

Impact of preciseness of price presentation on the magnitude of compromise and decoy effects

1. Introduction

Does a consumer's decision-making differ when marketers alter the price information from \$49.99 and \$99.99, to \$50 and \$100, as ubiquitously seen in marketing and tourism literature? Consumers' (and travelers') decisions are substantially influenced by the choice sets available. Compromise and decoy effects are well-known manifestations of context effects that influence consumers. Compromise effects, referring to one's tendency to prefer non-extreme options over extreme ones, illustrate that by varying the extremeness of option attributes, consumers' decisions may be influenced (Kim, Kim, Lee, Kim, & Hyde, 2019; Simonson, 1989). In a different choice context, decoy effects (i.e., one's tendency to choose an asymmetrically dominating option in a given choice set; also known as the attraction effect) have also been shown to suggest such possibilities (Huber, Payne, & Puto, 1982).

Research on the two price-related theories of decoy and compromise effects provides a more in-depth understanding of consumers' psychological mechanisms and latent utility through the tradeoff between non-price and price attributes. Both theories have been examined in marketing and decision-making science (Gonzalez-Prieto, Sallan, Simo & Carrion, 2013; Herne, 1997; Jonathan, 2012; Park & Kim, 2005; Scarpi, 2011; Simonson & Tversky, 1992) and have recently been adopted in the field of tourism (Josiam & Hobson, 1995; Nicolau & Sellers, 2012; Kim, Kim, Lee, Kim & Hyde, 2019; Xianyu, Juan & Zhu, 2012).

With frequently adopted pricing strategies that use both precise (e.g. \$49.99 and \$99.99 [or \$49.45 and \$99.50]) and rounded prices (e.g. \$50 and \$100) (Jeong & Crompton, 2017; Kim, Franklin, Phillips, & Hwang, 2020; Mattila & Gao, 2016), academics'

understanding of the aforementioned price-related theories can be further enhanced through an investigation of price preciseness. For example, little light has been shed regarding the magnitude of compromise and decoy effects when the prices of various marketing and tourism options are represented at different preciseness levels. To address this research void, our research looks into the first question we posed by focusing on the impact of price preciseness on the magnitude of two context effects. Specifically, we propose two opposing predictions regarding the role of precise vs. rounded prices on the compromise and decoy effects such that the decoy effect will be stronger when prices are presented in a precise (vs. rounded) manner, whereas the opposite pattern will be found for the compromise effect (see Table 1 for a summary of the existing literature showing the moderating effect of two contexts and our intended contribution).

To provide a more fine-grained understanding of the impact of different price presentation styles (precise vs. rounded), we further introduce two critical moderating variables: one is a potent individual trait portraying individuals' tendency to base their decisions on either reasons or emotions, known as lay rationalism [hereafter LR], and the other pertains to decision tasks, and is described as time pressure. By showing the significant moderating role of consumers' LR, this study presents the notion that the magnitude of context effects may be affected by how consumers balance emotions and reasons. In addition, this study further suggests that the impact of price preciseness on the magnitude of compromise and decoy effects is magnified under high (vs. low) time pressure conditions, exemplifying consumers' heuristic (vs. systematic) information processing and decision-making style. Our work is significant as it provides a richer picture of context effects, by integrating both individual-level and task-specific moderating variables, and showcasing their impact on the application boundaries of the compromise and decoy effects (Table 1).

[TABLE 1]

Based on the aforementioned rationales, this research has three major objectives. First, we investigate the impact of price preciseness on the magnitude of the two context effects. Previous literature has stated only that the compromise effect is strong when the key tradeoff is between two quality-related attributes rather than price-quality attributes (i.e., Neumann, Böckenholt & Sinha, 2016). Therefore, the present study attempts to empirically determine the unique role of price and quality attribute information in affecting the magnitude of compromise and decoy effects. Second, this research aims to assess the significant moderating role of a potent individual difference variable (i.e., levels of LR) in determining travel decision making through a series of empirical tests. We argue that consumers who weight reasons and emotions differently in the decision-making might process price information in a distinct manner as well, which in turn leads to a variation in the magnitude of context effects. Finally, this study assesses the moderating role of time pressure – a pivotal situation-specific variable, in travel decision-making. By showing the interplay between choice architecture (i.e., context effects), situations (e.g., price information preciseness and time pressure), and their impact on consumers' choices, we attempt to advance scholars' understanding of the key underlying mechanisms of compromise and decoy effects.

This paper has meaningful theoretical and practical implications. First, we theoretically argue and empirically examine the impact of price preciseness on consumers' (travelers') decision-making, through the lens of the compromise and decoy effects. Industry practitioners in the field of tourism could benefit substantially from our findings, considering the profound impact of leveraging such context effects, which have been surprisingly under-explored to date. Furthermore, travel activities can be categorized as hedonic or experience-based products rather than utilitarian products. Since the previous literature has suggested that the compromise effect is weaker in hedonic (vs. utilitarian) situations (e.g., Kim & Kim,

2016; Neumann, Böckenholt & Sinha, 2016), it is very important to investigate the boundary conditions for the effects. Second, through a series of six experimental studies demonstrating the impact of price preciseness, significant moderating roles of individuals' LR (Study 3) and time pressure (Study 4), in both travel (Studies 1 to 4) and non-travel (Study 5) decision contexts, and with hypothetical (Studies 1 to 4) and actual choice outcomes (Study 5), we establish a high level of empirical robustness, and offer findings with both convergent validity and external validity. Finally, our findings provide feasible and easy-to-implement implications for industry practitioners. As one of the most ubiquitous product attributes, marketers could harness our findings and vary price preciseness to boost patronage.

2. Theoretical framework and hypothesis development

The following section presents relevant literature on compromise and decoy effects, then reviews the impact of prices, and price preciseness. Next, we develop our conceptual framework regarding the impact of price preciseness, and the moderating role of consumers' LR and time pressure.

2.1. Compromise and decoy effects

The traditional assumption regarding travelers' preferences for traveling options states that travelers have strong preferences that result in stable choice outcomes in various situations and times. However, a recent view called the "*preference construction paradigm*" (e.g., Bettman, Luce & Payne, 1998; Payne, Bettman & Johnson, 1993) holds that travelers have flexible or weak preferences and that their decision outcomes depend mainly on the situations or contexts of their decision making. Compromise and decoy effects are well-known examples because they demonstrate the preference construction in the case of the choice set available.

The *compromise effect* is pertinent to the phenomenon that people tend to choose options with non-extreme attributes over those with extreme attributes (Kim, Spence & Marshall, 2018; Simonson, 1989). For example, for travelers facing three alternatives, specifically, Option A (i.e., a three-star hotel for \$100), Option B (i.e., a three-point-five-star hotel for \$150), and Option C (i.e., a four-star hotel for \$200), the compromise effect will predict that the travelers will choose Option B, as its key attributes are non-extreme in terms of quality rating and price. However, travelers facing a different set of three alternatives, that is, Option B (i.e., a three-point-five-star hotel for \$150), Option C (i.e., a four-star hotel for \$200), and Option D (i.e., a four-point-five-star hotel for \$250), are expected to select Option C, as it now has the non-extreme attributes.

The *decoy effect* (or *attraction effect*) is related to the phenomenon in which people tend to choose the option that dominates over inferior alternatives (Huber et al., 1982; Park & Kim, 2005). For instance, for travelers facing three alternatives, specifically, Option A (i.e., a three-star hotel for \$150), Option B (i.e., a three-point-five-star hotel for \$150), and Option C (i.e., a four-star hotel for \$200), the decoy effect predicts that travelers will choose Option B, as it dominates (better than or equal to in all attributes) over Option A, whereas no dominance relationship exists between Options A and C.

The phenomena of compromise and decoy effects have been employed in various fields, such as hospitality (Schwartz & Cohen, 1999), marketing (Huber et al., 1982; Simonson, 1989), psychology (Wedell & Pettibone, 1999), political science (e.g., Herne, 1997; 1999), medical decision making (Schwartz & Chapman, 1999), and even animal studies (e.g., Scarpi, 2011). Josiam and Hobson (1995) first introduced the decoy effect in the travel literature and provided empirical evidence that travelers show a higher decoy effect when they experience a combination of high quality and high prices than when they encounter low quality and low prices. Leveraging the multi-attribute utility framework,

Gonzalez-Prieto et al. (2013) investigated the effects of introducing simple or double decoy options in airline tickets. Specifically, the authors posited that incorporating decoy options into choice sets could significantly increase the choice shares of target options by decreasing the attractiveness of competitor options.

Additionally, in travel-destination booking scenarios, Kim et al. (2019) investigated the impact of the decision task (i.e., selection vs. rejection) on the magnitude of decoy and compromise effects. The authors theorized that the decoy option would be eliminated early in a rejection task, thereby resulting in a weak decoy effect on the rejection task compared with the selection task. However, the authors suggested that the compromise effect would be stronger in the rejection task compared with the selection task, as the former generally requires deliberative processing, whereas the latter involves less elaborate processing. The authors' three experiments provide empirical evidence for their findings. However, the attributes of their options did not differ in terms of price. Therefore, investigating the impacts of different price levels on the effects of the two contexts is worthwhile.

