Summer 2021

Effects of Information Exposure, Emotions, and Self-Efficacy On Risk Perception and Travel Intention During the COVID-19 Pandemic

Chunsheng Jin

EFFECTS OF INFORMATION EXPOSURE, EMOTIONS, AND SELF-EFFICACY ON RISK PERCEPTION AND TRAVEL INTENTION DURING THE COVID-19 PANDEMIC

by

Chunsheng Jin

Bachelor of Business Administration
Kyung Hee University, 2018

Submitted in Partial Fulfillment of the Requirements

For the Degree of Master of International Hospitality and Tourism Management in

International Hospitality and Tourism Management

College of Hospitality, Retail and Sport Management

University of South Carolina

2021

Accepted by:

Kevin Kam Fung So, Director of Thesis

David A. Cárdenas, Director of Thesis

Tracey L. Weldon, Interim Vice Provost and Dean of the Graduate School

DEDICATION

This thesis is dedicated to my wife, Yutong Zhu, who has supported me during this process and loved me throughout my life.

ACKNOWLEDGEMENTS

First, I would like to express my sincere gratitude to my major advisor, Dr. Kevin So, who has constantly provided me support, guidance, and encouragement for my professional and personal development. Without his endless help, I could not have completed my thesis. Additionally, I would like to thank my internal advisor, Dr. David Cárdenas, who supported my IRB application and funded me for data collection.

I would also like to acknowledge my friends: Charlie, Fatty, Shan, Linwan, and Forest. Some of them helped me test and review the survey for my study, and others provided me generous academic suggestions for my thesis. I am so fortunate to have such great friends in my life.

Last, I would like to express my appreciation to my mother, who loves me and has supported my studies in the United States; and my wife, Yutong Zhu, who has stayed with me in the United States and always supports and encourages me when I encounter difficulties.

ABSTRACT

Living in the information age, people acquire knowledge from various sources. These resources can play key roles in individuals' perceptions during disease outbreaks. Especially amid COVID-19, risk perceptions are critical in determining individuals' behavioral intentions. Researchers have investigated risk perceptions related to numerous diseases (e.g., swine flu, severe acute respiratory syndrome, Middle East respiratory syndrome, the Zika virus, and Ebola). However, few tourism studies have focused on health risks. Different from the above-mentioned illnesses, the relatively new virus of COVID-19 could have unique effects on individuals' risk perceptions and behavioral intentions; the disease has been spreading worldwide for more than a year with a high infection rate. Moreover, little research has explored individuals' emotional responses to information received via multiple communication channels. People's emotions could play major roles in how individuals process information sources and perceive risk. This study investigated the effects of information sources on individuals' risk perceptions and travel intentions during the COVID-19 pandemic. The study also explored the impacts of people's emotional responses to pandemic-related information and self-efficacy on their risk perceptions and travel intentions amid COVID-19.

Online surveys were distributed via Amazon Mechanical Turk for the pilot study and main study. Two samples (pilot study: $N = 149$; main study: $N = 388$) were established. The hypothesized relationships among mass media exposure, social media exposure, interpersonal communication, emotion, self-efficacy, risk perception, and

travel intention were tested using partial least squares structural equation modeling. Results demonstrated varied impacts of information sources on people's emotions and risk perceptions. Mass media exposure significantly influenced individuals' emotions (fear, anger, and anxiety) and risk perceptions, whereas social media exposure and interpersonal communication each had no direct impact on risk perceptions. Interpersonal communication had a significant effect on emotions; however, social media only influenced fear. Meanwhile, fear and anxiety each played a significant mediating role in the relationship between different information sources and risk perceptions. Unexpectedly, this study did not reveal a significant negative relationship between risk perception and travel intention during and after the COVID-19 pandemic.

This study contributes to hospitality and tourism both theoretically and practically. From a theoretical standpoint, the study extends the tourism literature by building a theoretical link between psychology, communication, and tourism. This research also improves understanding of individuals' risk perceptions and travel intentions by examining the effects of information sources, emotions, and self-efficacy during the pandemic. From a practical perspective, findings offer service providers in the hospitality and tourism industry a comprehensive understanding of individuals' risk perceptions and associated influencing factors, thus helping stakeholders develop recovery strategies.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Traveling has become easier than ever but has also enabled illnesses to spread worldwide due to increased mobility (Wilson, 1995). Viral diseases and epidemics such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and swine flu (H1N1) have been prevalent across the globe over the last two decades. Recently, people around the world encountered a new viral infectious epidemic called coronavirus disease 2019 (COVID-19). COVID-19 symptoms are similar to those of the common cold, characterized by a fever and cough; however, COVID-19 infection can result in severe illness and death (CDC, 2020). A relative lack of knowledge about this disease and the absence of an effective treatment led experts to advocate for non-pharmaceutical interventions—quarantines, social distancing, and stay-at-home orders—until a vaccine became available for most people (Gössling et al., 2020). Although many countries implemented strategies to slow viral transmission (e.g., closing borders, restaurants, and schools; limiting gatherings; and allowing people to work from home), COVID-19 reached nearly every nation and region around the world. This study was conducted when the pandemic was occurring worldwide. COVID-19 has infected more than 94 million individuals with two million deaths globally. The number of cases (23.5 million) and deaths (390,000) were highest in the United States as of January 19, 2021 (World Health Organization, 2020). Generally, older people with underlying medical

conditions are more vulnerable to COVID-19 and perceive the disease as a serious health risk (CDC, 2020).

COVID-19 is not the first crisis to decimate the global tourism industry. Numerous crises throughout history have influenced travel: the terrorist attacks on September 11, 2001; the 2008–09 economic crisis; and the outbreak of SARS in 2003, H1N1 in 2009, Ebola in 2014–2015, and MERS in 2015 (Gössling et al., 2020). However, different from the COVID-19 pandemic, tourism experienced only a temporary downturn in growth amid these events (Gössling et al., 2020). The COVID-19 pandemic is one of the most influential incidents of the past century and has brought substantial economic impacts to multiple industries. The hospitality and tourism sector is particularly vulnerable to this pandemic; related establishments rely heavily on person-to-person interaction, which can accelerate viral infection. Businesses in this industry, including hotels, restaurants, travel agencies, destinations, airlines, festivals, and so forth, have been profoundly affected by drastically lower numbers due to store closures and travel bans (Gössling et al., 2020; Statista, 2020a). Tourism statistics from the United Nations World Tourism Organization (UNWTO) indicate that international tourist arrivals fell by roughly 900 million between January and October 2020. UNWTO further estimated a more than 70% decline in the number of international arrivals for the year 2020 (UNWTO, 2020). This massive drop in tourist traffic could result in a global GDP loss of US$2 trillion (UNWTO, 2020). Specifically, global tourism revenue was expected to decline from US$711.94 billion to US$568.6 billion in 2020 (Statista, 2020a). Asia weathered the most marked decrease in tourism revenue during the year. Many leading tourism attractions in the Asia-Pacific region, such as Vietnam and Indonesia, saw a

significant drop-off in tourist arrivals. Between January 20 and February 9, 2020, flights booked in China declined by more than 57% (Statista, 2020a). In the United States, the government announced a tourist loss of around 850,000 people and a visitor investment loss of US$3.4 billion in March 2020 alone due to a travel ban on Europe (Statista, 2020a). The hotel industry was estimated to have lost up to US $500 billion and eliminated 6.5 million workers in the hotel market, respectively, based on low occupancy rates in the same year (Statista, 2020a).

Although the COVID-19 pandemic has ravaged international tourism, global demand for domestic tourism continues to grow in certain markets (e.g., China and Russia). Individuals' confidence in traveling is expected to recover as vaccines become widely available (UNWTO, 2020). Presumably, as people grow increasingly confident about the vaccine and start to receive it, their travel intentions will steadily increase. According to Statista, vaccination status is a key factor for people considering travel (Statista, 2021). COVID-19 vaccines became available in many countries in December 2020; around 27 million people in the United States were vaccinated as of January 29, 2021 (Statista, 2020b).

Risk perception may be one of the most important psychological factors determining individuals' travel intentions during the pandemic (Luo & Lam, 2020). Although people wished to travel, COVID-19 led to restrictions. Health-related risks might not have been a major priority when traveling prior to the pandemic. Currently, however, travelers are likely to be more concerned about the risk of contracting COVID-19. Tourism researchers focused on other types of risk before the pandemic, such as financial risks, terrorism risks, and so forth (Floyd et al., 2004; Park & Reisinger, 2010;

Sönmez & Graefe, 1998). Yet scholars have recently begun to pay more attention to health-related risks (Bae & Chang, 2020; Huang et al., 2020). Since the outbreak of COVID-19, many studies in hospitality and tourism have investigated individuals' risk perceptions (Bae & Chang, 2020; Dryhurst et al., 2020; Neuburger & Egger, 2020; Yıldırım & Güler, 2020). Research has specifically considered the effects of risk perceptions on tourists' behavioral changes (Golets et al., 2020; Ivanova et al., 2020; Neuburger & Egger, 2020), preventive behavior (Huang et al., 2020), and travel intentions (Li & Ito, 2021; Perić et al., 2021; Sánchez-Cañizares et al., 2020; Wachyuni & Kusumaningrum, 2020). Scholars have also explored people's behavioral intentions toward rural tourism (Zhu & Deng, 2020), "untact" tourism (Bae & Chang, 2020), and "travel bubbles" (Luo & Lam, 2020). Although researchers have assessed the impact of risk perception on tourists' behavior, little is known about how information sources (e.g., mass media, social media, and interpersonal communication) and self-efficacy influence people's risk perceptions and, in turn, their intentions to travel during the COVID-19 pandemic.

Alongside the significant role of risk perception in travel intention, emotions play a key part in perceived risk (Loewenstein et al., 2001; Slovic et al., 2007). When individuals receive information, they may initially respond emotionally before perceiving risk. Some researchers have found that emotions mediated the relationship between people's social media exposure and preventive behavior during the MERS outbreak (Oh et al., 2020; Paek et al., 2016); however, few have explored individuals' emotional responses (e.g., anger, fear, and anxiety) to information obtained via different

communication channels or the impacts of emotions on one's risk perceptions and travel intentions. The present study seeks to address this research gap.

1.2 PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

Media encompasses useful communication tools that have become increasingly vital in the tourism industry. Extensive coverage of the COVID-19 pandemic could lead various media forms and interpersonal communication to shape individuals' risk perceptions. Koo et al. (2016) studied the effects of mass media and social media on travel intention. Apart from their work, few tourism studies have compared multiple communication channels, emotional responses, self-efficacy, and affiliated impacts on individuals' risk perceptions and travel intentions during a pandemic. The current research therefore aims to (1) explore how distinct information channels and self-efficacy influence individuals' risk perceptions and travel intentions during and after the COVID-19 pandemic; and (2) identify the roles that emotions play in the relationships among information sources, risk perception, and travel intention.

This study will answer the following research questions:

RQ1: What are the differential effects of information sources on potential tourists' risk perceptions?

RQ2: What are tourists' intentions to travel during and after the pandemic?

RQ3: What relationships exist among information sources, self-efficacy, emotions, risk perception, and travel intention?

1.3 SIGNIFICANCE OF THE STUDY

This study is expected to make several unique contributions to tourism both theoretically and practically. Theoretically, this study extends the tourism literature from

psychology and communication perspectives to build a theoretical link between these three disciplines. The study also improves the understanding of tourists' psychological responses and travel intentions. Additionally, this research enriches theory by introducing new mediators. From a practical perspective, findings provide timely insight for hospitality and tourism organizations by generating knowledge on how tourists perceive risks associated with COVID-19 and how such perceptions affect travelers' behavioral intentions during the pandemic. Understanding different communication channels is tantamount to understanding individuals' risk perceptions. Recognizing the importance of information sources will enable service providers to identify more effective ways to communicate with target consumers and implement tailored recovery strategies.

