

Afraid to travel after COVID-19? Self-protection, coping and resilience against pandemic 'travel fear'

Danni Zheng^{a,b}, Qiuju Luo^{c,d,*}, Brent W. Ritchie^b

^a Department of Tourism, Fudan University, China

^b UQ Business School, The University of Queensland, Brisbane, Australia

^c School of Tourism Management, Sun Yat-sen University, Building 329, 135 Xingangxi Road, Guangzhou, 510275, PR China

^d Center for Tourism Planning and Research, Sun Yat-sen University, Building 329, 135 Xingangxi Road, Guangzhou, 510275, PR China

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ABSTRACT

COVID-19 has generated an unprecedented level of public fear, likely impeding tourism industry recovery after the pandemic is over. This study explores what trigger the public's pandemic 'travel fear' and how people impose self-protection, coping and resilience related to travel. The study integrates theories including protection motivation theory, coping and resilience theories to address the research aim. Using a quota sampling, an online survey of 1208 respondents across mainland China was conducted. Results found that threat severity and susceptibility can cause 'travel fear', which leads to protection motivation and protective travel behaviors after the pandemic outbreak. Findings also revealed that 'travel fear' can evoke different coping strategies, which increases people's psychological resilience and adoption of cautious travel behaviors. Several strategies are provided on how to mitigate people's 'travel fear' and encourage travel in a post-COVID-19 world.

1. Introduction

In the 21st century, we have witnessed several infectious diseases threaten the global economy and human lives. Unfortunately, a new pandemic disease has occurred again, and this has had an unprecedented impact on the global tourism industry. In Dec 2019, the 2019 novel coronavirus (COVID-19) appeared in Wuhan and rapidly spread to other places in China. As of Feb 25, 2020, the pandemic has caused 2666 deaths out of 77,779 confirmed and 2824 suspected patients (China National Health Commission, 2020). To effectively control the pandemic disease, China and many other countries have taken unprecedented measures to limit population mobility. For instance, many provinces in China enacted a "Level I Emergency Response" by suspending public transportation, closing schools and cancelling mass gatherings (Li et al., 2020). By Feb 2020, over 80 countries and territories had imposed travel restrictions including border closure, entry or exit bans, visa restrictions and flight suspensions (Kiernan & DeVita, 2020). Currently, the spread of this pandemic disease continues in countries such as Japan, South Korea and Italy. In early March, it was recategorized as a worldwide pandemic disease (World Health Organization, 2020). At the time of writing, cases of COVID-19 have exceeded one million worldwide. The increasing number of cases and deaths has

led to an unprecedented level of anxiety, fear and panic, and understandably, the avoidance of human contact.

Previous studies highlight that when a pandemic outbreaks occur, tourism can be dramatically affected and recovery can be slow (Novelli, Burgess, Jones, & Ritchie, 2018). In 2003, over 3 million tourism industry employees lost their jobs after the outbreak of SARS, causing an economic loss of over \$20 billion in east Asia (World Travel & Tourism Council, 2003). Given the fear of SARS infection during travelling, the number of outbound trips fell significantly from 702.6 million in 2002 to 694 million in 2003 (World Tourism Organization, 2004). In 2014, the outbreak of the Ebola epidemic in West Africa triggered worldwide tourists' fear once again. Although 99% of the Ebola cases were in Sierra Leone, Guinea and Liberia, many tourists regarded all African countries as high-risk destinations, resulting in a 7.7% decrease in arrivals in other Ebola-free countries. After 35 months of the Ebola outbreak, international arrivals to West Africa is still over 50% short of the pre-epidemic highs (World Travel & Tourism Council, 2018). During this COVID-19 outbreak, tourism has been severely damaged due to travel being regarded as a high-risk activity. Worse still, due to the uncertainty and misleading information about epidemics in the social media, the fear of the epidemic itself and traveler perceptions have led to significant reductions in travel demand. Although we can glean lessons from the past,

* Corresponding author. School of Tourism Management, Sun Yat-sen University, Building 329, 135 Xingangxi Road, Guangzhou, 510275, PR China.

E-mail addresses: dianacheng510@163.com (D. Zheng), bettyluoqiuju@126.com (Q. Luo), b.ritchie@uq.edu.au (B.W. Ritchie).

COVID-19 is significantly larger in size and scope than previous epidemics. Understanding individuals' pandemic 'travel fear' is essential to help revive the tourism industry after the outbreak.

The research of health-related crisis management in tourism has been divided into three main streams, including evaluating impacts on the tourism industry (e.g., Au, Ramasamy, & Yeung, 2005; Zeng, Carter, & De Lacy, 2005), forecasting tourism demand (e.g., Kuo, Chen, Tseng, Ju, & Huang, 2008; Solarin, 2016; Tang & Wong, 2009), and estimating impacts on tourist behaviors (e.g., Cahyanto, Wiblishauser, Pennington-Gray, & Schroeder, 2016; Wen, Huimin, & Kavanaugh, 2005). Since 2000, a series of epidemic diseases have been studied, such as foot and mouth disease (e.g., Irvine & Anderson, 2006), SARS (e.g., Kuo et al., 2008), H1N1 (e.g., Lee, Song, Bendle, Kim, & Han, 2012) and Ebola (e.g., Novelli et al., 2018).

Research found that government policies (e.g., Wan, 2013), media engagement (e.g., Hystad & Keller, 2008) and new tourism products (e.g., Alan, So, & Sin, 2006) may be effective interventions to boost visitor numbers and improve post-disaster economic recovery. Additionally, studies revealed that tourists' post-disaster travel behaviors can be influenced by their risk perceptions (e.g., Chew & Jahari, 2014; Su, Zhao, & Tan, 2015) and motivations (e.g., Biran, Liu, Li, & Eichhorn, 2014; Rittichainuwat, 2008). Although pandemics can generate psychological distress among tourists, seldom has research examined individuals' psychological response and coping mechanism in a post-pandemic travel context.

In public health crisis contexts, people may generate protection motivation (Rogers, 1975) and employ different coping strategies (Folkman & Lazarus, 1980) to deal with their fear triggered by infectious disease. Moreover, studies revealed that coping with fear can increase individuals' resilience, which helps to moderate perceived losses and improve the adaptability toward the disaster (e.g., Rodriguez-Llanes, Vos, & Guha-Sapir, 2013). As a primitive emotional response to a threat, fear is more incalculable and unpredictable than risk (Fennell, 2017). Instead of assessing the perceived risks in tourism, literature found that fear can significantly impact tourists' choices in destinations and activities (e.g., dark tourism, adventure tourism) (e.g., Cater, 2006; Kang, Scott, Lee, & Ballantyne, 2012; Mura, 2010). Although the role of emotions in tourists' behaviors has been highlighted in recent studies (e.g., Prayag, Hosany, Muskat, & Del Chiappa, 2017; Yan, Zhou, & Wu, 2018), what cause 'travel fear' and how tourists psychologically recover from a global pandemic outbreak, such as COVID-19 is unknown, yet vital.

To fill the knowledge gap, this study aims to explore the antecedents and behavioral consequences of individuals' 'travel fear' after the pandemic outbreak. Based on protection motivation theory, the research establishes a theoretical framework to explore the relationships between 'travel fear', perceived threat, protection motivation and protective behaviors in a public health-related tourism context. Further, the study advances the extant protection motivation model by investigating individuals' coping and resilience related to 'travel fear'. Rather than assuming that fear may merely lead to protection motivation and protective behaviors, the study posits that individuals can increase their resilience to psychologically recover from pandemic 'travel fear'. Give the dearth of studies on coping and resilience in tourism crisis literature (Prayag, 2018), the research provides comprehensive insights in understanding tourists' psychology after the outbreak. The key questions underpinning the research are: (1) Will COVID-19 evoke fear of traveling after the pandemic outbreak? (2) What are the triggers of individuals' pandemic 'travel fear'? (3) How do individuals cope and improve resilience against pandemic 'travel fear'? (4) How does pandemic 'travel fear' affect individuals' protective travel behaviors?