2.2. Price preciseness effect

Previous literature has suggested opposing predictions regarding this study's research question. For example, precise information of prices could generate decision complexity, because such information is large and requires a substantial amount of time to encode and calculate. Several studies have stated that the compromise effect is reduced when task difficulty is high from representing the attributes of options on hand with precise levels (Lee et al., 2017; Simonson, 1989). In summary, the compromise effect is expected to be alleviated when the prices of options are represented with precise levels.

Regarding the price aspects of consumption, traditional economic theory assumes that price constitutes the economic "cost" of a product and is directly related to "monetary sacrifice" (Bornemann & Bomburg, 2011, p. 490). Therefore, consumers should have a

negative association with highly priced options. However, price could serve as an index or proxy for the “quality” of a product, and consumers may use price information “to infer product quality” (Bornemann & Bomburg, 2011, p. 490). Thus, consumers can have a positive attitude toward highly priced options.

The different roles of price are determined by several factors, such as psychological distance (Bornemann & Bomburg, 2011), information processing style (Kardes et al., 2004), and time constraints (Suri & Monroe, 2003). Finally, Bornemann and Bomburg (2011) suggested that the relationship between price and perceived quality is pronounced from a temporally and socially distant perspective (i.e., abstract construal), whereas the price–perceived sacrifice relationship is pronounced from a temporally near perspective (i.e., concrete construal).

Similarly, price-ending digits can influence the interpretation of price attributes. For example, prices ending in nine may more likely make consumers focus on the sacrifice attribute of the price than those ending in zero. This assumption is because a nine-ending price has connotations of a low price, thereby increasing sales (Gedenk & Sattler, 1999; Schindler & Kibarian, 2001). The nine-ending strategy is one of the most dominant pricing strategies in the United States and is implemented to mitigate consumers’ negative responses toward the cost attribute of price by suggesting connotations of discounted prices (Jeong & Crompton, 2017). Similar effects are expected in eight-ending prices in China and Japan (e.g., Schindler, 2009). In contrast, prices ending in zero, which is the second most dominant price-ending digit in the United States, tend to make consumers focus on the quality indicator of price, as a zero-ending price symbolizes high quality (Kleinsasser & Wagner, 2011; Schindler, 2006) and gives a positive perception of a priced service. In summary, precise price-ending digits seem to relate to low construal levels (e.g., cost), whereas prices ending in rounded numbers seem to relate to high construal levels (e.g., quality).

2.3. The role of price on compromise and decoy effects

Previous literature (Neumann, Bockenholt & Sinha, 2016) has noted that compromise and decoy effects are relatively weak when the two key attributes of the context effects involve a tradeoff between price and quality (in contrast to a quality–quality tradeoff). For example, in their meta-analysis of the compromise effect, Neumann, Bockenholt, and Sinha (2016) argued that price information could reduce the uncertainty of decision making, because price is a well-known attribute for consumers. Therefore, the authors predicted that the compromise effect would be weak when the tradeoff involves price attributes, and their empirical results supported that prediction. Similarly, Ratneshwar, Shocker, and Stewart (1987) argued that product stimulus meaningfulness and familiarity could reduce the magnitude of the decoy effect. Compared with other quality attributes, price information inherently has a meaningful value for consumers. In summary, the previous literature has indicated that the magnitude of compromise and decoy effects is low when decision makers are given price information.

In the travel literature, Kim et al. (2019) incorporated price attributes into one of their empirical studies (Study 3); however, price information was identical across the three options in each context effect (i.e., compromise and decoy effects). In other words, the price information in the choice set did not induce a tradeoff. In addition, in the study of Josiam and Hobson (1995), who adopted price attributes in the decoy effect, the number of quality attributes is considerably higher (e.g., four to seven quality attributes).

As price is one of the most essential attributes for travelers, investigating compromise and decoy effects by systematically varying price levels across multiplex options is crucial. Based on the literature review, the following hypotheses are proposed.

H1a: *The compromise effect will be significantly positive even if travel options differ in (rounded vs. precise) price levels.*

H1b: *The decoy effect will be significantly positive even if travel options differ in (rounded vs. precise) price levels.*

Although compromise and decoy effects are effective in the context of decision making with price information, the directional influence of price on the two effects could differ depending on different price preciseness levels. We make different predictions regarding the role of price preciseness in the magnitude of compromise and decoy effects. On the one hand, we expect that precise (vs. rounded) price information will relatively reduce the magnitude of the compromise effect. On the other hand, other studies have indicated the opposite pattern for the decoy effect in that precise (vs. rounded) price presentation will relatively increase the magnitude of the decoy effect. We will explain the detailed predictions in the subsequent section.

2.4. Weaker compromise effect under precise (vs. rounded) price information

The relatively elaborate process of comparing each option in the compromise set is one of the most essential conditions for a significant compromise effect (e.g., Dhar & Simonson, 2003; Khan et al., 2011; Pocheptsova et al., 2009). For example, Pocheptsova et al. (2009) provided empirical evidence that after participants depleted their cognitive and emotional resources, they showed less tendency to choose the compromised option. This result indicates that the compromise effect is mainly driven by cognitively complex calculation processing rather than being a simple heuristic decision (Dhar & Simonson, 2003; Khan et al., 2011).

One of the critical differences between precise and rounded price information could be the complexity of the information. Other things being equal, precise information is much more complex than rounded price information. In other words, precise price information

could increase a decision's complexity, as the information unit is large. Furthermore, in a decision that involves multiple attributes and multiple alternatives, a considerable amount of time and effort is needed to compare the precise price information of each option (see Thomas, Simon & Kadiyali, 2010; Yan, 2016 for empirical evidence). Therefore, the complexity of precise price information will reduce the systematic process of comparing each option easily, thereby resulting in a relatively weak compromise effect.

Moreover, decision complexity or difficulty could reduce the compromise effect (i.e., Lee et al., 2017). Specifically, in the study by Lee et al. (2017) on wafflemaker output power, the compromise effect is reduced significantly when attribute information is difficult to process (e.g., difficult conditions, specifically, 850 vs. 950 vs. 1050 output power, compared with easy conditions, that is, 800 vs. 900 vs. 1000 output power). In summary, the compromise effect is predicted to be relatively weaker for precise price information conditions than for rounded price information conditions.

H2a: The compromise effect in a travel context will be relatively weaker in precise price conditions than in rounded price conditions.

2.5. Stronger decoy effect under precise (vs. rounded) price information

Regarding the impact of price preciseness on the decoy effect, the current literature has indicated that the decoy effect could be strong in precise (vs. rounded) price information conditions. First, regarding the absolute impact of the decoy effect, the perception of dominance between target and decoy options is a critical point. We maintain that the difference in perception is significantly influenced by price preciseness in that the same magnitude could be perceived as being much stronger when the price difference between two options is precise rather than rounded. For example, the same \$10 difference could have a different impact when the price of two options is \$19.99 versus \$29.99 compared with when it is \$20 versus \$30. A consumer will judge the difference as being much larger for the

precise price (former) case than for the rounded (latter) case. Second, selecting an option that is asymmetrically dominant over other options (i.e., showing the decoy effect) is one of the easiest ways to resolve decision tradeoffs (Simonson, 1989). For instance, Simonson (1989) found that the decoy effect tends to be magnified when individuals are asked to justify their decisions, as selecting an option that is asymmetrically dominant over other options is easy to explain to others. People will experience a relatively difficult decision owing to the complexity of information under precise (vs. rounded) price conditions. In this situation, they will show a relatively higher decoy effect. In summary, based on these arguments, we predict the following situation.

H2b: *The decoy effect in a travel context will be relatively stronger in precise price conditions than in rounded price conditions.*

Furthermore, we suggest two moderating variables (i.e., LR and time pressure), determining the relative impact of precise (vs. rounded) price presentation on the two context effects.

2.6. The moderating role of lay rationalism

Individuals' judgements and choices are largely influenced by the extent to which they use rationality in their decision-making processes. That is, decision makers will inherently differ in their decision making with regard to whether they are affected by hot (e.g., affect factors) or cold factors (e.g., economic values; Kahneman, 2003; Shiv & Fedorikhin, 1999). Initiated by Hsee et al. (2003) and further validated in later work (Hsee, Yang, Zheng & Wang, 2015), LR refers to the relative weight that lay person place on reasons and feelings/emotions in decision making in an inherently different manner. Specifically, individuals with a high LR index are likely to use reason (i.e., cold factors, such as financial costs and benefits, product specifications, and objective facts) in their decision

making. By contrast, those with a low LR index are likely to rely on hot factors, such as gut feelings and feelings of superiority. For example, in an empirical study, Hsee et al. (2015) found that people with high LR prefer utilitarian products over hedonic ones and evaluate products (e.g., a car) with reason-based information more positively than those with feeling-based information.