1.4 CHAPTER SUMMARY

This chapter introduced the research background, research questions, study purpose, and study significance. The next chapter presents a literature review to outline focal constructs and the relationships between them, thus building a foundation for this study.

CHAPTER 2

LITERATURE REVIEW

2.1 RISK PERCEPTION

Perceived risk or risk perception has been widely investigated in domains such as communication, psychology, and tourism. Although researchers in different fields have provided numerous definitions of both terms, conceptualizations are similar. Slovic and Weber (2002) defined a risk as "a hazard, probability, consequence, and potential adversity or threat" (p. 4). Risk perception has been described as "people's beliefs, attitudes, judgments and feelings, as well as the wider social or cultural values and dispositions that people adopt, toward hazards and their benefits" (Pidgeon et al., 1992, p. 89). Risk perception in tourism refers to potential losses during travel-related activities (Tsaur et al., 1997). Perceived and real risks are distinct: perceived risks are subjective, whereas real risks are objective (i.e., they have actually happened). Many studies have investigated perceived risk rather than real risk because risk perceptions more heavily influence people's behavior (Dillard et al., 2012; Yıldırım & Güler, 2020) and decisions (Slovic & Weber, 2002).

Different forms of risk uniquely influence individuals' risk perceptions. Respondents in one study ranked the risk of an epidemic disease outbreak the highest among 10 types of risk (Moreira, 2008). In tourism, scholars have studied health-related risk perceptions related to diseases (Bae & Chang, 2020; Rittichainuwat & Chakraborty, 2009) and general travel risks, including those related to finance, physical health, crime,

terrorism, social conditions, mental health, equipment, business performance, and natural disasters (Floyd et al., 2004; Perić et al., 2021; Reisinger & Mavondo, 2005; Sönmez & Graefe, 1998; Zhan et al., 2020; Zhu & Deng, 2020). Diverse forms of risk differentially affect individuals' travel intentions. Some studies have only highlighted social risk as a significant factor in these intentions (Floyd et al., 2004; Sönmez & Graefe, 1998), while others have identified five types of perceived risk (i.e., health, psychological, financial, destination, and travel risks) that shape one's intentions to travel during the COVID-19 pandemic (Perić et al., 2021).

2.1.1 Types of Risk

As mentioned, myriad types of risk have been explored in the literature. In early tourism research, Roehl and Fesenmaier (1992) described seven types: financial, functional or performance, physical, social, psychological, satisfaction, and time risks. Maser and Weiermair (1998) outlined multiple travel-related risks, including disease, crime, natural disasters, accidents, hygiene, transportation hazards, culture and language barriers, and uncertainty with destination-specific regulations and laws. In addition to the seven forms of risk initially proposed, risks related to culture, crime, health, natural disasters, politics, and terrorism were identified later (Park & Reisinger, 2010; Sönmez & Graefe, 1998).

Studies in psychology and communication have differentiated between personal and societal risk perceptions (Oh et al., 2015; Tyler & Cook, 1984). Some researchers have asserted that these risk perception levels are independent and should be distinguished (Oh et al., 2015; Tyler & Cook, 1984). Others have claimed that the two levels are interrelated (Paek et al., 2016). Personal-level risk perceptions occur when

individuals perceive a particular risk as a considerable danger to themselves; societal risk perceptions refer to individuals viewing the same risk as a substantial threat to other people (Tyler & Cook, 1984). This study focuses on personal risk rather than societal risk because personal risk perceptions affect individuals' decisions more during the COVID-19 pandemic. COVID-19 is unique from previous infectious viruses: unlike diseases such as SARS and MERS, which spread within a few regions and lasted for a short time, COVID-19 is a new virus that has spread worldwide and persisted for more than one year. Personal risk perceptions have been identified as more vital indicators of individuals' behavioral intentions than societal risk perceptions (Paek et al., 2016). Similarly, research has indicated the significance of personal risk perceptions on individuals' preventive behavior (Liu et al., 2020; Oh et al., 2020). This study aims to explore people's intentions to travel during the COVID-19 pandemic and thus concentrates on personal risk perception.

2.1.2 Differential Impact Hypothesis and Social Amplification of Risk

A major factor in personal risk perception is the information sources to which people refer on communication channels. Two influential theories regarding the effect of information on risk perception are the differential impact hypothesis and social amplification of risk. The differential impact hypothesis suggests that media genres influence personal and societal risk perceptions differently (Snyder & Rouse, 1995). More specifically, exposure to entertainment media affects personal risk perception whereas exposure to news media influences societal risk perception (Snyder & Rouse, 1995). Based on this theory, the current study examines how different types of media and forms of interpersonal communication inform personal risk perception.

Another theoretical foundation related to information and risk perception, social amplification of risk, purports that risk interacts with "psychological, social, institutional, and cultural processes in ways that may amplify or attenuate public responses to the risk or risk event" (Kasperson et al., 1988, p. 177). News media and informal personal communication are main information channels that convey health risks through social amplification (Kasperson et al., 1988). Media sources are social amplification stations—they magnify individuals' risk perceptions and guide people's behavior (Kasperson et al., 1988). One social media site, Facebook, has been found to amplify individuals' emotions and influence their risk perceptions (Chong & Choy, 2018). Personal communication such as conversations with friends, family, and co-workers can amplify people's risk perceptions as well (Kasperson et al., 1988). Social amplification via friends and family has been shown to be correlated with risk perception about COVID-19 (Dryhurst et al., 2020). The differential impact hypothesis and social amplification of risk highlight the prime roles of information sources in risk perception. It is therefore worthwhile to investigate the varying effects of these sources on risk perception during the pandemic.

2.2 INFORMATION SOURCES

People acquire information through numerous sources: mass media (newspapers, television news, radio, and internet news), social media (blogs, Facebook, Twitter, and YouTube), and interpersonal communication (conversations with friends and peers, family, partners, and health professionals) (Choi et al., 2017; Han et al., 2014; Liu et al., 2020; Morton & Duck, 2001; Oh et al., 2020; Wu & Li, 2017; Yoo et al., 2018). Obtaining information from multiple sources can be particularly useful during a health crisis. Specifically, due to a lack of knowledge and direct experience with a new disease,

individuals tend to search for related information via multiple communication channels (Han et al., 2014; Kasperson et al., 1988).

As information sources shape individuals' risk perceptions, sensationalized reporting can engender irrational fear and anxiety (Motta Zanin et al., 2020; Reisinger & Mavondo, 2005). For example, social media exposure affected people's risk perceptions during the MERS outbreak (Choi et al., 2017). Traditional and news media are the primary sources through which people receive public health–related information (Paek et al., 2016) and are typically considered trustworthy (Brug et al., 2004). Amid the COVID-19 pandemic, people who mainly received information from newspapers perceived higher risk in Italy (Motta Zanin et al., 2020). Those who obtained pandemic-related information mostly through interpersonal communication displayed the highest risk perceptions, while people gathering information from video platforms reported the lowest risk perceptions (Zhan et al., 2020). This study examines how various information sources (e.g., mass media, social media, and interpersonal communication) affect personal risk perception as described in the next section.

2.2.1 Mass Media Exposure

Mass media exposure refers to "the amount of exposure that the public obtains information about the pandemic from the mass media, including television, newspaper, radio, news apps or websites and so on" (Liu et al., 2020, p. 4). This concept has been applied in risk perception research to understand mass media's effect (Morton & Duck, 2001; Oh et al., 2015; Paek et al., 2016; Wu & Li, 2017). Several studies have indicated that mass media exposure either does not directly influence or has little impact on risk perception (Liu et al., 2020; Nazione et al., 2021; Oh et al., 2015). Other research

suggests that exposure indirectly informs people's risk perceptions and preventive behavior (Liu et al., 2020) as well as their intentions to visit a specific destination (Koo et al., 2016). Mass media exposure and attention have also been found to be positively correlated to risk perception, in turn affecting individuals' food consumption intentions (Shim & You, 2015). Based on this discussion, the following hypothesis is proposed:

H1a: Mass media exposure to COVID-19-related information will be positively related to risk perception.

2.2.2 Social Media Exposure

Social media exposure can affect risk perception as well. Social media has changed how people obtain information and has led to the growth of a social media–oriented generation seeking information via associated sites (Hassan et al., 2020). Platforms such as Facebook, Twitter, WhatsApp, Instagram, YouTube, and LinkedIn enable people to easily acquire and share information. According to Pew Research Center, more Americans use social media to obtain news compared to traditional media sources (Shearer, 2021).

Social media plays a principal role in disseminating and receiving information during disease outbreaks (Choi et al., 2017). COVID-19-related information has spread worldwide via online-based media (Wachyuni & Kusumaningrum, 2020). Meanwhile, infection mitigation strategies such as isolation and quarantine have encouraged individuals to spend more time on social media, thus increasing its use. Many people have reported frequently using and preferring social media to search for information during the pandemic (Gao et al., 2020; Yu & Mao, 2020). Additionally, a study on tourists' risk perceptions during the pandemic indicated that social media can be a helpful

communication tool for interacting with travelers and reducing their risk perceptions (Sánchez-Cañizares et al., 2020).

As social media has become an essential communication venue, many researchers have focused on the impact of social media exposure on risk perception (Ali et al., 2019; Chan et al., 2018; Choi et al., 2017; Lin & Lagoe, 2013; Oh et al., 2020; Wu & Li, 2017; Yoo et al., 2018; Zeballos Rivas et al., 2021). Han et al. (2014) discovered that exposure to internet-based media such as social networking sites, blogs, and other platforms substantially affected risk perception about H1N1 (Han et al., 2014). By contrast, Nazione et al. (2021) found that social media had little impact on risk perception during the COVID-19 pandemic. Another study on content-oriented and user-oriented social media revealed that content-oriented social media exposure significantly influenced personal and societal risk perceptions and affected behavioral intention (Yoo et al., 2018). Likewise, social media exposure was positively associated with perceived risk during the MERS outbreak in South Korea (Choi et al., 2017; Oh et al., 2020). Involvement with social networking sites has also been shown to inform individuals' risk perceptions and preventive intentions (Liu et al., 2020; Wu & Li, 2017). The following hypothesis is hence put forth:

H1b: Social media exposure to COVID-19-related information will be positively related to risk perception.

2.2.3 Interpersonal Communication

Interpersonal communication, representing informal discussions with friends, neighbors, and co-workers (Kasperson et al., 1988), can also affect risk perception. Communication research has specifically examined the role of interpersonal

communication in people's risk perceptions (Coleman, 1993; Morton & Duck, 2001; Tyler, 1980) and behavior (Dunlop et al., 2008). This type of communication, as an informal communication mode, can influence societal and personal risk perceptions (Coleman, 1993; Tyler, 1980). Interpersonal communication is also interconnected with mass communication, as the former plays a crucial role in the relationship between mass media exposure and both levels of risk perceptions (Morton & Duck, 2001). In one case, interpersonal communication was shown to significantly influence societal risk perception but not personal risk perception (Coleman, 1993). However, Morton and Duck (2001) found that people who discussed a hazard with others perceived greater risk to themselves while individuals who obtained information about a health risk from newspapers perceived a higher risk for other people. Studies have also indicated that individuals tend to participate in interpersonal communication when they experience negative emotions from media exposure (Dunlop et al., 2008; Paek et al., 2016). Furthermore, during an epidemic outbreak such as H1N1, increased interpersonal communication heightens individuals' risk perceptions (Han et al., 2014). Dryhurst et al. (2020) similarly reported that people who received COVID-19-related information from friends and family perceived relatively higher personal risk. Therefore, the following hypothesis is proposed:

H1c: Interpersonal communication about COVID-19-related information will be positively related to risk perception.

