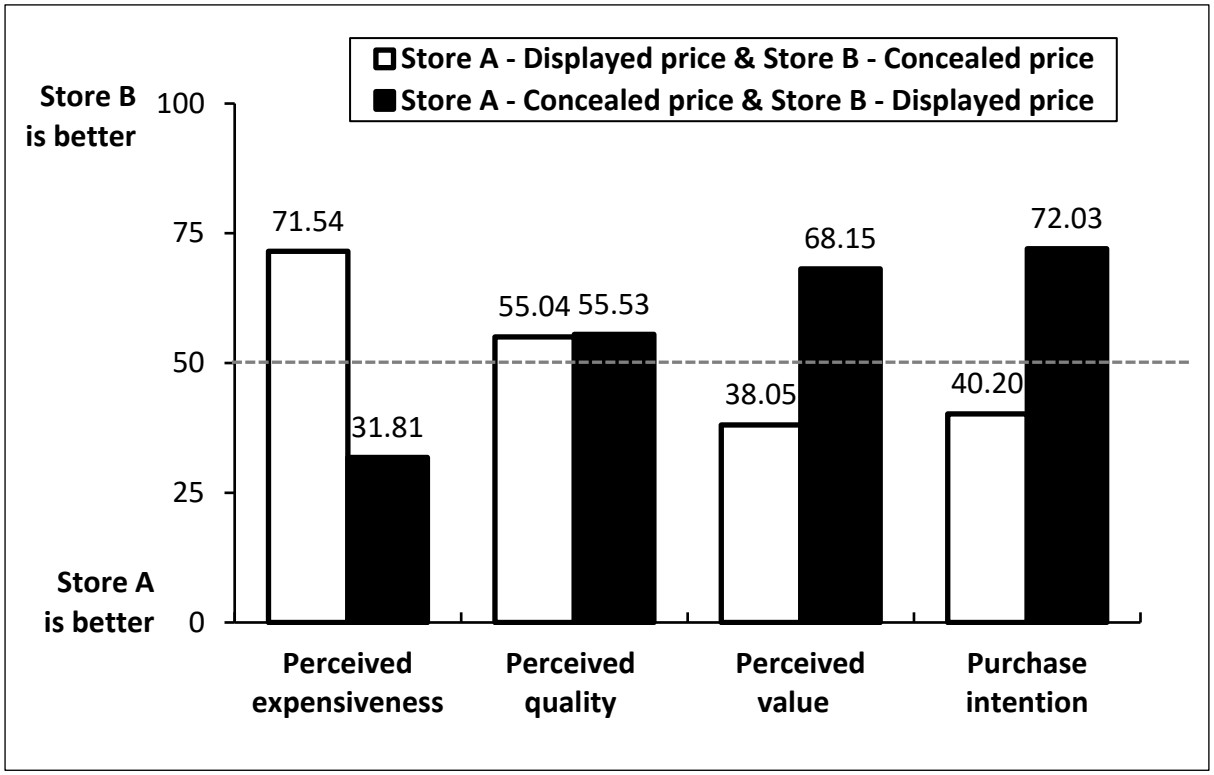


Figure 3

Results of Study 3