Following this vein of reasoning, individuals' LR could be significant in how they view and process different price preciseness information. In other words, in this current work, we expect that individuals with a high LR index will tend to be reason-based and analytical in processing different price preciseness information. Furthermore, as illuminated above, different price preciseness levels might induce different price information complexities (*H2a and H2b*). Therefore, perceived differences induced by price preciseness information are expected to be substantial for individuals with a high LR index. By contrast, those with a low LR index are seemingly less sensitive to price specifications; therefore, their perceived differences between precise and rounded prices will be less distinctive. The moderating role of individual LR is formally presented in the following hypothesis.

H3: High (vs. low) lay rationalism will show a significant difference between precise and rounded price information in H2a and H2b in a travel context.

2.7. The moderating role of time pressure

Individuals' judgements and choices may be largely influenced by the situations involved in their decision-making processes. One of the most important situational variables is time pressure; specifically, whether decision makers have abundant versus limited time to make choices. People under high time pressure will (i) accelerate information processing (Ben Zur & Breznitz, 1981; Miller, 1960); (ii) focus on selective information or put weight on selective information (Ben Zur & Breznitz, 1981); or (iii) use relatively simple decision strategies or decision heuristics (Payne, Bettman & Johnson, 1988).

However, the current literature shows inconsistent results on the impact of time pressure on compromise and decoy effects. First, Dhar, Nowlis, and Sherman (2000) provided empirical evidence that the compromise effect is attenuated or eliminated under time pressure, as decision makers use relatively simple, rather than complex, decision strategies. Similarly, Pettibone (2012) suggested that time pressure could reduce the magnitude of the compromise effect mainly as a result of the participants' difficulty in selecting one option effectively. Finally, Kim (2017) further showed that the impact of time pressure on the compromise effect depends on different information presentation modes. Specifically, time pressure reduces the compromise effect for (typical) numerical information presentation conditions, whereas the opposite pattern is found for graphical information presentation conditions. Put differently, the magnitude of the compromise effect is expected to be attenuated or even eliminated when time pressure weakens individuals' ability to compare different options, or their systematic processing. This assertion concurs with the view that theorizes the compromise effect as a phenomenon that involves more elaborated (vs. simple) processing (e.g., Dhar *et al.* 2000; Kim *et al.*, 2019).

Second, Pettibone (2012) argued that time pressure could increase decision difficulty (i.e., choosing one option), which further attenuates the decoy effect. However, Lin et al. (2008) provided contrary evidence that time pressure increases the decoy effect, as decision makers adopt simple strategies in choosing a target option with a decoy option. Therefore, the current literature indicated mixed predictions regarding the impact of time pressure on the decoy effect. There were differences between studies, such as the amount of time given or the experimental procedure used in enforcing the time pressure. The results of the present study were expected to show similarity to those of Pettibone (2012) because this study followed his experimental procedure with respect to time pressure.

Based on the literature on time pressure, the different impacts of price preciseness on the magnitude of compromise and decoy effects are expected to be magnified under high (vs. low) time pressure conditions. On the one hand, in the absence of time pressure conditions, decision makers will consider all information systematically; thus the impact of price preciseness will be relatively small. On the other hand, under time pressure conditions, decision makers will use relatively simple decision strategies. In this situation, they may decide by heavily relying on a few salient pieces of information (e.g., price attributes) or on the salient relationship among alternatives (e.g., choosing a middle attribute option for the compromise effect or using an asymmetrically dominant relationship for the decoy effect). In summary, we expected time pressure to have a significant moderating impact on the magnitude of both compromise and decoy effects. Stated formally:

***H4:** High (vs. low) time pressure will show a significant difference between precise and rounded price information in H2a and H2b in a travel context.*

The conceptualization framework, including four hypotheses and the empirical studies used to test them, is presented in Figure 1.

[FIGURE 1]

3. Study 1A: Testing the compromise effect with price attributes

The purpose of Study 1 was to examine the magnitude of the context effects in different price preciseness conditions, including compromise (Study 1A) and decoy effects (Study 1B). Specifically, we expected significant effects from compromise and decoy effects, even when one of the product attributes was price information. Study 1A provided initial support for our predictions; specifically, that the compromise effect would be significant even

when one product attribute was price information (H1a) and would differ between precise and rounded price information. Furthermore, we used two different precise price conditions to provide a generalized result for those (i.e., .99-ending and .50-ending prices) of Studies 1A and 1B.

3.1. Participants, design, and procedures

To test this objective, 289 participants from the United States (49.5% female) from Amazon MTurk joined this study and were randomly assigned to one group with a 2 (choice set: C_aAB vs. ABC_b) X 3 (price preciseness level: precise price I vs. precise price II vs. rounded price) between-subject design.

The participants were initially requested to imagine that they were planning a weeklong vacation and booking a hotel with three options. Next, they were randomly assigned to one of four experimental conditions in which different compromise options and price preciseness levels were manipulated. The participants in each experimental condition were exposed to three hotel options with differences in “quality,” “number of outdoor recreation options,” “number of local restaurants,” and “price per day.” In addition, the participants were informed of different levels of price information preciseness (i.e., \$100/\$150/\$200/\$250 in the rounded conditions, \$99.99/\$149.99/\$199.99/\$249.99 in the precise I conditions, and \$102.50/\$153.50/\$204.50/\$255.50 in the precise II conditions), as illustrated in Web Appendix A. Next, they were instructed to choose one of the three hotel options.

The results of the compromise effect with price attributes are as follows (see Table 2 for detailed results). This research calculated the magnitude of the compromise effect by focusing on the ‘*relative shares*’ (Neumann, Böckenholt, & Sinha, 2016, p. 196) of two main options (i.e., options A and B), according to previous studies (e.g., Kim et al., 2019; Kim,

Spence, & Marshall, 2018; Levav, Kivetz, & Cho, 2010). As a result, 77 participants chose compromise options in the choice sets (C_a and C_b). These 77 participants were excluded from further data analysis (thus the new $n = 212$) to examine the relative choice share of option B over option A to investigate the magnitude of the compromise effect.

3.2. Results

Significant compromise effects were found among the rounded and precise conditions. Specifically, the compromise effect was significant in the rounded price condition (option B's share under the ABC_b vs. C_aAB condition = 72.4% [21/29] vs. 45.0% [18/40]; compromise effect = +27.4%, $\chi^2(1) = 5.14, p < .05$). Similar results were found in the precise I price condition (option B's share under the ABC_b vs. C_aAB condition = 70.6% [24/34] vs. 45.9% [17/37]; compromise effect = +24.7%, $\chi^2(1) = 4.41, p < .05$) and in the precise II price condition (option B's share under the ABC_b vs. C_aAB condition = 64.9% [24/37] vs. 37.1% [13/35]; compromise effect = +27.8%, $\chi^2(1) = 5.53, p < .05$). Ultimately, we found a significant compromise effect in price-present information presentations (option B's share under the ABC_b vs. C_aAB condition = 69.0% [69/100] vs. 42.9% [48/112]; compromise effect = +26.19%, $\chi^2(1) = 14.60, p < .01$), thereby supporting H1a. In summary, the compromise effect was significant even when price information was present in the product attribute information.

[TABLE 2]

4. Study 1B: Testing the decoy effect with price attributes

4.1. Participants, design, and procedures

Study 1B tested our predictions that the decoy effect would be significant even when one product attribute was price information (H1b) for precise and rounded price information conditions. Following our methodological approach, 291 participants from the United States (54.6% female) from Amazon MTurk joined the study and were randomly assigned to one group with a 2 (choice set: aAB vs. ABb) X 3 (price preciseness level: precise price I vs. precise price II vs. rounded price) between-subject design.

The participants were first exposed to an experimental scenario similar to that in Study 1A, but with a few modifications to reflect the addition of decoy options. Similar to Study 1A, the participants in each experimental condition were asked to engage in hotel selection tasks and exposed to three hotel options with different attribute information, including quality ratings, number of outdoor recreation options, local restaurants, and price levels. Furthermore, the participants were exposed to different price preciseness. In the rounded price conditions, we adopted rounded price presentations (i.e., \$200/\$250/\$300), whereas in the precise I and II price conditions, price information was presented in a precise manner (i.e., \$199.99/ \$249.99/ \$299.99 for the precise I condition and \$204.50/ \$255.50/ \$306.50 for the precise II condition), as illustrated in Web Appendix B. Next, the participants were instructed to choose one of three hotel options.

4.2. Results

The results are shown in Table 2. The previous literature had examined the magnitude of the decoy effect by focusing on the relative shares of two main options, excluding the participants who chose the decoy option. Therefore, this study adopted the same method. A total of 11 out of all the participants chose the decoy options in the choice sets (a and b) and thus were excluded from further analysis (new $n = 280$) to examine the relative choice share

of option B over option A to investigate the magnitude of the decoy effect in the current study.