2.3 EMOTIONS

Despite the notable impacts of information sources on individuals' risk perceptions, emotions constitute an essential antecedent of risk perception. People

initially judge an event based on their own experiences; emotions involved in these assessments influence how people respond to the event (Luo & Lam, 2020). Researchers have identified negative emotions as primary components of risk perception (Loewenstein et al., 2001). Several theories, such as the risk-as-feelings hypothesis and the affect heuristic, explain the importance of negative emotions in risk perception (Loewenstein et al., 2001; Slovic et al., 2007). Dunlop et al. (2008) proposed three types of emotional responses: self-referent, message-referent, and plot-referent. Self-relevant emotions greatly influence people's personal risk perceptions and can elicit behavioral changes to manage risk (Dunlop et al., 2008). Regarding COVID-19, some researchers have pointed out that individuals are experiencing heightened anxiety, depression, vulnerability to social risk, and lower life satisfaction during the pandemic (S. Li et al., 2020). As such, given the roles of emotions in risk perception, the present study investigates individuals' emotional responses to information sources and related impacts on risk perceptions. The following sections discuss specific emotions and their respective effects on risk perception and behavioral intention.

2.3.1 Emotions (Fear, Anger, and Anxiety), Risk Perception, and Behavioral Intention

Fear and anger were the two most commonly expressed feelings among six emotions (fear, anger, disgust, sadness, surprise, and happiness) when people tweeted about the MERS outbreak in Korea (Do et al., 2016). These two emotions exert opposing effects on risk perception (Ali et al., 2019; Lerner & Keltner, 2000). Fear occurs when people consider a situation ambiguous and uncontrollable; anger arises when people perceive a situation as certain and controllable (Lerner & Keltner, 2000; Yang & Chu, 2018). Based on the appraisal-tendency hypothesis, researchers investigating both

emotions have reported that fearful individuals seem more at risk due to uncertainty and uncontrollability; angry individuals conversely appear optimistic about future threats because they are confident they can deal with risk (Lerner et al., 2003; Lerner & Keltner, 2000). Lerner et al. (2003) proposed a positive relationship between fear and risk perception and a negative relationship between anger and risk perception. However, scholars have found that both fear and anger are positively correlated with personal risk perception (Oh et al., 2020; Zeballos Rivas et al., 2021). Paek et al. (2016) also noted that fear influenced both societal and personal risk perceptions as well as individuals' behavioral intentions to talk about such risk.

Anxiety is "a subjective feeling that occurs as a result of being exposed to an actual or potential risk" (Wachyuni & Kusumaningrum, 2020, p. 69). Oh et al. (2020) suggested that fear and anxiety can influence risk perception differently; these emotions can thus be examined separately. So et al. (2016) further claimed that fear and anxiety are distinct emotional reactions to a specific risk, and both essentially influence behavioral intention (So et al., 2016). Yang and Chu (2018) explored the impacts of discrete emotions (fear, anxiety, anger, disgust, sadness) and found that all were positively correlated with risk perception. Of these, fear and anxiety were most influential on risk perception during the Ebola outbreak (Yang & Chu, 2018). Studies have also shown that anxiety, as a strong predictor, directly and indirectly influences behavioral intention, whereas fear only indirectly affects individuals' intentions to receive a vaccine (Luo & Lam, 2020; So et al., 2016). Tourism researchers have reported that travel anxiety is significantly associated with travel intention along with perceived terrorism and sociocultural risks (Reisinger & Mavondo, 2005). The COVID-19 pandemic has led

people to feel anxious about traveling due to the prospects of isolation, quarantine, and lockdown. These considerations can affect travel behavior (Nazneen et al., 2020; Yıldırım & Güler, 2020) even if one's post-pandemic anxiety level is relatively low (Wachyuni & Kusumaningrum, 2020). Liu et al. (2020) took fear and anxiety as negative emotions to examine risk perception and preventive intention during COVID-19. Results showed that these emotions were positively related to risk perception and excessive preventive intention (Liu et al., 2020). Therefore, based on the literature discussed above, the following three hypotheses are proposed:

H2: (a) Fear, (b) anger, and (c) anxiety will be positively related to risk perception.

2.3.2 Emotions and Information Sources

Emotions are interconnected with information sources; fear and anxiety can lead people to seek information to mitigate potential risks (So et al., 2019). Oh et al. (2020) suggested anxiety as a negative emotion expressed on social media during an infectious disease outbreak. Further, different information sources can have varied impacts on individuals' emotions. For instance, news sources are more influential for fear-arousing sensationalists than non-news sources (Ali et al., 2019), while frequent exposure to social media can increase individuals' anxiety significantly (Gao et al., 2020). Thus, the information presented through communication channels can inform people's emotions, consequently affecting their behavior (Liu et al., 2020).

Emotions play a mediating role between media exposure and risk perception and between media exposure and behavioral intention. Fear and anger were shown to mediate the relationship between social media exposure and preventive behavior during the

MERS outbreak in South Korea (Oh et al., 2020). Amid the COVID-19 pandemic, researchers have identified social media as a vital means of communication. Media outlets can elicit emotional arousal, such as fear and anxiety, when providing tourists safety information to reduce risk perception (Sánchez-Cañizares et al., 2020). Liu et al. (2020) reported that while negative emotions mediated the relationship between social networking services involvement and excessive preventive intention, these emotions did not appear to significantly mediate the relationship between mass media exposure and excessive preventive intention. Overall, considering the significant mediating role of emotions in information media and risk perception, it is reasonable to propose the following hypotheses:

H3: Mass media exposure to COVID-19-related information will be positively related to (a) fear, (b) anger, and (c) anxiety.

H4: Social media exposure to COVID-19-related information will be positively related to (a) fear, (b) anger, and (c) anxiety.

H5: Interpersonal communication about COVID-19-related information will be positively related to (a) fear, (b) anger, and (c) anxiety.

2.4 SELF-EFFICACY

Self-efficacy is another critical factor influencing risk perception. Unlike information from different sources, self-efficacy is a personal trait. This study also focuses on personal risk perception and the associated effects of different factors. Self-efficacy is defined as "people's beliefs that they can exert control over their motivation and behavior and their social environment" (Bandura, 1990, p. 9). Self-efficacy is also related to optimistic bias and plays a crucial role in individuals' risk perceptions.

Optimism bias refers to individuals being unrealistically optimistic if they believe that a potential outcome will be more favorable than it actually will be; in essence, people prefer to judge themselves as being at less risk than others (Coleman, 1993; Shepperd et al., 2015). As an example, Han et al. (2014) stated that individuals perceived a higher risk of H1N1 for others than for themselves.

Furthermore, Coleman (1993) asserted that lower self-efficacy results in higher risk perceptions at the personal and societal levels. On the contrary, individuals who are more confident in their ability to cope with an infectious disease will perceive a lower risk (Choi et al., 2017). Han et al. (2014) identified a negative relationship between self-efficacy and perceived risk about H1N1 in Chinese respondents; the higher a respondent's self-efficacy, the lower their perceived risk (Han et al., 2014). Similarly, self-efficacy was negatively associated with risk perception during the MERS outbreak (Choi et al., 2017). Self-efficacy critically influences people's behavior and is significantly associated with preventive behavior (Nazione et al., 2021). Studies have also indicated that self-efficacy plays a vital moderating role between risk perception and protective action (Choi et al., 2017; Freimuth & Hovick, 2012). Accordingly, the following hypothesis is proposed:

H6: Self-efficacy will be negatively related to risk perception.

2.5 TRAVEL INTENTION

Travel intention is the primary outcome of interest in this study. It is fundamental to investigate individuals' behavioral intentions, which can inspire actual behavior (Mahmoud & Abdelbaki, 2019). Travel intention reflects "one's desire or intention to travel" (Luo & Lam, 2020, p. 3). Media sources substantially affect individuals' decisions

to visit a destination (Koo et al., 2016). Researchers have also investigated the impact of media exposure on people's intentions to travel to a specific place, discovering that such exposure significantly influences people's desire and intentions to travel (Koo et al., 2016). The risks associated with September 11, 2001 and H1N1 in 2009, and their dramatic impacts on tourism, have led researchers to explore how risk perception shapes travel intention (Floyd et al., 2004; Lee et al., 2012). Travelers' concerns about health threats affect their travel intentions and destination-related decisions: demand can plummet when tourists opt not to travel (Floyd et al., 2004). A large body of research has addressed these topics in relation to COVID-19 as well (Bae & Chang, 2020; Li & Ito, 2021; Luo & Lam, 2020; Perić et al., 2021; Sánchez-Cañizares et al., 2020; Zhu & Deng, 2020). Several researchers have specifically adopted the theory of planned behavior to examine individuals' risk perceptions and travel intentions (Bae & Chang, 2020; Sánchez-Cañizares et al., 2020). Bae and Chang (2020) found that affective and cognitive risk perceptions directly influenced individuals' behavioral intentions around "untact" tourism; in particular, affective risk perceptions negatively influenced behavioral intention while cognitive risk perceptions had positive impacts. The authors also uncovered mediating roles between risk perception and behavioral intention: affective risk perception influenced behavioral intention through the path of attitude, and cognitive risk perception influenced behavioral intention through subjective norms (Bae & Chang, 2020). Risk perception has also been found to be negatively associated with travel intention in Sapporo, Japan amid COVID-19 despite the absence of a significant relationship in Wuhan, China (Li & Ito, 2021). Perceived risk indirectly influenced travel intention during the pandemic through attitude and perceived behavioral control as well

(Sánchez-Cañizares et al., 2020). Additionally, Chinese residents' risk perceptions were negatively correlated with their intentions to visit rural areas (Zhu & Deng, 2020).

The COVID-19 pandemic has altered some individuals' behavioral intentions despite studies demonstrating no impact of the 2009 H1N1 outbreak on international travel intention when tourists felt confident about avoiding the disease through preventive action (Lee et al., 2012). COVID-19 has heightened people's anxiety to the point that travel activities are now considered unsafe (Nazneen et al., 2020). Individuals who perceive disease-related risk have generally taken steps to prevent illness, such as rescheduling and canceling trips during the pandemic (Golets et al., 2020; Neuburger & Egger, 2020). Other people nevertheless want to travel and have been more likely to travel for relaxation than for business for two reasons: (a) increased stress from staying home and (b) a lesser need for business travel as online meetings become commonplace (Ivanova et al., 2020). Chinese residents have expressed a preference for domestic travel, especially rural tourism (Zhu & Deng, 2020). Behavioral changes due to COVID-19 might also persist after the pandemic. Although some people have expressed willingness to travel after the pandemic, they appear concerned about destination safety and hygiene; they also seem to favor nature tourism and short trips (i.e., 1-4 days) using their own car within their own country (Ivanova et al., 2020; J. Li et al., 2020; Wachyuni & Kusumaningrum, 2020). In light of these findings, the following hypothesis is proposed:

H7: Risk perception will be negatively related to travel intention (a) during and (b) after the COVID-19 pandemic.

The preceding discussion informed the development of a comprehensive research model and accompanying hypotheses (Figure 2.1).