To mitigate the devastative impacts of COVID-19 on tourism, tourism destinations and enterprises need to better understand public's psychology in post-pandemic travel rather than simply predict tourism demand. The results of this research can help tourism providers to establish effective communication and policies to relieve public's 'travel

fear' and encourage travel after the pandemic outbreak. China was the one of countries to experience the COVID-19 outbreak and is the first to have reduced cases significantly. It is also the largest source country in the world. Findings from our study can thus provide meaningful insights and suggestions for other countries, helping to accelerate tourism recovery in post pandemic.

2. Literature review

2.1. Tourists' fear of pandemic diseases

A pandemic refers to a widespread occurrence of an infectious disease which crosses country and continent boundaries, while an epidemic is an outbreak mainly contained in a community at a particular time (French, Mykhalovskiy, & Lamothe, 2018). As a highly infectious disease that can rapidly spread between humans, pandemic disease leads to a high intensity of fear and panic among the public (Strong, 1990). Considering the uncertainty of the novel virus and possible fatal outcomes, fear of pandemic can spread throughout all populations (Person, Sy, Holton, Govert, & Liang, 2004). During the pandemic outbreak, governments normally implement mandatory measures such as travel restrictions, prohibition of public events, school closures, quarantine and isolation measures to control infection, all of which further fuels the public's fear of the pandemic (Eichelberger, 2007). Given the prevalence of social media in the recent decade, research also found that fear can be significantly increased by observing others' reactions and experiences toward pandemics online (e.g., Dalrymple, Young, & Tully, 2016; Fung, Tse, Cheung, Miu, & Fu, 2014; Lamb, Paul, & Dredze, 2013).

The fear of contagion can exist over a long period, which triggers fear-induced consumption and communicating behaviors during and after the pandemic outbreak (Bali, Stewart, & Pate, 2016). Since tourists have to confront high risks and have no available precautions and medical care during the pandemic outbreak, their fear of infection and death may cause a sense of helplessness and long-term anxiety towards travelling. However, the extant literature on tourists' response to disasters mainly focused on their risk perception and post-crisis travel motivations, overlooking the emotional consequences caused by health-related crises (Fennell, 2017). Although some studies argued that there would be a short period of post-pandemic 'blowout' of tourism demand (e.g., Wen et al., 2005), there is almost no study investigating how tourists' psychologically recover from their fear of a pandemic.

2.2. Protection motivation theory

Protection motivation theory explains how people cognitively assess a particular threat and perform protective behaviors (Floyd, Prentice-Dunn, & Rogers, 2000). The cognitive mediational process includes people's perceived threat and perceived efficacy in coping, which evokes their protection motivation and different coping manners (i.e., adaptive or maladaptive behaviors) (Rogers, 1975). Adaptive behaviors refer to individuals' actions that are intended to protect against threat, whereas maladaptive behaviors involve people's avoidance of engaging in a corresponding protection (Menard, Bott, & Crossler, 2017).

In public health contexts, protection motivation refers to people's intention to adopt recommended behaviors to protect themselves against a health threat (Lwin, Stanaland, & Chan, 2010). The protection motivation model has been widely utilized in investigating people's health-related behaviors, such as healthy lifestyles (e.g., Scarpa & Thiene, 2011), vaccination uptake (e.g., Makarovs & Achterberg, 2017; McNeill, Harris, & Briggs, 2016) and disease prevention (e.g., Eppright, Tanner Jr, & Hunt, 1994). Tourism studies mainly applied the protection motivation theory to explore tourists' perception and protective behaviors towards risky destinations and activities (Lu & Wei, 2019; Wang, Liu-Lastres, Ritchie, & Mills, 2019). Despite public health crises (e.g., epidemic, pandemic disease) possibly resulting in severe consequences for tourists, seldom has research investigated how tourists evaluate an

epidemic threat and how this may influence their protective travel behaviors.

Perceived threat includes two dimensions: threat susceptibility and threat severity, which is individuals' subjective perception of the particular risk (Floyd et al., 2000). Threat susceptibility is people's sense of vulnerability towards a particular threat, while threat severity refers to the individual's perceived seriousness of the threat (Menard et al., 2017). Although the conventional protection motivation model provides how perceived threat lead to protective behaviors, it neglects the emotional consequences during the cognitive appraisal process (Tanner Jr, Hunt, & Eppright, 1991). Fear is a basic emotion that motivates people to avoid a particular threat (Cisler, Olatunji, & Lohr, 2009). While appraising threat severity and susceptibility, fear can be triggered as a defensive response and affective adaption toward the threat (LaTour & Rotfeld, 1997). Studies have confirmed that fear can be an intervening variable that impacts individuals' attitude and protective behaviors toward the threat (Boss, Galletta, Lowry, Moody, & Polak, 2015; LaTour & Rotfeld, 1997; Posey, Roberts, & Lowry, 2015). Specifically, fear can lead people to take the threat more seriously, which increases their motivation of self-protection (Chen & Yang, 2019; Witte, Berkowitz, Cameron, & McKeon, 1998). When a pandemic occurred, individuals' perceived threat of travelling can significantly trigger their pandemic 'travel fear'. Consequently, people are motivated to protect themselves toward travelling after the pandemic outbreak. Thus, we proposed the following hypotheses:

H1. Individuals' perceived threat severity significantly increases their pandemic 'travel fear'.

H2. Individuals' perceived threat susceptibility significantly increases their pandemic 'travel fear'.

H3. Individuals' pandemic 'travel fear' significantly increases their protection motivation toward travelling after the outbreak.

Individuals' protection motivation can also result in their perceived efficacy in dealing with the threat (i.e., self-efficacy and response efficacy) (Floyd et al., 2000). Self-efficacy refers to the belief that personal action can control or eliminate the threat while response efficacy is people's perceived effectiveness of taking actions to prevent a threat (Zhao & Cai, 2009). When people believe that the action outcome is effective and feasible, they are motivated to engage and comply with protection (De Meulenaer, De Pelsmacker, & Dens, 2018). In tourism contexts, the positive relationship between perceived efficacy and protection motivation has been widely supported in tourists' behavior studies (Liu, Pennington-Gray, & Krieger, 2016; Wang, Liu-Lastres, Ritchie, & Pan, 2019; Wang, Lin, Lu, & Lee, 2019). Tourists' protection motivation after the outbreak may also be affected by their consideration of the effectiveness of action toward the pandemic threat. Thus, we proposed the following hypotheses:

H4. Individuals' response efficacy significantly increases their protection motivation towards travelling after the pandemic outbreak.

H5. Individuals' self-efficacy significantly increases their protection motivation towards travelling after the pandemic outbreak.

2.3. Coping with fear

Coping refers to the cognitive and behavioral efforts that people adopt to deal with stressful events (Folkman & Lazarus, 1980; Folkman, Lazarus, Pimley, & Novacek, 1987). When people perceive situations as unpleasant, they may apply different coping strategies to overcome the adverse events or occurrences (Lin & Yusoff, 2013). Coping is developed to maintain individuals' physical and mental health, which can be categorized into two broad types: focused and disengagement coping (Zeidner & Saklofske, 1996). Problem-focused coping aims to manage and reduce the source of threat (e.g., planning, accepting), while emotion-focused coping tries to regulate and mitigate the emotional

distress caused by the situation (e.g., venting, self-blame) (Shimazu & Schaufeli, 2007). Disengagement coping is a passive coping approach, which attempts to avoid or disconnect from the stressful situation (e.g., denial, humor) (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001).

Research has confirmed the significant relationship between fear and people's choices of coping strategies (e.g., Duhachek & Iacobucci, 2005; Jun & Yeo, 2012). To escape and protect oneself from the threat, studies found that fear positively triggers people's disengagement and emotion-seeking coping (self or social supported) (Duhachek & Iacobucci, 2005). Moreover, studies suggested that individuals' coping towards fear can be active-oriented, such as seeking instrumental support and taking active protection actions (Yeung & Fung, 2007). In a pandemic tourism context, people may seek different coping strategies to deal with their emotion. Thus, we proposed the following hypotheses:

H6. Individuals' pandemic 'travel fear' significantly increases their problem-focused coping (a), self-supported emotional coping (b), social-supported emotional coping (c), and disengagement coping (d).