Congruent with our prediction (H1b), a significant decoy effect in the three different price conditions was identified. Specifically, the decoy effect was significant in the rounded price condition (option B's share under the ABb vs. aAB condition = 66.0% [31/47] vs. 38.1% [16/42]; decoy effect = +27.9%, $\chi^2(1) = 6.91, p < .01$). We also found a similar pattern in the precise I price condition (option B's share under the ABb vs. aAB condition = 55.3% [26/47] vs. 28.6% [14/49]; decoy effect = +26.7%, $\chi^2(1) = 7.06, p < .01$) and in the precise II price condition (option B's share under the ABb vs. aAB condition = 59.6% [28/47] vs. 35.4% [17/48]; decoy effect = +24.2%, $\chi^2(1) = 5.56, p < .05$). In all the conditions, the decoy effect was significant in price-present information presentations (option B's share under the ABb vs. aAB condition = 60.3% [85/141] vs. 33.8% [47/139] %; decoy effect = +26.5%, $\chi^2(1) = 19.68, p < .01$); thus, H1b was supported.

In conclusion, Studies 1A and 1B provided initial evidence to support H1a and H1b, respectively, wherein we argued that compromise and decoy effects existed even when one of the product attributes was price information. Furthermore, significant context effects were found regardless of price information preciseness and the details of precise information formats (i.e., 99-ending and .50-ending prices).

However, a pitfall existed in Study 1, including different main target options in the compromise and decoy choice sets, which could attenuate the magnitude of compromise and/or decoy effects.

5. Study 2: Testing both compromise and decoy effects within one study

5.1. Participants, design, and procedures

To address the potential drawbacks in Study 1 and enhance the robustness of our findings, we modified the study design of Study 2. First, the same two main targets were adopted for the compromise and decoy choice sets. In addition, a simple version of the choice sets was applied to strengthen the impact of price information on travelers' choices. To explain the methods employed, 412 participants (47.6% females) from Amazon MTurk joined and were randomly assigned to one group with a 2 (choice set: aAB/ CaAB vs. ABb/ABC_b) X 2 (price preciseness level: precise price vs. rounded price) X 2 (type of context effect: compromise effect vs. decoy effect) between-subject design.

The participants were engaged in stimuli similar to those in the previous studies, but with several modifications. Moreover, they were randomly assigned to one of eight experimental conditions, as shown in Web Appendix C. In one condition, they were exposed to choice sets consisting of compromise options, whereas in another condition, decoy options were added into the choice sets. Next, the participants were asked to choose one out of three hotel options, with different quality ratings and price levels.

5.2. Results

The results of the compromise and decoy effects are reported in Table 2. Along the same line of reasoning of Studies 1a and 1b, the participants who chose compromise (C_a and C_b) and decoy options (a and b) were excluded from further analysis to investigate the magnitude of compromise (new n = 149) and decoy effects (new n = 200).

We conducted a bi-logistic analysis, with "DV" as the choice (1 = competitor option – option A vs. 2 = target option – option B) and "IVs" as the choice set, price preciseness level, and type of context effect. We found that only the main effect of the choice set was significant ($B = 1.61$, $SE = .24$, $Wald = 45.79$, $p < .001$), whereas none of the interaction effects were significant (all $ps > .21$). A significant difference was not observed for

compromise and decoy effects; thus, we conducted a separate test for the two context effects, as follows (based on Kim, 2017; Kim et al., 2019).

First, the compromise effect was significant in the rounded price condition (option B's share under the ABC_b vs. CaAB condition = 71.9% [23/32] vs. 30.8% [12/39]; compromise effect = +41.1%, $\chi^2(1) = 11.88, p < .001$) and in the precise price condition (option B's share under the ABC_b vs. CaAB condition = 70.7% [29/41] vs. 32.4% [12/37]; compromise effect = +38.3%, $\chi^2(1) = 11.44, p < .001$). Overall, the compromise effect was significant in all presentations with price-present information (option B's share under the ABC_b vs. CaAB condition = 71.2% [52/73] vs. 31.6% [24/76]; compromise effect = +39.7%, $\chi^2(1) = 23.43, p < .001$), thereby supporting H1a.

Second, the decoy effect also was significant in the rounded price condition (option B's share under the AB_b vs. aAB condition = 74.1% [40/54] vs. 45.9% [17/37]; decoy effect = +28.1%, $\chi^2(1) = 7.42, p = .006$) and in the precise price condition (option B's share under the AB_b vs. aAB condition = 68.5% [37/54] vs. 25.5% [14/55]; decoy effect = +43.1%, $\chi^2(1) = 20.30, p < .001$). In all the conditions, the decoy effect was significant in all presentations with price-present information (option B's share under the AB_b vs. aAB condition = 71.3% [77/108] vs. 33.7% [31/92]; decoy effect = +37.6%, $\chi^2(1) = 28.28, p < .001$), thereby supporting H1b.

In summary, the results of Study 2 were quite similar to those of Study 1 in that compromise and decoy effects were significant even when price information was present.

6. Study 3: Investigating the moderating role of lay rationalism

6.1. Participants, design, and procedures

In Studies 1 and 2, we found significantly positive compromise and decoy effects across precise and rounded price conditions. In this study, we investigated the moderating

role of LR (H3). This study was interested in the moderating role of LR; thus, rather than a two-choice set, we used a one-choice set to calculate compromise and decoy effects based on previous literature (Kim et al., 2019). In our method, 316 participants (48.4% female) from Amazon MTurk joined the study and were randomly assigned to one group with a 2 (type of context effect: decoy [aAB] vs. compromise [C_aAB]) X 2 (price preciseness level: precise price vs. rounded price) between-subject design.

The participants were asked to imagine a situation similar to those used in the previous studies, but with several modifications. The participants were randomly assigned to one of four conditions and asked to choose one option. The stimuli were similar to those of Study 1, except for a few modifications (e.g., different attributes), as shown in Web Appendix D.

Next, all the participants were asked to answer five questions (e.g., I trust my initial feelings about people) relating to LR, using 7-point Likert-type scales (1= strongly disagree, 7 = strongly agree; Cronbach's $\alpha = .891$). We used reversed means in the main analysis, in which high LR values represented high rational (vs. intuitive) thinking.

6.2. Results

The findings are shown as follows (see Table 2 for detailed results). Along the same line of reasoning as previous studies, the participants who chose compromise (C_a) or decoy options (a) were excluded from further analysis to investigate the magnitude of compromise and decoy effects (new n = 270). Once again, we conducted a bi-logistic analysis, with DV as the choice (1 = competitor option – option B vs. 2 = target option – option A) and IVs as the price preciseness level, type of context effect, and LR scale. The SPSS macro modules of Hayes (2018), with 5,000 bootstrapped samples, were applied. The results indicated that the main effect of LR was significant ($B = .56$, $SE = .18$, $z = 3.10$, $p = .002$, 95% confidence

interval [CI] = .205, .906) in that the overall effect from the contexts was stronger for highly rational participants than for intuitive participants. Most important, the three-way interaction effect was significant ($B = 1.37$, $SE = .69$, $z = 1.97$, $p = .048$, 95% CI = .010, 2.729), as shown in Figure 2. Specifically, when the participants' LR was low (i.e., $-1SD$, thereby suggesting intuitive-thinking participants), target option A's relative share (i.e., $\text{Share A} / \{\text{Share A} + \text{Share B}\}$) did not differ across rounded and precise price information for either the compromise (Option A's relative share = 53.1% [rounded price] vs. 51.9% [precise price], $z = .09$, $p = .928$, 95% CI = -1.021 , .931) or decoy effect (Option A's relative share = 54.6% [rounded price] vs. 46.8% [precise price], $z = .58$, $p = .561$, 95% CI = -1.355 , .735). By contrast, when the participants' LR was high (i.e., $+1SD$, thereby suggesting rational-thinking participants), target option A's relative share (i.e., $\text{Share A} / \{\text{Share A} + \text{Share B}\}$) did not differ significantly across either the rounded or precise price information for the compromise effect (Option A's relative share = 68.7% [rounded price] vs. 54.2% [precise price], $z = 1.14$, $p = .254$, 95% CI = -1.670 , .441) but was significant for the decoy effect. Specifically, Option A's relative share was much higher under the precise price condition than under the rounded price condition (Option A's relative share = 66.6% [rounded price] vs. 88.9% [precise price], $z = 2.20$, $p = .028$, 95% CI = .152, 2.615). In summary, Study 3 partially supported H3 (thereby supporting H2b as well).

[FIGURE 2]

7. Study 4: Investigating the moderating role of time pressure

7.1. *Participants, design, and procedures*

This study attempted to investigate the moderating role of time pressure (H4). The method used was similar to that of Study 3, except for additional time pressure manipulation.

Additionally, a one-choice set based on previous literature was adopted. In our method, 412 participants from the United States (51.5% female) from Amazon MTurk joined the study and were randomly assigned to one group with a 2 (type of context effect: decoy [ABb] vs. compromise [ABC_b]) X 2 (price preciseness level: precise price vs. rounded price) X 2 (time pressure: high vs. low) between-subject design.

