

# Impact of the COVID-19 pandemic on travelers' preference for crowded versus non-crowded options

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## ABSTRACT

Crowding is a critical determinant of consumers' satisfaction with and preferences for different shopping and travel situations. When considering a selection of travel and hospitality options, travelers are influenced by perceived crowding. This research examined how the current health crisis (i.e., the COVID-19 pandemic) affects travelers' preferences for crowded and non-crowded options. Specifically, we predicted that travelers would have a diminished preference for crowded (vs. non-crowded) travel and hospitality options when the ongoing pandemic is salient. We demonstrated that the primary effect of the salience of the threat was persistent across different travel categories and contexts. We also found that travelers with high levels of sensation seeking and a high need for uniqueness show the opposite pattern, suggesting a possible recovery strategy from the pandemic. Five experimental studies provide several theoretical and managerial implications for travel and hospitality business marketers.

## 1. Introduction

Currently, the COVID-19 pandemic has impacted our everyday lives and wreaked havoc in the tourism industry. This pandemic created a significant disruption for hospitality businesses. Indeed, experts predicted that over 50 % of restaurants would not survive this crisis (Severson & Yaffe-Bellany, 2020). Bars and restaurants will continue to be greatly affected by the COVID-19 crisis as social distancing is more prevalent in those domains, and reduced incomes could cut individuals' consumption of food and alcohol outside of the home environment (Cronin & Evans, 2020; Economics Observatory, 2020). A similar impact can be expected for the hotel industry as more than 50% of people have reported that they are not ready to travel and stay at a hotel in the short term (Gursoy, Chi, & Chi, 2020). Given the dangers of transmission, people have been avoiding urban settings, popular destinations, and offices. The current pandemic has influenced and magnified adverse responses to crowding.

Prompted by the concept that crowding often is associated with negative consequences, researchers and managers in different industries, including travel and hospitality, have been examining options

and solutions to manage consumers' concerns related to crowded situations (Jin, Hu, & Kavan, 2016; Mehta, 2013; Pons, Giroux, Mourali, & Zins, 2016; Pons, Mourali, & Giroux, 2014). With an increasing global population and rising numbers of tourists in countries such as Hong Kong and Japan, the management of crowds in these environments can shape consumers' perceptions and avoid major problems (Baran, 2015; Hjalager, 2010; Matchup, 2020). Often, individuals acknowledge many negative effects attributed to crowding, such as feelings of stress and difficulty in coping, which can have negative consequences for customers. Serving as a nexus of investigations into the effects of the COVID-19 global pandemic, this study sought to examine how the health crisis is affecting travelers' perceptions of crowding in tourism destinations and the options available. With perceptions and habits changing, a deeper understanding of how disruptive events and global health crises can influence perceptions of density and decision-making for tourists can provide lessons for rebuilding the tourism industry and dealing with other potential threats.

Thus, knowing that the risks of contamination and contagion resulting from social interactions influence the perception of human density in a tourist destination, this research provides deeper knowledge

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on the impact of COVID-19 on travelers' decisions. This article aims to provide answers about individuals' reactions to crowded options during the COVID-19 pandemic and what factors can influence their perceptions. For example, what will be individuals' reactions to crowded destinations, such as Paris or Rome, or tourism activities, such as Disneyland. What important factors need to be considered to mitigate the negative impact? Based on the travel-related health risk and the possible effect of COVID-19 on individuals' well-being, we argue that preference for crowded options (vs. non-crowded options) will diminish while the pandemic is salient. Thus, travelers will avoid busy and packed travel and hospitality options during the COVID-19 pandemic and immediately after it. In multiple studies, we empirically demonstrated that consumers show a lower preference for venues associated with more (vs. fewer) people. These results provide practical guidance for firms, indicating they should not promote the notion of crowding or popularity in advertisements for travel destinations. One of important current issues in the travel industry is how firms should respond and attempt recovery during the COVID-19 pandemic (Sigala, 2020). The present research investigated this critical question by exploring the varying extents to which consumers avoid crowding during a pandemic. Interestingly, we demonstrated that consumers' tendency to sensation seeking and their need for uniqueness during travel moderate the negative impact of COVID-19 on travelers' avoidance of crowded places. Specifically, travelers' negative preferences for crowded options under the high threat of COVID-19 are reduced or even reversed for travelers with high levels of sensation seeking and need for uniqueness. These findings suggest that during the pandemic, firms need to primarily target travelers who have high levels of sensation seeking and need for uniqueness in order to recover from the losses caused by the pandemic (Sigala, 2020).

Because few studies have focused on the impact of the pandemic on the crowded option, this study is novel and timely. The study had four objectives. The first was to investigate the effect of the COVID-19 pandemic on travelers' preference for travel options. The second was to assess whether the avoidance of crowded travel and hospitality options is stronger because the negative effects of crowding are expected to be strong during and immediately after the COVID-19 pandemic. The third was to identify the impact of the salience of the COVID-19 pandemic on travelers' preference for the crowded (vs. non-crowded) option. The results of this research promote the understanding of travelers' reactions to crowded options during a critical health crisis and inform the development of proactive management strategies that minimize the pandemic's unfavorable effects, such as dissatisfaction, service failure, negative behavioral intentions, image degradation, and reduction of revenue. Finally, this study provided some practical yet theoretically driven guidance for strategies to aid recovery from the negative effects of the pandemic (Sigala, 2020). Specifically, the present research suggests that travelers with high levels of sensation seeking and need for uniqueness may be the primary consumer segments for firms to target as they attempt to recover from the significant drop in travel intention caused by the pandemic.

## 2. Literature review

### 2.1. The behavioral inhibition system drives social distancing

The affiliation motivation theory (Hill, 2009) demonstrates that, generally, human beings desire social contact with others and tend to visit places where numerous people are assembled. Indeed, social contact provides several benefits to individuals, such as encouraging the positive affect associated with interpersonal communion, praise, and social comparison, and reducing negative affect (Hill, 1987). Thus, individuals are likely to take a trip with others rather than alone. Even though these rewards motivate individuals to congregate, certain situations are also expected to make people avoid others. In other words, cases in which people perceive others as a risk factor may motivate them

to keep a social distance. For example, Im, Kim, and Choeh (2021) noted that tourists might maintain social distance because they judge that others could infect them when COVID-19 is spreading in the community. Aligned to the affiliation motivation theory, we can understand the phenomenon of social distance based on the Behavioral Inhibition System (BIS), which is differentiated from the Behavioral Approach System (BAS) (Gray, 1990).

Scholars have argued that there are two core motivational systems that control human behavior (e.g., Fowles, 1980; Gray, 1990). Gray (1990) described the first system as the BIS inducing withdrawal behavior and the latter system as the BAS causing approach behavior. The BIS is assumed to prevent behavior that is predicted to result in loss of reward or punishment, while the BAS is believed to lead individuals to approach reward-related stimuli, where the objective is to move toward the desired target (Johnson, Edge, Holmes, & Carver, 2012; Smits & Boeck, 2006). Sociability is closely associated with activation of the BAS (Depue & Iacono, 1989).

Researchers can assess both the BIS and the BAS in terms of individual differences. BIS and BAS can be measured using a scale via which individuals provide their psychological status using self-reporting. One well-known scale was developed by Carver and White (1994), in which individuals can respond to items reflecting approach or avoidance tendencies. An example item for the BIS is "If I think something unpleasant is going to happen I usually get pretty worked up", and an example item of the BAS is "When I get something I want, I feel excited and energized". The BIS and the BAS are related to individuals' personality traits, such as the Big Five personality. For example, a prior study showed that the BIS negatively predicts extraversion, while the BAS positively predicts extraversion (Smits & Boeck, 2006). Thus, both the BIS and the BAS are considered to be validated constructs, which may be applicable to explain tourists' behavior.

To deeply understand social behaviors in the current study, we will draw on a motivational model based on the BIS. Together with the BAS, the BIS accounts well for social behaviors, with the BAS activating approach behaviors and the BIS driving avoidance-oriented behaviors (Elliot, 2006; Gray, 1990). However, because social distancing is an avoidance-oriented behavior, in this study, we argue that social distancing is driven by the BIS. If a guest sees another person coughing in a restaurant, he or she will leave the restaurant (i.e., avoidance behavior such as social distancing). A possible explanation for this social distancing is that the guest may experience negative affect, such as fear of infection with COVID-19 (i.e., anxiety) resulting in the activation of the BIS, leading them to consider the other person as being potentially infected with COVID-19. Prior studies have shown that the BIS tends to be activated when an individual experiences negative affect such as anxiety, so that the individual is motivated to adopt an avoidance strategy (Chi & Grandey, 2019; Ma-Kellams & Wu, 2020).

The BIS has two properties-dampening social functioning and generating anxiety—both closely associated with the behavioral inhibitions that result in social distancing. As an aversive motivational system, the BIS is sensitive to cues of non-reward and punishment (Amodio, Master, Yee, & Taylor, 2008). In the BIS, "inhibition" refers to disposing of behaviors in which the objective is to move away from undesirable stimuli or events (Fowles, 2000). Previous studies showed that the BIS is positively related to aversive social functioning, such as social avoidance and social anxiety (Coplan, Wilson, Frohlick, & Zelenski, 2006; Hundt, Mitchell, Kimbrel, & Nelson-Gray, 2010; Kashdan & Roberts, 2006). These findings suggest that when the BIS is activated in response to a perceived risk of infection, individuals will be more likely to avoid social contact and maintain social distance because BIS activation stimulates the inhibition of ongoing behavior and the engagement of risk-evaluation processes (Fuentes et al., 2012). Thus, activation of the BIS can protect individuals from potentially harmful situations such as cramped restaurants or crowded travel destinations by suppressing social behaviors. For instance, BIS engagement could act to dissuade individuals from approaching others who might be infected

with SARS-CoV-2, the virus that causes COVID-19. In other words, people will be likely to maintain social distancing in a dangerous situation such as the COVID-19 pandemic. Aligned to this context, Tuzovic and Kabadayi (2020) indicated that many restaurants have provided their services through delivery applications to maintain social distancing during the COVID-19 pandemic.

