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ARTICLE



The impact of the COVID-19 threat on the preference for high versus low quality/price options

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ABSTRACT

The present research investigates how the threat of COVID-19 affects consumers' choices among hospitality/travel options of varying levels of quality and price. Drawing on compensatory consumption theory, we predicted that the virus's prominence would increase consumers' preference for more expensive options in a choice set. Five empirical studies and one secondary data analysis investigated consumers' choice among various business and budget hotels. The results consistently showed that consumers increase their safety-seeking under a high threat of COVID-19 and prefer a more expensive hotel option. To enhance the study's internal validity, we provide converging evidence by either measuring (studies 1, 2, 3, and 5) or manipulating the threat of COVID-19 (study 4). We also provide the secondary data analysis with words searched in Google Trends (study 6). Finally, we discuss the theoretical and managerial implications of our findings.

KEYWORDS

COVID-19; pandemic; price; quality; preference; safety-seeking

本研究调查了 COVID-19 的威胁如何影响消费者在不同质量和价格水平的招待/旅行选择中的选择。根据补偿性消费理论,我们预测,病毒的突出地位将增加消费者对选择中更昂贵的选择的偏好。五项实证研究和一次二次数据分析调查了消费者在各种商务型和经济型酒店中的选择。研究结果表明,在 COVID19 的高威胁下,消费者增加了安全寻求,并且更喜欢更昂贵的酒店选择。为了提高研究的内部有效性,我们通过测量(研究1, 2, 3和5)或操纵 COVID19 的威胁(研究4)提供融合证据。我们还提供二级数据分析,在 Google 趋势中搜索单词(研究6)。最后,我们讨论了我们的研究结果的理论和管理意义。

Introduction

COVID-19 – declared a pandemic by the World Health Organization (WHO) on 12 March 2020 – has had vast and multifaceted impacts on the entire world economically, politically, socioculturally, and psychologically (Sigala, 2020). Global contagious diseases have had substantial impacts on the hospitality and tourism industry (e.g., Chen et al., 2007; Gursoy & Chi, 2020; McKercher & Chon, 2004; Pine & McKercher, 2004; Tew et al., 2008). For example, in the hospitality industry, the lockdown policies and consumers' general

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tendency to avoid public places out of fear of catching the virus from contact with others (Neuberg et al., 2011) have caused hotels and restaurants to suffer (Gursoy et al., 2020; Severson & Yaffe-Bellany, 2020; Sigala, 2020). Business owners need to understand the pandemic's effect on consumer preferences to rectify the situation (Gursoy et al., 2020; Kim & Lee, 2020).

COVID-19 also has negative influences on individual consumers. Owing to its adverse impacts on whole economies, many people, including tourism micro-entrepreneurs (e.g., Airbnb hoteliers, Uber taxi drivers; Sigala & Dolnicar, 2017), already lost or have the prospect of losing their jobs and income. These negative impacts can induce feelings of financial constraint and distress (Lee et al., 2018). In addition, COVID-19 can change individuals' values, consumption preferences, and behaviors (Gursoy & Chi, 2020; Kim & Lee, 2020; Sigala, 2020) depending on how severely individuals perceive the disease threat (Kim et al., 2020).

Given the financial distress experienced by hospitality business managers and individual consumers, we investigate an important and timely question: How do consumers make hospitality choices among differing quality and price options? Across five empirical studies (n = 797) with the support of the secondary data analysis, we show that the perceived threat of COVID-19 increases consumers' preferences for more expensive options. This is because consumers' need for safety increases under high (vs. low) threat of COVID-19, which, in turn, positively influences their preferences for more expensive hotel and travel options. By providing a better understanding on consumers' quality and price sensitivity and preferences under COVID-19, this research offers critical implications for both business managers of hospitality and tourism industries and individual consumers. Specifically, the findings of this research suggest that during and after the pandemic, travel and hospitality managers should offer high quality and high price options to better respond to consumers' experiences of heightened threats. Ultimately, we recommend practical strategies for travel and hospitality managers to recover from the devastating losses in the travel and hospitality service caused by COVID-19 (Gursoy & Chi, 2020; Sigala, 2020).

Literature review

COVID-19 in travel and hospitality

COVID-19 has had a tremendous influence on nearly every aspect of life worldwide. Previous literature explored the various effects of viruses and related diseases, including individual preferences for typical (vs. atypical) products (Huang & Sengupta, 2020), conformity tendencies (Wu & Chang, 2012), and anti-social behavior (Park et al., 2003). Among the areas affected, COVID-19 has had critical impacts on the hospitality and tourism industries (Sigala, 2020).

Recent research provided empirical evidence of the impacts of COVID-19 on various aspects of travel and hospitality. For instance, the pandemic influences consumers' preferences regarding tourism destinations. Travelers hoping to avoid contact with possibly infected others show greater preference for rural (over city) and domestic (over international) tourism (OECD, 2020). To prevent contagion from human service providers, consumers show preferences toward technology-delivered services over human-delivered services (Galoni et al., 2020; Kim et al., 2021). People also prefer simple activities to risky or

multipurpose activities (Mayo Clinic, 2020). Zhang et al. (2020) found that the threat of infectious disease increased consumers' negative reactions to disadvantaged tourism-related pricing or unfair travel pricing. In addition, Kim et al. (2019) identified the negative effects of epidemic disease outbreaks on restaurants' financial performance. More relatedly, Kim and Lee (2020) showed that consumers who feel more threatened by COVID-19 displayed a higher preference for private facilities when making restaurant or room choices.