The participants were randomly assigned to one of eight conditions and asked to choose one option. The stimuli were similar to those of Study 1, except for a few modifications, as illustrated in Web Appendix E. The participants were asked to imagine a situation similar to those used in the previous studies, except for several modifications. In the high time pressure condition, the participants were first exposed to a figure with an option and key attributes but without a detailed attribute value (see Web Appendix E – initial information). Next, they were instructed to choose within 10 seconds and told that all the participants were given an equal amount of time to complete the task. Then, they were shown the next page, which contained a 3-option set with full attribute information, and asked to choose one option. The page was set to count the time and automatically change after 10 seconds. The participants in the low time pressure condition were exposed to the same procedure, except that their decision time was 40 seconds. We expected a high percentage of not choosing within the given time in the high (vs. low) time pressure condition. Therefore, we purposely collected additional samples for the high (vs. low) time pressure condition ($n_{\text{high time pressure}} = 241$, $n_{\text{low time pressure}} = 171$).

7.2. Results

The time pressure manipulation was successful in that different levels of time pressure significantly influenced the choice percentage within a given fixed time (i.e., 10 vs. 40 seconds). Specifically, only 60.6% [146/241] of the participants in the high time pressure

condition successfully finished their selection within 10 seconds, whereas 98.2% [168/171] of the participants in the low time pressure condition finished the task ($\chi^2(1) = 78.28$, $p < .001$).

The findings are shown in Table 2. Along the same line of reasoning as in the previous studies, the participants who chose either the compromise (C_a) or decoy option (a) were excluded from further analysis to investigate the magnitude of compromise and decoy effects (new $n = 269$). The results generally supported our expectations.

We once again conducted bi-logistic analysis, with DV as the choice (1 = competitor option – option A vs. 2 = target option – option B) and IVs as the price preciseness level, type of context effect, and time pressure. The results indicated that the three-way interaction effect was significant ($B = 2.80$, $SE = 1.12$, $Wald = 6.22$, $p = .013$), as shown in Figure 3. Specifically, under the low time pressure condition, target option B's relative share (i.e., $\text{Share B} / \{\text{Share A} + \text{Share B}\}$) did not differ across the rounded and precise price information for either the compromise (Option B's relative share = 68.8% [22/32, rounded price] vs. 77.8% [28/36, precise price], $\chi^2(1) = .71$, $p = .400$) or decoy effect (Option B's relative share = 66.7% [28/42, rounded price] vs. 64.1% [25/39, precise price], $\chi^2(1) = .06$, $p = .808$).

However, under the high time pressure condition, target option B's relative share was marginally different in the price information condition for the compromise effect. Specifically, the participants showed a high compromise effect under rounded (vs. precise) price conditions (Option B's relative share = 80.0% [24/30, rounded price] vs. 59.4% [19/32, precise price], $\chi^2(1) = 3.10$, $p = .078$), thereby supporting H2a. However, the opposite pattern was observed for the decoy effect in that the participants showed a weak effect under rounded (vs. precise) price conditions (Option B's relative share = 61.5% [16/26, rounded price] vs.

84.4% [27/32, precise price], $\chi^2(1) = 3.90, p = .048$), thereby supporting H2b. Overall, this study supported H4 (thereby supporting H2a and H2b as well).

[FIGURE 3]

8. Study 5: Providing actual behavioral evidence of compromise effect

Even though we theorized the impact of price preciseness on the context effects and provide empirical evidence to test our hypotheses in travel decision-making, we strongly believe that this theoretical framework can be extended to non-travel decision-making. In order to verify this projection, we conducted an additional study on the compromise effect. Participants were 143 adults (39.2% females) from Amazon MTurk, who were randomly assigned to one group with two price preciseness levels (precise price vs. rounded price) using a between-subject design. They were then requested to choose a bonus money opportunity as a token of appreciation for their participation in MTurk. Three types of bonus money plans were differently proposed in terms of probability and winning money, as illustrated in Web Appendix F. The information presentation was manipulated as either precise (e.g., 30% or \$.10) or rounded (e.g., 29.99% or \$.11). Some participants in this study were actually paid under the bonus plan after joining the survey. We mainly focused on the relative share of Option B (i.e., the middle-attributed option) across two experimental conditions. The results indicated that the share of Option B was higher in the rounded information condition ($M = 52.1\%$ [38/73]), compared to in the precise information condition ($M = 35.7\%$ [25/70], $\chi^2(1) = 3.87, p = .049$), thereby supporting H2a in the non-travel decision context. In summary, the additional evidence from this additional study extends the external validity of our core theorizing.

9. General discussion and implications

9.1. Summary of studies

In line with previous research on the preference construction paradigm (Bettman, Luce & Payne, 1998; Payne, Bettman & Johnson, 1993), we suggested that travelers' decision outcomes, specifically in the realm of different context effects (i.e., compromise and decoy effects), could be influenced by three pivotal factors, namely, the preciseness of price information (i.e., either precise or rounded prices), individuals' personality traits (i.e., LR), and a situational decision-making variable (i.e., time pressure).

First, we predicted that compromise and decoy effects would remain significant even when price information was present in the option information and involved in the tradeoff among options (H1a and H1b). Accordingly, a series of four experimental studies provided supportive evidence.

Second, additional hypotheses relating to the effect of price preciseness on the two different context effects were articulated by drawing on different theorizations. Specifically, we predicted a stronger compromise effect under rounded price representations (H2a) because of the negative impact of the processing complexity associated with precise price information. In contrast, the magnitude of decoy effects was expected to be amplified. A series of experiments conducted in a travel setting provided convergent support for our theorization, especially for high LR consumers (Study 3), and/or under high time pressure (Study 4).

Third, final study 5 provide the empirical evidence of our arguments of compromise effect with the actual behavior data such as selecting bonus money.

9.2. Theoretical implications

This paper has several meaningful theoretical implications. A series of four experimental studies showing positive compromise and decoy effects with price information is in line with Helson's (1964) adaptation-level theory that price information is processed and influences decision making. Additionally, our findings parallel those of previous studies regarding the role of contextual messages in customers' perception. That is, price information contributes to customers' evaluation and judgement of price levels, because they tend to perceive a tradeoff between what is received and what is given (Anbarci & Feltovich, 2017; Armantier, Nelson, Topa, van der Klaauw & Zafar, 2016; Kim & Crompton, 2001; Koschate-Fischer, Huber & Hoyer, 2016; Zeithaml, 1988). Information asymmetry between customers and suppliers (Fleischer et al., 2015) influences price fairness; therefore, contextual price information provided by suppliers (i.e., hotels and travel agencies) can play a critical role in mitigating or stimulating customers' price resistance.

Second, with regard to compromise and decoy effects, the two experimental studies (Studies 1 and 2) exhibited significant results. Specifically, when price information was included in the tradeoff, the context effects were significant. Compared with prior literature (Neumann et al., 2016; Ratneshwar et al., 1987), which stated that price information reduces the magnitude of context effects, the results of this study presented a different perspective, as significant compromise and decoy effects were identified even when the tradeoff among options involved price attributes. Specifically, we stated that even when price information was present in the option information and involved in the tradeoff among options, significant context effects (i.e., compromise and decoy effects) were still observed.

Third, the findings of this study showed the significant effects of different price presentation formats in terms of the preciseness of prices (i.e., precise price presentation vs. rounded presentation) on the magnitude of the two context effects. This result is consistent with discussions in previous studies that the preciseness of price information generates

different responses for the evaluation of products (Yan, 2016), different acceptance rates of negotiations (Yan & Pena-Marin, 2017), and different price (Thomas, Simon & Kadiyali, 2010) and advertising perceptions (Schindler, 2009). Therefore, we believe that we can extend our understanding of the role of price preciseness mainly in the realm of travelers' choices.

Fourth, we proposed and empirically demonstrated the moderating role of individuals' LR (H3). Partially congruent with our prediction, travelers with a high LR index showed a significantly high magnitude of the decoy effect when price information was presented in a precise manner. However, the magnitude of the compromise effect was not significantly different. In contrast, the magnitude of both context effects was not significantly different for travelers with a low level of LR. Our findings are espoused by those of previous studies (Hsee et al., 2003; Hsee et al., 2015), thereby adding to the evidence that people with high LR are likely to use reason in their decision making and thus process information systematically and deliberately. However, this study adopted a different standpoint by incorporating a pivotal individual factor (i.e., LR) in considering context effects, especially in the realm of hotel pricing. Therefore, the insights that emerged should contribute substantially to academicians' comprehension of travelers' choices based on their inherent differences.

Finally, the results of this study regarding the impact of time pressure on compromise and decoy effects provided an important theoretical implication. The current literature has showcased inconsistent results for the impact of time pressure on context effects (e.g., Dhar et al., 2000; Lin et al., 2008; Kim, 2017; Pettibone, 2012). Specifically, time pressure can assuage the magnitude of context effects when decision makers are prohibited from comparing each option. By contrast, time pressure may increase context effects when decision makers are forced to choose one option. Based on the results of our research, we

proposed that the preciseness of price information may be a possible moderating variable, thereby determining the direction of time pressure on compromise and decoy effects.

8.3. Practical implications

The findings of this study have several practical implications. First, since this study found an effect of price contextual messages, tourism businesses can capitalize on such messages in offering customers price fairness and reducing resistance to a new price. For example, if a message is given indicating that a tourism business has set an affordable price and/or offer a coupon, discount, or accumulation of mileage, this helps to convince potential consumers to accept the price and purchase the product.