## 2.2. The concept of crowding in consumer behavior

In evaluating a service experience, it is essential to include crowding as a factor (Eroglu & Harrell, 1986; Machleit, Eroglu, & Mantel, 2000), with crowding considered to be different from the related notion of density. Crowding is conceived of as an assessment or judgment of perceived density in relation to guidelines, norms, and motivations (Rapoport, 1975, p. 136). Such an evaluation, when it includes perceived spatial restriction, is often seen as negative and causing stress to individuals. Evidence for the negative impact of crowding on consumers' experience exists in the extant research on crowding in retail and service environments (Machleit et al., 2000). However, to fully understand the effect of crowding, we must consider several factors. For example, previous studies have drawn attention to the difference between crowd origins. Machleit, Kellaris, and Eroglu (1994) made distinctions between human crowding (i.e., too many people) and spatial crowding (i.e., too little physical space in which to move). Thus, the perception of density can be caused by the feeling that a given space is limited because of the number of people or the number of objects and stimuli occupying it. Crowding differs on a personal level and varies from one person to the next. Several factors can influence this assessment of dysfunctionality, such as expectations, time pressure, and individual tolerance levels (Eroglu & Harrell, 1986). In addition, the shopping type or task (leisure vs. utilitarian) can also strongly influence individuals' reactions (Hui & Bateson, 1991). Indeed, human crowds are a central part of the experience in a concert or a sporting event, or even in a bar, whereas crowds are considered to be more damaging in a grocery store or a shopping mall. Previous research on crowding has examined its antecedents and the different general outcomes and has mainly investigated its effect on satisfaction (Machleit et al., 1994).

Consumers are exposed throughout their daily lives to shopping environments that have different levels of human crowding. Stores tend to be much more crowded on weekends than on weekdays. On a larger scale, a significant percentage of retail sales are made during the holiday season and in very crowded conditions. Restaurants vary in how crowded they are. For these reasons, it is important to understand how human crowding impacts the psychological and behavioral aspects of consumer behavior.

Because social crowding is highly relevant to consumers, it has received significant attention in the literature on consumer behavior. Generally, human crowding leads to various negative consequences, such as inducing consumers' avoidance motivation (Cain & LeDoux, 2008; Maeng & Tanner, 2013). Social crowding decreases consumers' satisfaction and increases negative emotions related to shopping (Eroglu, Machleit, & Barr, 2005; Machleit et al., 2000). In restaurants, crowded waiting areas reduce consumers' service satisfaction because they perceive that their personal space is being violated (Hwang, Yoon, & Bendle, 2012). In stores, social crowding reduces consumers' engagement with other shoppers and salespersons (Harrell, Hutt, & Anderson, 1980). In general, consumers spend less time shopping and evaluate products less favorably in crowded environments (Hui & Bateson, 1991; O'Guinn, Tanner, & Maeng, 2015). Crowding can produce tense arousal and influence consumer's mental representation, thus causing consumers to interpret objects using more concrete low-level construals (Maeng & Tanner, 2013).

Social crowding can also influence people's brand preferences. Puzakova and Kwak (2017) found that when consumers felt socially crowded, their preference for anthropomorphized brands decreased (anthropomorphism refers to endowing nonhuman entities with

humanlike characteristics, intentions, emotions, beliefs, and mind) (Aggarwal & McGill, 2007). Puzakova and Kwak (2017) showed that consumers' social withdrawal in crowded contexts led to their reduced interest in and preference for anthropomorphized brands and products. Interestingly, according to another previous study, social crowding can increase brand preference by motivating consumers to avoid social interaction and causing them to become more attached to brands (i.e., nonsocial targets) to satisfy their basic needs for belongingness (Huang and Hyun, 2017).

It is important to note that social crowding influences consumers' decision-making and choice preferences. Social crowding can induce the feeling that one's *personal space* is being violated (personal space is a moveable invisible boundary in the physical space surrounding a person that functions primarily as a buffer to protect the individual from potential threats and overstimulation) (Hall, 1966; Miao & Mattila, 2013). Griffitt and Veitch (1971) also showed that violation of one's personal space can induce the fight-or-flight human defensive system, which can influence behavior and emotions such as asocial behavior and increased hostility. In their study on the link between social crowding and consumers' decision-making, Levav and Zhu (2009) showed that spatial confinement induced consumers to react against a violation of their personal space, leading them to make more varied and unique choices. In addition, Xu, Shen, and Wyer (2012) showed that spatial confinement stimulated consumers' motivation to reassert their individuality and, by doing so, spurred them to choose more distinctive products.

The findings of Maeng and Tanner (2013) are highly relevant to our present research because they found that when consumers were making choices, social crowding prompted strong prevention goals, thereby increasing their sensitivity toward prevention-related benefits (e.g., being careful about their health). In multiple studies, Maeng and Tanner (2013) demonstrated that social crowding also increased consumers' tendency to choose safety-oriented options (i.e., first-aid products rather than a box of cookies) that would provide prevention benefits. Interestingly, the effect of social crowding on preventive alternatives was much stronger when the crowd was composed of out-group members rather than in-group ones.

## 2.3. Effects of health risks and crowding on travelers' decision making

Health risks are tangentially involved with travelers' attitudes toward the destination and their decision making, such as choices in destination, activity, or travel program options, because these risks directly affect their personal safety, well-being, and overall satisfaction with the travel (Chen & Hang, 2021; Hu, Teichert, Deng, Liu, & Zhou, 2021; Huang, Dai, & Xu, 2020; Jonas, Mansfeld, Paz, & Potosman, 2011; Otoo & Kim, 2018; Rittichainuwat & Chakraborty, 2009). Even though there are various health risk-triggering factors, the threat of infection influences tourist flow seriously, directly, and longitudinally. A previous instance was the SARS epidemic, which devastated tourism markets in the Asia region in 2002–2003 (Kim, Chun, & Lee, 2005; McAleer, Huang, Kuo, Chen, & Chang, 2010). However, compared to the rapid resurgence in tourism demand following the SARS outbreak, the COVID-19 pandemic has completely dismantled tourism demand worldwide since early 2020 because of strict social distancing restrictions across countries or regions, and tourists' personal risk perceptions. Among a growing number of studies on the impact of COVID-19 on tourism demand, there have been efforts to explore the linkage between the pandemic and levels of acceptance of crowded spaces (Craig, 2021; Jang, Kim, Kim, & Kim, 2021; Kim & Kang, 2021; Kock, Norfelt, Josiassen, & Assaf, 2020; Miao, Im, Fu, Kim, & Zhang, 2001; Milman, Tasci, & Wei, 2020).

Firstly, the pandemic risk has led tourists to avoid travel to crowded environments to mitigate the risk of disease transmission (Hu, Yang, & Zhang, 2021; Piccinelli, Moro, & Rita, 2021; Sigala, 2020). Kock, Norfelt, Josiassen, Assaf, and Tsionas (2020) empirically found that those who had a higher perception of COVID-19's infectivity reacted to

crowding negatively and uncomfortably. Similarly, a study by Jang et al. (2021), using spatial and experimental analysis, discovered a sharp shrinkage in demand for peer-to-peer (P2P) accommodation during the COVID-19 pandemic. The revenue for P2P facilities was high where tourists visited an Airbnb for business travel; in locations with higher levels of non-white American population; in urban areas; and for consumers who had past travel experience.

A conceptual study by Miao and Mattila (2013) posited that social distancing and voluntary de-crowding behavior is a newly emerging post-pandemic tourist behavior, which avoids congestion, seasonality, and overtourism. The new practice fosters diversification patterns in selecting a destination, preference for open spaces to cramped spaces, individual travel to group travel, and deluxe tourism to economy tourism. Similarly, other researchers found that the COVID-19 pandemic has helped mitigate the adverse effects of mass tourism and promote sustainable practices (Jiricka-Purrer, Brandenburg, & Probstl-Haider, 2020; Sigala, 2020). These views are supported by Kim and Kang's (2021) empirical study, which showed that perceived crowding during the pandemic directly affected participation in leisure activities, and those with a high perception of risk tended to avoid person-to-person contact activities. Similarly, Craig's (2021) study investigated whether the intention to participate in camping tours and glamping tours in a post-COVID era could be explained by perceived safety, past experience, duration of stay, distance, and willingness to avoid crowded locations. When using non-Northwestern samples, those who preferred a shorter stay at the camping site, traveling to a less distant place, and avoiding overcrowded places showed a higher intention to join a tent camping tour. Therefore, crowding appears to influence decision making in choosing an outdoor tourism destination in the post-COVID era (Craig, 2021).

The flood of constantly updated news providing statistics, warnings, and announcements by the WHO (World Health Organization), governments, organizations, and workplaces, has increased the levels of panic in potential tourists via diverse mass media platforms. Thus, individuals facing exposure to crowded options are likely to choose sparsely populated or uncrowded destinations. Tourists will thus tend to prefer independent and quiet places. They will be inclined to join simple and unskillful activities, such as watching, appreciating, or staying in remote areas and will tend to avoid tour programs involving adventure, risk, or long distance travel.

In summary, the relationship between the level of crowding and satisfaction varies according to the types of places visited and the activities engaged in, as well as visitors' motivations or emotional status (Dangi & Gribb, 2018; Griffitt & Veitch, 1971; Huang, Huang, & Wyer, 2018; Jacobsen, Iversen, & Hemc, 2019; Neuts & Nijkamp, 2012). For example, ecotourists generally tend to avoid crowded destinations (Dangi & Gribb, 2018), whereas tourists who enjoy city tourism tend to be less sensitive to crowded settings in an urbanized space (Neuts & Nijkamp, 2012). Jonas et al. (2011) addressed the diverse causes of health risks, including environmentally induced factors (e.g., water quality, health care quality, food safety, and disease infection), semi-controlled risk factors (e.g., physical injuries), and fully controlled health risk factors (e.g., drugs and sexually transmitted diseases). The impacts of the health risks are distinctive according to the causes. However, a global health risk in the form of the COVID-19 pandemic differs from the normal risks in terms of severity, influence scope, damage, the need for international collaboration, and duration. One of the newly arisen matters affecting tourism and hospitality businesses as a result of the pandemic is consumers' perceptions of and preference for crowding levels during travel and at their destinations. Given that the current pandemic has had detrimental impacts worldwide, the level of crowding in a tourism or hospitality consumption space will directly affect tourists' decision-making in selecting a destination, participating in an activity, and their purchase intentions.