2.4. Resilience

Resilience has been widely applied to investigate how tourism destinations and organizations respond to crises and disasters (e.g., Cartier & Taylor, 2020; Fountain & Cradock-Henry, 2020). However, little is known about how tourists generate and use psychological resilience to manage changes and adversities in travelling (Prayag, 2018; Prayag, Spector, Orchiston, & Chowdhury, 2020). Psychological resilience refers to individuals' capacity to thrive in the face of past or present adversity (Singh & Yu, 2010). Numerous studies found that people's psychological resilience helps to moderate the losses and increase the adaptability toward stressful or traumatic events, such as natural disasters (Rodriguez-Llanes et al., 2013), terrorism (Bonanno, Galea, Bucciarelli, & Vlahov, 2006), illness (Hou, Law, Yin, & Fu, 2010; Li, Chi, Sherr, Cluver, & Stanton, 2015) and loss (Bonanno, Westphal, & Mancini, 2011). In pandemic research, increasing people's psychological resilience is an important approach to relieve fear and traumatic stress among the survivors and healthcare workers (Bonanno et al., 2008; Maunder, 2004). However, the concept of psychological resilience has been widely studied as clinical treatment, which has seldom been applied in investigating public mental health recovery.

Although literature argues that resilience can exist as a personality trait (e.g., Seery, 2011), several studies reveal that it can be a dynamic protective process affected by various coping skills (Campbell-Sills, Cohan, & Stein, 2006; Stratta et al., 2015). As the positive outcome of an individual's psychological adjustment, resilience can be impacted by either adaptive coping or maladaptive coping (Stratta et al., 2015). Thus, we proposed the following hypotheses:

H7. Problem-focused coping (a), self-supported emotional coping (b), social-supported emotional coping (c), and disengagement coping (d) significantly increase individuals' psychological resilience against pandemic 'travel fear'.

2.5. Post-pandemic travel behaviors

The majority of studies on post-pandemic travel behaviors have focused on industry impacts (e.g., Dombey, 2004; Kim, Chun, & Lee, 2005) or tourism demand (e.g., Kuo et al., 2008; Mao, Ding, & Lee, 2010; Wang, 2009), which fails to identify the psychological factors associated with these changed behaviors. For instance, studies found that Ebola induced a significant decrease in tourism demand across the whole of Africa in the year after its outbreak (Cahyanto et al., 2016; Novelli et al., 2018). After the SARS outbreak, Chinese tourists altered their travelling behaviors in a social distancing way, such as choosing natural tourism destinations, decreasing group tours and avoiding contact with other people during travelling (Wen et al., 2005). Numerous public

health studies found that fear was positively related to people's risk avoidant behaviors during or after infectious disease outbreaks (e.g., Nabi & Prestin, 2016; Wong & Sam, 2011). When tourists' fear is triggered by a health crisis, they may choose travel avoidance as a direct protective measure to reduce the potential risks (Cahyanto et al., 2016). By applying protection motivation theory, travel risk studies confirmed that tourists' protection motivation was a strong predictor in their travel avoidance (e.g., Ruan, Kang, & Song, 2020; Wong & Yeh, 2009) or adoption of protective tourism behaviors (e.g., Fisher, Almanza, Behnke, Nelson, & Neal, 2018; Lu & Wei, 2019). Therefore, protection motivation may significantly impact tourists' travel avoidance and cautious travel intentions after the pandemic outbreak. Additionally, since resilience can significantly increase people's adaptive behaviors (e.g., planning, protection) against the threat (Hua, Chen, & Luo, 2018; Rutter, 1987), it is argued that people who have high level of psychological resilience may perform cautious rather than avoidant behaviors in post-pandemic travel. Thus, we proposed the following hypotheses (Fig. 1 displays the whole conceptual model):

H8. Individuals' pandemic 'travel fear' significantly increases their travel avoidance after the outbreak.

H9. Individuals' protection motivation significantly increases their travel avoidance (a) and cautious travel (b) after the pandemic outbreak.

H10. Individuals' resilience significantly increases their cautious travel after the pandemic outbreak.

3. Methodology

3.1. Construct measures

The research employed a quantitative research approach to empirically test the hypothesized model. Aside from socio-demographic variables, the items for the constructs were adapted from relevant previous studies to ensure content validity. To measure respondents' 'travel fear', respondents are asked to rate their feeling when thinking about

travelling after the pandemic outbreak (i.e., after national travel restrictions have been totally lifted). Three items (i.e., *frightened*, *nervous*, *anxious*) that have been validated and applied in fear scale were selected (Block & Keller, 1995; Gleicher & Petty, 1992). Respondents were asked to indicate the level of each emotion listed on the survey based on a 5-point Likert-type scale (1 = *not at all*, to 5 = *very much*). The response format for other statements was also measured with 5-point scaling, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. A two-item threat severity scale and a three-item threat susceptibility scale were adopted from measurements in epidemic studies (Becker, 1974; Masser, White, Hamilton, & McKimmie, 2011; Witte, 1996). Respondents' perceived efficacy in protecting themselves during travel after the pandemic was measured by five items in a response efficacy scale (Burns, Posey, Roberts, & Benjamin Lowry, 2017; Workman, Bommer, & Straub, 2008) and four items in a self-efficacy scale (Burns et al., 2017; Workman et al., 2008). Four items of protection motivation that have been widely adopted in protective behavior studies were selected (Posey et al., 2015).

The Brief Cope (Carver, 1997) comprising 14 scales (two items each) was initially selected to assess peoples' coping strategies in dealing with pandemic fear. As recommended in other research, four types of coping strategies with their associated eight subscales were divided and selected to adapt the context, including problem-focused (i.e., planning, active coping), self-supported emotional (i.e., positive reframing, acceptance), social-supported emotional (i.e., instrumental support, emotional support) and disengagement coping (i.e., behavioral disengagement, denial) (Schnider, Elhai, & Gray, 2007; Sharif & Khanekharab, 2017; Stratta et al., 2015). Five items were chosen to measure the public's psychological resilience in travelling after the pandemic outbreak (Campbell-Sills & Stein, 2007; Connor & Davidson, 2003; Hua et al., 2018). Two items were selected to measure respondents' travel avoidance intention while three items were chosen to detect their willingness to adopt cautious travel (Mahoney et al., 2016; Mahoney, Hobbs, Newby, Williams, & Andrews, 2018). Moreover, the respondents were asked to indicate their travel choices in terms of time, distance and destination types after the pandemic outbreak. Finally, respondents'

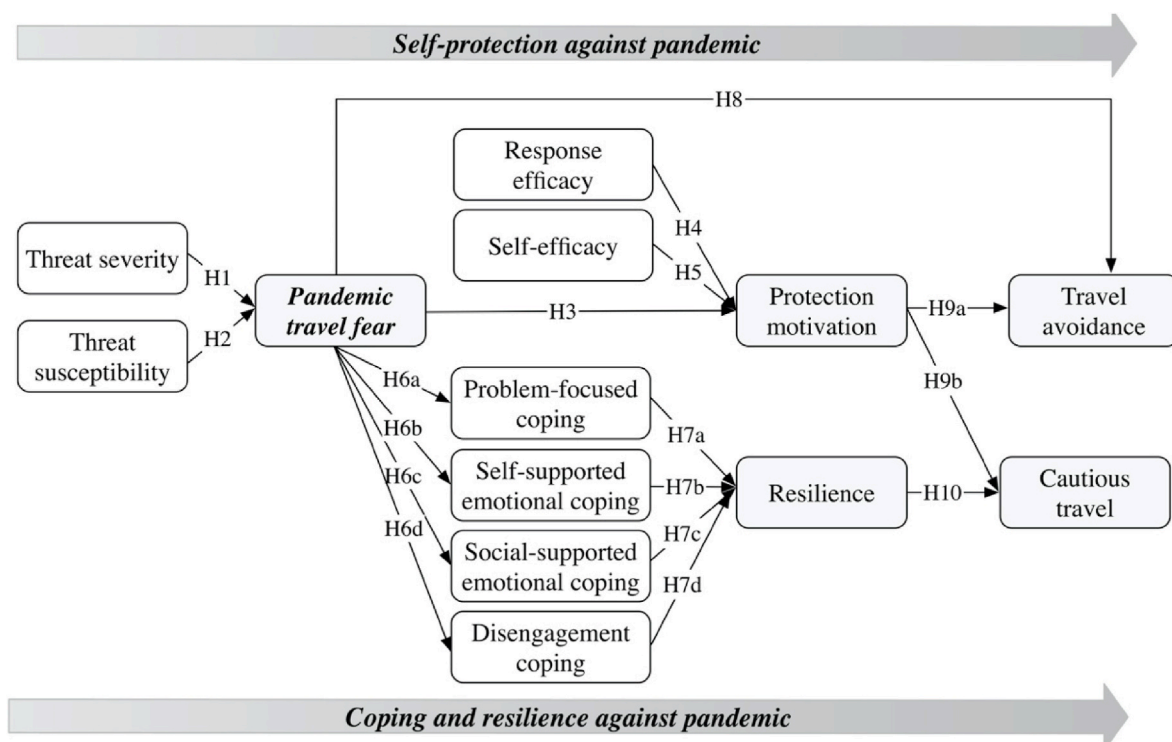


Fig. 1. Hypotheses for the research model.

socio-demographics such as gender, age, birthplace, current living locations and education were included in the survey.