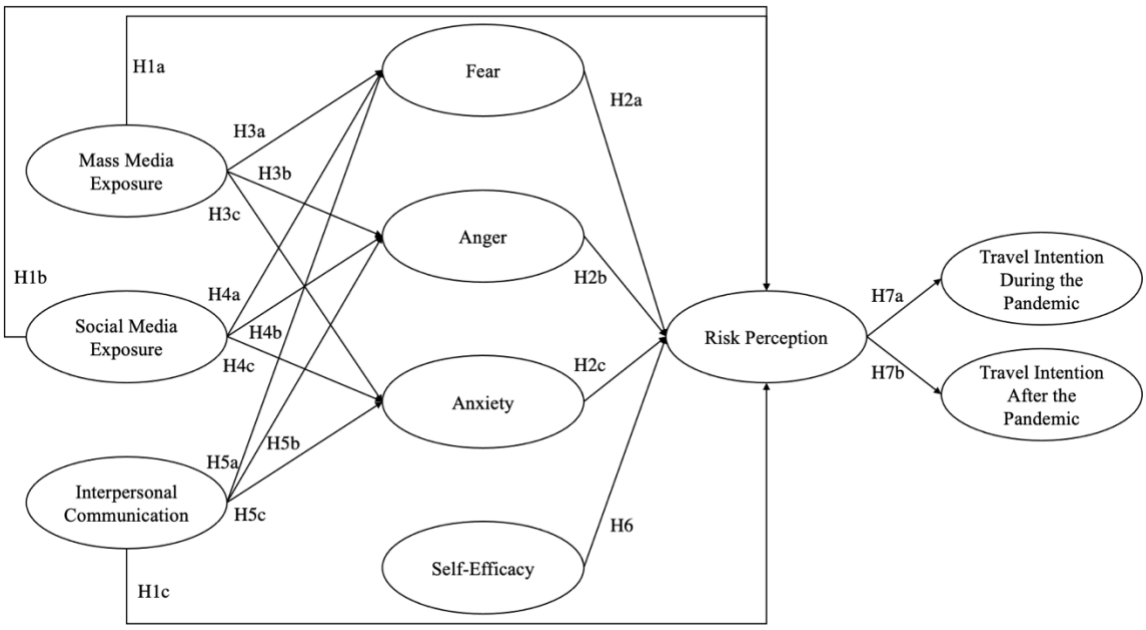

Figure 2.1 Research Model and Study Hypotheses

2.6 CHAPTER SUMMARY

This chapter has discussed the concept of risk perception and its relationship with numerous factors such as mass media exposure, social media exposure, interpersonal communication, fear, anger, anxiety, and travel intention. This literature review established a thorough understanding of relevant concepts to build a foundation for the study. Based on previous research and theoretical models, the proposed model and hypotheses were described in this chapter. The research model will be tested in the next chapter.

CHAPTER 3

METHODOLOGY

3.1 RESEARCH DESIGN

This study adopted a quantitative method involving a self-administered survey. The survey was created in Qualtrics based on research discussed in the literature review and contained four parts. The first section was a letter introducing the questions that respondents would be asked to answer and indicating that all participation was voluntary, anonymous, and confidential. The second part included items to measure focal constructs (i.e., mass media exposure, social media exposure, interpersonal communication, fear, anger, anxiety, self-efficacy, risk perception, and travel intention) during and after the COVID-19 pandemic. The third part addressed individuals' travel preferences during and after the pandemic based on checklist questions for which respondents could choose multiple answers. The last part contained demographic questions pertaining to respondents' age, gender, income, race, marital status, employment status, and education. All questions were forced-choice to prevent missing data.

3.2 SAMPLING

3.2.1 Pilot Study

A pilot study was conducted prior to the main study. The target population encompassed members of the general public who were over 18 years old and had lived in the United States for the past year during the COVID-19 pandemic. The sampling frame was obtained from Amazon Mechanical Turk (MTurk). Each respondent was paid $0.75

upon successful survey completion. An attention check question was added among survey items to ensure data quality; respondents were asked to select "Strongly agree" as the answer to one statement. Respondents who did not pass the attention check were automatically directed out of the survey. After respondents completed the survey, they received a validation code to be used on MTurk to receive compensation. After removing 11 invalid surveys from respondents who failed to pass either the screening questions or attention check, a sample of 149 respondents remained. The respondent profile appears in Table 3.1.

Table 3.1 Descriptive Data from Pilot Study (N = 149)

Variables	**Specification**	**Frequency (*N*)**	**Percent (%)**
Gender	Male	78	52.3
	Female	70	47.0
	Prefer not to say	1	0.7
Age	18–25	15	10.1
	26–35	55	36.9
	36–45	41	27.5
	46–55	21	14.1
	56–65	14	9.4
	66 and above	3	2.0
Marital Status	Married	101	67.8
	Single	40	26.8
	Widowed/Divorced/Separated	8	5.4
Educational Level	High school degree or lower	11	7.4
	Some college or associate degree	20	13.4
	Bachelor's degree	83	55.7
	Graduate degree or above	35	23.5
Annual Household Income	Less than $20,000	10	6.7
	$20,000–$40,000	44	29.5

	$40,001–$60,000	29	19.5
	$60,001–$80,000	28	18.8
	$80,001–$100,000	18	12.1
	$100,001–$150,000	12	8.1
	$150,001–$200,000	6	4.0
	$200,001–$300,000	1	0.7
	$300,001 or above	1	0.7
Employment Status	Student	2	1.3
	Employed full-time	125	83.9
	Employed part-time	9	6.0
	Unemployed and looking for work	8	5.4
	Homemaker or stay-at-home parent	2	1.3
	Retired	3	2.0
Ethnic Group	Caucasian	118	79.2
	African American	5	3.4
	Hispanic	5	3.4
	Asian	11	7.4
	Native American	4	2.7
	Multi-racial	3	2.0
	Prefer not to say	1	0.7
Political Affiliation	Democrat	76	51.0
	Republican	43	28.9
	Independent	29	19.5
	Prefer not to say	1	0.7
Vaccinated	Yes	67	45.0
	No	82	55.0

3.2.2 Main Study

Results of the pilot study were reviewed before conducting the main study; no issues were identified. Therefore, the same survey, target population, sampling technique,

and compensation were applied to the main study. A sample of 388 respondents was retained for data analysis.

3.3 MEASUREMENT

All measurement items were adapted from earlier research and scored on a 7-point Likert scale; see Table 3.2 for item details. The following sections discuss the measurement scales used.

3.3.1 Information Sources

Mass media exposure was measured with four items (Liu et al., 2020; Morton & Duck, 2001; Oh et al., 2015; Wu & Li, 2017), asking how often respondents had read, watched, or heard information about COVID-19 via mass media over the past year (1 = *not at all*; 7 = *very often*): (1) television news programs, (2) print newspapers, (3) news apps on mobile phones/news websites, and (4) radio (e.g., traditional and internet-based radio). Higher scores indicated that respondents had greater exposure to COVID-19-related information through mass media.

Social media exposure was measured with four items (Choi et al., 2017; Oh et al., 2020; Zeballos Rivas et al., 2021). Respondents reported how often they had read, watched, or heard information about COVID-19 on social media (e.g., Facebook, Twitter, Instagram, YouTube, blogs) over the past year (1 = *not at all*; 7 = *very often*). Higher scores represented greater exposure to COVID-19-related information on social media.

Interpersonal communication was measured based on how much respondents' peers (e.g., colleagues, classmates, friends), family, healthcare professionals (e.g., doctors, nurses), and others had spoken to them about COVID-19 over the past year (1 = *not at all*; 7 = *a great deal*) (Han et al., 2014; Lin & Lagoe, 2013; Morton & Duck,

2001). Higher scores reflected greater interpersonal communication with others about COVID-19.

3.3.2 Emotions

Fear was assessed using three items (So et al., 2016; Yıldırım et al., 2020): (1) "I am fearful of COVID-19"; (2) "I am frightened by COVID-19"; (3) "I am scared of COVID-19" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores reflected a stronger level of fear.

Anger was evaluated with two items (Oh et al., 2020): (1) "I am angry with COVID-19"; (2) "I am irritated at COVID-19" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores represented a stronger level of anger.

Anxiety was measured with three items (So et al., 2019): (1) "I am anxious about contracting COVID-19"; (2) "I am worried about contracting COVID-19"; (3) "I am concerned about contracting COVID-19" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores indicated a higher level of anxiety.

3.3.3 Self-Efficacy

Self-efficacy was measured with three items (Choi et al., 2017): (1) "I can avoid COVID-19 infection"; (2) "I know how to avoid COVID-19"; (3) "I can overcome infection even if I am infected by COVID-19" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores suggested that respondents felt confident in dealing with COVID-19.

3.3.4 Risk Perception

Risk perception was measured with five items based on perceived likelihood, susceptibility, and severity (Li & Ito, 2021; Liu et al., 2020; Oh et al., 2015): (1)

"COVID-19 is a serious problem"; (2) "COVID-19 is a frightening disease"; (3) "I am very likely to get COVID-19"; (4) "If I get COVID-19, it will be severe"; (5) "If I get COVID-19, it will be risky" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores indicated that respondents perceived greater risk.

3.3.5 Travel Intention

To compare respondents' travel intentions during and after the COVID-19 pandemic, travel intention was measured separately (i.e., during and after the pandemic) with three items each (Sánchez-Cañizares et al., 2020): (1) "During/after the COVID-19 pandemic, I intend to travel"; (2) "During/after the COVID-19 pandemic, if I need to travel for work, I intend to do so"; (3) "During/after the COVID-19 pandemic, if I need to travel for leisure, I intend to do so" (1 = *strongly disagree*; 7 = *strongly agree*). Higher scores implied that respondents had stronger intentions to travel during or after the pandemic.

Table 3.2 Measurement Items

Constructs	**Items**
Mass Media Exposure	How often a respondent had read, watched, or heard information about COVID-19 on mass media over the past year:
MME1	Television news programs
MME2	Print newspapers
MME3	News apps on mobile phones/news websites
MME4	Radio (e.g., traditional and internet-based radio)
Social Media Exposure SME	How often a respondent had read, watched, or heard information about COVID-19 on social media (e.g., Facebook, Twitter, Instagram, YouTube, blogs) over the past year.
Interpersonal Communication	How much the following people had spoken to a respondent about COVID-19 over the past year:
IC1	Peers (e.g., colleagues, classmates, friends)
IC2	Family

IC3	Healthcare professionals (e.g., doctors, nurses)
IC4	Others
Fear	How fearful a respondent was about COVID-19:
Fear1	I am fearful of COVID-19.
Fear2	I am frightened by COVID-19.
Fear3	I am scared of COVID-19.
Anger	How angry a respondent was about COVID-19:
Anger1	I am angry with COVID-19.
Anger2	I am irritated at COVID-19.
Anxiety	How anxious a respondent was about COVID-19:
Anxiety1	I am anxious about contracting COVID-19.
Anxiety2	I am worried about contracting COVID-19.
Anxiety3	I am concerned about contracting COVID-19.
Self-Efficacy	How a respondent was dealing with COVID-19:
SE1	I can avoid COVID-19 infection.
SE2	I know how to avoid COVID-19.
SE3	I can overcome infection even if I am infected by COVID-19
Risk Perception	How a respondent perceived the risk of COVID-19:
RP1	COVID-19 is a serious problem.
RP2	COVID-19 is a frightening disease.
RP3	I am very likely to get COVID-19.
RP4	If I get COVID-19, it will be severe.
RP5	If I get COVID-19, it will be risky.
Travel Intention During the COVID-19 Pandemic	A respondent's intentions to travel during the COVID-19 pandemic:
TIDCP1	During the COVID-19 pandemic, I intend to travel.
TIDCP2	During the COVID-19 pandemic, If I need to travel for work, I intend to do so.
TIDCP3	During the COVID-19 pandemic, If I need to travel for leisure, I intend to do so.
Travel Intention After the COVID-19 Pandemic	A respondent's intentions to travel after the COVID-19 pandemic:

TIDACP1	After the COVID-19 pandemic, I intend to travel.
TIDACP2	After the COVID-19 pandemic, If I need to travel for work, I intend to do so.
TIDACP3	After the COVID-19 pandemic, If I need to travel for leisure, I intend to do so.