### 3. Primary predictions

#### 3.1. Main effect of the salience of COVID-19

In this research, we predicted that the salience of the COVID-19 pandemic may influence travelers' evaluations of crowded (vs. non-crowded) options in travel situations and may affect their relative preferences for crowded and non-crowded options. Several theories, including many from the literature we reviewed above, could support our main argument.

First, the theory of the BAS and the BIS strongly bolsters our prediction (Elliot, 2006; Gray, 1990). Both systems account well for social behaviors: the BAS activates approach behaviors, whereas the BIS drives avoidance-oriented behaviors (Elliot, 2006; Gray, 1990). In the circumstance of COVID-19 being prevalent in society, when BIS is activated in individuals, they may detect potential danger and feel anxiety toward others. Anxiety about acquiring a disease affects an individual's perceived risk in a pandemic (Khosravi, 2020). That is, a feeling of anxiety, induced by the BIS, results from the individual's sensitivity to the perceived risk from a pandemic such as COVID-19. Because the emotional experience of a threat can lead to protective behaviors regardless of the severity of the risk (Bish & Michie, 2010), individuals are likely to maintain social distance in order to protect themselves from infection with COVID-19.

Second, controlling people's social contact, especially their physical and psychological contact, is very important in humans' reaction to a pandemic. Physical contact is obviously the most critical factor for spreading a contagious disease (e.g., Meyers, 2007; Salathé et al., 2010). For example, keeping social distance has been the most effective strategy for reducing the spread of the COVID-19 pandemic for most societies (e.g., Greenstone & Nigam, 2020; Lewnard & Lo, 2020). Nevertheless, the psychological effect of social contact is also important. For instance, the contagion effect (Argo, Dahl, & Morales, 2006; Kim, 2017; Milman et al., 2020) helps predict the impact of the disease pandemic on our preferences for the options. The contagion effect assumes that "the essences or properties of a person or object (source) are transmitted to another object or person (a recipient) through physical contact" (Kim, 2017, p. 593). For example, people tend to avoid objects that other people touch (Argo et al., 2006) or have traces left by previous users (Kim, 2017). Social contact theory asserts that people will try to avoid contact with others, especially during a pandemic.

Finally, as we have reviewed, the crowding theory regarding commercial settings also posits that avoiding a crowded situation or place is a fundamental human coping strategy (e.g., Crandall & Moriarty, 1995; Huang & Sengupta, 2020). Furthermore, we expect that this tendency will be stronger when the pandemic threat is activated or salient. Here is our formal prediction:

**H1.** The salience of the COVID-19 pandemic will reduce travelers' preference for crowded (vs. non-crowded) travel and hospitality options.

#### 3.2. Moderating role of travelers' sensation seeking

Tourism research has established numerous elements that explain travel behaviors. One of the key factors in determining and interpreting differences between individuals' choices and decisions is the characteristics and qualities associated with individual travelers' personalities (Park, Tussyadiah, Mazanec, & Fesenmaier, 2010). One of the important individual differences influencing the general risk response is the level of sensation seeking. Past research demonstrates that genetic or biological mechanisms can explain the "optimal levels of stimulation and arousal" (Zuckerman, 1994, p. 27) for individuals (Hur & Bouchard, 1997). Sensation seeking can be defined as "the need for varied, novel and complex sensations and experiences and the willingness to undertake physical and social risks for the sake of such experiences

(Zuckerman, 1979, p. 10)."

This desire to experience novelty and extreme emotions and excitement can explain several behaviors and be exhibited in different spheres of our lives (Galloway & Lopez, 1999; Pizam, Reichel, & Uriely, 2001). Elements related to sensation seeking, such as novelty, arousal, and experience, have been investigated in travel and hospitality settings and linked to tourism motivations (Lee & Crompton, 1992; Lepp and Gibson, 2008; Litvin, 2008; Pizam et al., 2001). Risk-taking and sensation seeking tendencies are common in the population and significantly influence choices and behaviors related to tourism and travel (Pizam et al., 2004). For example, Pizam et al. (2001) found that the preference for risky leisure activities such as extreme sports was higher for high (vs. low) sensation seekers. Thus, high sensation seekers show stronger inclinations for stimulating and thrilling activities and risky trip destinations (Lepp & Gibson, 2008). Finally, Kim et al. (2020c) provided empirical evidence that sensation seeking was related to a preference for risky food options.

Sensation seeking has been identified as a crucial mediating factor between people's risk perception and their travel behaviors (Sharifpour, Walters, & Ritchie, 2013). Individuals with sensation-seeking inclinations are more tended to opt for volatile destinations and adventurous activities despite a certain level of risk (Hajibaba, Gretzel, Leisch, & Dolcinari, 2015; Lee & Tseng, 2015; Pizam et al., 2004). Thus, we expect different responses to the threat of COVID-19 in relation to travel activities. Travelers with low levels of sensation seeking will take action to reduce the risk related to any travel. In contrast, those with high levels of sensation seeking will seek out risky activities in order to satisfy their need for novelty and intense experiences during travel (Pizam et al., 2001). Along with this theory, we expect that the preference for crowded options will be negatively influenced only low sensation seeking travelers, whereas the opposite pattern is expected to be true for high sensation seeking travelers. Here is our formal hypothesis:

**H2.** The sensation seeking tendency of travelers will moderate the impact of the COVID-19 pandemic's salience on travelers' preference for crowded (vs. non-crowded) options. Specifically, the negative effect of the COVID-19 threat on preference for crowded options will be reversed when travelers' sensation seeking is high (vs. low).

### 3.3. Moderating role of travelers' need for uniqueness

Even if the negative effect that COVID-19's salience exerts on travelers' preference for a crowded option is strong and persistent, that effect will not necessarily hold for everyone. This paper suggests that travelers' need for uniqueness is one of the important determining factors for the effect predicted in Hypothesis 1. Previous literature has indicated that a perceived threat can significantly influence subsequent behaviors, such as conformity (i.e., choosing the majority (vs. minority) option) (Murray & Schaller, 2012). However, the literature also suggested that people have an opposite response to conformity: a need for uniqueness. Expressing individuality and uniqueness through acquired products, possessions and experiences is seen as a vital part of the extended self (Belk, 1988). Nowadays, differentiation from other people plays a basic role in individuals' decisions (Veblen, 2009). Uniqueness can be defined as "a positive striving for differentness relative to other people" (Snyder & Fromkin, 1977, p. 518). Put differently, people with a high need for uniqueness will seek atypical behaviors or preferences in order to distinguish themselves from others. Consequently, people with a high need for uniqueness will purposely not follow the general conformity option. This need for uniqueness can be satiated not only by buying uncommon and exclusive goods but also by traveling differently (Chan, To, & Chu, 2016; Kron, 1983). In travel and hospitality settings, Chark, Fong, and Tang (2019) provided empirical evidence that travelers with a high (vs. low) need for uniqueness perceive others' majority options negatively, preferring the minority option. Hwang and Hyun (2017) also suggested three sub-dimensional aspects of uniqueness (i.e.,

similarity avoidance, creative choice, and unpopular/atypical choice) for airline travelers. More recently, the need for uniqueness has been found to be a crucial factor influencing travel choices, purchases, and recommendations in different contexts, such as online room reservations, first-class flights, and heritage context tourism (Chark et al., 2019; Dey, Mathew, & Chee-Hua, 2020; Hwang & Hyun, 2017; Imhoff & Erb, 2009; Karagöz & Uysal, 2020).

Along with this theory, we expect that the negative impact on preference for the crowded option will be stronger only for travelers with a low need for uniqueness. In contrast, the negative effect could be reduced or reversed for those individuals whose need for uniqueness is high. Here is our formal hypothesis.

**H3.** Travelers' need for uniqueness will moderate the impact of the COVID-19 pandemic's salience on travelers' preference for the crowded (vs. non-crowded) option. Specifically, the negative effect of the COVID-19 threat on preference for the crowded option will be reversed when travelers' need for uniqueness is high (vs. low).

### 3.4. Overview of empirical investigation

We chose experimental study as our main method to provide empirical evidence for the predictions of the hypotheses stated above. We also conducted multiple studies in order to extend the external validity for our augments. We used two main methods to assess the COVID-19 pandemic's salience: (i) a measurement method and (ii) a manipulation method.