Despite the recent research efforts, the current literature still lacks empirical investigations about the impact of COVID-19 on the travel and hospitality area. This paper provides a theoretical prediction and empirical evidence regarding COVID-19's effect on consumers' preference for high (vs.) low quality/price options.

Literature on trade-off between high versus low quality and price options

Quality and price are critical competitive components for hotels seeking to attract tourists. Using game-theoretic formulations, García and Tugores (2006) investigated whether hotels are better off by providing high-quality services through differentiation and found that high- and low-quality segments can coexist in the hotel industry. This co-existence is because of the fundamental trade-offs between quality and price: low-priced hotels are discouraged from developing high-quality services but benefit from attracting many tourists. In contrast, high-priced hotels benefit from providing high-quality services at the expense of losing tourists who cannot afford their high prices (Fiorentino, 1995).

In the early 1990s, budget hotels appeared as an innovative business model and received a great deal of attention from hotel chains owing to their growth opportunities (Fiorentino, 1995). Based on the operations of successful budget hotels in the UK, Brotherton (2004) identified three critical factors for successful budget hotels: convenient locations, consistent accommodation standards, and value for money. More recently, researchers have examined the drivers of improved financial performance in budget hotels. For example, Ren et al. (2018) investigated how customers' experiences with budget hotels influence customers' satisfaction and the perceived value of services they receive from the hotels. Lei et al. (2019) explored the relationship between sales channels, including online and mobile booking platforms, and budget hotels' financial performance.

Meanwhile, tourists are increasingly expressing their interests in higher-quality hotels (García & Tugores, 2006; Sánchez-Pérez et al., 2020). To respond to the increasing demand, hotels rely on differentiation as an essential strategy for attaining competitive advantage (Becerra et al., 2013). Sánchez-Pérez et al. (2020) considered two different types of differentiation, vertical and horizontal, and showed that both types increased hotel price. Despite the high prices, researchers found that providing high-quality services through differentiation can lead to more sustainable earnings than cost leadership strategies (i.e., affordable but low-quality service; Banker et al., 2014; Köseoglu et al., 2015). In another study, Kim et al. (2019) investigated the impact of unexpected external shocks, including natural disasters and financial crises, on hotels' performance. Their findings suggest that high-priced hotels should offer room rate discounts, as a common crisis-coping strategy, to mitigate the harmful impacts.

Notably, various situational or decision factors influence the preference between two options of different quality and price. People preferred higher rather than lower quality/price items, especially when the anticipated regret of the purchase was salient. For example,

Simonson (1992) found that participants who worried about their decision preferred the high quality/price options, and Simonson and Tversky (1992) provided empirical evidence that people preferred high (vs. low) quality/price options when they systematically compared two options. Finally, construal level theory (Trope & Liberman, 2010) suggests that people prefer the cheaper option when the construal is concrete (i.e., travel in the next week). They choose the expensive but higher-quality option when the construal is abstract (i.e., travel in six months).

In the travel area, Kim, Cui et al. (2020) suggested that the price information's preciseness influenced the preference for the high rather than low quality/price option. Specifically, when travelers saw a precise price format (e.g., 199 USD), they chose the low (vs. high) quality/price option because they associated the precise price information with the cost to pay. In contrast, when the price is in a rounded format (e.g., 200 USD), travelers chose the high (vs. low) quality/price option. The opposite pattern holds when the price information is related to the quality of the target products.

In sum, the previous literature suggests various influences on consumer preferences for high (vs. low) quality/price options. However, it has mostly ignored the effect of disease threat on consumer preference. Our study focuses on the impact of the COVID-19 threat on consumers' choice for the different quality/price options. In the following sections, we develop our main predictions and report five empirical studies and one secondary data analysis.

Main prediction

The current research investigates the impact of COVID-19 on hospitality and tourism customers' preferences for high (vs. low) quality/price options. As the coronavirus pandemic has upended most human beings' lives globally, people perceive significant threats to their safety. The need for safety is one of the basic human needs (Maslow, 1987), and perceived threat of COVID-19 highlights the feeling of lack of basic safety needs. The extant literature on motivation suggests that when people recognize a discrepancy between their ideal state (e.g., safety) and the current state (e.g., perceived threat), they are motivated to reduce the gap (e.g., Jhang & Lynch, 2015). Our study predicts that people who perceive an increased threat from COVID-19 would show a greater safety-seeking tendency (H1).