Second, it was revealed that the magnitude of the compromise and decoy effects were contingent upon the way price information is presented. Therefore, tourism businesses are recommended to use rounded price framing in presenting products on both online and offline platforms. Third, in Study 3, a significant three-way interaction effect was found, in that the decoy effect was more effective under precise price conditions than under rounded conditions only in the case of high LR. The findings of Study 3 should be beneficial for hotel industry practitioners. For example, based on our findings, when a hotel showcases its prices on its website, hotel practitioners predominantly adopt precise pricing practices, which might activate an association with low quality and thus transfer travelers' focus to their competitors (i.e., cheap hotel options). Therefore, the use of precise prices could have a detrimental impact, especially for luxury hotels. By contrast, managers of affordable hotels should avoid using a rounded pricing strategy to prevent travelers from being distracted by rival luxury hotels.

The findings of Study 4 had similar implications for practitioners. For example, by including a decoy option (e.g., providing temporal discounting for regular customers or

special discounting for loyal customers), hotel managers can influence customers' selection process and outcome, and manipulate time pressure by introducing a limited time for sales promotions (e.g., "only 2 rooms left" for a specific option – orbitz.com). We suggested that precise prices are ideal for this situation. However, opposite strategies could generate high sale transactions when they use the compromise effect.

9.5. Limitations and future directions

The limitations of this study also shed light on future research directions. First, a series of main experimental approaches were undertaken by using hypothetical scenarios in travel settings (except in the follow-up study). Even though experimental method could provide a relatively strong casual evidence, the experiments with high behavioral realism such as a field experiment is required to enhance the quality of empirical package (see, Viglia & Dolnicar, 2020). Future studies should investigate the impact of price preciseness on customers' reactions to artificial price framing in an actual and non-tourism market setting. A comparison of results from the adoption of different methods will improve the validity and transferability of the outcomes.

Second, this study compared two different situations in which only either precise or rounded price information was available. However, customers of tourism and hospitality businesses are exposed to multiple pricing cues in numerous decision-making processes. Therefore, future studies should assess this issue scrupulously, considering multiple pricing information.

Third, decision making under high time pressure could influence cognitive processes (as explained in this study) as well as emotional responses (e.g., Araña & León, 2009; Luce, Payne & Bettman, 1999). Therefore, future studies should consider the role of diverse situational factors in identifying time pressure in decision making. Furthermore, investigating

the interaction effect between cognitive and emotional responses is necessary to answer our research question.

Fourth, some studies showed different effects of monetary and non-monetary components or reference pricing on satisfaction or perception of the price level (Choi and Mattila, 2018; Kim et al., 2020; Nicolau et al., 2020). The perceived level of price can also fluctuate according to the degree of price dispersion. Therefore, future studies need to identify which approach is more effective in the pricing contextual framing.

Finally, customers' perception of price differs according to various factors attached to every customer. Moderating effects can be influenced by sociodemographic profiles, such as income level, educational level, or gender (Durvasula, Lysonski, Mehta & Tang, 2004); psychological variables, such as loyalty to a brand (Kaura, Prasad & Sharma, 2015); behavioral variables, such as the number of previous uses, ownership of hotel membership, or intention to reuse (Ariely, Loewenstein & Prelec, 2003; Mussweiler & Strack, 2000); and knowledge of reference prices (Schwer & Daneshvary, 1997). For example, the impact of different price information could be more significant to first-time customers compared with loyal customers, which is attributed to prior knowledge. Therefore, future studies should investigate whether the results of this study fluctuate owing to the influence of other variables that are inherent to every customer.

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Table 1.

Summary of Common Moderators of Compromise and Decoy effect

Source	Moderator	Findings
<i>Showing the same directional effects for compromise and decoy effects</i>		
Simonson (1989)	Need for justification	Both compromise and decoy effects were stronger in a high need for justification situation.
Pettibone (2012)	Time pressure	Both compromise and decoy effects were reduced when time pressure was high.
<i>Showing the opposite directional effects for compromise and decoy effects</i>		
Dhar & Simonson (2003)	No-choice option	Introduction of a no-choice option increased the decoy effect, but decreased the compromise effect.
Mourali, Böckenholt, & Laroche (2007)	Promotion vs. prevention motivations (Self-regulatory focus)	Prevention-oriented consumers showed a higher compromise effect, but a lower decoy effect.
Pocheptsova et.al. (2009)	Resource depletion	Resource depletion reduced the compromise effect due to the limited ability to carefully compare trade-offs. In contrast, resource-depletion increased the decoy effect.
Khan, Zhu, & Kalra (2011)	Abstract vs. concrete construal level	A high construal level increased the decoy effect but decreased the compromise effect.
Jang & Yoon (2016)	Decision process (Attribute- vs. alternative-based processing)	Attribute-based processing increased the compromise effect, but showed an opposite pattern for the decoy effect.
Kim (2017)	Presentation style (graphical vs. numerical)	The compromise effect was higher in graphical presentation conditions. The decoy effect was similar in both graphical and numerical presentation conditions.
Lin et al. (2018)	Time pressure	The compromise effect was reduced when time pressure was high. The opposite pattern was true for the decoy effect.
Kim et al. (2019)	Decision task (choice vs. rejection)	The compromise effect was relatively stronger in a rejection task, whereas the decoy effect showed the opposite pattern
This paper	Price Preciseness, (& Lay Rationalism and time pressure)	The compromise effect was relatively stronger in a rounded information condition than a precise one, whereas the decoy effect was stronger in the precise information condition. This effect was stronger for high lay rationalism and high time pressure.

Table 2.

Results of Studies 1A, 1B, 2, 3, and 4

	Study 1A: Compromise effect					
Options	Rounded Price		Precise Price I		Precise Price II	
	C_aAB	ABC_b	C_aAB	ABC_b	C_aAB	ABC_b
C _a	16.7% (8/48)	---	21.3% (10/47)	---	22.2% (10/45)	---
A	45.8% (22/48)	16.0% (8/50)	42.6% (20/47)	20.0% (10/50)	48.9% (22/45)	26.5% (13/49)
B	37.5% (18/48)	42.0% (21/50)	36.2% (17/47)	48.0% (24/50)	28.9% (13/45)	49.0% (24/49)
C _b	---	42.0% (21/50)	---	32.0% (16/50)	---	24.5% (12/49)

	Study 1B: Decoy effect					
Options	Rounded Price		Precise Price I		Precise Price II	
	aAB	ABb	aAB	ABb	aAB	ABb
a	8.7% (4/46)	---	3.9% (2/51)	---	0.0% (0/48)	---
A	56.5% (22/46)	32.7% (16/49)	68.6% (35/51)	42.0% (21/50)	64.6% (31/48)	40.4% (19/47)
B	34.8% (16/46)	63.3% (31/49)	27.5% (14/51)	52.0% (26/50)	35.4% (17/48)	59.6% (28/47)
b	---	4.1% (2/49)	---	6.0% (3/50)	---	0.0% (0/47)

Study 2								
	Compromise effect				Decoy effect			
Options	Rounded Price		Precise Price		Rounded Price		Precise Price	
	C_aAB	ABC_b	C_aAB	ABC_b	aAB	ABb	aAB	ABb
C _a / a	20.4% (10/49)	---	22.9% (11/48)	---	9.8% (4/41)	---	5.2% (3/58)	---
A	55.1% (27/49)	15.8% (9/57)	52.1% (25/48)	24.5% (12/49)	48.8% (20/41)	25.5% (14/55)	70.7% (41/58)	30.9% (17/55)
B	24.5% (12/49)	40.4% (23/57)	25.0% (12/48)	59.2% (29/49)	41.5% (17/41)	72.7% (40/55)	24.1% (14/58)	67.3% (37/55)
C _b / b	---	43.9% (25/57)	---	16.3% (8/49)	---	1.8% (1/55)	---	1.8% (1/55)

	Study 3			
Options	Compromise effect (C_aAB)		Decoy effect (aAB)	
	Rounded Price	Precise Price	Rounded Price	Precise Price
C_a / a	18.8% (15/80)	29.3% (22/75)	6.3% (5/79)	4.9% (4/82)
A	50.0% (40/80)	37.3% (28/75)	57.0% (45/79)	67.1% (55/82)
B	31.3% (25/80)	33.3% (25/75)	36.7% (29/79)	28.0% (23/82)

Study 4								
	Low time pressure				High time pressure			
Options	Compromise effect (ABC_b)		Decoy effect (ABb)		Compromise effect (ABC_b)		Decoy effect (ABb)	
	Rounded Price	Precise Price	Rounded Price	Precise Price	Rounded Price	Precise Price	Rounded Price	Precise Price
A	23.8% (10/42)	18.6% (8/43)	32.6% (14/43)	35.0% (14/40)	14.3% (6/42)	31.0% (13/42)	34.5% (10/29)	15.2% (5/33)
B	52.4% (22/42)	65.1% (28/43)	65.1% (28/43)	62.5% (25/40)	57.1% (24/42)	45.2% (19/42)	55.2% (16/29)	81.8% (27/33)
C_b / b	23.8% (10/42)	16.3% (7/43)	2.3% (1/43)	2.5% (1/40)	28.6% (12/42)	23.8% (10/42)	10.3% (3/29)	3.0% (1/33)