3.4 DATA COLLECTION

Surveys for the pilot study and main study were distributed via MTurk on April 4 and April 22, 2021, respectively. Before distributing the questionnaire and gathering data, the survey was reviewed and pretested based on respondents' reactions and suggestions to address potential errors and misleading questions. The later modified version was posted on MTurk for data collection. The questionnaire included two screening questions to obtain qualified data. The first screening question asked whether participants had lived in the United States during the COVID-19 pandemic in the past year. The second screening question asked whether respondents were adults who were at least 18 years old. Respondents who answered "No" to either question were automatically directed out of the survey.

3.5 DATA ANALYSIS

Descriptive analysis was conducted in IBM SPSS Statistics 26.0. SPSS was also used to test the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, and Cronbach's alpha in the pilot study. SmartPLS 3.3.3 was used for measurement model assessment, structural equation modeling (SEM), mediator and hypothesis testing, and multi-group analysis.

Partial least squares SEM (PLS-SEM) was deemed suitable for this study, which was predictive. PLS-SEM is thought to be appropriate when handling complex models; the method is capable of dealing with reflective and formative models and single-item

constructs (Hair et al., 2017). Measurement models should be evaluated before performing PLS-SEM (Hair et al., 2017). Reliability and validity must also be examined by testing indicator reliability, internal consistency, convergent validity, and discriminant validity to assess the reflective measurement model. A single-item construct was not available to evaluate the measurement model in this study.

To assess the reflective measurement model, indicator reliability was tested based on outer loadings with a cutoff value of 0.7 (Garson, 2016, pp. 60-61). When an outer loading is between 0.4 and 0.7, researchers should consider eliminating the item from the scale if deleting the item can increase composite reliability (Hair et al., 2017). Internal consistency was evaluated based on composite reliability and Cronbach's alpha, the values of which should each be greater than 0.7 (Garson, 2016, pp. 63-64). Convergent validity was assessed based on the variance extracted (AVE); this value should exceed 0.5 (Chin, 1998). The AVE value can also be used to measure discriminant validity based on the Fornell–Larcker criterion: "for any latent variable, the square root of AVE should be higher than its correlation with any other latent variable." (Garson, 2016, p. 67). Discriminant validity was evaluated using cross-loadings and the heterotrait–monotrait (HTMT) ratio (Hair et al., 2017). Similar to the Fornell–Larcker criterion, cross-loadings indicate whether constructs' outer loadings are greater than those of related constructs. If the outer loadings of related constructs exceed the others, then discriminant validity is established. Discriminant validity can be evaluated in two ways based on HTMT. The first technique involves measuring the HTMT ratio; anything below 0.90 indicates sufficient discriminant validity. One can also run a bootstrapping procedure to determine

whether the confidence interval includes the value of 1; if so, then there is an issue with discriminant validity (Hair et al., 2017).

To assess a structural model, collinearity issues, and the significance of model relationships, R^2 and f^2 effect size values should be tested. The variance inflation factor (VIF) is considered when evaluating potential collinearity in a structural model. An inner VIF value lower than 5 indicates that collinearity is not a problem (Hair et al., 2017). The R^2 values used to measure a structural model's predictive power are considered substantial, moderate, and weak when exceeding 0.67, 0.33, and 0.19, respectively (Chin, 1998). The f^2 values of 0.02, 0.15, and 0.35 are described as small, medium, and large effects (Cohen, 1988). The SRMR value is generally used to assess model fit in covariance-based SEM, with a value lower than 0.8 indicating a good model fit (Hu & Bentler, 1998). However, "no threshold value has been introduced in a PLS-SEM context yet" (Hair et al., 2017, p. 328). This model fit test thus provides little value; researchers need to modify their models to obtain a better fit. The SRMR value is therefore not recommended in the PLS-SEM context (Hair et al., 2017).

After evaluating the measurement model and structural model, a mediation analysis was conducted. The results of bootstrapping in SmartPLS 3 include mediators' level of significance. The presence of a mediation effect depends on whether an indirect effect is significant (Hair et al., 2017). If no significant indirect effect exists, then no mediation effect applies in a tested relationship. Nonmediation can be classified into two types—direct-only nonmediation and no-effect nonmediation—based on the significance of a direct effect. If the tested relationship includes a significant direct effect, then the outcome is described as direct-only nonmediation. Otherwise, it is called no-effect

nonmediation. Moreover, if a significant indirect effect is identified, then a mediator effect exists in the tested relationship. Mediation can be divided into three types: complementary mediation, competitive mediation, and indirect-only mediation. Complementary mediation and competitive mediation exhibit significant direct and indirect effects. If the directions of the direct and indirect paths are the same, then complementary mediation exists. By contrast, if the directions of the direct and indirect paths are opposite, then competitive mediation is present. Complementary mediation and competitive mediation can also be described as partial mediation. In indirect-only mediation, the tested relationship contains an indirect effect but no direct effect; this type of mediation is considered full mediation.

3.6 CHAPTER SUMMARY

This chapter described the study's methodology, including the questionnaire design, sampling, survey items, and data collection. This chapter also discussed how to analyze data and what analysis tools were applied in this study. The next chapter presents the data analysis results.

CHAPTER 4

RESULTS

The previous chapter discussed this study's research methodology; this chapter details the results of data analysis in the pilot study and main study.

4.1 RESULTS OF PILOT STUDY

The KMO measure of sampling adequacy and Bartlett's test of sphericity were examined to ensure the appropriateness of data for factor analysis. The KMO values of sampling adequacy for mass media exposure, interpersonal communication, fear, anger, anxiety, self-efficacy, risk perception, travel intention during the COVID-19 pandemic, and travel intention after the COVID-19 pandemic were 0.662, 0.705, 0.776, 0.500, 0.773, 0.643, 0.697, 0.728, and 0.685, respectively. All KMO values exceeded the recommended value of 0.60 (Tabachnick & Fidell, 2001) except for anger; this construct's value was 0.5 but not unacceptable (Kaiser, 1974). All constructs were significant ($p < .01$) based on Bartlett's test of sphericity. Additionally, the Cronbach's alpha value for each construct was greater than 0.70 (Nunnally, 1994). Therefore, all items from all constructs were included in the main study. Table 4.1 displays results for the KMO measure of sampling adequacy, Bartlett's test of sphericity, and Cronbach's alpha.

Table 4.1 KMO measure of Sampling Adequacy, Bartlett's Test of Sphericity, and Cronbach's Alpha

Constructs	KMO measure of sampling adequacy	Bartlett's test of sphericity	Cronbach's alpha
Mass media exposure	0.662	0.000	0.741
Interpersonal communication	0.705	0.000	0.762
Fear	0.776	0.000	0.952
Anger	0.500	0.000	0.851
Anxiety	0.773	0.000	0.947
Self-efficacy	0.643	0.000	0.787
Risk perception	0.697	0.000	0. 831
Travel intention during the COVID-19 pandemic	0.728	0.000	0.896
Travel intention after the COVID-19 pandemic	0.685	0.000	0.745

4.2 DEMOGRAPHIC PROFILES OF MAIN STUDY

A total of 431 respondents participated in the main survey on MTurk. After removing 27 invalid surveys from respondents who did not pass either the screening questions or an attention check, 402 surveys remained. Fourteen respondents whose response time was less than 100 seconds were then removed. Ultimately, 388 surveys were retained for analysis. Of these respondents, 69.8% were men and 29.9% were women. In terms of age, 8.2% of respondents were between 18 and 25 years old; 55.7% were between 26 and 35; 21.1% were between 36 and 45; 7.2% were between 46 and 55; 5.4% were between 56 and 65; and 2.3% were 66 and above. Most respondents were married (70.4%), followed by those who were single (26.5%) or widowed/divorced/separated (3.1%). The vast majority of respondents (82.7%) held a bachelor's degree or higher. Most respondents' household income fell between $20,000

and $100,000 (79.1%), and many respondents (86.6%) were employed full-time. The majority of respondents were Caucasian (70.6%). Respondents primarily identified as democrats (58.2%) compared with republicans (28.1%) and those who were independent (13.4%). Slightly more than half of respondents (54.1%) had been fully vaccinated against COVID-19; the remainder (45.9%) had not yet received the vaccine. Respondents preferred to travel domestically rather than internationally, to travel with family instead of friends, and to travel by car than by airplane during the pandemic. Five respondents expressed that they did not prefer to travel at all during the pandemic. Respondents' post-pandemic travel preferences were evenly distributed. The sample's demographic profile is provided in Table 4.2.

Table 4.2 Respondents' Demographic Profile (N = 388)

Variables	**Specification**	**Frequency (*N*)**	**Percent (%)**
Gender	Male	271	69.8
	Female	116	29.9
	Prefer not to say	1	0.3
Age	18–25	32	8.2
	26–35	216	55.7
	36–45	82	21.1
	46–55	28	7.2
	56–65	21	5.4
	66 and above	9	2.3
Marital Status	Married	273	70.4
	Single	103	26.5
	Widowed/Divorced/Separated	12	3.1
Educational Level	High school degree or lower	17	4.4
	Some college or associate degree	50	12.9
	Bachelor's degree	253	65.2
	Graduate degree or above	68	17.5

Annual Household Income	Less than $20,000	26	6.7
	$20,000–$40,000	69	17.8
	$40,001–$60,000	90	23.2
	$60,001–$80,000	96	24.7
	$80,001–$100,000	52	13.4
	$100,001–$150,000	34	8.8
	$150,001–$200,000	10	2.6
	$200,001–$300,000	8	2.1
	$300,001 or above	3	0.8
Employment Status	Student	4	1.0
	Employed full-time	336	86.6
	Employed part-time	29	7.5
	Unemployed and looking for work	8	2.1
	Homemaker or stay-at-home parent	6	1.5
	Retired	5	1.3
Ethnic Group	Caucasian	274	70.6
	African American	48	12.4
	Hispanic	21	5.4
	Asian	18	4.6
	Native American	22	5.7
	Multi-racial	4	1.0
	Prefer not to say	1	0.3
Political Affiliation	Democrat	226	58.2
	Republican	109	28.1
	Independent	52	13.4
	Prefer not to say	1	0.3
Vaccination	Yes	210	54.1
	No	178	45.9
Travel Preference During the COVID-19 Pandemic	Domestic trip	201	51.8
	International trip	78	20.1
	Travel with family	131	33.8

	Travel with friends	63	16.2
	Travel by car	161	41.5
	Travel by airplane	27	7.0
	Pay attention to hygiene	117	30.2
Travel Preference After the COVID-19 Pandemic	Domestic trip	182	46.9
	International trip	169	43.6
	Travel with family	186	47.9
	Travel with friends	143	36.9
	Travel by car	144	37.1
	Travel by airplane	112	28.9
	Pay attention to hygiene	101	26.0

4.3 DESCRIPTIVE STATISTICS OF CONSTRUCTS

Constructs' descriptive statistics, including the mean, average mean, and standard deviation, are shown in Table 4.3. All constructs exhibited a higher average mean. In particular, the average mean of post-pandemic travel intention was higher than that during the pandemic.