People can satisfy their need for safety by adopting products or services with explicit safety features, such as a hotel room with a high-security level. Prior research on compensatory consumption suggests that people can also offset psychological deficits, such as control, power, or safety, by consuming specific products or services that offer the deficient resources in symbolic forms (e.g., Mandel et al., 2017; Rucker & Galinsky, 2008). For instance, Rucker and Galinsky (2008) showed that people who feel powerless tend to purchase luxury brands because luxury brands make them feel more powerful and competent. More germane to our research, Mandel and Heine (1999) found that when induced with mortality salience (thus a feeling of insecurity), people evaluate brands with high (vs. low) status more favorably, implying that people obtain a sense of security from high-status brands. Along this line, recent research demonstrated that luxury (vs. non-luxury) brands are more closely related to a sense of safety. Consequently, individuals' preferences for luxury (vs. non-luxury) brands increase with physical threats (Ma et al., 2019). These findings collectively suggest that perceived threats (and the feeling of insecurity) increase preferences for options addressing heightened safety.

Despite much overlap between luxury (or high-status) brands and high quality/price options, they are not the same. Luxury brands are much more sophisticated concepts with multiple facets and connotations (Ko et al., 2019); whereas, high quality and price are relative judgments determined by the choice context. Empirically differentiating the two may not always be clear. We argue that if an option is associated with heightened safety, preference for that option will increase as perceived threat increases because it can bolster one's sense of security (H3). Indeed, people associate high-quality products with lower risk (Dowling & Staelin, 1994). Thus, we predict that when people perceive increased threat from COVID-19, the preference for a high quality/price option will increase even if the option is not a luxury item (H2). Our hypotheses are as follows:

H1: High perceived COVID-19 threat will increase an individual's safety-seeking tendency.

H2: High perceived COVID-19 threat will increase an individual's preference for high (vs. low) quality/price options.

H3: Individual's safety-seeking tendency will mediate the impact of the perceived COVID-19 threat on the preference for high (vs. low) quality/price options.

Empirical studies

Overview of empirical studies and secondary data analysis

We conducted five empirical studies using survey and experimental design to test our hypotheses regarding the relationship among the perceived threat, safety-seeking, and the preference for the high (vs. low) quality/price option.

Study 1 provides empirical evidence that consumers' perceived threat of COVID-19 increases safety-seeking tendencies (i.e., the Risk Propensity Scale; Meertens & Lion, 2008). Study 2 shows that perceived disease threat increases consumers' preferences for high (vs. low) quality/price options. Study 3 replicates the findings using a different choice set. Study 4 uses a different method of manipulating the levels of COVID-19 threat and provides consistent evidence of the significant impact of disease threat on consumers' preferences for high (vs. low) quality/price options. Study 5 tests the mediation role of safety-seeking between the threat of COVID-19 and the preference for high (vs. low) quality/price options. Finally, Study 6 uses secondary data, Google search data, before and after the COVID-19 pandemic. Study 6 extends the external validity to our core argument.

To control for the heterogeneity of the sample of the survey and experiments across all studies, we used a sample of US participants from an online panel (Amazon Mechanical Turk). We collected the data in June-July and December 2020, when the COVID-19 situation in the United States had improved compared with the early period, but the disease was still prevalent. Note that the price range of hotel options (\$95-\$260) in our experiments resemble the context of the business/budget hotels category rather than the resort/luxury hotels category.

Study 1: establishing the relationship between the perceived threat and safety-seeking (H1)

We predicted that high perceived threat, or threat salience, increases the general tendency to seek safety or avoid risk. Eighty-six US adults (44.2% female, Average age = 35.7, SD = 10.6) participated in our study. First, we asked participants to report their perceived threat of COVID-19 on two scales (e.g., “In your opinion, how life-threatening is coronavirus?” (1 = not at all life-threatening, to 7 = very life-threatening), Cronbach’s $\alpha = .711$), following Kim (2020) and Kim et al. (2020). Then we measured safety-seeking tendency along a six-item scale (e.g., “I do not take risks with my health” (1 = totally disagree, to 7 = totally agree, where a higher score indicates higher safety-seeking), Cronbach’s $\alpha = .698$), using the Risk Propensity Scale (Meertens & Lion, 2008). We deleted one item from the original scale, “I really dislike not knowing what is going to happen,” because of low reliability.

As predicted, a regression analysis with perceived threat as the independent variable (IV) and safety-seeking as the dependent variable (DV) showed that the perceived threat positively influenced safety-seeking ($R^2 = .06$, $F(1, 84) = 4.86$, $b = .20$, $SE = .09$, $t = 2.20$, $p = .030$). This effect remained significant when we included family income, age, and gender as covariates ($R^2 = .10$, $F(4, 81) = 2.33$, $b = .20$, $SE = .09$, $t = 2.19$, $p = .031$). However, the effects of covariates on safety-seeking were not significant (all $ps > .104$). In sum, this study’s findings supported H1.

Study 2: showing the initial evidence of H2





Study 2 provided the initial evidence of the perceived threat’s impact on the preference for different quality/price options. One hundred and forty-five US adults (44.5% female, Average age = 36.2, SD = 11.3) participated in this study. First, we asked participants to report their perceived threat of COVID-19 on the same two-item scales used in study 1 (Cronbach’s $\alpha = .904$). Then, participants chose one of four hotel room types (as shown in Figure 1) that varied in quality (e.g., floor size, view) and price (\$95 ~ 199 USD). We presented the options in ascending order, allowing us to treat the DV (choice) as a continuous variable. Next, participants provided their demographic information, including their incomes.