All empirical studies were conducted between May 2020 and March 2021, when COVID-19 significantly influenced the everyday life. In order to reduce country-specific effects, we only used US participants in this research. We mainly used Amazon MTurk as the source of subjects for our empirical studies (See Table 1 for a detailed profile of the

**Table 1**  
Profiles of participants in Studies 1–5.

|                    |                                            | Study<br>1 (n =<br>197) | Study<br>2 (n =<br>262) | Study<br>3 (n =<br>229) | Study<br>4 (n =<br>163) | Study<br>5 (n =<br>216) |
|--------------------|--------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Gender             | Male                                       | 48.2 %                  | 57.6 %                  | 52.0 %                  | 47.2 %                  | 60.6 %                  |
|                    | Female                                     | 51.8 %                  | 42.4 %                  | 48.0 %                  | 52.8 %                  | 39.4 %                  |
| Age                | 18–29                                      | 31.0 %                  | 26.3 %                  | 17.0 %                  | 25.2 %                  | 24.1 %                  |
|                    | 30–39                                      | 33.5 %                  | 31.7 %                  | 34.5 %                  | 33.1 %                  | 30.1 %                  |
|                    | 40–49                                      | 17.8 %                  | 19.5 %                  | 17.9 %                  | 19.0 %                  | 20.4 %                  |
|                    | 50–59                                      | 8.1 %                   | 10.3 %                  | 17.5 %                  | 11.0 %                  | 15.7 %                  |
|                    | 60–                                        | 9.6 %                   | 12.2 %                  | 13.1 %                  | 11.7 %                  | 9.7 %                   |
| Race               | White/<br>Caucasian                        | 77.2 %                  | 74.8 %                  | 73.8 %                  | 74.2 %                  | 68.1 %                  |
|                    | African<br>American                        | 6.6 %                   | 6.1 %                   | 4.8 %                   | 3.1 %                   | 12.5 %                  |
|                    | Hispanic                                   | 4.6 %                   | 7.3 %                   | 7.4 %                   | 4.9 %                   | 6.0 %                   |
|                    | Asian                                      | 8.6 %                   | 8.0 %                   | 11.8 %                  | 16.6 %                  | 9.7 %                   |
|                    | Others                                     | 3.0 %                   | 3.9 %                   | 2.2 %                   | 1.2 %                   | 3.8 %                   |
|                    | Did not<br>complete high<br>school         | 0.5 %                   | 0.4 %                   | 1.3 %                   | 0.6 %                   | 0.0 %                   |
| Education<br>level | High school<br>graduate or<br>some college | 19.3 %                  | 21.0 %                  | 28.4 %                  | 33.1 %                  | 31.0 %                  |
|                    | College<br>graduate (4<br>years)           | 53.3 %                  | 59.5 %                  | 52.0 %                  | 49.1 %                  | 50.9 %                  |
|                    | Postgraduate<br>degree                     | 26.9 %                  | 19.1 %                  | 18.3 %                  | 17.2 %                  | 18.1 %                  |
| Family<br>income   | <\$30,000                                  | 15.2 %                  | 15.6 %                  | 13.5 %                  | 16.6 %                  | 19.0 %                  |
|                    | \$30,001–<br>\$60,000                      | 29.4 %                  | 33.2 %                  | 32.3 %                  | 27.0 %                  | 40.3 %                  |
|                    | \$60,001–<br>\$90,000                      | 24.4 %                  | 24.8 %                  | 24.0 %                  | 29.4 %                  | 21.3 %                  |
|                    | \$90,001–<br>\$120,000                     | 13.2 %                  | 11.8 %                  | 15.3 %                  | 9.2 %                   | 9.3 %                   |
|                    | >\$120,001                                 | 17.8 %                  | 14.5 %                  | 14.8 %                  | 17.8 %                  | 10.2 %                  |

participants). The validity and reliability of this online panel are well established in tourism and other fields (e.g., Kim, Kim, Lee, Kim, & Hyde, 2019).

Fig. 1 illustrates the theoretical framework and summarizes the empirical findings.

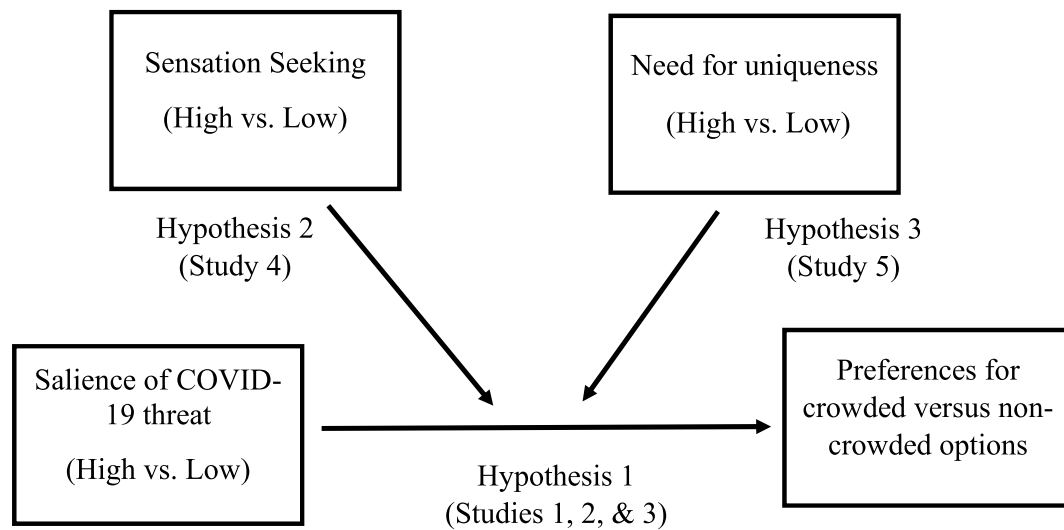
#### 4. Study 1: Investigation of the primary prediction (H1)

Study 1 investigated the primary prediction regarding the impact that the salience of COVID-19 would have on travelers' preferences for crowded versus non-crowded options.

#### 4.1. Method: Subjects, design, and procedure

A total of 197 U.S. adult participants (51.8 % female, average age = 38.06,  $SD = 12.88$ ) were recruited from an online panel (i.e., Amazon MTurk) for a nominal payment in June 2020. They were randomly assigned to one of two experimental conditions in a between-subjects design (crowding of restaurants: crowded people in Option A & non-crowded people in Option B vs. Non-crowded people in Option A & Crowded people in Option B).

First, participants were required to imagine that they would be traveling to a city during the COVID-19 pandemic [in one week] and needed to search for a good Thai restaurant. They were further asked to find two restaurants. We manipulated the crowding of the restaurants such that in one condition, Restaurant A [i.e., *THEP Thai*] used images of



| Study Name | Context                                                   | Research Design                                                                                                   | Results           |
|------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------|
| Study 1    | Evaluating Thai restaurants under high COVID-19 salience  | IV: choice option presentation (counterbalanced)<br>DV: preference between crowded vs. non-crowded option         | H1 supported      |
| Study 2    | Evaluating travel activities under high COVID-19 salience | IV: choice option presentation (counterbalanced)<br>DV: preference between crowded vs. non-crowded activities     | H1 supported      |
| Study 3    | Evaluating travel activities in Chicago                   | IV: COVID-19 threat salience<br>DV: preference between crowded vs. non-crowded activities                         | H1 supported      |
| Study 4    | Evaluating of restaurants in New York city                | IV: COVID-19 threat salience<br>DV: preference between crowded vs. non-crowded option<br>MOD: sensation seeking   | H1 & H2 supported |
| Study 5    | Evaluating Thai restaurants                               | IV: COVID-19 threat salience<br>DV: preference between crowded vs. non-crowded option<br>MOD: need for uniqueness | H1 & H3 supported |

Fig. 1. Theoretical framework and summary of empirical studies.

a crowded setting, whereas Restaurant B [i.e., *Thai Villa*] used images of a non-crowded setting. In contrast, in another condition, the opposite images were used, such that Restaurant A used images of a non-crowded setting while Restaurant B used images of a crowded setting, as shown in Fig. 2. Then, participants were asked to choose one restaurant. After that, they were asked to evaluate each option in a three-item measurement rated using a seven-point scale (i.e., 1 = “very bad/negative/unfavorable”, 7 = “very good/positive/favorable”, Cronbach’s  $\alpha = 0.925$

and 0.905, respectively, [Bhatnagar & Wan, 2011](#)). Finally, they were asked to rate the restaurants’ relative perceived popularity (e.g., [de Bruyn & Cillessen, 2008](#)) using a seven-point scale (i.e., 1 = “definitely *THEP Thai*”, 7 = “definitely *Thai Villa*” [is more popular]).

4.2. Results and discussion

First, the manipulation of perceived popularity was successful, such

Crowded people in Option A, & Few people in Option B



Few people, Option A, & Crowded people, Option B

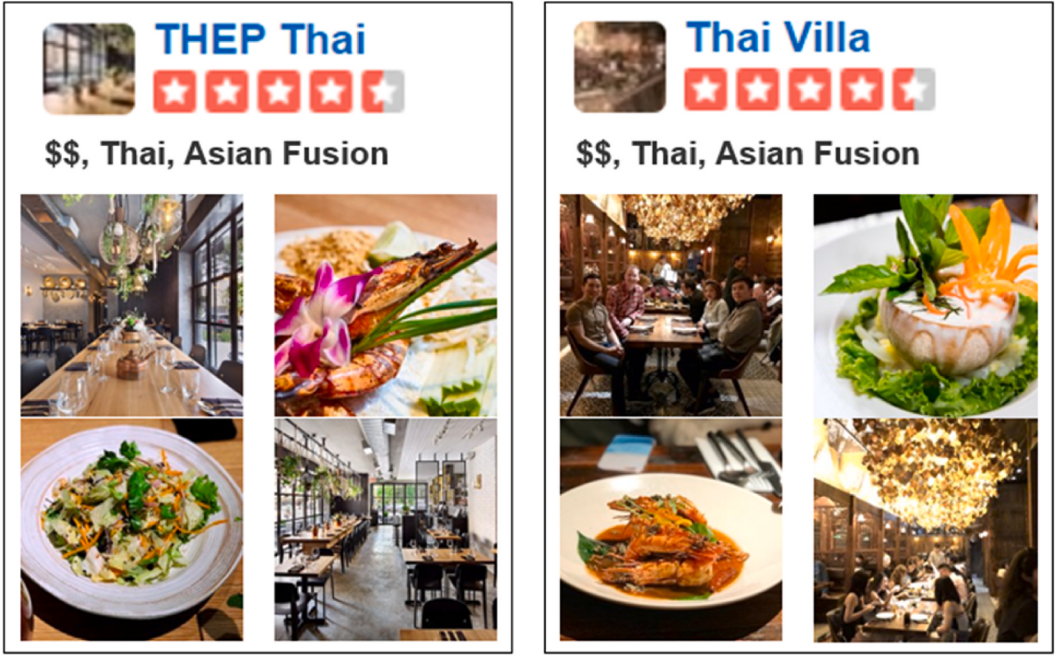


Fig. 2. Stimuli of study 1.

that Restaurant B (i.e., Thai Villa) was perceived as being highly popular when the restaurant's image showed crowded people ( $M = 5.11$ ,  $SD = 1.80$ ), compared with considering it less popular when the image showed the restaurant uncrowded ( $M = 4.05$ ,  $SD = 2.09$ ;  $F(1, 195) = 14.56$ ,  $p < .001$ ,  $\eta^2 = 0.070$ ).