Table 4.3 Descriptive Statistics of Variables (N = 388)

Construct	Item	Mean	Standard Deviation	Average Mean
Mass media exposure	MME1	5.157	1.561	4.778
	MME2	4.273	2.070	
	MME3	5.371	1.483	
	MME4	4.312	2.037	
Social media exposure	SME	5.729	1.413	5.729
Interpersonal communication	IC1	5.119	1.482	5.005
	IC2	5.433	1.380	
	IC3	4.830	1.712	
	IC4	4.637	1.715	

Fear	Fear1	4.951	1.724	4.930
	Fear2	4.853	1.700	
	Fear3	4.985	1.786	
Anger	Anger1	4.928	1.739	5.052
	Anger 2	5.175	1.678	
Anxiety	Anxiety1	4.933	1.745	4.998
	Anxiety2	4.954	1.737	
	Anxiety3	5.108	1.675	
Self-efficacy	SE1	5.428	1.285	5.498
	SE2	5.588	1.205	
	SE3	5.479	1.363	
Risk perception	RP1	5.603	1.357	5.010
	RP2	5.477	1.444	
	RP3	4.500	1.808	
	RP4	4.619	1.847	
	RP5	4.853	1.712	
Travel intention during the COVID-19 pandemic	TIDCP1	4.446	1.936	4.540
	TIDCP2	4.706	1.847	
	TIDCP3	4.469	1.963	
Travel intention after the COVID-19 pandemic	TIACP1	5.456	1.396	5.526
	TIACP2	5.474	1.438	
	TIACP3	5.647	1.372	

4.4 ASSESSMENT OF MEASUREMENT MODEL

Indicator reliability was verified; all outer loadings exceeded the recommended threshold values of 0.7 after removing items RP1 and RP2 due to low outer loadings (0.444 and 0.587, respectively). Internal consistency was also satisfied: composite reliability and Cronbach's alpha values for all constructs exceeded the cutoff values of 0.7. The AVE values surpassed the cutoff value of 0.5; convergent validity was therefore

satisfied. The outer loadings of related constructs (numbers in bold displayed in Table 4.5) were greater than any of their cross-loadings, signifying discriminant validity. Similarly, the square root of the AVE for each construct (see top numbers in bold in each column in Table 4.6) surpassed the correlations with other constructs; thus, discriminant validity was adequate based on the Fornell–Larcker criterion. Most HTMT ratios were below the recommended cutoff values of 0.9 except for the relationship between fear and anxiety (0.919). However, the confidence intervals for HTMT did not include 1. Discriminant validity was hence not an issue according to cross-loadings and the Fornell–Larcker criterion, although it was a minor concern in the relationship between fear and anxiety based on HTMT ratios. Results from the evaluation of the measurement model are listed in Tables 4.4, 4.5, 4.6, 4.7, and 4.8. The constructs of mass media exposure, social media exposure, and interpersonal communication were not included when assessing indicator reliability, internal consistency, convergent validity, and discriminant validity because these constructs were applied to single or composite indicators.

Table 4.4 Indicator Reliability, Internal Consistency, and Convergent Validity

Constructs	**Loadings**	**Cronbach's α**	**CR**	**AVE**
Fear		0.916	0.947	0.856
Fear1	0.914			
Fear2	0.935			
Fear3	0.927			
Anger		0.857	0.933	0.874
Anger1	0.947			
Anger2	0.923			
Anxiety		0.887	0.930	0.815
Anxiety1	0.904			
Anxiety2	0.893			

Anxiety3	0.911			
Self-efficacy		0.724	0.832	0.624
SE1	0.710			
SE2	0.854			
SE3	0.798			
Risk perception		0.822	0.894	0.738
RP3	0.824			
RP4	0.899			
RP5	0.853			
Travel intention during the COVID-19 pandemic		0.882	0.927	0.809
TIDCP1	0.869			
TIDCP2	0.735			
TIDCP3	0.866			
Travel intention after the COVID-19 pandemic		0.764	0.865	0.682
TIACP1	0.919			
TIACP2	0.853			
TIACP3	0.925			

Table 4.5 Discriminant Validity: Cross-Loadings

	Anger	Anxiety	Fear	RP	SE	TIA	TID
Angr1	**0.947**	0.483	0.513	0.437	0.304	0.252	0.358
Angr2	**0.923**	0.415	0.441	0.344	0.348	0.266	0.238
Anxiety1	0.450	**0.904**	0.757	0.592	0.148	0.194	0.205
Anxiety2	0.457	**0.893**	0.745	0.599	0.162	0.197	0.187
Anxiety3	0.405	**0.911**	0.742	0.652	0.096	0.202	0.207
Fear1	0.488	0.766	**0.914**	0.625	0.211	0.247	0.252
Fear2	0.479	0.749	**0.935**	0.660	0.212	0.241	0.247
Fear3	0.459	0.783	**0.927**	0.688	0.167	0.228	0.276
RP3	0.368	0.520	0.547	**0.824**	0.137	0.247	0.468
RP4	0.374	0.607	0.627	**0.899**	0.135	0.151	0.395

RP5	0.344	0.632	0.662	**0.853**	0.175	0.169	0.282
SE1	0.268	0.139	0.124	0.055	**0.710**	0.311	0.172
SE2	0.319	0.141	0.223	0.167	**0.854**	0.314	0.128
SE3	0.240	0.090	0.130	0.142	**0.798**	0.287	0.305
TIACP1	0.280	0.148	0.207	0.183	0.369	**0.869**	0.245
TIACP2	0.206	0.231	0.222	0.163	0.239	**0.735**	0.205
TIACP3	0.200	0.171	0.213	0.198	0.313	**0.866**	0.269
TIDCP1	0.320	0.219	0.261	0.416	0.255	0.300	**0.919**
TIDCP2	0.261	0.163	0.218	0.338	0.163	0.218	**0.853**
TIDCP3	0.292	0.210	0.271	0.439	0.250	0.264	**0.925**

Table 4.6 Discriminant Validity: Fornell–Larcker Criterion

	Anger	Anxiety	Fear	RP	SE	TIACP	TIDCP
Anger	**0.935**						
Anxiety	0.483	**0.903**					
Fear	0.513	0.828	**0.925**				
RP	0.422	0.681	0.712	**0.859**			
SE	0.346	0.149	0.212	0.173	**0.790**		
TIACP	0.276	0.219	0.258	0.221	0.374	**0.826**	
TIDCP	0.325	0.221	0.28	0.446	0.251	0.292	**0.899**

Notes: Square roots of the AVE of latent variables are on the diagonal.

Table 4.7 Discriminant Validity: HTMT Ratios

	Anger	Anxiety	Fear	RP	SE	TIA	TID
Anger							
Anxiety	0.552						
Fear	0.576	0.919					
RP	0.497	0.798	0.820				
SE	0.439	0.193	0.244	0.197			
TIA	0.344	0.270	0.311	0.277	0.508		
TID	0.365	0.248	0.309	0.517	0.309	0.352	

Table 4.8 Discriminant Validity: HTMT Confidence Intervals

Relationships	95% Confidence Interval (Bias-corrected)
Anxiety -> Anger	[0.430, 0.661]
Fear -> Anger	[0.465, 0.679]
Fear -> Anxiety	[0.865, 0.964]
RP -> Anger	[0.387, 0.599]
RP -> Anxiety	[0.726, 0.861]
RP -> Fear	[0.753, 0.877]
SE -> Anger	[0.308, 0.566]
SE -> Anxiety	[0.077, 0.330]
SE -> Fear	[0.113, 0.387]
SE -> RP	[0.098, 0.304]
TIA -> Anger	[0.197, 0.488]
TIA -> Anxiety	[0.139, 0.414]
TIA -> Fear	[0.170, 0.449]
TIA -> RP	[0.151, 0.410]
TIA -> SE	[0.345, 0.667]
TID -> Anger	[0.237, 0.487]
TID -> Anxiety	[0.118, 0.376]
TID -> Fear	[0.180, 0.435]
TID -> RP	[0.397, 0.626]
TID -> SE	[0.191, 0.437]
TID -> TIA	[0.221, 0.472]

4.5 EVALUATION OF STRUCTURAL MODEL

The structural model assessment revealed VIF values ranging from 1.2 to 3.586, which indicated no collinearity problem. A full collinearity test was performed to measure common method bias; inner VIF values that are equal to or lower than 3.3 reflect the absence of such bias (Kock, 2015). The structural model in this study may have possessed minor common method bias, as the VIF value for the relationship between fear

and risk perception was 3.586. However, this relationship still applied in the structural model because all VIF values were lower than 5.

A bootstrapping procedure with 5000 subsamples was next carried out to test the structural model. Regarding R^2 values, the model explained 33.8% of the variance in fear (R^2 = 0.338) along with 61.5% in risk perception (R^2 = 0.615), 21.8% in anger (R^2 = 0.218), 28.5% in anxiety (R^2 = 0.285), and 20.1% in travel intention during the pandemic (R^2 = 0.201). The f^2 results indicated that various paths only displayed small effects based on the supported hypotheses. More details are provided in Table 4.9.

4.6 HYPOTHESIS TESTING

Average scores were used to create a composite variable for mass media exposure. This variable had a significant positive impact on fear (β = 0.223, p = 0.001), anger (β = 0.196, p = 0.005), anxiety (β = 0.188, p = 0.008), and risk perception (β = 0.309, p = 0.000), lending support to H3a, H3b, H3c, and H1a.

Social media exposure significantly influenced fear (β = 0.114, p = 0.040) but had no significant effect on anger (β = 0.110, p = 0.050), anxiety (β = 0.078, p = 0.169), or risk perception (β = -0.013, p = 0.718). Thus, H4a was supported while H4b, H4c, and H1b were not.

Average responses were calculated to create a new variable for interpersonal communication. Interpersonal communication had a significantly positive impact on fear (β = 0.339, p = 0.000), anger (β = 0.244, p = 0.001), and anxiety (β = 0.344, p = 0.000); it had no impact on risk perception (β = 0.061, p = 0.295). H5a, H5b, and H5c were therefore accepted, but H1c was not.

Fear (β = 0.337, p = 0.000) and anxiety (β = 0.241, p = 0.001) each positively influenced risk perception, whereas anger (β = -0.003, p = 0.944) and self-efficacy (β = -0.033, p = 0.354) did not. As such, H2a and H2c were supported; H2b and H6 were rejected.

Risk perception positively influenced travel intention during the pandemic (β = 0.449, p = 0.000) and after the pandemic (β = 0.222, p = 0.000). This study hypothesized a negative relationship between risk perception and travel intention. Accordingly, H7a and H7b were rejected. The path coefficients, hypothesis testing results, and *t*-values appear in Table 4.9 and Figure 4.1.