Semantic equivalence of the questionnaire was ensured by translation and back-translation approach. Two translators translated the English instruments into Chinese independently. Afterwards, a panel discussion amongst six native Chinese speakers was conducted to discuss and revise the differences between the two versions of translations. A third person was asked to translate the Chinese survey back into English to confirm the consistency.

3.2. Data collection

The survey was conducted among Chinese residents who travelled within past 12 months and experienced the outbreak of COVID-19 within China. The questionnaire was generated and distributed via a popular online survey service company (www.wenjuanxing.com) in China, which has been widely employed in recent studies on Chinese tourists (Fong, Lam, & Law, 2017; Zhou, Su, Zhou, & Zhang, 2016). Given the COVID-19 quarantine requirement in China, the online survey was the only option to collect our survey data. Moreover, as our target population comprised residents across the nation, it is the most cost-effective approach (e.g., Chang, 2018; Kanwal, Rasheed, Pitafi, Pitafi, & Ren, 2020). Prior to formal investigation, a pilot test of the online survey with 100 respondents was conducted to check the appropriateness of the survey. The formal survey was conducted from 8 March to March 23, 2020, which is approximately two months after quarantine restrictions in China (since Jan 23, 2020 in Wuhan) and two days before the resumption of national transportation (except in Wuhan city).

To ensure data quality, this study applied a quota sampling approach that has been applied and recommended in tourism research (e.g., Kim, Chung, & Lee, 2011; Lin & Song, 2015; Ridderstaat, Croes, & Nijkamp, 2016; Zheng, Ritchie, Benckendorff, & Bao, 2019a). First, the quota was calculated based on the sociodemographics (i.e., age, gender) of China's population census (China National Bureau of Statistics, 2010). Second, considering the significant differences in culture and COVID-19 infection amongst different provinces in China, the quota was set by considering geographical areas (i.e., north, south, east, west and middle of mainland China) and confirmed COVID-19 cases (i.e., low, average and high infected provinces). Only respondents who answered "yes" to the screening question (i.e., are you currently staying in China due to COVID-19 travel restrictions?) were recruited for the study. A total of 3000 questionnaires were distributed, and 1235 responses were returned, representing a response rate of 41.2%. After eliminating outliers, fast responses and pattern answers (e.g., 12,345, 22,222), 1208 responses were retained for final analysis.

3.3. Data analysis

The research employed SPSS (version 23) to conduct descriptive analysis and a one-way analysis of variance (ANOVA). Further, the study used Partial Least Squares Structural Equation Modelling (PLS-SEM) to examine the associations between latent constructs including 'travel fear', self-efficacy, response efficacy, coping, protection motivation, and travel avoidance and cautious travel intentions. SmartPLS (version 3.2.9) was applied to test the measurement and structural model proposed in the research. Compared with Covariance-Based Structural Equation Modelling (CB-SEM), PLS-SEM has several advantages in analyzing complex models, such as parameter estimation biases reduction, suitable for different data types, and less sensitive to sample size and residual distributions (Henseler, Ringle, & Sinkovics, 2009). Following the suggestion by Hair, Hult, Ringle, and Sarstedt (2016), the research used the PLS algorithm and bootstrapping (5000 subsamples) to evaluate the significance of path coefficients.

4. Result

4.1. Profile of respondents

The actual survey was within 4.5% deviation from the quota. The respondents were 49.2% female and 50.8% male. The majority groups of respondents were either young (44.2% were under 34) or middle aged (47.9% were between 35 and 49). Around 77% respondents received college or university education, and 70.9% participants had a monthly income between ¥5000 and ¥30,000. The respondents were from almost every province in mainland China. The sample covered most geographic areas of China including north (11.3%), northeast (8.1%), east (20%), south (16.1%), southwest (10.3%), northwest (7%) and the middle (27.2%) of China. Respondents from the five provinces (i.e., Hubei, Guangdong, Zhejiang, Hunan, Henan) that had more than 1000 confirmed COVID-19 cases accounted for 45.5%. 25.6% respondents were from 11 provinces (municipalities) that had confirmed COVID-19 cases between 300 and 999 (i.e., Anhui, Jiangxi, Shandong, Jiangsu, Chongqing, Beijing, Sichuan). Around 29% respondents were from low COVID-19 infected areas (i.e., Guangxi, Shanxi, Yunnan, Hainan, Tianjin, Guizhou, Gansu, Shanxi, Liaoning, Jilin, Neimenggu, Ningxia, Qinghai, Xizang), where the confirmed COVID-19 cases were below 299 at the time of the research (Table 1).

4.2. Descriptive analysis

Results showed that people were inclined to feel frightened ($M = 2.87$, $SD = 1.15$), nervous ($M = 2.88$, $SD = 1.14$) and anxious ($M = 2.74$, $SD = 1.19$) when they travel in the post COVID-19 period. One-way ANOVA results found that people's nervous in travelling after the pandemic differed significantly across the groups in low-, average- and high-COVID-19 infected areas ($F = 4.06$, $p < 0.05$). However, there was no significant difference between groups in their frightened and anxious emotions. Although people from high infected areas (e.g., Hubei, Guangdong) experienced the most serious situation of COVID-19, the intensity of their nervous emotion was lower than respondents who were from average infected areas ($M = 2.92$ vs. 2.97 , $p < 0.05$). For the low COVID-19 infected group, respondents' nervous ($M = 0.274$) and anxious ($M = 2.64$) emotions were much lower than the other groups, while their frightened ($M = 2.85$) emotion surpassed the group in the high-infected areas (Fig. 2).

By comparing the high pandemic 'travel fear' and low pandemic 'travel fear' groups, statistical differences were observed between groups in their choice of nearby self-drive ($p < 0.05$), domestic group ($p < 0.001$) and overseas group ($p < 0.01$) tours. Results found that most people (45.1% vs. 40.3%) tended to choose travel four to six months after removal of national travel restrictions after the pandemic outbreak. However, people who had less 'travel fear' were more likely to travel immediately or within 1–3 months after the travel ban was lifted (2.9% vs. 1.1%; 32.6% vs. 18.7%) (Fig. 3). Regarding the type of travel after the pandemic outbreak, most people in both groups chose self-driving tours nearby (87% vs. 84%) and within the province (74% vs. 72%) whereas people seldom chose overseas group (7% vs. 10%) and cruise tour (4% vs. 3%) (Fig. 4).

4.3. Measurement model

The study examined common method bias adopting two approaches. First, a Harman's single factor test was launched by factor analysis without rotation (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The principle component analysis revealed that the first factor accounted for 13.72% of variance, far below the cutting-off point of 50% (Harman, 1976). Second, a non-response bias test was assessed by comparing early (i.e., the first half respondents) and late respondents (i.e., the second half respondents) as s based on the questionnaire return date. There was no significant difference between early and late respondents at the 0.01

Table 1
Profile of respondents.