Second, the participants' preference between two options for the restaurant differed significantly for the two experimental conditions ( $\chi^2(1) = 38.15$ ,  $p < .001$ ) and supported H1. Specifically, participants chose Option B more often under the non-crowded condition ( $M = 81.8\%$  [81/199]) than under the crowded condition ( $M = 38.8\%$  [38/98]).

In addition, the participants' evaluation of each restaurant was significantly influenced by the number of people in the picture. For Restaurant A (i.e., THEP Thai), the evaluations were higher when the restaurant's image showed non-crowded people ( $M = 5.71$ ,  $SD = 1.05$ ) than when the image had crowded people ( $M = 5.15$ ,  $SD = 1.46$ ;  $F(1, 195) = 9.53$ ,  $p = .002$ ,  $\eta^2 = 0.047$ ). Similarly, for Restaurant B (i.e., Thai Villa), the evaluations were also higher when the restaurant's image showed non-crowded people ( $M = 5.72$ ,  $SD = 1.08$ ) than when the image was of crowded people ( $M = 5.38$ ,  $SD = 1.28$ ;  $F(1, 195) = 3.91$ ,  $p = .049$ ,  $\eta^2 = 0.020$ ), as shown in Fig. 3.

The results of Study 1 provided initial support for our primary prediction regarding the impact that the salience of COVID-19 has on travelers' preferences for crowded versus non-crowded options. As anticipated, participants perceiving a high salience of the COVID-19 pandemic reduced their preference for crowded (vs. non-crowded) restaurants.

## 5. Study 2: Analysis of the main prediction (H1) in a different context

Study 2 attempted to replicate Study 1 in the choice of travel activities settings. Specifically, we focused on an overseas travel decision. We further tested our main hypothesis in two different activities, which differed in terms of risk. Specifically, we focused on the key underlying mechanism for H1. If perceived risk mainly driven by COVID-19 is the main underlying factor influencing preference for the crowded (vs. non-crowded) option, then crowding should not influence an activity that is already risky. This is because travelers should reduce their exposure to risky activities regardless of the additional risk caused by crowding. In sum, we further predicted that if H1 is correct, the preference for risky activities would not vary with different crowding levels.

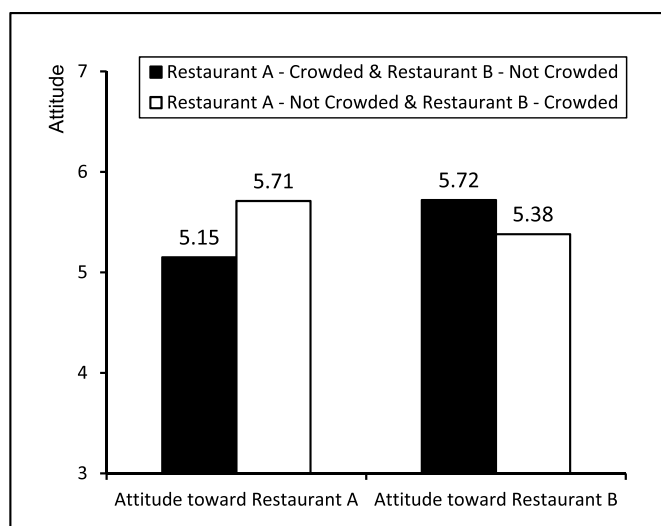


Fig. 3. Results of Study 1.

## 5.1. Method: Subjects, design, and procedure

Participants in this study were 262 U.S. adults (42.4 % female, average age = 39.97,  $SD = 13.40$ ) recruited from an online panel (Amazon MTurk) for a nominal payment in May 2020. Participants were randomly assigned to one of two experimental conditions in a between-subjects design (crowding of activities: crowded people Option set I & non-crowded people Option set II vs. non-crowded people Option set I & crowded people Option set II).

First, participants were provided information regarding COVID-19 and asked to read the information in order to activate their perceived threat of COVID-19. Then, as was the case in Study 1, participants were asked to imagine that they were planning a trip to New Zealand in the near future (Kim & Seo, 2019). We manipulated the crowding of activities such that in one condition, Option set I (i.e., bungee jumping, winery tours, rafting, and garden tours) was described with crowded travelers, whereas Option set II (i.e., a harbor cruise, skydiving, visiting galleries, and rock climbing) was depicted with non-crowded travelers or no travelers. In contrast, in the second condition, the opposite was true, such that Option set I was with non-crowded travelers and Option set II was with crowded travelers, as shown in Fig. 4. Participants were then asked to choose four out of eight different activities.

## 5.2. Results and discussion

First, we calculated the number of chosen options for (i) Option set I and (ii) Option set II. We will focus our report on the results for option set I, because those of option set II should be exactly reversed. We found that the participants' preference for the travel activities in Option set I differed significantly between the two experimental conditions. Specifically, the number of activities chosen was higher when the options' image showed non-crowded people ( $M = 2.33$ ,  $SD = 0.65$ ) than when it showed crowded people ( $M = 1.88$ ,  $SD = 0.64$ ;  $F(1, 242) = 29.85$ ,  $p < .001$ ,  $\eta^2 = 0.110$ ), as shown in Fig. 5.

Second, we also conducted a similar analysis of relatively risky activities (i.e., bungee jump, rafting, skydiving, and rock climbing). The result was not significant because the number of risky activities chosen was not significantly different between set I having non-crowded people ( $M = 1.37$ ,  $SD = 1.15$ ) and having crowded people ( $M = 1.56$ ,  $SD = 1.06$ ;  $F(1, 242) = 1.77$ ,  $p = .185$ ,  $\eta^2 = 0.007$ ).

The results of Study 2 provided further support for our key prediction. First, Study 1 replicated the results of Study 1 with different research stimuli related to travel activities. Supporting hypothesis 1, under salience of the COVID-19 pandemic, participants reduced their preference for crowded (vs. non-crowded) travel activities. However, as anticipated, the difference in preference between crowded (vs. non-crowded) activities did not emerge with travel activities that were already highly risky (regardless of COVID-19 salience). Therefore, we can infer an important role for perceived risk regarding crowding during travel associated with less risky activities.

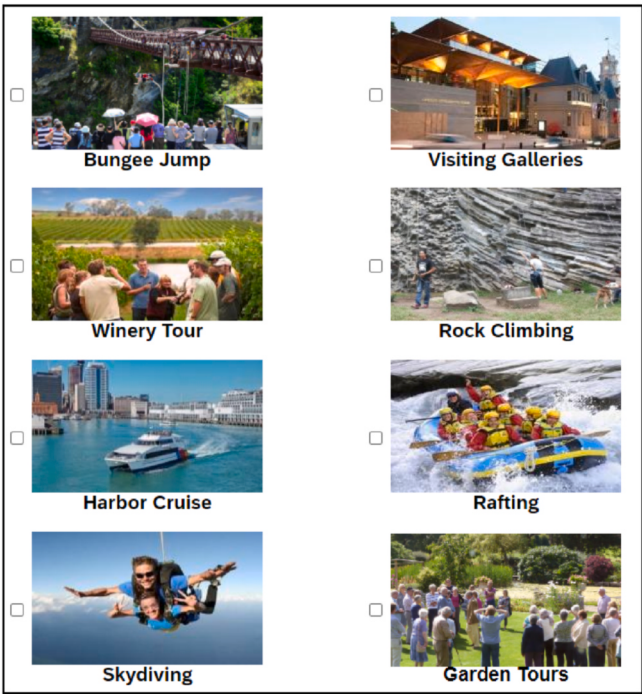
## 6. Study 3: Replicating another travel activity choice setting

The study focused on replicating the previous findings in order to improve the generalizability of the results. We directly measured the perceived level of threat of COVID-19 in the travel activity choice setting. We also controlled prior experience of travel in the above effect.

### 6.1. Method: subjects, design, and procedure

Respondents in this study were 229 U.S. adults (48.0 % female, average age = 42.29,  $SD = 13.52$ ) recruited from an online panel (Amazon MTurk) for a nominal payment in March 2021. Participants were randomly assigned to one of two experimental conditions in a between-subjects design (crowding of activities: Condition #1 [crowded people Option A & non-crowded people Option B] vs. Condition #2

Option Set I – Crowded Conditions, & Option Set II – Non-Crowded Conditions



Option Set I – Non-Crowded Conditions & Option Set II – Crowded Conditions

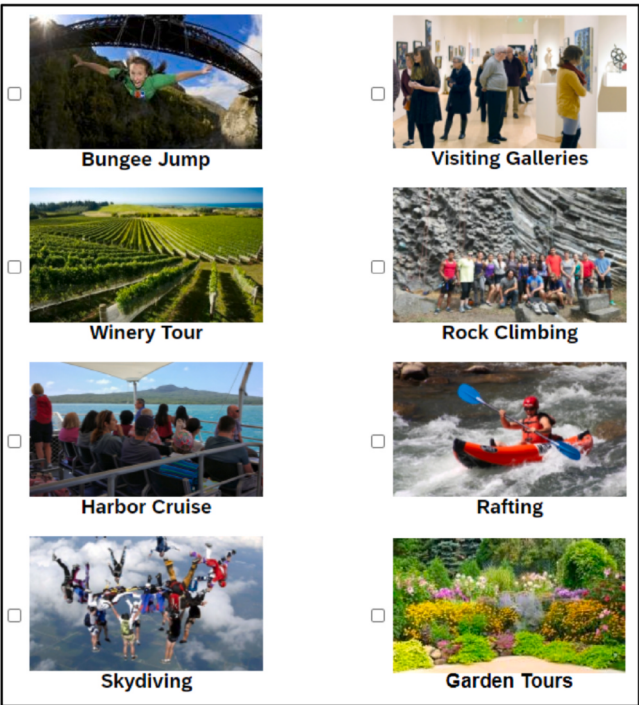


Fig. 4. Stimuli of Study 2.