Table 4.9 Structural Model Results

Hypothesis	**Relationship**	**Path Coefficient**	***t*-value**	**Result**	**R^2**	**f^2**
H1a	MME -> RP	0.309	5.992***	Supported	0.615	0.125
H1b	SME -> RP	-0.013	0.361	Not supported		0.000
H1c	IC -> RP	0.061	1.047	Not supported		0.004
H2a	Fear -> RP	0.337	4.236***	Supported		0.082
H2b	Anger -> RP	-0.003	0.070	Not supported		0.000
H2c	Anxiety -> RP	0.241	3.219**	Supported		0.045
H3a	MME -> Fear	0.223	3.197**	Supported	0.338	0.040
H4a	SME -> Fear	0.114	2.052*	Supported		0.015
H5a	IC -> Fear	0.339	4.71***	Supported		0.087
H3b	MME -> Anger	0.196	2.819**	Supported	0.218	0.026
H4b	SME -> Anger	0.110	1.957	Not supported		0.012
H5b	IC -> Anger	0.244	3.444**	Supported		0.038
H3c	MME -> Anxiety	0.188	2.673**	Supported	0.285	0.026
H4c	SME -> Anxiety	0.078	1.375	Not supported		0.007
H5c	IC -> Anxiety	0.344	4.608***	Supported		0.083
H6	SE -> RP	-0.033	0.928	Not supported		0.002

H7a	RP -> TIDCP	0.449	9.281***	Not supported	0.201	0.052
H7b	RP -> TIACP	0.222	4.212***	Not supported	0.049	0.252

Notes: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

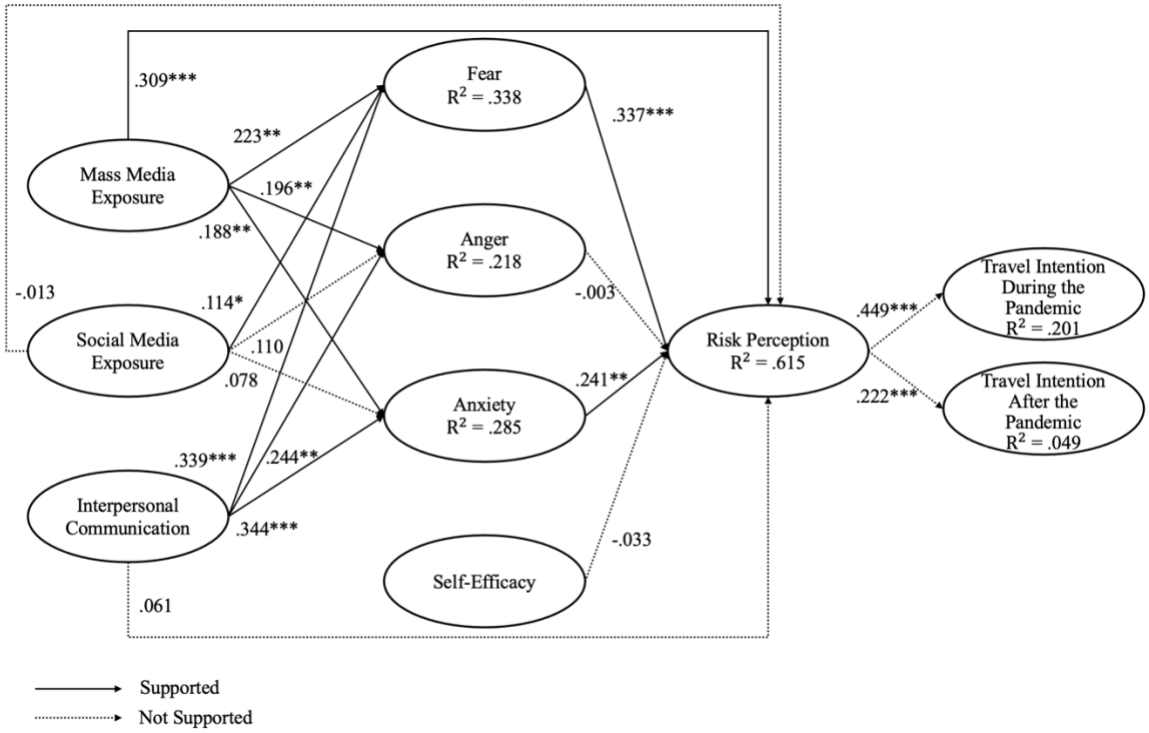

Figure 4.1 Results of Structural Model Analysis

4.7 MEDIATION TEST

Mediation analysis was conducted by running bootstrapping with 5,000 subsamples to assess the mediating roles of emotions on the relationship between information exposure and risk perception. Fear and anxiety significantly mediated the relationship between mass media exposure and risk perception, as the confidence interval did not include zero; however, no significant mediating effect was observed for anger. Similarly, fear and anxiety played significant mediating roles in the relationship between interpersonal communication and risk perception, but anger had no significant mediating effect. Regarding the relationship between social media exposure and risk perception,

only fear demonstrated a mediating effect; anger and anxiety were not significant mediators.

Fear and anxiety partially mediated the relationship between mass media exposure and risk perception, while fear and anxiety fully mediated the relationship between interpersonal communication and risk perception. These two information sources also had significant direct effects on risk perception. Regarding the relationship between social media and risk perception, only fear played a full mediating role. Table 4.10 displays the mediation test results.

Table 4.10 Results of Mediation Test

Model Pathways	**Indirect Effects**	**95% Confidence Interval (Bias-corrected)**
MME -> Fear -> RP	0.075	*[0.028, 0.140]
MME -> Anger -> RP	-0.001	[-0.022, 0.019]
MME -> Anxiety -> RP	0.045	*[0.012, 0.110]
SME -> Fear -> RP	0.039	*[0.003, 0.089]
SME -> Anger -> RP	0.000	[-0.012, 0.012]
SME -> Anxiety -> RP	0.019	[-0.004, 0.060]
IC -> Fear -> RP	0.114	* [0.050, 0.204]
IC -> Anger -> RP	-0.001	[-0.023, 0.025]
IC -> Anxiety -> RP	0.083	* [0.035, 0.152]
Model Pathways	**Direct Effects**	**95% Confidence Interval (Bias-corrected)**
MME -> RP	0.309	* [0.205, 0.409]
SME -> RP	-0.013	[-0.083, 0.053]
IC -> RP	0.061	[-0.051, 0.177]

Note: * indicates significance.

4.8 GROUP DIFFERENCE TESTING

Group differences were tested to identify whether individuals' travel intentions varied among vaccinated and unvaccinated groups, as the widely available COVID-19 vaccine could influence individuals' travel intentions. Specifically, an independent-samples *t*-test was conducted to compare vaccinated and unvaccinated respondents' travel intentions during and after the COVID-19 pandemic. Vaccinated people's travel intentions during the pandemic (M = 5.15, SD = 1.342) were statistically significantly different from those of unvaccinated people (M = 3.82, SD = 1.845); $t(386) = 8.223$, p = 0.000. However, post-pandemic travel intentions among vaccinated respondents (M = 5.55, SD = 1.126) and unvaccinated respondents (M = 5.50, SD = 1.190) were not statistically significantly different; $t(386) = 0.375$, p = 0.708. Therefore, vaccinated respondents' mean travel intentions during the pandemic were statistically significantly larger than those of unvaccinated respondents. By contrast, post-pandemic travel intentions did not differ significantly between the two groups. The *t*-test results are presented in Table 4.11.

Table 4.11 Comparison of Vaccinated and Unvaccinated Groups

Variable	Groups	Mean	SD	t-value	p-value
Travel intention during the pandemic	Vaccinated	5.15	1.342	8.223	0.000
	Unvaccinated	3.82	1.845	8.017	0.000
Travel intention after the pandemic	Vaccinated	5.55	1.126	0.375	0.708
	Unvaccinated	5.50	1.190	0.373	0.709

Following the independent-samples *t*-test and apparently significantly different travel intentions during the pandemic, the proposed model was tested to examine relationships in each group. Some model relationships were statistically significantly

different between vaccinated and unvaccinated respondents. In particular, the influences of mass media exposure on fear, anger, and anxiety were significant in the vaccinated group; the impact of mass media exposure on risk perception was significant in both groups. Conversely, the effects of interpersonal communication on fear, anger, and anxiety were significant in the unvaccinated group but not in the vaccinated group. Regarding the impact of social media exposure on emotions, only social media exposure significantly influenced anger in the unvaccinated group. In terms of the relationship between emotions and risk perception, fear had a significant impact on risk perception in the unvaccinated group, whereas anxiety significantly influenced the vaccinated group's risk perceptions. Finally, risk perceptions significantly affected both groups' travel intentions during the pandemic; these perceptions only significantly influenced respondents' post-pandemic travel intentions in the vaccinated group. Testing of the structural model for vaccinated and unvaccinated groups is summarized in Table 4.12.

Table 4.12 Structural Model Test for Vaccinated and Unvaccinated Groups

	Vaccinated Group		**Unvaccinated Group**	
Relationships	Path Coefficient	*t*-value	Path Coefficient	*t*-value
MME -> Fear	0.567	4.866 ***	0.036	0.428
MME -> Anger	0.304	2.623 **	0.093	0.972
MME -> Anxiety	0.504	4.045 ***	0.015	0.180
MME -> RP	0.349	3.663 ***	0.253	3.780 ***
SME -> Fear	0.101	1.548	0.128	1.580
SME -> Anger	0.027	0.316	0.163	2.077 *
SME -> Anxiety	0.115	1.451	0.065	0.824
SME -> RP	0.055	1.038	-0.079	1.662
IC -> Fear	0.063	0.477	0.430	5.244 ***
IC -> Anger	0.210	1.658	0.231	2.633 **
IC -> Anxiety	0.049	0.330	0.448	5.917 ***

IC -> RP	0.021	0.235	0.083	1.085
Fear -> RP	0.168	1.759	0.565	4.930 ***
Anger -> RP	0.018	0.251	-0.019	0.307
Anxiety -> RP	0.347	3.748 ***	0.050	0.455
SE -> RP	-0.057	0.889	-0.111	1.429
RP -> TIDCP	0.533	8.017 ***	0.258	3.277 **
RP -> TIACP	0.339	4.460 ***	0.100	1.046

Notes: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

4.9 CHAPTER SUMMARY

This chapter presented the results of the pilot study and main study. The KMO measure of sampling adequacy, Bartlett's test of sphericity, and Cronbach's alpha were analyzed in the pilot study. This chapter also summarized the demographic profile and descriptive statistics of constructs in the main study. Subsequently, the results of measurement model assessment, structural model evaluation, hypothesis testing, mediation testing, and group difference testing were reported. The next chapter presents a discussion, this study's limitations, directions for future research, and conclusions.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

5.1 DISCUSSION OF RESULTS

The purpose of this study was to understand individuals' risk perceptions during the COVID-19 pandemic. Specifically, the study examined how media channels or information sources, emotions, and self-efficacy each affect people's risk perceptions and travel intentions during the pandemic.

Findings indicated that information sources differentially influenced individuals' emotions and risk perceptions. In particular, when people received COVID-19-related information via mass media outlets, they experienced fear, anger, and anxiety as well as perceived risk. Mass media, unlike social media and interpersonal communication, is a formal communication channel; individuals who receive information from news media are more likely to take it seriously, which effortlessly evokes emotions and perceptions. This study's results differ from earlier research suggesting that mass media exposure does not directly inform people's risk perceptions and negative emotions (Liu et al., 2020). However, prior work has shown that mass media exposure significantly influences risk perception (Wu & Li, 2017).

Regarding the effects of mass media exposure on emotions, this study revealed that when people received COVID-19-related information from their friends, family, and others, they tended to feel fearful, angry, and anxious. Yet no direct impact of

interpersonal communication on risk perception was observed, inconsistent with previous work (Han et al., 2014; Morton & Duck, 2001).

Unlike the impacts of mass media and interpersonal communication on emotions and risk perception, social media exposure had little influence on these two factors. In particular, social media exposure only significantly influenced fear but had no effect on anger, anxiety, and risk perception. These results counter studies indicating that social media directly influence fear and anger and indirectly affect risk perception (Oh et al., 2020). The direct effect of social media exposure on risk perception identified in this study varies from prior research as well (Choi et al., 2017; Han et al., 2014; Yoo et al., 2018). One exploration of tourists' risk perceptions amid the pandemic highlighted social media as an essential communication tool that can elicit fear and anxiety and can thus be used to reduce risk perception (Sánchez-Cañizares et al., 2020). However, the present study illustrated that mass media and interpersonal communication were more influential than social media in provoking people's emotions and risk perceptions. This research hence reflected different effects of information sources on individuals' emotions and risk perceptions.