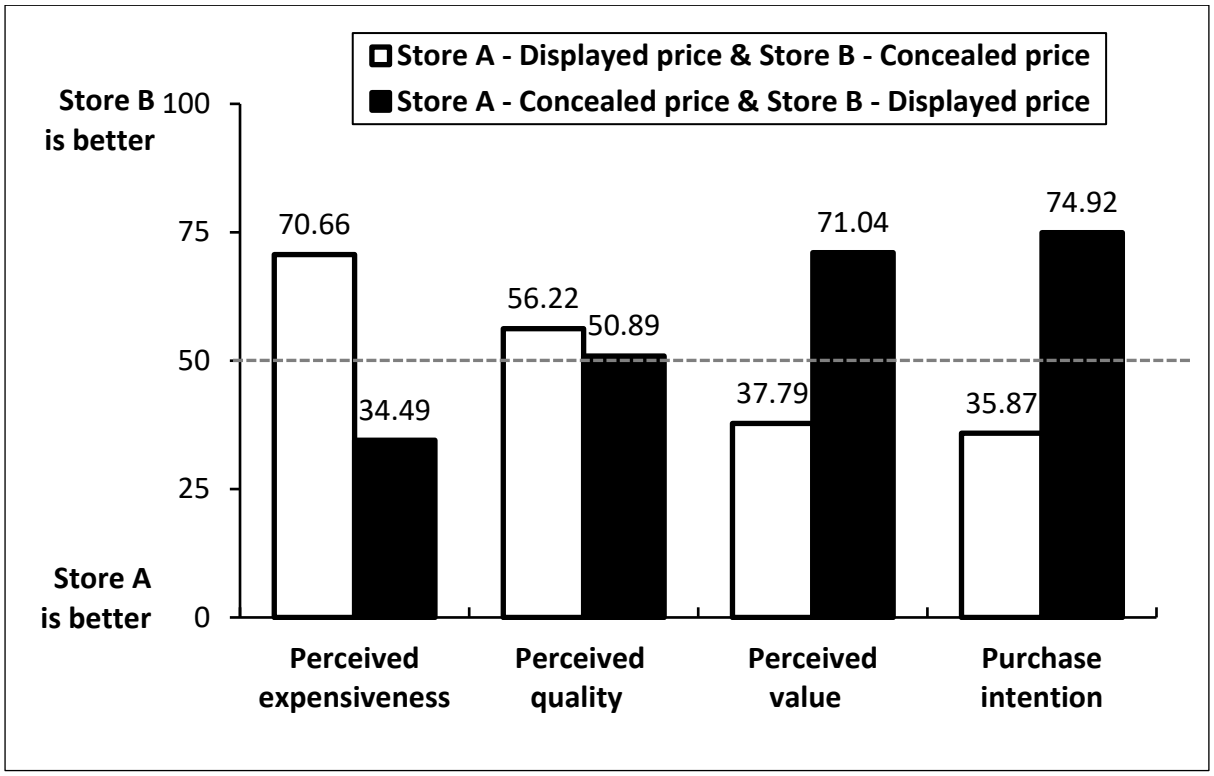
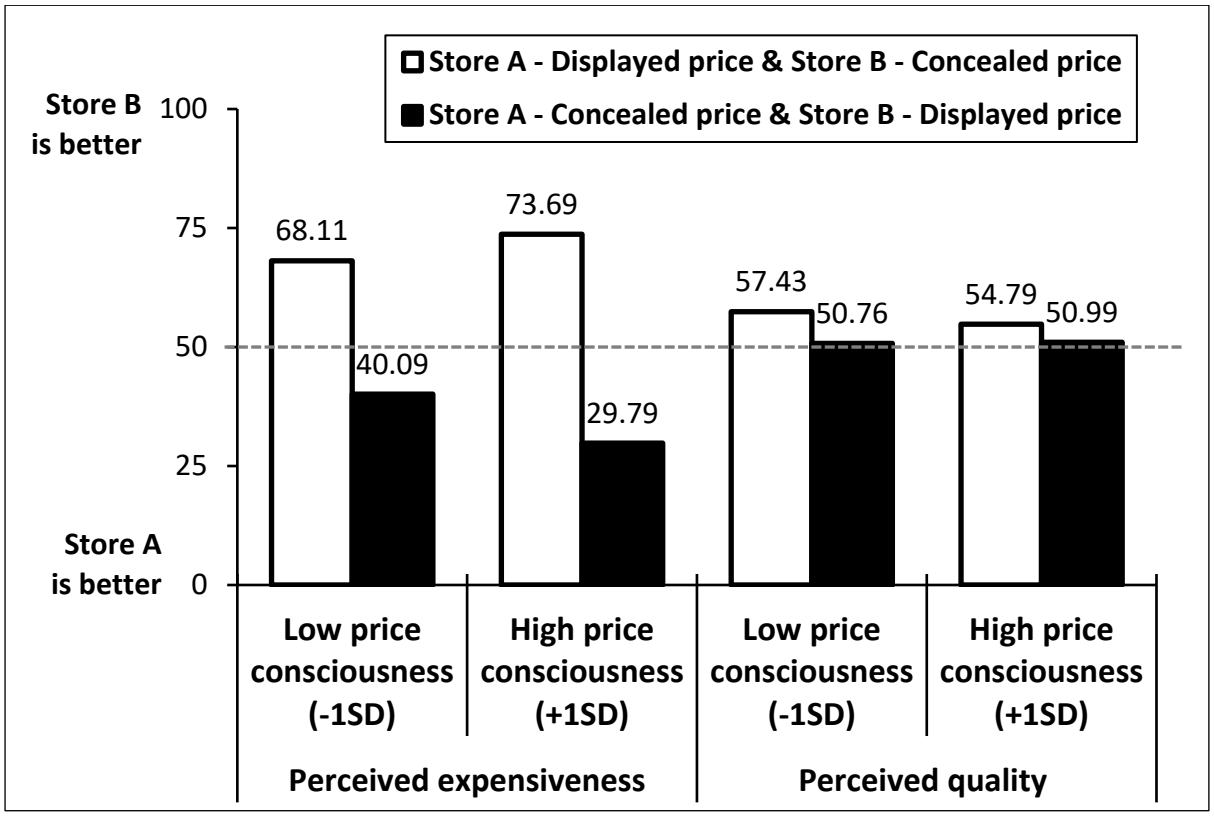