[non-crowded people Option A & crowded people Option B]).

First, participants in this study were asked to imagine that they were traveling to Chicago and that they found two activities (i.e., Downtown Chicago Walking Tour [Option A] vs. Chicago Architecture River Cruise [Option B]). The two options were different in terms of levels of

crowding, based on the number of people in the images for the options, as shown in Fig. 6.

Participants were asked to choose one activity by rating their relative preference on a 7-point scale (1 = I will definitely choose the Downtown Chicago Walking Tour, 7 = I will definitely choose the Chicago

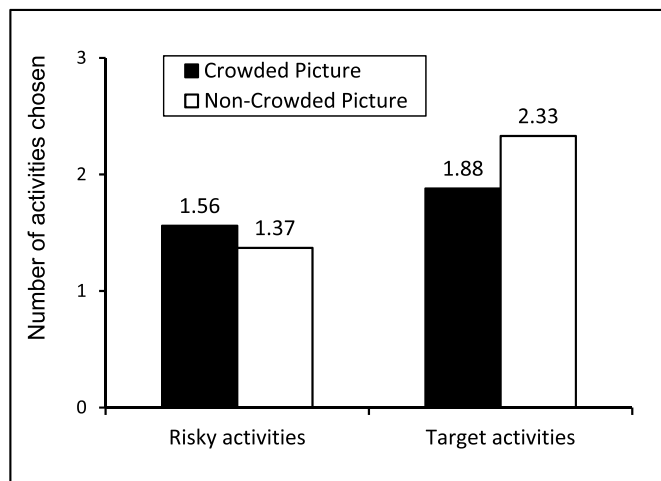


Fig. 5. Results of Study 2.

Architecture River Cruise). After that, participants were asked to rate their perceived level of crowding for each option (i.e., Which option do you perceive as more crowded?) using a 7-point scale (1 = definitely the Downtown Chicago Walking Tour, 7 = definitely the Chicago Architecture River Cruise). In addition, participants were asked to indicate their perceived reality for the scenario using a 7-point scale (1 = highly unrealistic, 7 = highly realistic).

After finishing the task above, participants were offered basic information about COVID-19. Then, they were asked to rate their perception of the threat, using two items (i.e., In your opinion, is the coronavirus a serious threat? How life-threatening is the coronavirus?), based on previous studies (Kim, 2020a; Kim et al., 2020b) and using 7-point scales (1 = “not at all serious/life-threatening”, 7 = “very serious/life-threatening”, Cronbach’s  $\alpha = 0.897$ ).

Finally, participants were asked to describe their previous experience of visiting Chicago (yes or no), travel experience in the last 2 years (yes or no), and general enthusiasm for the travel (1 = not much, 7 = a lot).

## 6.2. Results and discussion

First, the manipulation check for crowding was successful in that Option B [Chicago Architecture River Cruise] was perceived as more crowded in condition #2 ( $M = 6.02$ ,  $SD = 1.50$ ) than in condition #1 ( $M = 2.81$ ,  $SD = 1.95$ ,  $F(1, 227) = 192.13$ ,  $p < .001$ ,  $\eta^2 = 0.458$ ). The perceived realism of the scenarios was higher for both condition #1 ( $M = 5.70$ ,  $SD = 1.48$ ) and condition #2 ( $M = 5.81$ ,  $SD = 1.34$ ,  $F(1, 227) = 0.35$ ,  $p = .552$ ,  $\eta^2 = 0.002$ ).

To test the hypothesis, we conducted a moderation test using Hayes’ (2017) process analysis with Model #1 (i.e., independent variable: the perceived threat of COVID-19, moderator: crowding of activities, dependent variable: preference for Option B). The findings indicated that only the interaction effect was significant (effect =  $-0.42$ ,  $t = -2.58$ ,  $p = .011$ , 95 % confidence level [CI]:  $[-0.747, -0.100]$ ). Specifically, for Condition #2 (i.e., when Option B was crowded, but Option A was not), the relative preference for Option B over Option A was reduced as the perceived threat of COVID-19 increased (effect =  $-0.25$ ,  $t = -2.01$ ,  $p = .045$ , 95 % CI:  $[-0.496, -0.005]$ ). In detail, the preference for Option B was higher when the COVID-19 threat was perceived as relatively high (+1SD in measurement, estimated  $M = 5.35$ ) compared to when the same threat was relatively low (-1SD in measurement, estimated  $M = 4.46$ ). On the other hand, for Condition #1 (i.e., when Option B was non-crowded, but Option A was crowded), the relative preference for Option B over Option A was increased as the perceived threat of COVID-19 increased (effect =  $0.17$ ,  $t = 1.61$ ,  $p = .109$ , 95 % CI:  $[-0.039, 0.384]$ ), even though it failed to reach a significant level. The

detailed pattern was illustrated in Fig. 7.

We conducted a similar analysis, including three previous experiences as covariates, in order to check the impact of these effects. The results indicated that all covariate variables were not significant ( $ps > .324$ ), whereas the interaction effect was still significant (effect =  $-0.43$ ,  $t = -2.62$ ,  $p = .009$ , 95 % CI:  $[-0.759, -0.108]$ ). To summarize, the effect above was consistent regardless of participants’ different experiences.

The results of study 3 replicated the findings of Studies 1 and 2 and thus improved the generalizability of the results. In addition, we directly measured the different perceived levels of threat of COVID-19 in the travel activity choice setting. We also controlled prior experience of travel in the above effect. Study 3 demonstrated that this effect was consistent across different travel activity choice settings, as well as controlling for previous travel experiences.

## 7. Study 4: Demonstration of the moderating evidence of sensation seeking (H2)

Study 4 replicated Study 1 for restaurant choices during a travel situation. In addition, we further investigated the moderating role of sensation seeking on the impact of the threat of COVID-19. We expected that the previous findings would be effective only for travelers with low levels of sensation seeking. Finally, we also directly measured the different perceived levels of threat of COVID-19.

### 7.1. Method: Subjects, design, and procedure

Respondents in this study were 163 U.S. adults (52.8 % female, average age = 39.98,  $SD = 13.56$ ) recruited from an online panel (Amazon MTurk) for a nominal payment in September 2020.

The overall procedure was quite similar to that of Study 1 but with the following modifications. The participants were first informed that the survey comprised different tasks. Participants were asked to rate their perceived threat of COVID-19 using the same method as Study 3, with the same two items (Cronbach’s  $\alpha = 0.914$ ). After that, participants were asked to imagine that they were traveling to New York City in one week. They were further advised to search for a good Italian restaurant, and they were presented with two options: *Trattoria Dell’Arte* [Restaurant A] and *Marea* [Restaurant B]. Then, the crowding of the restaurants was manipulated such that Restaurant A had only two booking time slots left, whereas Restaurant B had five booking time slots, as shown in Fig. 5. Participants were asked to rate their relative preference along a 7-point scale (1 = I will definitely choose Trattoria Dell’Arte, 7 = I will definitely choose Marea). In the main analysis, we reverse coded it so that the higher numbers represented a higher preference for the risky options. After that, participants were asked to rate their perceived popularity for each restaurant (e.g., ... is more popular than others) using a 7-point scale (1 = strongly disagree, 7 = strongly agree).

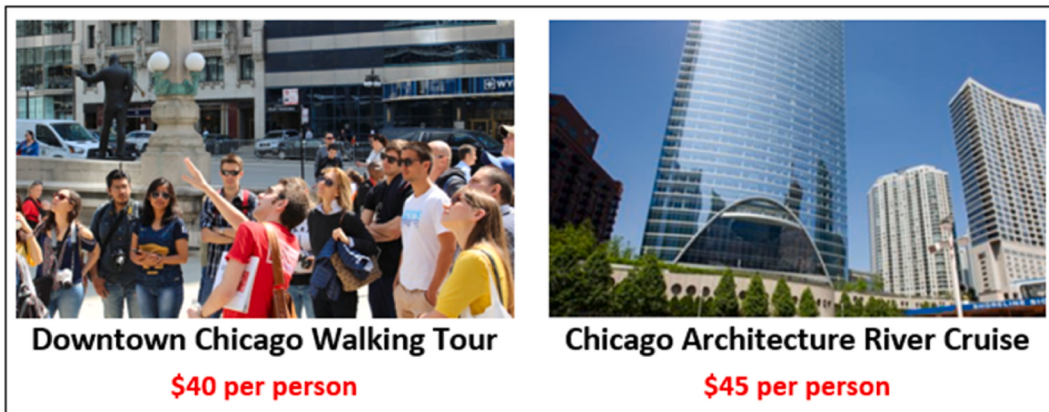
Finally, participants were asked to rate their sensation seeking tendency in 8 items (e.g., I would like to explore strange places/I would love to have new and exciting experiences, even if they are illegal) using a 7-point scale (1 = not at all, 7 = very much, Cronbach’s  $\alpha = 0.904$ , from Brief Sensation Seeking Scale (BSSS), Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002).