The results of a regression analysis (IV: perceived threat, DV = preference for high-quality/price option) indicated that the perceived threat positively influenced the preference for the high quality/price option ($R^2 = .03$, $F(1, 143) = 4.04$, $b = .10$, $SE = .05$, $t = 2.01$, $p = .046$), supporting H2. This effect was consistent when we included family income, age, and gender as covariates ($R^2 = .06$, $F(4, 140) = 2.23$, $b = .08$, $SE = .05$, $t = 1.68$, $p = .096$). However, the covariate of age was significant ($b = .01$, $SE = .01$, $t = 1.77$, $p = .079$).

Study 3: showing the main prediction with a different dependent variable

Study 3 replicated study 2 using a different choice scenario and included 179 US adult participants (42.5% female, Average age = 40.2, SD = 13.2). First, as we did in study 1, we asked participants to report their perceived threat (Cronbach’s $\alpha = .792$). Then, we asked participants to imagine that they planned to take a vacation and choose one vacation spot from nine options (as shown in Figure 1). Each option differed in hotel quality (e.g., 3.0 ~ 4.6) and price (\$100 ~ 260 USD). After that, participants provided their demographic information, including their incomes.

Studies 2 & 4

Room Type 1	Room Type 2	Room Type 3	Room Type 4
Classic Room	Premier Corner Room	Swiss Pinnacle Room	Executive Suite
			
210 square feet	320 square feet	419 square feet	550 square feet
\$95 per night	\$126 per night	\$167 per night	\$199 per night

Study 3

Spot	A	B	C	D	E	F	G	H	I
Quality of hotel (rated: 1.0-5.0)	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6
Price per day	\$100	\$120	\$140	\$160	\$180	\$200	\$220	\$240	\$260

Study 5








Classic Room	Superior Room
	
Room Size: 180 square feet	Room Size: 250 square feet
  	   
\$140 per night	\$200 per night

Figure 1. Stimuli for Studies 2, 3, 4, and 5.

The results of our regression analysis (IV = perceived threat, DV = preference for high-quality/price option) were consistent with those of study 2. Specifically, the perceived threat positively influenced the preference for higher quality/price options ($R^2 = .03$, $F(1, 177) = 4.58$, $b = .24$, $SE = .11$, $t = 2.14$, $p = .036$), supporting H2. This effect was still significant when we added family income, age, and gender as covariates ($R^2 = .05$, $F(4, 174) = 2.36$, $b = .22$, $SE = .11$, $t = 1.98$, $p = .049$). There was a statistical significance in the covariate of income ($b = .09$, $SE = .04$, $t = 1.99$, $p = .049$).

Study 4: manipulating the COVID-19 threat

In studies 2 and 3, we measured the perceived threat, potentially weakening the causal relationship. To address this issue, we manipulated the COVID-19 threat in this study using 152 US adult participants (42.1% female, Average age = 35.9, SD = 10.2). We randomly assigned participants to one of two groups (COVID-19 threat: high vs. low) in a between-subjects design. Following the procedure of Galoni et al. (2020), we first asked participants to read a newspaper article regarding COVID-19 or food (See Figure 2). Specifically, participants in the high threat condition read the newspaper article about the COVID-19's high risk (i.e., the article's title: "Study finds 1 in 5 people worldwide at risk of severe COVID-19"). Participants in the low threat condition read a newspaper article about food (i.e., the article's title: "This one-pan meal shows just how joyful tofu can be"). We then asked participants to recall the topic of the newspaper's articles (we excluded eight participants for failing this attention check task). Following this, participants chose one hotel room type from four options, as in study 2.

ANOVA results were significant (IV = threat manipulation, DV = preference for high-quality/price option). Specifically, the preference for high quality/price options was stronger in the high (vs. low) threat condition ($M_{high} = 2.45$, $SD = 0.98$ vs. $M_{low} = 2.12$, $SD = 0.94$; $F(1, 150) = 4.59$, $p = .034$, $\eta^2 = .030$), as shown in Figure 3. To control for other related variables, we conducted an ANCOVA with three additional variables (i.e., family income, age, and gender) as covariates. No covariates were significant (all $ps > .161$) while the main effect of the COVID-19 threat was still marginally significant ($F(1, 147) = 3.53$, $p = .062$, $\eta^2 = .023$). In sum, the results of Study 4, where we manipulated (not measured) COVID-19 threat, lend support for H2.

Study 5: providing a mediating evidence of safety-seeking

This study has two purposes. First, even though our previous studies provided converging evidence that the COVID-19 threat increased consumers' preferences for high quality/price options, we did not provide the direct causal evidence for the underlying mechanism of safety-seeking (i.e., H3: COVID-19 threat \rightarrow safety-seeking tendency \rightarrow preference for high quality/price option). Therefore, in this study, we aim to empirically demonstrate the mediating role of safety-seeking in the relationship. Second, one may argue that the stimuli used in our previous studies did not fully resemble actual consumer experiences. To increase external validity, we use stimuli that are highly realistic in Study 5 (see Figure 1).