Sample (N = 1208)					
Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Gender			Geographical area		
Female	594	49.2	North	137	11.3
Male	614	50.8	Northeast	98	8.1
Age			East	241	20.0
18-34	534	44.2	South	194	16.1
35-49	579	47.9	Southwest	125	10.3
50 or above	95	7.9	Northwest	85	7.0
Education			Middle	328	27.2
Junior Primary School	51	4.2	Confirmed COVID-19 cases		
High School	142	11.8	Above 1000	550	45.5
College/University	933	77.2	300-999	309	25.6
Graduate school or higher	82	6.8	Below 299	349	28.9
Level of monthly income					
Below ¥5000	156	12.9			
¥5000-10,000	368	30.5			
¥10,000-30,000	488	40.4			
¥30,000 or above	196	16.2			

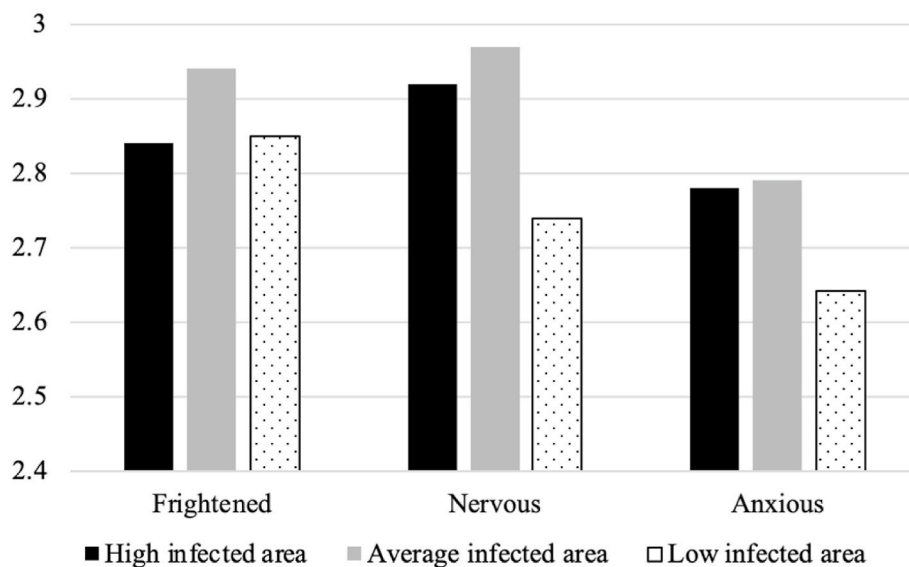


Fig. 2. People's pandemic 'travel fear' in different COVID-19 infected areas. *Note.* High infected area = COVID-19 cases over 1000; Average infected area = COVID-19 cases between 300 and 999; Low infected area = COVID-19 cases below 299.

significance level, implying that non-response bias was not a main concern (Armstrong & Overton, 1977). Therefore, the results confirmed that no common method bias was evident in this research.

The research tested internal consistency reliability, indicator reliability convergent validity and discriminant validity of the constructs (Table 2, Table 3). The outer loading value of majority items is above 0.7, and the lowest loading is 0.43, which is above the recommended 0.4 cut-off level (Hair et al., 2016). The Cronbach's α is between 0.70 and 0.86 and the composite reliability (CR) is between 0.81 and 0.91, exceeding the acceptable threshold of 0.70 (Hair, 2010). The average variance extracted (AVE) value for each construct is between 0.50 and 0.78, which is above the AVE threshold of 0.5. Thus, the measurements in the study are proven to be reliable (Henseler, Ringle, Sinkovics, Sinkovics, & Ghauri, 2009).

The discriminant validity was examined by comparing the square root of AVE and the latent variable correlations and employing the Heterotrait-Monotrait Ratio Inference (HTMT_{inference}) criterion (Fornell & Larcker, 1981; Henseler, Ringle, & Sarstedt, 2015). All the inter-correlations between the constructs are lower than the square root

of AVE. The highest value of the HTMT ratio did not encompass the recommended value of 0.85 (i.e., 0.79), which further confirmed good discriminant validity.

4.4. Structural model

The structural model was evaluated by collinearity, predictive relevance (Q^2), effect size (f^2), coefficient of determination (R^2) and path coefficients (β) (Table 4). The value of the standardized root mean residual (SRMR) was 0.061, suggesting a good approximate model fit (SRMR < 0.08 criterion) (Henseler et al., 2015). The values of both the inner and outer Variance Inflation Factor (VIF) are less than 5 (between 1 and 2.367), which eliminated the issue of multicollinearity among the variables. By employing a Blindfolding test (omission distance = 7), results found that the Stone-Gaiser's Q^2 values for the constructs were above the minimum requirement of zero (Fornell & Cha, 1994).

The structural model explains 23.8% of the construct of pandemic 'travel fear', 32.9% of resilience, 20.1% of cautious travel and 14.6% of travel avoidance. However, the study reveals that the explanation of

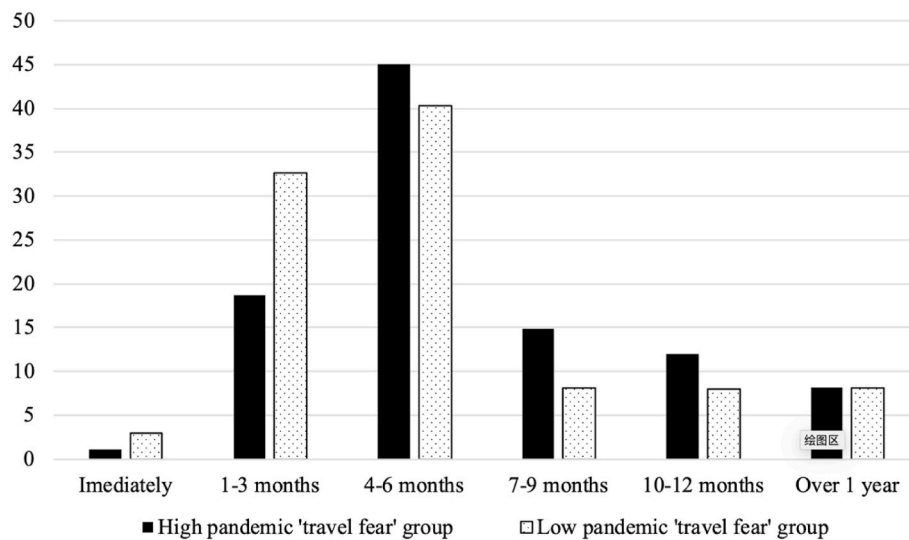


Fig. 3. Expecting travel time between high pandemic 'travel fear' and low pandemic 'travel fear' groups. *Note.* Mean score of 'travel fear' in high pandemic 'travel fear' represents groups ≥ 2.8 ; Mean score of 'travel fear' in low pandemic 'travel fear' represents groups < 2.8 .

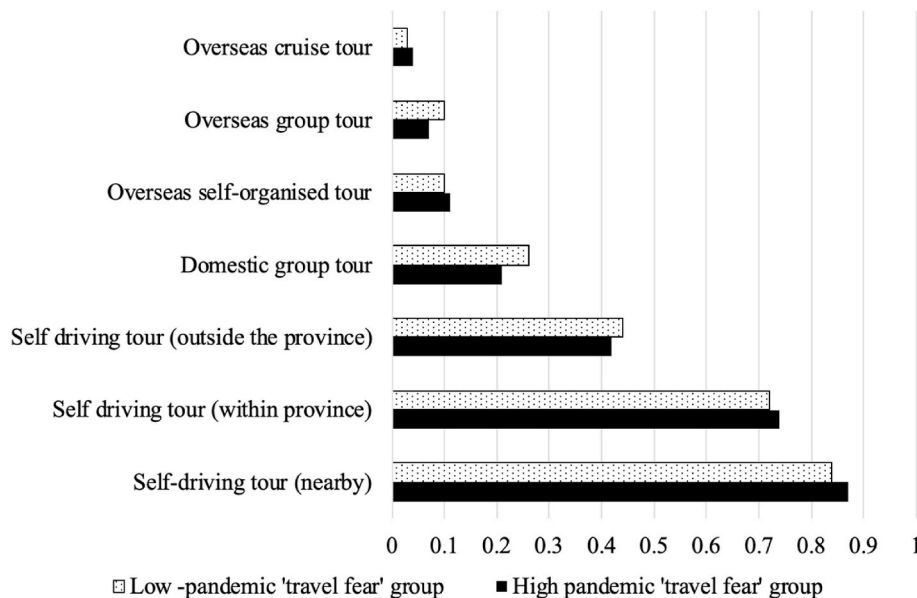


Fig. 4. Means of travel options between high pandemic 'travel fear' and low pandemic 'travel fear' groups. *Note.* Mean score of 'travel fear' in high pandemic 'travel fear' represents groups ≥ 2.8 ; Mean score of 'travel fear' in low pandemic 'travel fear' represents groups < 2.8 .

constructs including protection motivation (4%), problem-focused coping (0.4%), self-supported emotional coping (0.5%), social-supported emotional coping (0.1%) and disengagement coping (1.9%) is low. The f^2 values represent the contribution of predictor variables towards dependent variables, which can be identified as small ($f^2 > 0.02$), medium ($f^2 > 0.15$) and large effect size ($f^2 > 0.35$) (Cohen, 2013). The findings revealed that all effect sizes (f^2) were positive. Threat severity ($f^2 = 0.052$) and threat susceptibility ($f^2 = 0.086$) had a small size effect on predicting pandemic 'travel fear'. The largest effect size of resilience is respondents' self-supported emotional coping ($f^2 = 0.144$). Protection motivation had a medium size effect ($f^2 = 0.154$) and resilience had a small size effect ($f^2 = 0.047$) on predicting cautious travel. Moreover, pandemic 'travel fear' ($f^2 = 0.027$) and protection motivation ($f^2 = 0.036$) had a small size effect on predicting people's travel avoidance.