Figure 1.
Conceptual Framework

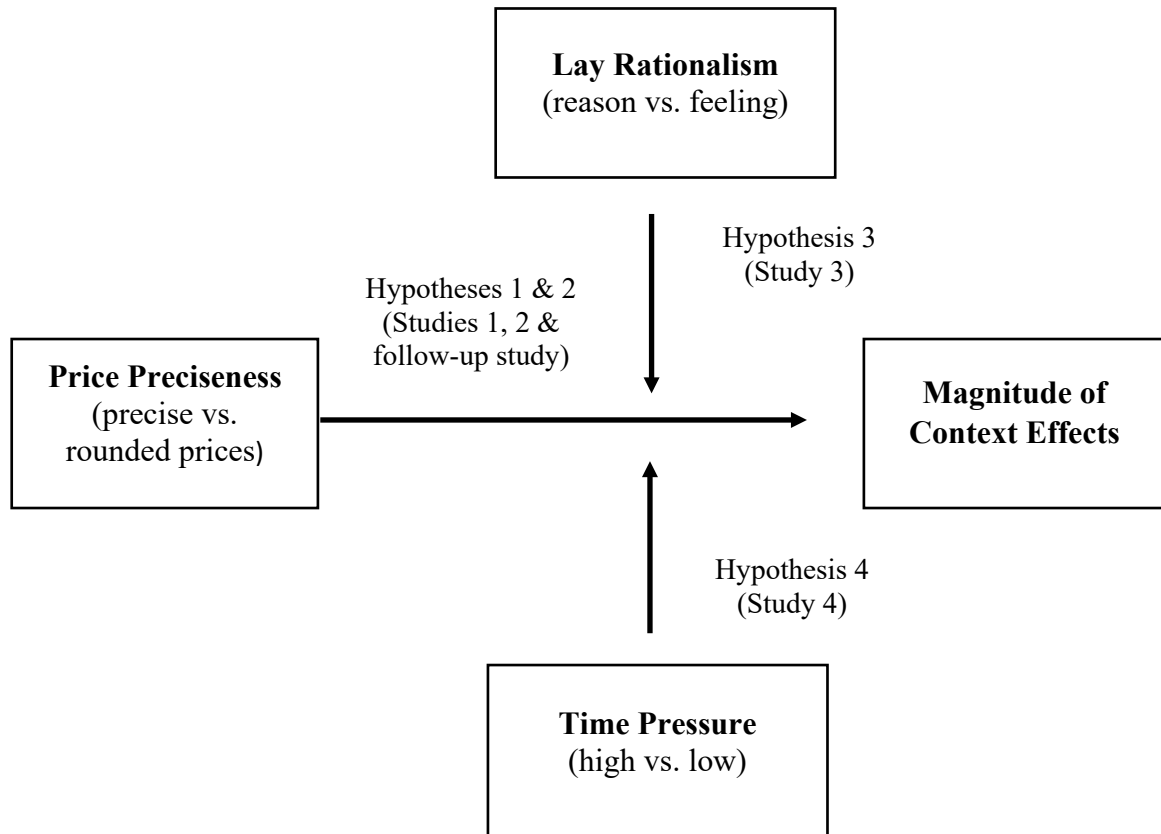


Figure 2.
Results of Study 3

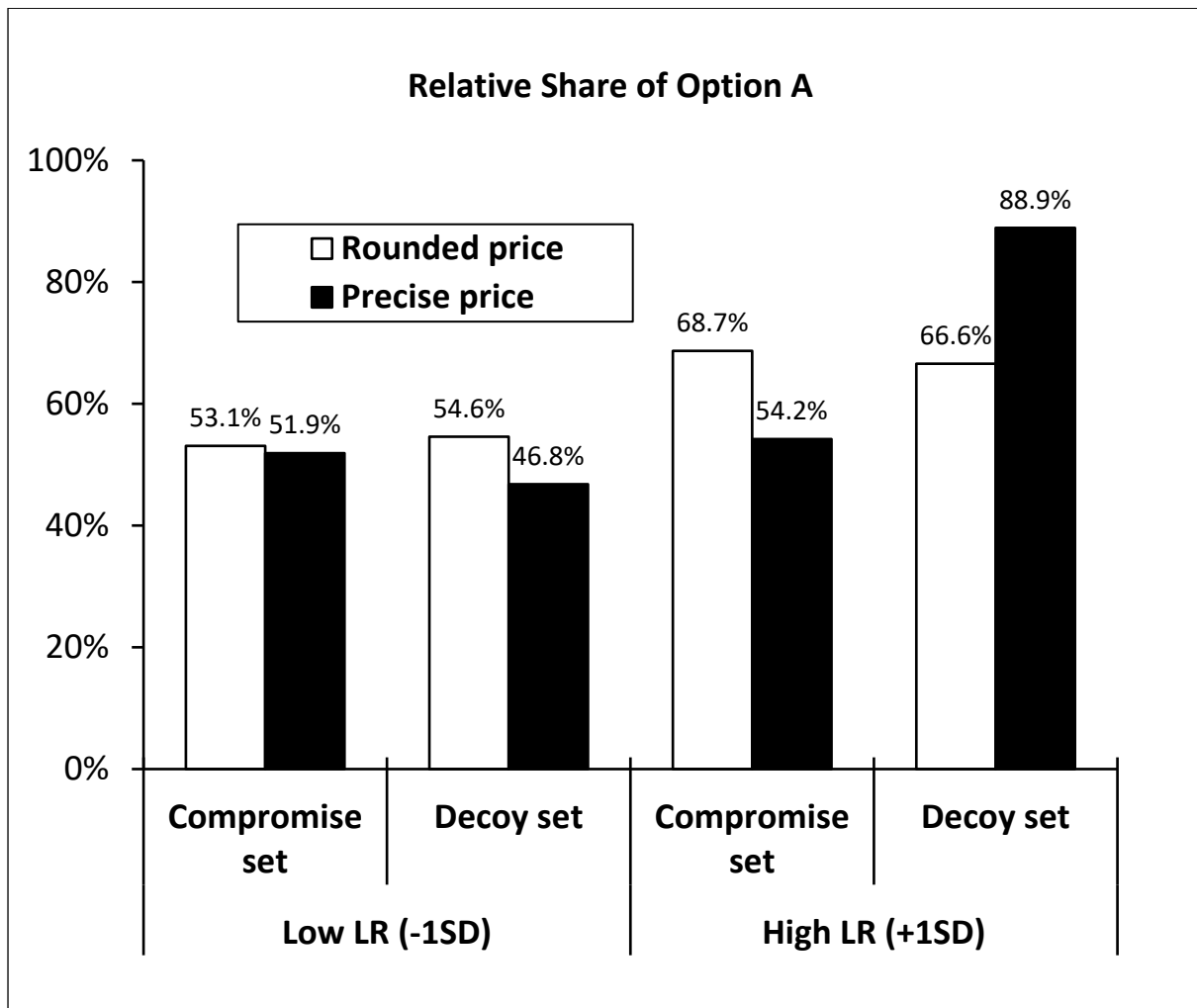
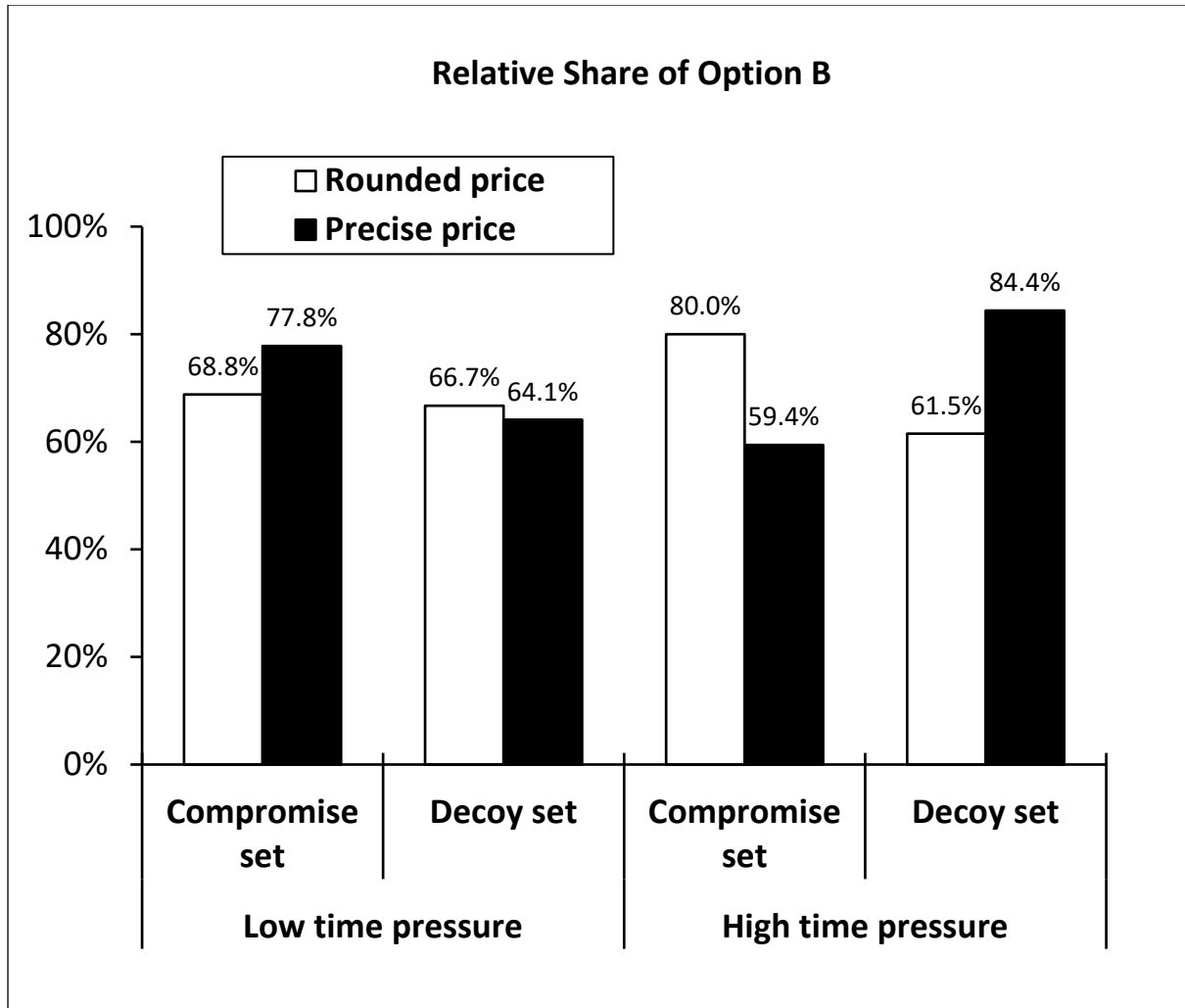