Study 5 resembled study 2 with a few modifications. Participants of this study included 235 US adults (47.7% female, Average age = 41.0, SD = 14.0). First, we asked participants to report their perceived threat similar to study 2 (Cronbach's $\alpha = .895$). Then, we asked participants to imagine planning their holiday and indicate their preferences between the two hotel room types along a 7-point scale (1 = I will definitely choose Classic Room [inexpensive option], 7 = I will definitely choose Superior Room [expensive option]). The two options (Figure 1) varied in quality (e.g., floor size, key benefits) and price (\$140 vs. \$200 USD). After that, participants rated their safety-seeking tendencies in hotel room decisions (i.e., Safety is first in my hotel room choice/I do not take risks with my health in my hotel room choice, adapted from Meertens & Lion, 2008) on two items of a 7-point scales (1 = totally disagree, 7 = totally agree, Cronbach's $\alpha = .823$).

High Threat condition

The New York Times

Study Finds 1 in 5 People Worldwide at Risk of Severe Covid-19

Roughly 1.7 billion people have at least one of the underlying health conditions that can worsen cases of the coronavirus, a new analysis shows.



June 15, 2020

In just six months, nearly 8 million people worldwide have been stricken with confirmed cases of Covid-19, and at least 434,000 have died. But those deaths have not been distributed evenly; among the most vulnerable are people with underlying health conditions, such as diabetes and diseases that affect the heart and lungs. According to a new modeling study, roughly 1.7 billion people around the world — 22 percent of the global population — fall into that category.

That estimate, published today in *The Lancet Global Health*, excluded healthy older individuals without underlying health conditions, a group also known to be at risk because of their age. It also did not take into account risk factors like poverty and obesity, which can influence a person's susceptibility to disease and access to treatment.

Low Threat condition

The New York Times

This One-Pan Meal Shows Just How Joyful Tofu Can Be

This 30-minute dinner gets its crunch from pan-seared tofu, blistered snap peas and toasted cashews, and its flavor from an umami-rich sauce.



June 15, 2020

Tofu's versatility is no secret, but to embrace its many uses is an exquisite thing — it can be pan-fried, grilled, blended into spreads and dressings, or tossed in a smoker for a few hours.

A dish centered on tofu usually has to be prepared to weather imaginary criticism. Consider this recipe a series of well-prepared comebacks. There is a dash of rice vinegar, a sweet acid to gently sting the skeptical palate. There is coconut milk for richness, molasses for caramelization, ginger for freshness and soy sauce for umami.

The dish's contrasting textures may be the most satisfying part. Firm tofu slices are pan-seared for a golden-brown crust and a soft interior. Whole cashews offer a buttery crunch. The snap peas nod to the flavors of summer while looking back at the green shades of spring.

Figure 2. Stimuli for Study 4.

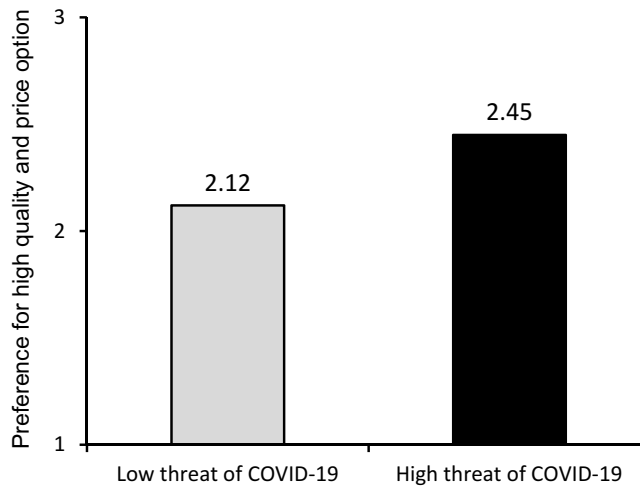


Figure 3. Results of Study 4.

First, the results of our regression analysis (IV = perceived threat, DV = preference for high quality/price option) were similar to study 2. Specifically, the perceived threat increased the preference for the higher quality/price option ($R^2 = .02$, $F(1, 233) = 5.52$, $b = .22$, $SE = .10$, $t = 2.35$, $p = .020$), again supporting H2. This effect remained significant when we controlled for the family income, age, and gender ($R^2 = .04$, $F(4, 230) = 2.45$, $b = .22$, $SE = .10$, $t = 2.28$, $p = .023$). The income covariate was statistically significant ($b = .08$, $SE = .04$, $t = 2.01$, $p = .045$).

Second, the result of our regression analysis (IV = perceived threat, DV = safety-seeking) indicated that the perceived threat increased the safety-seeking ($R^2 = .12$, $F(1, 233) = 31.32$, $b = .33$, $SE = .06$, $t = 5.60$, $p < .001$), again supporting H1. This effect remained significant when the family income, age, and gender were included in the model as covariates ($R^2 = .15$, $F(4, 230) = 10.01$, $b = .31$, $SE = .06$, $t = 5.23$, $p < .001$). However, the covariate of age was also significant in predicting the preference for the higher quality/price option ($b = .01$, $SE = .01$, $t = 1.96$, $p = .052$).