The results related to the research's hypotheses are presented in Table 4 and Fig. 5. First, the findings indicate that the public's pandemic

'travel fear' is positively affected by their threat severity ($\beta = 0.241, p < 0.001$) and threat susceptibility ($\beta = 0.31, p < 0.001$). Thus, H1, and H2 were all supported. Second, pandemic 'travel fear' can significantly affect people's protection motivation ($\beta = 0.31, p < 0.001$), self-supported emotional coping ($\beta = -0.07, p < 0.05$), disengagement coping ($\beta = 0.14, p < 0.001$) and travel avoidance intentions ($\beta = 0.24, p < 0.001$), which supported H3, H6b, H6d and H8. Third, tourists' protection motivation in after the pandemic can be significantly increased by their response efficacy ($\beta = 0.10, p < 0.05$) and self-efficacy ($\beta = 0.12, p < 0.01$) in pandemic precautions, supporting H3 and H4. The increased protection motivation can both impact their travel avoidance ($\beta = 0.28, p < 0.001$) and cautious travel ($\beta = 0.36, p < 0.001$). Thus, H9a and H9b were supported. Fourth, people's coping, including problem-focused coping ($\beta = 0.121, p < 0.001$), self-supported emotional coping ($\beta = 0.38, p < 0.05$), social-support emotional coping ($\beta = 0.10, p < 0.01$) and disengagement coping ($\beta = 0.07, p < 0.05$) can enhance their resilience toward travelling after the outbreak. This

Table 2

Measurement items.

	Mean	SD	Loading
Travel fear (Cronbach's $\alpha = 0.85$)			
frightened	2.87	1.15	0.88
nervous	2.88	1.14	0.89
anxious	2.74	1.19	0.87
Threat severity (Cronbach's $\alpha = 0.70$)			
infection consequence for tourists	4.13	0.90	0.87
health threat to tourists	3.52	0.95	0.89
Threat susceptibility (Cronbach's $\alpha = 0.86$)			
risk of being infected	3.53	1.00	0.88
possibility of contact with infected tourists	3.49	1.09	0.89
possibility of contact with infected people (non-tourists)	3.43	1.07	0.88
Response efficacy (Cronbach's $\alpha = 0.82$)			
efforts to keep safe from COVID-19 threats are effective.	3.42	0.92	0.79
available measures to protect myself from being infected by COVID-19 are effective.	3.73	0.93	0.87
measures that can be taken to stop tourists being infected by COVID-19 are adequate	3.48	0.96	0.79
preventive measures to stop tourists being infected by COVID-19 are adequate.	3.19	1.01	0.58
it is less likely to be exposed to the COVID-19 threat if performing the preventive measures	3.23	1.07	0.43
Self-efficacy (Cronbach's $\alpha = 0.75$)			
taking measures to prevent COVID-19 infection is easy	3.40	1.06	0.53
have the necessary skills and equipment to protect myself from being infected by COVID-19	3.62	1.05	0.79
my skills and equipment required to stop being infected by COVID-19 are adequate	3.32	1.08	0.70
could learn to perform preventive measures to protect myself from being infected by COVID-19	4.05	0.91	0.85
Protection motivation (Cronbach's $\alpha = 0.77$)			
protect myself from being infected by COVID-19 when travelling.	4.20	0.73	0.79
engage in activities that protect myself from being infected by COVID-19.	4.28	0.78	0.76
expend effort to protect myself from being infected by COVID-19.	4.15	0.78	0.78
obey policies to protect myself from being infected by COVID-19.	4.40	0.73	0.74
Resilience (Cronbach's $\alpha = 0.77$)			
able to adapt to change in travel.	3.71	0.87	0.76
deal with whatever comes in travel.	3.25	1.05	0.71
see the humorous side of problems in travel.	3.30	1.01	0.65
cope with stress in travel that can strengthen me.	3.84	0.91	0.77
handle unpleasant feelings in travel.	3.76	0.92	0.71
Problem-focused coping (Cronbach's $\alpha = 0.71$)			
trying to come up with a strategy about what to do towards COVID-19.	3.93	0.84	0.70
thinking hard about what steps to take to prevent COVID-19.	3.84	0.86	0.73
concentrating efforts on doing something about the situation of COVID-19	3.99	0.81	0.74
taking action to try to make the situation of COVID-19 better	3.84	0.90	0.76
Self-supported emotional coping (Cronbach's $\alpha = 0.70$)			
accepting the reality of the fact that COVID-19 has happened.	4.27	0.75	0.71
learning to live with the COVID-19 situation.	4.09	0.74	0.72
trying to see COVID-19 in a different light, to make it seem more positive	3.85	0.81	0.75
looking for something good in what is happening after COVID-19	3.78	0.91	0.72
Social-support emotional coping (Cronbach's $\alpha = 0.70$)			
trying to get advice or help from other people about what to do about COVID-19	3.91	0.78	0.69
getting help and advice from other people in dealing with COVID-19	4.10	0.81	0.70
getting emotional support from others regarding this COVID-19 outbreak	3.76	0.91	0.76
getting comfort and understanding from someone regarding this COVID-19 outbreak	3.76	0.96	0.76
Disengagement coping (Cronbach's $\alpha = 0.82$)			

Table 2 (continued)

	Mean	SD	Loading
giving up trying to deal with COVID-19 prevention.	1.50	0.91	0.77
giving up the attempt to cope with COVID-19 prevention.	1.53	0.89	0.79
saying to myself "this isn't real."	2.02	1.05	0.79
refusing to believe that COVID-19 has happened.	1.71	1.07	0.84
Travel avoidance (Cronbach's $\alpha = 0.72$)			
avoid travelling in the post-COVID-19 period	3.93	0.88	0.87
delay making decisions about travelling in the post-COVID-19 period	4.26	0.83	0.90
Cautious travel (Cronbach's $\alpha = 0.70$)			
try to manage the risk of infection during travel	4.14	0.78	0.79
seek COVID-19 information before I go travelling	4.32	0.74	0.80
check to make sure everything during the trip is protected from getting infected after travel restrictions.	4.36	0.74	0.79

resilience can significantly encourage people's cautious travel ($\beta = 0.20$ $p < 0.001$). Thus, H7a-d and H10 were supported.

5. Discussion

COVID-19 has created an unprecedented level of public fear and panic, which has negatively impacted the tourism industry and could impede tourism recovery after the pandemic is over. While there is a very large knowledge gap in understanding individuals' psychology in post-pandemic travel (Ritchie & Jiang, 2019), this study makes several contributions to research. By integrating theories from health psychology (i.e., protection motivation, and coping and resilience theory), this is a first study exploring the relationships between fear, coping, protective motivation, resilience and travel behaviors in a public health crisis context. In particular, the findings illustrated what factors triggers pandemic 'travel fear', and how people perceive self-protection, coping and resilience toward pandemic 'travel fear'.