Figure 4

Results of Study 3 – Moderating role of price consciousness



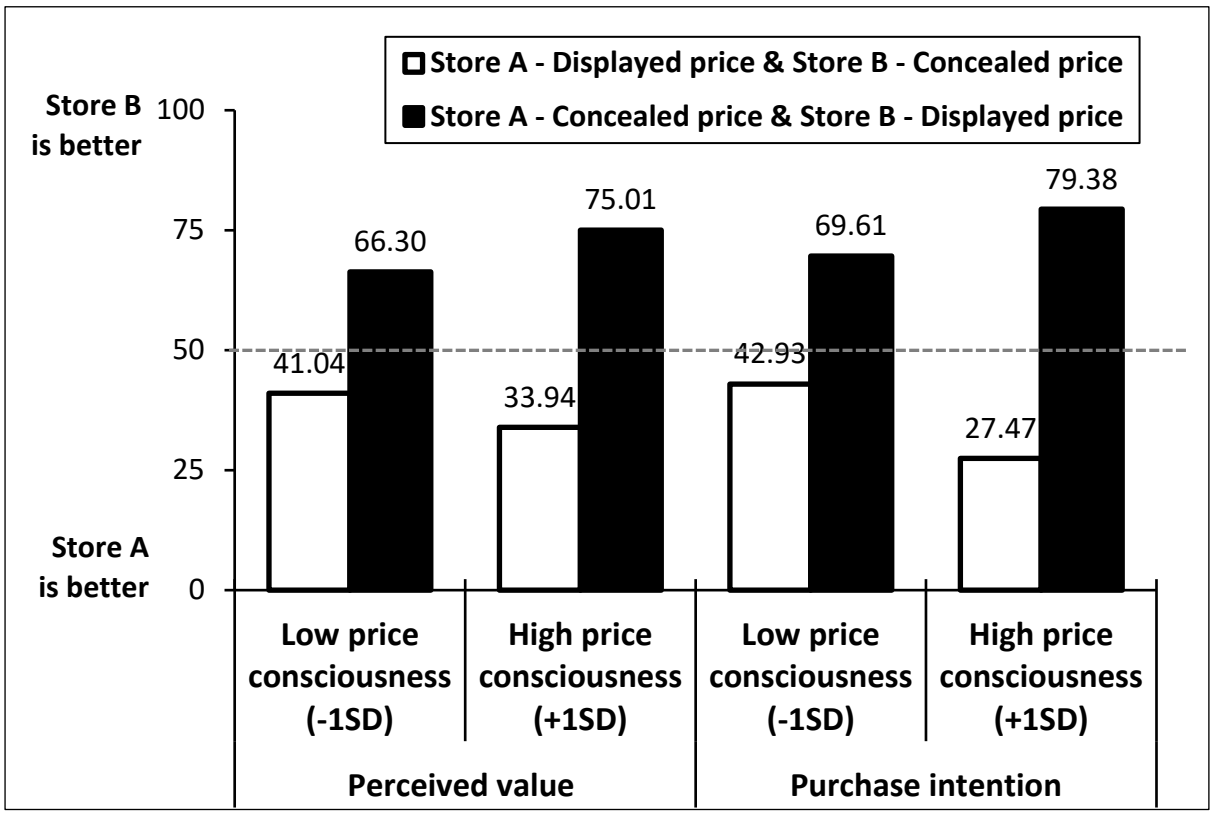


Figure 5

Stimuli of study 4

Price-concealed condition

Price-displayed condition

Figure 6

Results of Study 4

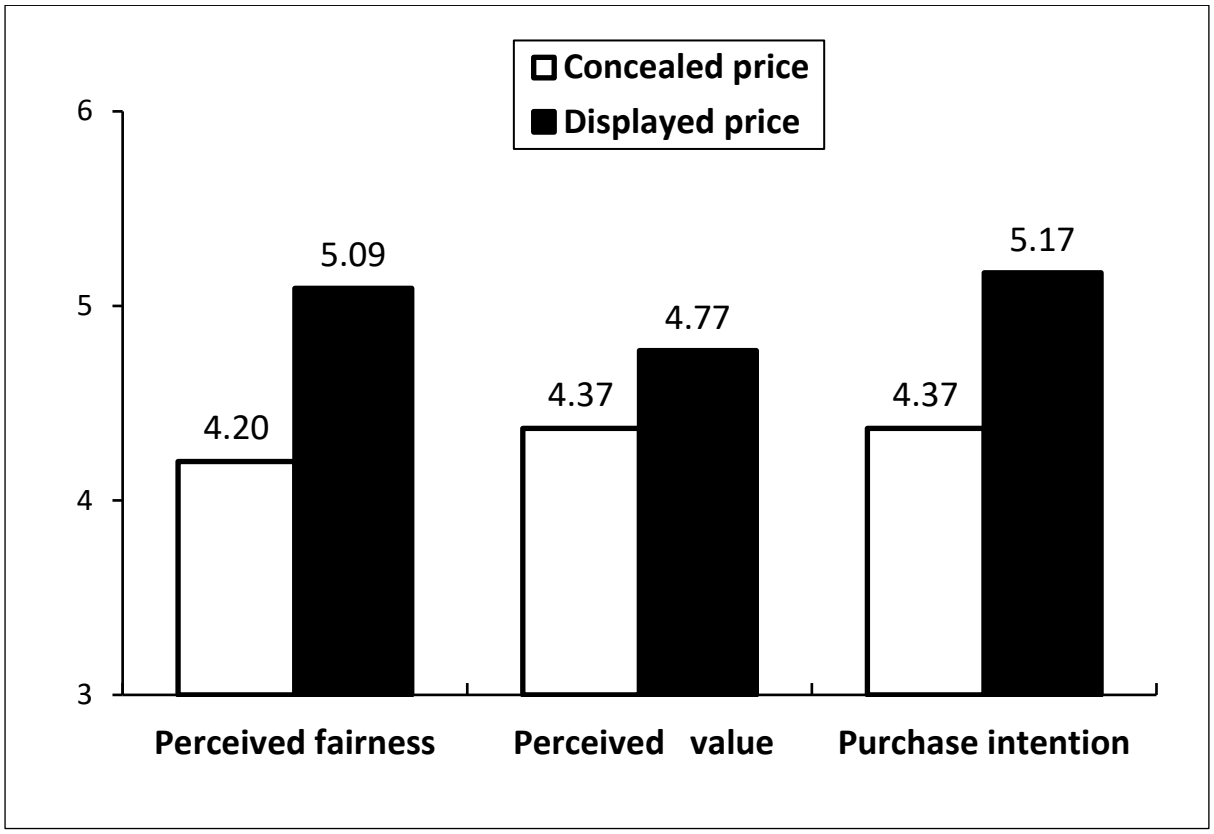


Table 1.

Profile of participants

		Study 1 (*n* = 166)	**Study 2 (*n* = 191)**	**Study 3 (*n* = 360)**	**Study 4 (*n* = 107)**
Gender	Male	52.4%	64.9%	52.5%	52.3%
	Female	47.6%	35.1%	47.5%	47.7%
Age	18–29	31.3%	37.2%	34.2%	41.1%
	30–39	39.8%	34.0%	35.3%	29.9%
	40–49	13.3%	18.8%	16.4%	18.7%
	50–59	7.2%	7.3%	6.1%	5.6%
	60–	8.4%	2.6%	8.1%	4.7%
Race	White/Caucasian	73.5%	71.7%	72.8%	67.3%
	African American	11.4%	6.8%	8.1%	5.6%
	Hispanic	4.8%	5.8%	7.2%	7.5%
	Asian	7.8%	11.5%	8.1%	17.8%
	Others	2.4%	4.2%	3.9%	1.8%
Edu. level	Did not complete high school	0.6%	0.5%	0.3%	0.0%
	High school graduate or college	36.1%	36.6%	37.5%	35.5%
	College graduate (4 years)	51.2%	51.3%	51.1%	49.5%
	Postgraduate degree	12.0%	11.5%	11.1%	15.0%
Family income	up to $30,000	22.9%	18.8%	17.5%	21.5%
	$30,001–$60,000	33.1%	33.0%	40.8%	46.7%
	$60,001–$90,000	21.7%	19.9%	23.6%	15.0%
	$90,001–$120,000	13.9%	13.6%	9.2%	10.3%
	$120,001+	8.4%	14.7%	8.9%	6.5%