Finally, to test H3 (i.e., COVID-19 threat \rightarrow safety-seeking tendency \rightarrow preference for high-quality/price option), we conducted a mediation analysis with Hayes' methods (2017; model #4 with 5,000 bootstrapping with 3 covariates of family income, age, and gender). As shown in Figure 4, the results indicated that the indirect effect of the safety-seeking tendency was significant (indirect effect = .06, 95% CI [Confidence Interval]: [.001, .142]), supporting H3. In addition, the direct effect became non-significant (direct effect = .16, 95% CI: [-.043, .124]), suggesting a full mediation model. Furthermore, to check for any artificial effect of measurement order in the mediation, we also conducted reverse mediation analysis (i.e., COVID-19 threat \rightarrow preference for high quality/price option \rightarrow safety-seeking tendency), based on Kim et al. (2018). The result of the reverse mediation was not significant (indirect effect = .02, 95% CI: [-.001, .046]), which further supported the mediating role of safety-seeking (H3).

Study 6: analysis using google trends data

To enhance the external validity of our previous findings, we conducted the secondary data analysis from Google Trends (<https://trends.google.com/>). Google Trends demonstrates the

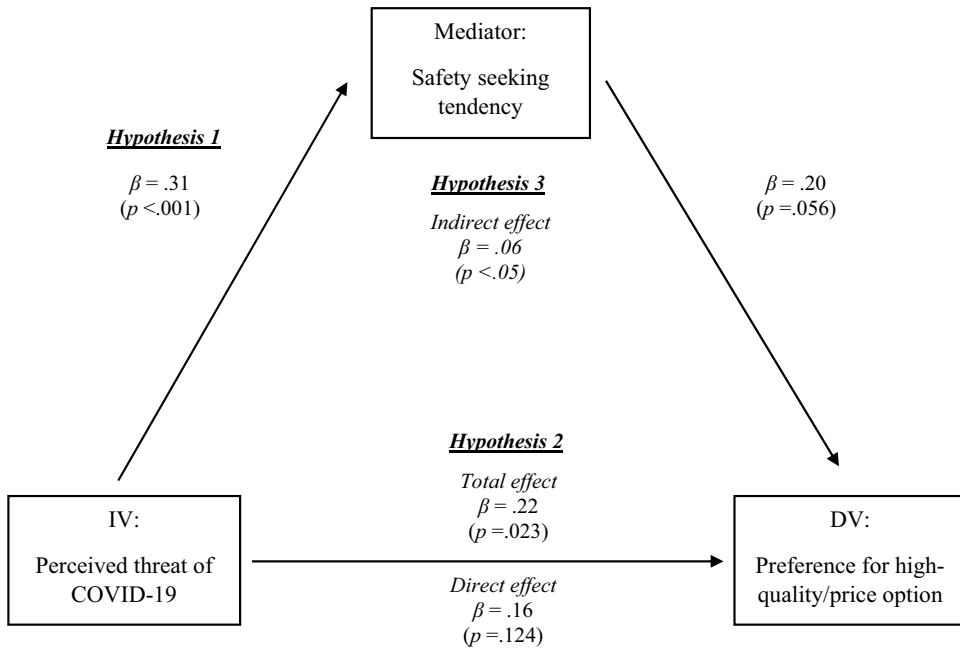


Figure 4. Mediation Results of Study 5.

dynamic changes of relative web search interests (i.e., percentage) compared to the highest point for a given region and a search period. We collected public interest data on hotel web searches using the five-level star rating, one of the most common hotel rating standards: 5-star hotel, 4-star hotel, 3-star hotel, 2-star hotel, and 1-star hotel. To be consistent with our previous studies, we focused on hotel search data in the US. Given that the web search for COVID-19 has been active from the beginning of March 2020 in the US, we set the search period from March 1 to November 29 in 2020 as the COVID-19 high-threat period (i.e., *after COVID-19*). For the matching samples, we set the period from March 3 to November 24 in 2019 as the COVID-19 low-threat period (i.e., *before COVID-19*). One might argue that this time-series data contains seasonality and situational effects. To address these concerns, we used the year-over-year comparison method and compared the average search interest during the treatment period (i.e., *after COVID-19*) with the control period (i.e., *before COVID-19*). Specifically, based on the year-over-year comparison, we calculated *before COVID-19* and *after COVID-19* by taking the average of search interests during the corresponding period.

Our Google Trends analysis indicated that, overall, Google searches for hotel options regardless of ratings significantly decreased after the COVID-19 outbreak (i.e., the overall absolute change [*after COVID-19* – *before COVID-19*] = –14.21% and the overall relative change [*after COVID-19* – *before COVID-19*]/*before COVID-19*) = –25.53%). This finding demonstrates that people, overall (across star ratings), searched hotels less during the high threat of COVID-19 than the low threat of COVID-19.