First, this study initially introduces the concept of pandemic 'travel fear' and illustrates that a pandemic outbreak can elicit people's travel fear. Reisinger and Mavondo (2006) revealed that tourists from epidemic infected countries (or regions) were more anxious and reluctant to travel than less-infected places. However, this research found that people's 'travel fear' is not positively related to their location's pandemic severity. Although the confirmed COVID-19 cases in provinces such as Hubei were much more prolific than the average-infected area, results showed that their level of 'travel fear' was generally lower than their counterparts. According to cognitive appraisal theory (Smith & Ellsworth, 1985), we assume that this may be due to people's increased certainty and coping with the COVID-19 pandemic. Since COVID-19 has been generally controlled across China, people from COVID-19 high-affected areas may show more optimistic attitudes and perceive less travel risks after the pandemic. Moreover, the study found that people who evoked high 'travel fear' may go travelling at least 4–6 months after the removal of travel restrictions whereas low 'travel fear' individuals were more likely to travel immediately or within 1–3 months. In line with previous research that have investigated the impacts of infectious diseases (e.g., SARS) on tourists' demand and behaviors (Mao et al., 2010; Wen et al., 2005), results revealed that people preferred independent short-distance travel after the outbreak. However, the research adds new knowledge by illustrating the link between 'travel fear' and people's expectant travel time and travel choices after the pandemic.

Second, results find that people's threat severity and threat susceptibility of travelling after the pandemic significantly triggers 'travel fear', which confirms and further extends the protection motivation model in a post-pandemic tourism context. Rather than assuming tourists as rational risk appraisers (e.g., Wang et al., 2019), it extends the previous work in this area by investigating the role of fear in the relationship between perceived threat and protection motivation. In

Table 3

Composite reliability, average variance extracted, and square root of AVE.

	CR	AVE	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Travel fear	0.91	0.77	.878												
2. Threat severity	0.87	0.77	.415	.878											
3. Threat susceptibility	0.91	0.78	.445	.562	.883										
4. Response efficacy	0.83	0.50	-.178	-.203	-.218	.710									
5. Self-efficacy	0.81	0.53	-.147	-.188	-.193	.727	.727								
6. Protection motivation	0.85	0.59	.075	.204	.178	.139	.156	.765							
7. Resilience	0.84	0.52	-.151	-.189	-.133	.411	.459	.227	.720						
8. Problem-focused coping	0.82	0.53	-.063	.015	.024	.254	.312	.446	.460	.731					
9. Self-supported emotional coping	0.81	0.52	-.068	-.013	.022	.290	.342	.368	.521	.531	.724				
10. Social-support emotional coping	0.82	0.53	-.004	.057	.086	.247	.269	.430	.369	.546	.429	.727			
11. Disengagement coping	0.88	0.64	.138	-.015	.041	.005	-.076	-.264	-.035	-.090	-.189	-.116	.799		
12. Travel avoidance	0.88	0.78	.265	.375	.365	-.145	-.094	.289	-.026	.118	.126	.136	-.087	.884	
13. Cautious travel	0.83	0.63	-.005	.054	.042	.159	.269	.405	.280	.326	.301	.325	-.234	.148	.792

Note. CR= Composite Reliability; AVE = Average Variance Extracted. Square root of AVE in bold on diagonals.

Table 4

Structural model assessment.

Hypotheses	β	p-value	SE	
H1 Threat severity $\rightarrow$ Travel fear	.241	***	.034	S
H2 Threat susceptibility $\rightarrow$ Travel fear	.31	***	.037	S
H3 Travel fear $\rightarrow$ Protection motivation	.11	.001**	.033	S
H4 Response efficacy $\rightarrow$ Protection motivation	.095	.03*	.044	S
H5 Self-efficacy $\rightarrow$ Protection motivation	.124	.001**	.037	S
H6a Travel fear $\rightarrow$ Problem-focused coping	-.063	.056	.033	N
H6b Travel fear $\rightarrow$ Self-supported emotional coping	-.068	.033*	.032	S
H6c Travel fear $\rightarrow$ Social-support emotional coping	-.004	.913	.033	N
H6d Travel fear $\rightarrow$ Disengagement coping	.138	***	.028	S
H7a Problem-focused coping $\rightarrow$ Resilience	.21	***	.033	S
H7b Self-supported emotional coping $\rightarrow$ Resilience	.38	***	.03	S
H7c Social-support emotional coping $\rightarrow$ Resilience	.098	.002**	.031	S
H7d Disengagement coping $\rightarrow$ Resilience	.069	.01*	.027	S
H8 Travel fear $\rightarrow$ Travel avoidance	.236	***	.027	S
H9a Protection motivation $\rightarrow$ Travel avoidance	.283	***	.036	S
H9b Protection motivation $\rightarrow$ Cautious travel	.361	***	.037	S
H10 Resilience $\rightarrow$ Cautious travel	.198	***	.035	S

Note. SRMR = 0.061. β = Standardized Regression Weight. SE = Standardized Error.

***p < 0.001. **p < 0.01. *p < 0.05. S = Support. N = Not support.

consistent with recent research on publics' psychological distress caused by COVID-19 (e.g., Lin, 2020), the study also confirms that the COVID-19 pandemic triggers people's fear and protective motivation in travelling even after the pandemic outbreaks. Moreover, the study shows that people's perceived efficacy (i.e., self-efficacy, efficacy response) of pandemic-protection in travelling can significantly improve their protection motivation, which supports extant studies on tourists' self-protection against health risks (e.g., Fisher et al., 2018). Given the scarcity of public health crisis studies in tourism (Ritchie & Jiang, 2019), this research enriches the discussion by making an early attempt to investigate people's evaluation of pandemic threats and efficacy in travel protection after the pandemic.

Third, this study fills a research gap by investigating people's coping and psychological resilience against 'travel fear'. A growing body of literature highlights that residents may apply coping strategies to tackle with their negative emotions (e.g., stress, angry) aroused by tourism development (Jordan, Vogt, & DeShon, 2015; Zheng, Ritchie, Benckendorff, & Bao, 2019b). However, there has been little exploration of the mechanism in the contexts of tourists' emotions. Different from previous research in sociology and marketing (e.g., Duhachek & Iacobucci, 2005; Jun & Yeo, 2012), results show that people's pandemic 'travel fear' was significantly related to their self-supported emotional coping and

disengagement coping. However, the research reveals that problem-focused coping and social-supported emotional coping were not significantly impacted by pandemic 'travel fear'. Given the uncertainty and low controllability of risks in post-pandemic travel, this finding suggests that people may rely on themselves rather than others to deal with negative emotions. Moreover, it extends the research findings on tourism crisis management by exploring how individuals' coping and psychological resilience impact their travel behaviors after the pandemic. Results support previous research (e.g., Stratta et al., 2015) that self-supported and problem-focused coping (i.e., planning, active coping) can significantly improve people's psychological resilience. Additionally, the research further confirms that the positive impacts of psychological resilience on individuals' intention to adapt cautious travel after the pandemic outbreak. Rather than investigating disaster resilience at a macro level (e.g., tourism destinations and enterprises) (e.g., Dahles & Susilowati, 2015; Orchiston, Prayag, & Brown, 2016; Prayag, 2018), it extends the research findings on resilience by identifying the causal relationships between coping strategies, resilience, and travel behaviors at a micro level.

Fourth, since the current literature mainly applied protection motivation theory in more common health risk-related behaviors (e.g., smoking, HIV, vaccine) (Rajendran & Shenbagaraman, 2017), this research delivers new knowledge by examining and extending the theory in a pandemic context. In consistent with the literature on people's health protective behaviors (e.g., Williams, Rasmussen, Kleczkowski, Maharaj, & Cairns, 2015), findings show that people's protection motivation can significantly impact their protective travel behaviors (i.e., travel avoidance and cautious travel) in post pandemic. However, instead of investigating the role of tourists' risk perception in travel decisions (e.g., Polas, Imtiaz, Mahbub, & Khan, 2019; Wang et al., 2019), we argue that people's travel behaviors in the post-pandemic period may be more fear-induced. Rather than avoid travel to deal with risks (Sönmez & Graefe, 1998), the study also reveals that people who have protection motivation are more willing to choose cautious travel rather than travel avoidance against the pandemic threat. Moreover, the study provides evidence that protection motivation can be impacted by 'travel fear' and perceived efficacy in post-pandemic travel. Moving beyond tourism, it extends the extant research by revealing the emotional factors affecting protection motivation and post-pandemic behaviors (e.g., Williams et al., 2015).