Figure 3.

Results of Study 4



Web Appendix A.

Study 1A: Stimuli of Compromise Effect

C_aAB in precise price I condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.0 of 5 ★★★★☆	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆
Number of outdoor recreation option	4 different activities are available	6 different activities are available	8 different activities are available
Number of different local restaurants	6 different restaurants	8 different restaurants	10 different restaurants
Price per day	\$99.99	\$149.99	\$199.99

ABC_b in precise price I condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆	Hotel Rating: 4.5 of 5 ★★★★☆
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$149.99	\$199.99	\$249.99

C_aAB in precise price II condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.0 of 5 ★★★★☆	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆
Number of outdoor recreation option	4 different activities are available	6 different activities are available	8 different activities are available
Number of different local restaurants	6 different restaurants	8 different restaurants	10 different restaurants
Price per day	\$102.50	\$153.50	\$204.50

ABC_b in precise price II condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆	Hotel Rating: 4.5 of 5 ★★★★☆
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$153.50	\$204.50	\$255.50

C_aAB in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.0 of 5 ★★★★☆	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆
Number of outdoor recreation option	4 different activities are available	6 different activities are available	8 different activities are available
Number of different local restaurants	6 different restaurants	8 different restaurants	10 different restaurants
Price per day	\$100	\$150	\$200

ABC_b in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★☆	Hotel Rating: 4.0 of 5 ★★★★☆	Hotel Rating: 4.5 of 5 ★★★★☆
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$150	\$200	\$250

Web Appendix B.

Study 1B: Stimuli of Decoy Effect

aAB in precise price I condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$199.99	\$199.99	\$249.99

ABb in precise price I condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	8 different activities are available	10 different activities are available	10 different activities are available
Number of different local restaurants	10 different restaurants	12 different restaurants	12 different restaurants
Price per day	\$199.99	\$249.99	\$299.99

aAB in precise price II condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$204.50	\$204.50	\$255.50

ABb in precise price II condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	8 different activities are available	10 different activities are available	10 different activities are available
Number of different local restaurants	10 different restaurants	12 different restaurants	12 different restaurants
Price per day	\$204.50	\$255.50	\$306.50

aAB in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$200	\$200	\$250

ABb in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	8 different activities are available	10 different activities are available	10 different activities are available
Number of different local restaurants	10 different restaurants	12 different restaurants	12 different restaurants
Price per day	\$200	\$250	\$300

Web Appendix C.

Study 2: Stimuli of Compromise and Decoy Effects

Compromise set - C_aAB in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$149.99	\$199.99	\$299.99

Compromise set - ABC_b in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$199.99	\$299.99	\$349.99

Compromise set - C_aAB in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$150	\$200	\$300

Compromise set - ABC_b in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$200	\$300	\$350

Decoy set - aAB in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$199.99	\$249.99	\$299.99

Decoy set - AB_b in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$199.99	\$299.99	\$349.99

Decoy set - aAB in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$200	\$250	\$300

Decoy set - AB_b in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆	Hotel Rating: ★★★★☆
Price per day	\$200	\$300	\$350

Web Appendix D.

Study 3: Stimuli of Compromise and Decoy Effects

Compromise set - C_aAB in precise price condition

	Spot A	Spot B	Spot C
Quality of hotel	Excellent: 4.5 out of 5 stars	Very Good: 4.0 out of 5 stars	Good: 3.5 out of 5 stars
Weather	Average temperature: 60°F - 90°F	Average temperature: 55°F - 85°F	Average temperature: 55°F - 80°F
Beaches quality	9 out of 10	8 out of 10	7 out of 10
Distance of airport	4 miles	8 miles	12 miles
Traveler reviews	Average score: 9 /10	Average score: 8 /10	Average score: 7 /10
Price	\$1,099.95	\$899.95	\$699.95

Compromise set - C_aAB in rounded price condition

	Spot A	Spot B	Spot C
Quality of hotel	Excellent: 4.5 out of 5 stars	Very Good: 4.0 out of 5 stars	Good: 3.5 out of 5 stars
Weather	Average temperature: 60°F - 90°F	Average temperature: 55°F - 85°F	Average temperature: 55°F - 80°F
Beaches quality	9 out of 10	8 out of 10	7 out of 10
Distance of airport	4 miles	8 miles	12 miles
Traveler reviews	Average score: 9 /10	Average score: 8 /10	Average score: 7 /10
Price	\$1,100	\$900	\$700

Decoy set - aAB in precise price condition

	Spot A	Spot B	Spot C
Quality of hotel	Excellent: 4.5 out of 5 stars	Very Good: 4.0 out of 5 stars	Good: 3.5 out of 5 stars
Weather	Average temperature: 60°F - 90°F	Average temperature: 55°F - 85°F	Average temperature: 55°F - 80°F
Beaches quality	9 out of 10	8 out of 10	7 out of 10
Distance of airport	4 miles	8 miles	12 miles
Traveler reviews	Average score: 9 /10	Average score: 8 /10	Average score: 7 /10
Price	\$1,099.95	\$899.95	\$899.95

Decoy set - aAB in rounded price condition

	Spot A	Spot B	Spot C
Quality of hotel	Excellent: 4.5 out of 5 stars	Very Good: 4.0 out of 5 stars	Good: 3.5 out of 5 stars
Weather	Average temperature: 60°F - 90°F	Average temperature: 55°F - 85°F	Average temperature: 55°F - 80°F
Beaches quality	9 out of 10	8 out of 10	7 out of 10
Distance of airport	4 miles	8 miles	12 miles
Traveler reviews	Average score: 9 /10	Average score: 8 /10	Average score: 7 /10
Price	\$1,100	\$900	\$900

Web Appendix E.

Study 4: Stimuli of Compromise and Decoy Effects

Initial information – all conditions

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: ? of 5	Hotel Rating: ? of 5	Hotel Rating: ? of 5
Number of outdoor recreation option	? different activities are available	? different activities are available	? different activities are available
Number of different local restaurants	? different restaurants	? different restaurants	? different restaurants
Price per day	?	?	?

Compromise set - ABC_b in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$149.50	\$198.50	\$247.50

Compromise set - ABC_b in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.5 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	10 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	12 different restaurants
Price per day	\$150	\$200	\$250

Decoy set - AB_b in precise price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	8 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	10 different restaurants
Price per day	\$149.50	\$198.50	\$247.50

Decoy set - AB_b in rounded price condition

Spot	Spot A	Spot B	Spot C
Quality of hotel	Hotel Rating: 3.5 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★	Hotel Rating: 4.0 of 5 ★★★★★
Number of outdoor recreation option	6 different activities are available	8 different activities are available	8 different activities are available
Number of different local restaurants	8 different restaurants	10 different restaurants	10 different restaurants
Price per day	\$150	\$200	\$250

Web Appendix F.

Follow-up Study: Stimuli of Compromise Effect

Compromise set - ABC in precise information condition

Option A:	9.99% chance of winning \$0.31
Option B:	19.99% chance of winning \$0.21
Option C:	29.99% chance of winning \$0.11

Compromise set - ABC in rounded information condition

Option A:	10% chance of winning \$0.30
Option B:	20% chance of winning \$0.20
Option C:	30% chance of winning \$0.10