To test our hypothesis regarding high quality/price option preferences, we compared consumers' search frequencies between the high vs. low quality/price hotel options across the two COVID-19 threat periods. Consistent with our hypothesis, we found that the

magnitude of the decrease in searches was much smaller for the high quality/price hotel options (i.e., 4-star and 5-star hotels; absolute change: -11.32%, relative change: -18.34%) compared to the low quality/price hotel options (i.e., 1-star and 2-star hotels; absolute change: -20.91%, relative change: -41.68%), as shown in Figure 5. The results were similar when we compared only the 5-star hotel options (i.e., the high quality/price option; absolute change: -10.97%, relative change: -16.45%) with the 1-star hotel options (i.e., the low quality/price option; absolute change: -23.32%, relative change: -45.98%).

These results support the notion that during COVID-19, consumers were interested in high (vs. low) quality/price options when searching and choosing hotels. Overall, these results using the real data were consistent with our empirical studies and validated our main findings from studies 1 through 5.

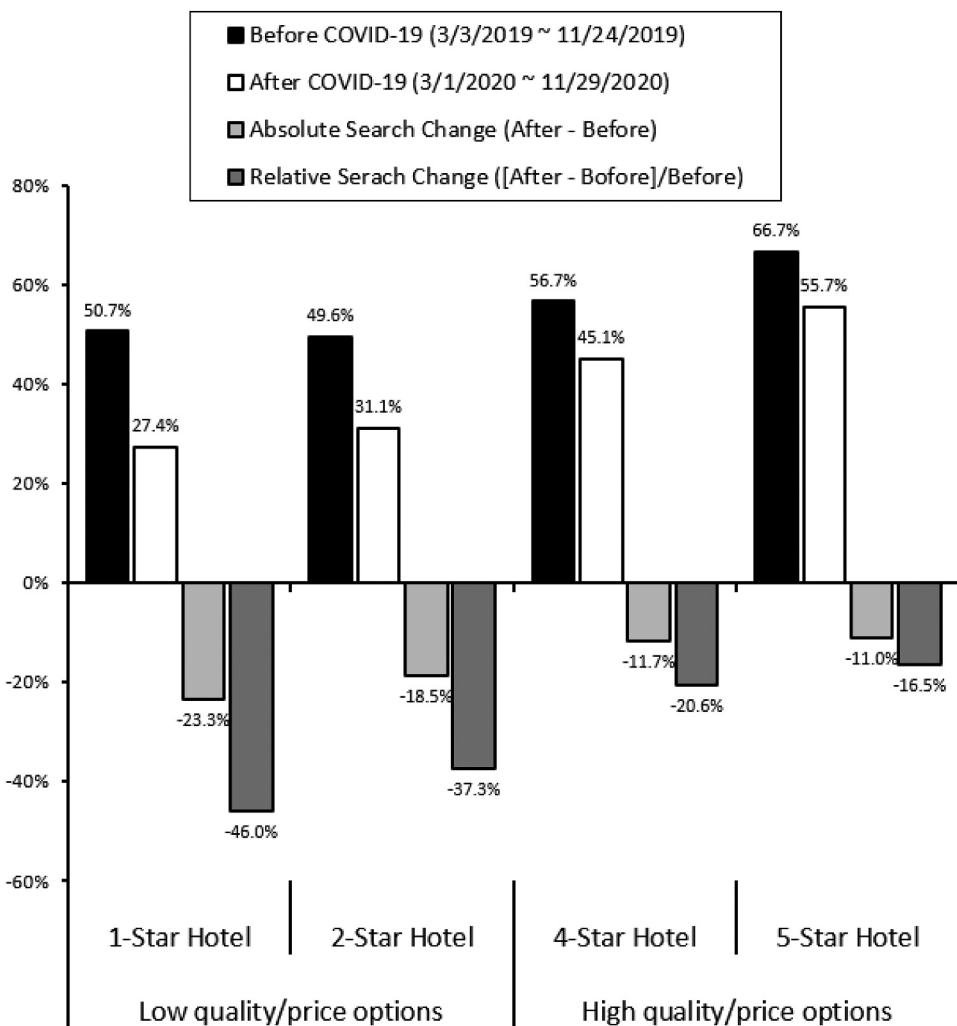


Figure 5. Results of Study 6.

General discussion

This research investigates how the threat of COVID-19 affects consumers' hospitality choices based on quality and price. Drawing on compensatory consumption theory, we demonstrate that the perceived threat of COVID-19 increases consumers' preferences for more expensive options. Five sets of primary data provide converging evidence that the threat leads consumers to prefer higher (vs. lower) quality/price options as a safety strategy. Specifically, study 1 confirmed that consumers' perceived threat of COVID-19 promoted safety-seeking tendencies. More importantly, study 2 showed that perceived threat increased the choice of higher (vs. lower) quality/price options. Study 3 replicated this finding using a different choice set, supporting the robustness of our results. To enhance our study's validity, in study 4, we directly manipulated the levels of threat and obtained consistent results that the COVID-19 threat increases consumers' preferences for the higher quality/price option. Study 5 provided empirical evidence for the mediating role of safety-seeking in the above relationship. Finally, the secondary data analysis in Study 6 provided additional support for our argument.