6. Practical implications

Considering the overwhelming dread and panic caused by the COVID-19 outbreak, it is particularly important to adopt strategies to relieve the public's fear and improve tourists' safety in a post-pandemic context. As China is recovering from the pandemic and is a large source country, the findings have broader appeal. Understanding tourists' 'travel fear' can offer insights for tourism policy makers and providers to

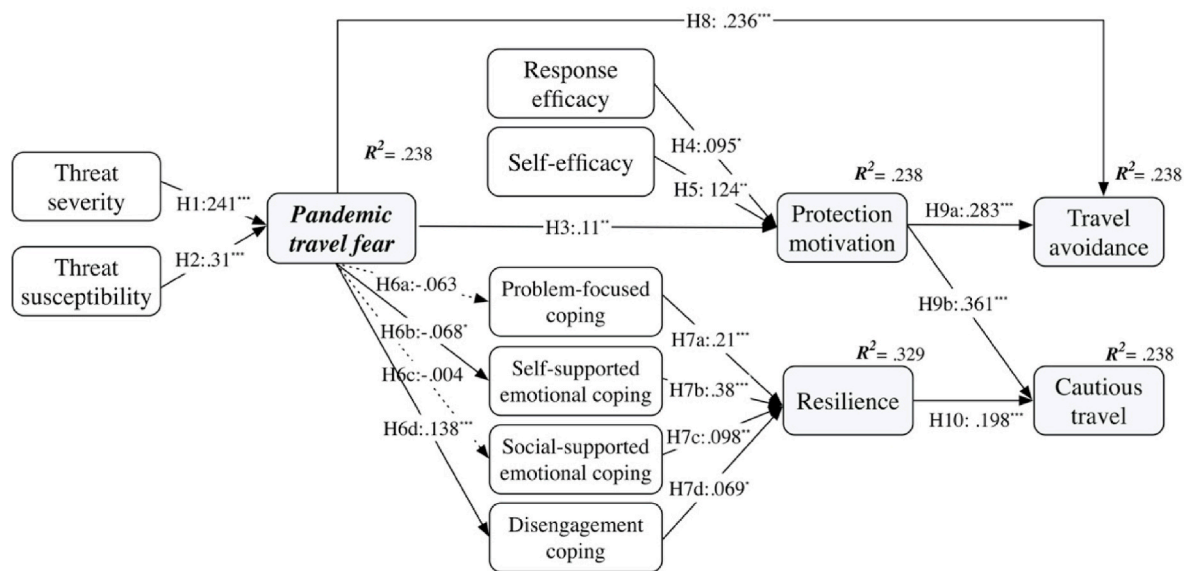


Fig. 5. The estimated structural model.

boost the post-pandemic tourism recovery. Firstly, the results suggest that people's pandemic 'travel fear' is mainly triggered by their perceived severity and possibility of being affected by COVID-19 when travelling, which can lead them to avoid travelling long after any travel ban removal. Thus, in the post-pandemic period, practitioners need to take strict measures to demonstrate that the tourism industry can control social distancing and decrease the potential risks of COVID-19 infection among tourists. Various levels of 'travel fear' are due to individual's differences in their threat appraisals rather than the COVID-19 severity in their living places. Therefore, to mitigate people's 'travel fear' in a post-pandemic period, building public confidence around more cautious forms of travelling at a national or even international level is important.

Secondly, the study confirmed the important role of people's protection motivation, which can help to alleviate the negative impacts of 'travel fear' on travel avoidance and encourage tourists' cautious behaviors. To improve tourists' protection motivation, tourism policy makers can employ effective communication interventions in increasing tourists' perceived efficacy in COVID-19 prevention. For instance, tourism destinations can provide real-time social distancing information (e.g., number of tourists at different scenic spots) and protective instruction messages (e.g., demonstrate successful achievements in adopting the suggested measures) for tourists. To increase people's perceived effectiveness of COVID-19 prevention, tourism providers should suggest measures that can be easily learned and adopted by tourists.

Thirdly, the relationships between 'travel fear', coping and resilience suggest that practitioners can establish strategies to build the public's resilience in post COVID-19 travelling by increasing their coping abilities. Particularly, communication interventions can be problem-focused or emotion-focused oriented, such as providing more information on how to plan and take actions in preventing COVID-19 in the tourism industry. Moreover, authorities can develop emotional appeals to positively reframe COVID-19, or to improve public acceptance of the reality of COVID-19. This is important as COVID-19 may linger for some time; thus, is quite different to SARS and Ebola.

7. Limitations and future directions

This study has some limitations. First, due to time, resources and social distancing constraints, the data for this research were collected by an online survey from residents in mainland China, which may limit the generalizability of the findings. Future research can apply face-to-face

survey and investigate tourists to examine the casual relationships among the variables. Moreover, further studies can launch investigations in other countries (e.g., western countries) or other stages of the COVID-19 outbreak (e.g., after removal of national or international travel restrictions, and after the COVID-19 outbreak has totally ended internationally).

Second, this study applied quantitative analysis to explore the causal relationships between the constructs including 'travel fear', perceived efficacy, threat appraisal, coping, resilience and travel behavior intentions. Given the complexity of the theoretical model, future studies can apply a mix-method approach or qualitative analysis to enhance the explanations of the framework (Khoo-Lattimore, Mura, & Yung, 2019). In addition, as the construct of 'travel fear' was adapted from marketing and psychology studies, future research can develop and validate fear scale in tourism contexts specifically.

Third, the study applied protection motivation, coping and resilience theories to explain people's travel intentions after the pandemic outbreak, which excludes other potential factors that may be related to people's 'travel fear' in the post-pandemic period. Considering the cross-cultural and individual differences in assessing travel risks, future research can consider examining the role of people's cultural values (e.g., collectivism vs. individualism) (e.g., Wen, Huang, & Ying, 2019), personality (e.g., Morakabati & Kapuściński, 2016) and trust (e.g., Cui, Liu, Chang, Duan, & Li, 2016) in media or tourist authorities in evoking and coping with their 'travel fear' after the pandemic. Lastly, owing to the current situation of COVID-19, this study has not investigated people's actual travel behaviors. Further studies may examine the relationships between 'travel fear' and changes in actual travel behavior to advance the conceptual model (e.g., Viglia & Dolnicar, 2020).

Author contribution

Danni Zheng: Conceived and designed the research. Launched the investigation, performed analysis, discussed the findings and implications, and wrote the manuscript. **Qiuju Luo:** Helped in research design, data collection and background interpretation of China. Acted as corresponding author. **Brent W. Ritchie:** Helped in concept and theory construction, data interpretation, manuscript revision and evaluation.

Impact statement

Understanding public's post COVID-19 travel fear is essential to help

revive the tourism industry after the outbreak. The results of this research can help destinations establish effective communication and policies to relieve tourists' post-pandemic 'travel fear' and build resilience in travelling after the COVID-19 outbreak. Considering the overwhelming dread and panic caused by the COVID-19 outbreak, this study can also help authorities to adopt strategies to relieve the public's fear and improve tourists' safety in a post COVID-19 era. China was the one of the countries to experience the COVID-19 outbreak and is the first to have reduced cases significantly. It is also the largest source country in the world. Findings from our study can thus provide meaningful insights and suggestions for other countries, helping to accelerate tourism recovery post pandemic.

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Danni Zheng, Ph.D., is an Assistant Professor in the Department of Tourism at Fudan University, China. She was a Postdoctoral Research Fellow in School of Business at The University of Queensland, Australia when she initiated this research. Her research interests include sociopsychology of tourism, community wellbeing, crisis tourism management, tourists' pro-social behaviors and creative tourism development.



Qiuju Luo, Ph.D., is Professor and Deputy Dean of School of Tourism Management, Sun Yat-sen University, China. Researching in event management, social media, and special interest tourism, she has published more than 60 academic articles in major journals. As the popularization of new media in tourism industry, she focuses more on online events besides the offline perspectives and devotes herself to conducting innovative research on social media and its influence in tourism domain.



Brent W. Ritchie, Ph.D., is Professor and Associate Dean (Research) of Faculty of Business, Economics and Law, The University of Queensland Australia. His research interests include tourism crisis management, tourist behavior, and residents' attitudes toward tourism. He is on the editorial board of eight journals including the *Tourism Management* and *Journal of Travel Research*.