### 7.2. Results and discussion

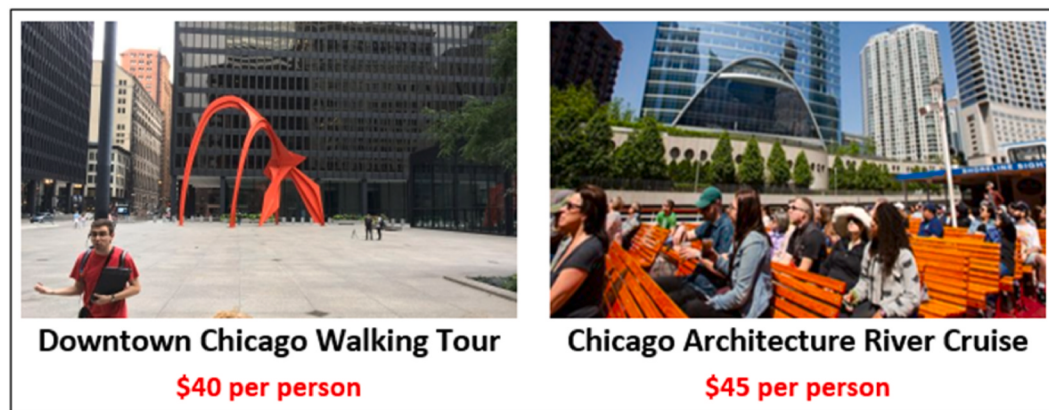
First, the manipulation check of popularity was successful in that Restaurant A was evaluated to be higher in popularity ( $M = 5.69$ ,  $SD = 1.08$ ) than Restaurant B ( $M = 4.02$ ,  $SD = 1.49$ ,  $t(162) = 11.00$ ,  $p < .001$ ).

A moderation test was implemented using Hayes’ (2017) process analysis with Model #1 (i.e., independent variable: The crowding of activities, moderator: sensation seeking; dependent variable: preference for crowded restaurants). The findings indicated that the main effect of the perceived threat was negatively significant (effect =  $-0.67$ ,  $t =$

*Study 3: Option A – Crowded Conditions, & Option B – Non-Crowded Conditions*



*Study 3: Option A – Non-Crowded Conditions & Option B – Crowded Conditions*



*Study 4: Stimuli of Study 4*

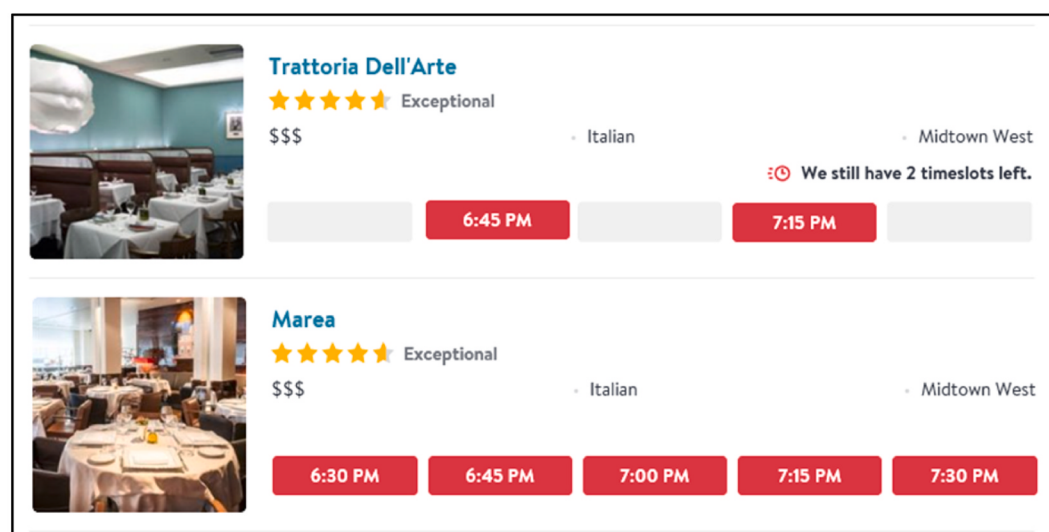
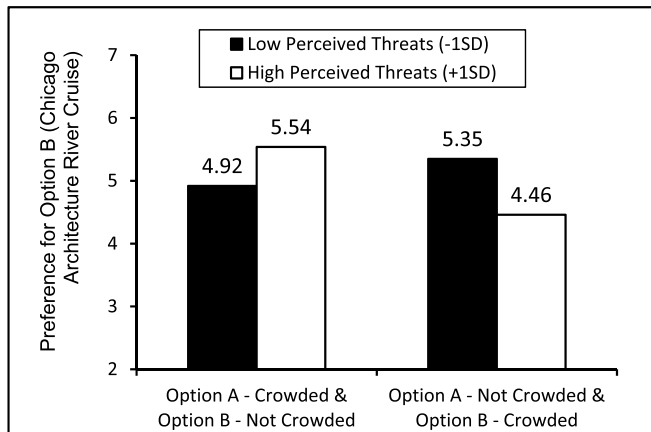


Fig. 6. Stimuli of Studies 3 & 4.

Results of Study 3



Results of Study 4

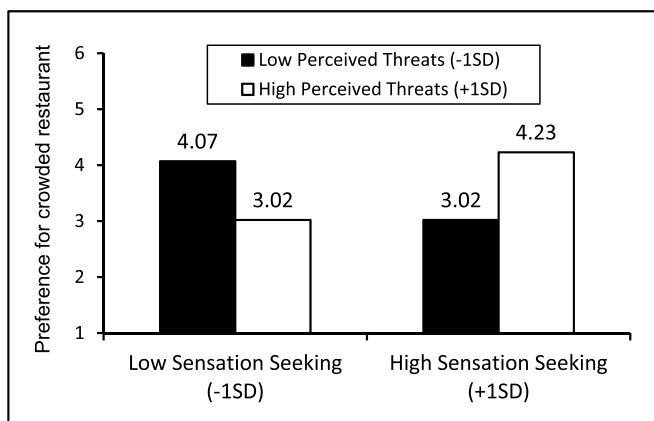


Fig. 7. Results of Studies 3 and 4.

$-2.44, p = .016$ , 95 % confidence level:  $[-1.209, -0.128]$ ), replicating study 1 and supporting H1. More importantly, the interaction effect was significant (effect = 0.191,  $t = 2.65, p = .009$ , 95 % CI:  $[0.049, 0.333]$ ). Specifically, when participants' sensation seeking was relatively low ( $-1SD$  in measurement), the preference for a crowded restaurant was lower when the perceived threat of COVID-19 was higher (estimated  $M = 3.02$ ) versus lower ( $M = 4.07, p = .065$ ). In contrast, when participants' sensation seeking was relatively high ( $+1SD$  in measurement), the opposite pattern was found, in that the preference for a crowded restaurant was higher when the perceived threat of COVID-19 was higher (estimated  $M = 4.23$ ) versus lower ( $M = 3.02, p = .042$ ), as shown in Fig. 6.

The results of Study 4 replicated Study 1 for restaurant choices during a travel situation. In addition, Study 4 showed the moderating role of sensation seeking on the impact of the threat of COVID-19. As expected, we found that the previous findings were effective only for travelers with low levels of sensation seeking.

## 8. Study 5: demonstration of the moderating evidence (H3)

Study 5 replicated Study 1 to identify the moderating role played by travelers' need for uniqueness. Specifically, we expected that the previous findings would be effective only for travelers with a low need for uniqueness, and the opposite pattern would be expected for those with a high need for uniqueness. In addition, we also directly measured the level of perceived threat of COVID-19.

### 8.1. Method: subjects, design, and procedures

The participants were 216 U.S. adults (39.4 % female, average age = 40.63,  $SD = 13.03$ ) recruited from an online panel (Amazon MTurk) for a nominal payment in September 2020.

The overall procedure was quite similar to that of Study 1 but with the following modifications. After the basic information regarding COVID-19 was provided, participants were asked to rate their perception of the threat, similarly to Study 3 (Cronbach's  $\alpha = 0.860$ ). Second, participants were exposed to a selection of restaurants. We only used 'less crowded' option A (i.e., Thai Vailla) and 'crowded' option B (i.e., THEP Thai). Then participants were asked to show their relative preference along a 7-point scale (1 = I will definitely choose Thai Vailla, 7 = I will definitely choose THEP Thai). After that, participants were asked to rate the restaurants' perceived popularity using the same 7-point scale (1 = definitely Thai Vailla, 7 = definitely THEP Thai).

Participants were then asked to rate their need for uniqueness, using six items (e.g., I actively seek to develop my personal uniqueness by buying special products or brands/The more commonplace a product or brand is among the general population, the less interested I am in buying it) using a 7-point scale (1 = strongly disagree, 7 = strongly agree, Cronbach's  $\alpha = 0.904$ , from a short-version of the NFU scale, Ruvio, 2008).

### 8.2. Results and discussion

The manipulation of the crowding of the restaurant was successful in that option B (i.e., THEP Thai) was perceived as being highly popular ( $M = 5.10, SD = 1.73$ ) compared to the neutral point (i.e., '4',  $t(215) = 9.39, p < .001$ ).

A moderation test was implemented using Hayes' (2017) process analysis with Model #1 (i.e., independent variable: Crowding of activities, moderator: Need for uniqueness; dependent variable: Preference for crowded restaurant). The findings indicated that the main effect of the perceived threat was negatively significant (effect =  $-0.61, t = -2.35, p = .020$ , 95 % confidence level:  $[-1.129, -0.099]$ ), replicating study 1 and supporting H1. More importantly, the overall moderation was significant (effect = 0.178,  $t = 2.76, p = .006$ , 95 % CI:  $[0.047, 0.285]$ ). Specifically, when the need for uniqueness was relatively low ( $-1SD$  in measurement), the preference for a crowded restaurant was lower when the perceived threat of COVID-19 was higher (estimated  $M = 2.80$ ) versus lower ( $M = 3.50, p = .092$ ). On the other hand, when the need for uniqueness was relatively high ( $+1SD$  in measurement), the opposite pattern was true, in that the preference for a crowded restaurant was higher when the perceived threat of COVID-19 was higher

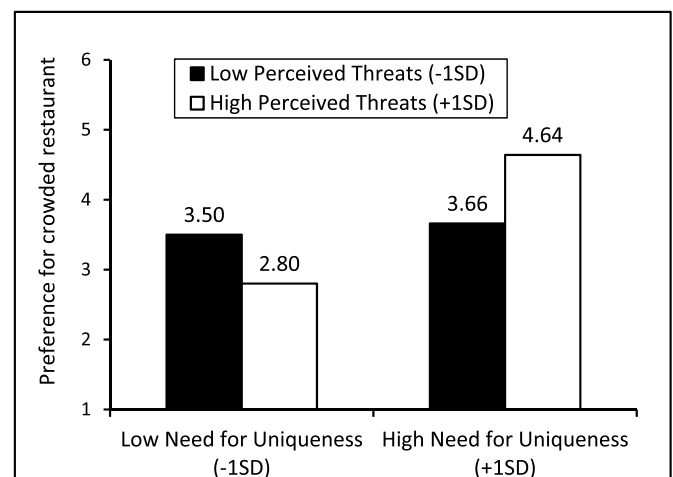


Fig. 8. Results of Study 5.