Theoretical and practical implications

The tourism and hospitality sector is most susceptible to external factors, such as terrorism or infectious diseases (Ioannides & Apostolopoulos, 1999). Nevertheless, previous research has seldom examined how external threat affects travelers' psychological and behavioral responses (e.g., Zhang et al., 2020). This research gap is significant in recent times as COVID-19 created dramatic changes in human behavior. The literature gap has opened up for new research to examine how consumers respond to threats, such as threats from contagious diseases (Galoni et al., 2020; Kim & Lee, 2020). For example, Kim and Lee (2020) showed that the COVID-19 pandemic increased consumers' preferences for private facilities in the hospitality setting, but they did not directly test the mechanism. Our research adds to the hospitality and tourism literature by showing that travel consumers' perceived threat shifts their preferences toward higher quality/price options.

More broadly, our research deepens the understanding of the impact of contagious diseases on individual behavior. Because of its dramatic influence across the globe, COVID-19 has drawn increasing research attention. Even though less starkly threatening than the COVID-19 pandemic, there have always been various sources of threat (Huang & Sengupta, 2020), such as other contagious diseases or terrorism. Research on compensatory consumption behavior well documented that psychological deficits, such as control and power, motivate individuals to engage in specific consumption behavior to offset the deficits (e.g., Mandel et al., 2017; Rucker & Galinsky, 2008). This line of research showed compensatory consumption in response to the threat, but it mostly focused on self-threats rather than external threats. Our research extends prior work by showing that disease cues' threats enhance safety-seeking and the preference for high quality/price options as a compensatory strategy.

Further, although considerable research has documented various factors that affect price-quality trade-offs (e.g., Kim, Cui et al. 2020; Trope & Liberman, 2010), there was relatively little attention devoted to the role of external threats. Our study is one of the few examinations of external cues' roles in consumer decision-making, particularly involving price-quality trade-offs. Therefore, our research also contributes to consumer choice and decision-making literature beyond travel and hospitality literature.

This research offers several practical implications. The tourism and hospitality industry is often severely affected by uncontrollable events such as infectious diseases and natural disasters (Ioannides & Apostolopoulos, 1999). These events call for an accurate understanding of and response to the changes in consumer preferences. In this regard, our study helps practitioners better predict consumers' travel preferences during and after the COVID-19 pandemic.

Our research findings also offer a critical recovery strategy for managers in the hospitality and tourism sector during and after the pandemic. Our research clearly shows that tourists' choices can shift because of the pandemic's significant threat. Specifically, consumers display greater preferences for high quality/price options under threat as a means of seeking safety. Travel service providers (e.g., hotels) should offer premium offerings especially in the countries or cities where the infectious disease has hit most. Alternatively, they can promote their existing offerings by positioning them as premium, high-quality choices.

These research findings will be particularly relevant to business/budget hotels. Although business/budget hotels have become a substantial hospitality industry sector, prior research paid most attention to the luxury sector (Peng et al., 2015). Budget hotels offer comfortable accommodation at a moderate or low price. Marketers traditionally positioned them at a low price to retain business travelers (Peng et al., 2015). However, our findings suggest that travelers prioritize quality rather than the price in the presence of threat cues. Therefore, budget hotels should appeal to quality instead of involving in a "price war" to attract travelers in the presence of threat cues, such as the COVID-19 pandemic.

Limitations and future study

The current research is not without limitations and calls for future research in several directions. To test our prediction, we mainly used scenarios in controlled settings. Although researchers frequently used scenarios in the hospitality and tourism research (e.g., Lee et al., 2020; Yang & Mattila, 2020), which were helpful for internal validity, future researchers should test behavior in different settings to enhance external validity. Even if our secondary data analysis on Google searches provides convincing evidence for our hypothesis, there are further research opportunities using secondary data. For example, by using occupancy rates as secondary data, future researchers could directly test whether consumers indeed purchased more premium options of higher quality and price during the COVID-19 outbreak. In a similar vein, examining the impact of an external threat on consumers' behavior in other contexts, such as terrorism, will not only verify the generalizability of our findings but also clarify how an uncontrollable event like COVID-19 significantly changes human behavior.

To maintain this research's focus, we did not explore various factors that affect the relationship between a threat and consumers' preferences for higher versus lower quality/price options. However, individual differences, such as risk-seeking/avoidance tendencies and price sensitivity, could moderate the relationship. Specifically, risk-seeking may alleviate travelers' safety-seeking tendencies and, in turn, decrease preferences for high quality/price options. Similarly, additional information, such as word-of-mouth and prior experience, or familiarity with the destination may reduce consumers' perceived risk and decrease their preference for higher quality/price options (Roselius, 1971). Future research can also examine whether the threat of COVID-19 and risk avoidance tendencies influence the consumption timing of their travel and experiential purchases (Hwang et al., 2019).

Finally, previous literature investigated several demographic factors such as gender and/or age, influencing the risk perception and attitudes in tourism and hospitality (e.g., Rittichainuwat et al., 2018; Yang et al., 2017). For example, Yang et al. (2017) found that over 70% of the papers identified a gender difference in tourists' risk perception and experience. However, we did not find any additional effect of gender as a covariate in this study. That is, the impact of COVID-19 on preferences for high quality/price options might be equally strong for both genders. Future research needs to investigate this issue more closely.

Disclosure statement

No potential competing interest was reported by the authors.

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