(estimated  $M = 4.67$ ) versus lower ( $M = 3.66$ ,  $p = .019$ ), as shown in Fig. 8.

Study 5 replicated Study 1 to identify the moderating role played by travelers' need for uniqueness. As anticipated, the previous findings were effective only for travelers with a low need for uniqueness, and the opposite pattern was effective for those with a high need for uniqueness.

## 9. Conclusions and implications

### 9.1. General discussion

This research investigated how the current COVID-19 pandemic is influencing travelers' preferences for crowded and non-crowded options. Specifically, we hypothesized that travelers might have a diminished preference for crowded (vs. non-crowded) travel and hospitality options when the pandemic is salient. All five studies supported our hypotheses. Study 1 investigated the primary prediction regarding the impact of the salience of COVID-19 on travelers' preferences for crowded versus non-crowded options. Participants imagined traveling to a city and choosing between a restaurant for which they saw images of crowded people and one for which they saw images of non-crowded people. Study 2 replicated Study 1 in a setting with choices of travel activities involving multiple activities that were portrayed as having many consumers or few consumers. Study 3 demonstrated that this effect is consistent across different travel activity choice settings as well as controlling for previous travel experiences. Study 4 replicated Study 1 in a restaurant during a travel situation and also supported the moderating evidence of the sensation seeking tendency on the above findings. Study 5 replicated the previous studies by showing the moderating role that travelers' need for uniqueness played. Consumers' tendency to avoid the crowded option was reduced significantly for participants whose sensation seeking was high and whose need for uniqueness was high.

### 9.2. Theoretical contributions

These findings make several important theoretical contributions. First, this research extends our knowledge on the effect that human crowding has on travel decision-making during disruptive events and global health crises. Human crowds are omnipresent in many popular destinations and attractions around the globe, and this paper provides new insights into the uncertainty related to human crowding during unpredictable times, such as during the current COVID-19 pandemic. Our results suggest that the salience of a global health crisis can significantly influence travelers' preferences for and intentions to visit crowded (vs. non-crowded) environments. These findings facilitate a deeper understanding of how uncertainty and perceived risk can lead to lower preferences and how tourism actors need to effectively manage the level of crowding of normally crowded attractions. This paper reinforces our knowledge about how perceived threat influences people's processing and evaluation of alternative options in the tourism sector.

Second, the results of this study imply that the COVID-19 pandemic could change individuals' fundamental preferences for the popular choice (vs. the less popular one), such that people would tend to avoid the popular option, especially under the high threat level triggered by the pandemic condition. The psychological impact of the pandemic is likely to influence other people's judgment and decision-making. For example, the pandemic could affect the framing effect, such as a positive vs. a negative description of the same event or incident (Kim, Kim, & Marshall, 2014; Tversky & Kahneman, 1981). Thus, people's sensitivity to the tourism destination's environment (e.g., crowding) could alleviate the framing effect in the communication strategy realm. For example, because serious decision-making due to the virus could reduce the context effect, such as the compromise effect, the decoy effect (Kim et al., 2019), or the decision type effect (e.g., choice vs. rejection) (Kim, Kim, et al., 2020), a future study should investigate this possibility in hospitality/tourism industry settings.

Third, this study extends the literature regarding the contagion effect (Argo et al., 2006; Kim, 2017). Previously, the contagion effect mainly referred to the negative impact of other people's direct or indirect touch or contact (Argo et al., 2006; Otoo & Kim, 2018). In this paper, we found that individuals living under the high salience of the COVID-19 pandemic tended to change their preference for a tourism site according to the site's level of crowding. Given that general outcome, the same pattern could be valid for evaluating tangible used goods, such as used travel bags (Kim, 2017). Specifically, the salience of the pandemic could decrease the attractiveness of used goods because of a concern about the contagion. Therefore, this study provides a crucial variable (i.e., the salience of an infectious disease) as an influence in the contagion effect.

Fourth, this research contributes to the literature exploring the impact of social crowding on consumer behavior. Previous research had demonstrated that social crowding induced consumers' avoidance motivation (Cain & LeDoux, 2008; Maeng and Tanner, 2013) and that avoidance, in turn, eroded their satisfaction and diminished their shopping time (Hui & Bateson, 1991; Hwang et al., 2012). In addition, previous studies demonstrated that social crowding influenced brand preference (Hwang and Hyun, 2017; Puzakova & Kwak, 2017) and decision-making, especially by causing consumers to favor safety-related products (Maeng and Tanner, 2013).

By extending those findings to the context of consumers' choice behavior under the threat of COVID-19, the present research found that consumers' willingness to avoid crowding increased when the threat from COVID-19 intensified. We thoroughly examined these influences in various contexts involving restaurants, travel locations, and preferred activities. Furthermore, our findings also revealed that the perception of crowding could be manipulated by pictorial displays of the choice options (e.g., preferred restaurants or travel activities).

### 9.3. Practical implications

This research offers several practical and managerial implications. First, tourism destination marketers need to be aware that perceived crowding of a tourism site can have a critical and negative influence on travelers' choice behavior. Thus, marketers need to identify ways to manage their customers' traffic effectively under pressure from such situations as health-related risks, so that managers can take in as many customers as possible while providing the perception that the place is not overly crowded. One strategy for management would be to limit the maximum number of customers during a given pandemic period to allay their fear of coming into contact with others at a destination. Another strategy for management would be to offer timely information about crowding in the tourist site via smartphone applications or social media.

Second, most studies have reached the consensus that customers tend to avoid crowded tourism destinations because there is a negative correlation between crowding and satisfaction (Eroglu & Machleit, 1990; Jacobsen et al., 2019; Lowrey, 2019). However, consumers also tend to avoid uncrowded tourism or business locations because they are suspicious of the places' quality, dislike isolation, suspect that something is wrong with the place, as evidenced by others avoiding it or have different motivations or cultural values (<https://www.sciencedirect.com/science/article/pii/S2211973617301204> (Luque-Gil, Gómez-Moreno, & Peláez-Fernández, 2018; Neuts & Nijkamp, 2012; Pons, Laroche, & Murali, 2006)). Therefore, because restaurant managers and tourism marketers need to accommodate their customers, they need to communicate with them. Managers should offer customers information about their efforts to surmount the multiple crises caused by the pandemic. Managers' messages could contain government regulations, management difficulties, and their operational measures and ideas. In addition, they need to continue to monitor customers' reactions to tourism businesses' practical measures (e.g., screen shields between tables in restaurants, assigning socially distanced standing points in queues, and providing hand sanitizers at the entrance).

Third, preparing a recovery strategy for the travel and hospitality

industry is essential (Litvin, Guttentag, & Smith, 2021; Sigala, 2020). Studies 4 and 5 demonstrated that travelers' sensation seeking and need for uniqueness significantly change the impact of the threat of COVID-19 on the relative preference for crowded options. Specifically, travelers' negative preference for the crowded option under high threat of COVID-19 was reversed for travelers with high levels of sensation seeking and a high need for uniqueness. This study suggests straightforward practical implications for recovery strategies relating to the pandemic. Managers should target high sensation seeking and/or high need for uniqueness travelers in travel and hospitality settings.

#### 9.4. Limitations and suggestions for future studies

This research had limitations that can help improve future research. First, in this research, all studies were conducted with scenario-based materials because it is not easy to collect large-scale samples within a short time period during a pandemic. Although the validity of our predictions was consistently supported across multiple studies, a field study, which asks respondents consequential decisions, would help further confirm this validity.

Second, in this investigation, we measured different levels of COVID-19 threat or manipulated the threat of COVID-19 based on previous literature. However, it is still possible that actual responses to the threat of the pandemic could be different. Future studies need to investigate this issue seriously, for example, by using actual behavioral data (e.g., hotel usage data or visitor statistics).

Third, this research does not offer managers practical guidelines for overcoming the negative effect of social crowding on travelers' choice behavior. Therefore, future research should explore the situational variables as well as consumer characteristics that can mitigate avoidance behaviors.

Finally, as we addressed above, the relationship between crowding and satisfaction can differ according to diverse factors, such as the consumer's personality, motivations to use, and cross-cultural values. Therefore, a future study is required to analyze whether people's perceptions of crowding are volatile according to those psychological, cultural, or individual-specific factors.

#### Credit author statement

All authors contributed equally to this work in terms of conceptualization, methodology, formal analysis, and writing.

#### Impact statement

This study has several theoretical and practical implications. First, it investigates the impact of the COVID-19 pandemic on tourists' preference for travel options. Second, this study assesses whether the avoidance of crowded travel and hospitality options is stronger because the negative effects of crowding are expected to be strong during the COVID-19 pandemic. Third, this study identifies the impact of the salience of the COVID-19 pandemic on travelers' preference for crowded (vs. non-crowded) options. The results of this research augment the understanding of travelers' reactions to crowded options during a major health crisis. Finally, this study provides some strategic recovery guidance relating to the pandemic. Specifically, the results of this study suggest that travelers with high levels of sensation seeking and a high need for uniqueness could be targets for recovering from the COVID-19-induced significant drop in travel intention.

#### Declaration of interest

None.

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