This study further unveiled the critical impacts of emotions on risk perception, confirming the risk-as-feelings hypothesis and the affect heuristic (Loewenstein et al., 2001; Slovic et al., 2007). This research confirmed fear and anger as distinct emotions (Lerner & Keltner, 2000) that exert varying impacts on risk perception. Findings indicated that fear and anxiety directly influenced risk perception, whereas anger had no effect. This pattern corroborates earlier suggestions that fear is positively related to risk perception (Oh et al., 2020; Paek et al., 2016) but does not substantiate an earlier finding

of anger being significantly associated with risk perception (Oh et al., 2020). The current study also reinforced previous findings indicating that fear and anxiety (or negative emotions) positively influence risk perception (Liu et al., 2020; Yang & Chu, 2018).

This study revealed a key mediating role of emotions in the relationship between different information sources and risk perception. In particular, fear and anxiety significantly mediated the relationship between mass media exposure and risk perception and that between interpersonal communication and risk perception. Only fear had a significant mediating effect on the relationship between social media exposure and risk perception, partially supporting earlier work (Oh et al., 2020). Anger was not confirmed as a significant mediator.

Despite the significant influences of emotions on risk perception, self-efficacy had no significant impact on risk perception. It was expected that when people feel confident about dealing with and preventing COVID-19 infection, they will perceive a lower risk of the disease; however, a significantly negative relationship between self-efficacy and risk perception was not established. This outcome contradicts research demonstrating that people who feel confident about confronting an infectious disease perceive less risk (Choi et al., 2017).

This study also assumed that individuals who perceive a higher risk of COVID-19 would tend to avoid traveling during the pandemic. Findings revealed a significantly positive relationship between risk perception and travel intention during and after the pandemic, which opposed prior work (Li & Ito, 2021). People may have had stronger travel intentions because the COVID-19 vaccine had become widely available in the United States and a significant number of people had received the vaccine at the time of

data collection. According to the Centers for Disease Control and Prevention (CDC), roughly 147.5 million people in the United States (44.4% of the total population) had received the first dose of their vaccine as of April 2021; 105.5 million (31.8% of the total population) were fully vaccinated (CDC, 2021). Other factors may influence travel intention as well. For instance, individuals' desire to travel might significantly exceed their potential perceived risk. Others could have taken preventive actions that afforded them confidence in their ability to cope with COVID-19. This study compared the effect of risk perception on travel intention during the pandemic with travel intention after the pandemic. Even though the average mean of travel intention after the pandemic was higher than that during the pandemic, risk perception positively influenced travel intention during and after the pandemic. As such, the impact of risk perception on travel intention did not differ during and after the pandemic.

The results additionally show that vaccinated and unvaccinated respondents possessed varying travel intentions amid COVID-19. Most notably, when people had received the COVID-19 vaccine, their intentions to travel during the pandemic were greater than for unvaccinated people. Vaccination was thus a significant factor in individuals' travel intentions.

Model testing for each group demonstrated between-group variation in several relationships. Vaccinated people's emotions were more affected by mass media, whereas unvaccinated people were more influenced by interpersonal communication. Additionally, when unvaccinated people were fearful of COVID-19, they tended to perceive a higher risk than vaccinated people. Vaccinated people perceived higher risk than the unvaccinated when feeling anxious. Emotions hence played different roles in the

relationships among communication sources and risk perceptions of vaccinated and unvaccinated respondents. Although vaccinated people displayed stronger travel intentions during the pandemic than unvaccinated people, a significant positive influence of risk perception on travel intention manifested in both groups. Of note, this study investigated behavioral intention rather than actual behavior; individuals who perceived higher risk might not travel during the pandemic but still intend to do so.

Overall, this study provides a comprehensive understanding of how information sources, emotions, and self-efficacy influence risk perception and travel intention based on the developed structural model. Model results supported some hypotheses but did not lend support to others. Comparisons of vaccinated and unvaccinated groups showed that both groups differed in their travel intentions and in terms of the research model. These findings should benefit tourism organizations as well as the tourism literature.

5.2 THEORETICAL IMPLICATIONS

This study offers theoretical and practical implications. First, from a theoretical perspective, this study extends the differential impact hypothesis; that is, media genres affect personal and societal risk perceptions differently. Although this study only focused on personal risk perception, the differential impact hypothesis was expanded through the integration of two additional information sources, social media exposure, interpersonal communication, and mass media. Emotions also constituted a significant mediator. Group differences in travel intention and in the research model emerged as well.

Second, this study applied theories from psychology and communication to tourism. Scholars in both fields have studied the information individuals receive along with their risk perceptions. The current research was guided by the differential impact

hypothesis and social amplification of risk framework. Previous work examined the effects of mass media exposure and interpersonal communication on risk perception (Morton & Duck, 2001; Oh et al., 2015; Snyder & Rouse, 1995; Tyler & Cook, 1984), and the popularity of social media has led to studies confirming a significant relationship between such platforms and risk perception (Choi et al., 2017; Han et al., 2014; Oh et al., 2020; Yoo et al., 2018). Researchers have also deemed negative emotions essential to risk perception and hence formulated the risk-as-feelings hypothesis and the affect heuristic (Loewenstein et al., 2001; Slovic et al., 2007). Paek et al. (2016) recently examined the significant impact of fear on risk perception, and Oh et al. (2020) investigated the roles of fear and anger in the relationship between social media exposure and risk perception. This study draws upon literature in the psychology and communication disciplines to build a theoretical link between communication, psychology, and tourism.

Finally, this study contributes to the tourism literature by addressing the timely COVID-19 pandemic. A structural model was established to investigate individuals' risk perceptions and travel intentions. The research specifically explored the effects of mass media exposure, social media exposure, interpersonal communication, and emotions (e.g., fear, anger, and anxiety) on individuals' risk perceptions and travel intentions during the pandemic. Findings enhance understanding of tourists' psychological responses to different information sources and corresponding travel intentions.

5.3 PRACTICAL IMPLICATIONS

This study has practical implications as well. Findings revealed significant effects of different information sources on individuals' emotions and risk perceptions during the pandemic. COVID-19 has persisted over the past year, wreaking havoc on hospitality and

tourism. Various industry businesses have recently reopened and begun to recover as more people receive the vaccine; however, the virus will likely continue to be a concern until most people are fully vaccinated. It is therefore crucial to understand how people perceive associated risk and what influences these perceptions.

The proposed structural model offers several practical implications for hospitality and tourism service providers. First, tourism practitioners must leverage effective communication channels to reach consumers during the pandemic. Findings from this study can help service providers better understand individuals' emotional responses to COVID-19-related information obtained via various communication channels, informing the development of relevant strategies. Different information sources were also found to significantly influence how COVID-19-related information affects people's emotions and risk perceptions. Mass media was the only source to directly and indirectly influence these variables. Hospitality and tourism organizations should therefore pay closer attention to mass media by disseminating information on safety, cleanliness, and hygiene to mitigate consumers' fear, anger, anxiety, and risk perceptions.

Second, the results of this study reflected the effects of interpersonal communication on emotions and risk perception: people experienced fear and anxiety upon receiving COVID-19-related information from others, leading to heightened risk perceptions. Service providers cannot control what people discuss; however, they can monitor how they deliver customer service by attending to customers' safety concerns. After customers consume products and services or experience a sense of security in a destination, they may spread positive word of mouth via informal interpersonal

communication. Personal conversations can thus potentially alleviate others' fear, anxiety, and risk perceptions.

Third, social media was found to have less influence on individuals' risk perceptions than other information sources as it only affected such perceptions through fear. One possible reason is that individuals primarily use social media for entertainment. Therefore, practitioners in the hospitality and tourism sector may turn to other communication channels to reduce consumers' negative emotions and risk perceptions. Social media can be used to communicate with customers for other purposes.

Lastly and unexpectedly, people expressed strong intentions to travel during and after the COVID-19 pandemic despite perceiving a higher risk associated with COVID-19. Respondents particularly preferred to travel with family, by car, and within the United States during the pandemic. Tourism providers would be wise to target these tourists and design products and services to satisfy their needs.

5.4 LIMITATIONS AND FUTURE RESEARCH

This study is not without limitations. First, the sample consisted solely of U.S. participants. People in other countries may perceive the risk of COVID-19 differently. Subsequent research can compare participants in the United States with those in other countries.

Second, travel intention was the outcome variable in the research model, which concentrated on the impact of risk perception on this intention. Researchers should apply this model to other hospitality and tourism areas. For example, scholars can explore individuals' behavioral intentions (e.g., purchase intentions) during the COVID-19 pandemic in the hotel, restaurant, airline, and meeting sectors.

Third, all survey items were adapted from the literature. Average scores were also applied to create composite variables (e.g., mass media exposure and interpersonal communication), and a single item represented social media exposure. Considering the issues related to sum scores and a single item (Hair et al., 2017), future studies could develop reflective or formative measurements to assess chosen constructs.

Last, a significantly positive relationship was surprisingly discovered between risk perception and travel intention during and after the pandemic. Additional factors could lead to strong travel intentions even among people who perceive a greater risk of COVID-19. Future research is needed to uncover the factors affecting travel intention, such as individuals' desire to travel, attitudes, and perceived behavioral control. For instance, if a person's desire to travel is exceptionally high—beyond the risk perceived due to restricted travel policies over the past year—then they may plan to travel despite perceiving a high level of risk. In addition, one's attitude toward travel and perceived behavioral control appear crucial in the relationship between risk perception and travel intention during the pandemic (Sánchez-Cañizares et al., 2020). Lee et al. (2012) also identified a significant role of non-pharmaceutical interventions in the relationship between risk perception and travel intention. Future studies should seek to discern other possible mediators between risk perception and travel intention.

5.5 CHAPTER SUMMARY

This chapter presented the study results and their relevance to earlier research. Theoretical and practical implications were also provided. Findings advanced the hospitality and tourism literature by providing a comprehensive structural model and offering service providers a thorough understanding of consumers' emotions and risk

perceptions during the COVID-19 pandemic. These results can help organizations craft effective communication strategies. This chapter also addressed the study's limitations and outlined directions for future research.

REFERENCES

Ali, K., Zain-ul-abdin, K., Cong, L., Johns, L., Ali, A. A., & Carcioppolo, N. (2019). Viruses Going Viral: Impact of Fear-Arousing Sensationalist Social Media Messages on User Engagement. *Journal of Business and Psychology*, *32*(3), 301-315.

Bae, S. Y., & Chang, P.-J. (2020). The effect of coronavirus disease-19 (COVID-19) risk perception on behavioural intention towards 'untact'tourism in South Korea during the first wave of the pandemic (March 2020). *Current Issues in Tourism*, 1-19.

Bandura, A. (1990). Perceived self-efficacy in the exercise of control over AIDS infection. *Evaluation and program planning*, *13*(1), 9-17.

Brug, J., Aro, A. R., Oenema, A., De Zwart, O., Richardus, J. H., & Bishop, G. D. (2004). SARS risk perception, knowledge, precautions, and information sources, the Netherlands. *Emerging infectious diseases*, *10*(8), 1486.

CDC. (2020). *Things to Know about the COVID-19 Pandemic*. https://www.cdc.gov/coronavirus/2019-ncov/your-health/need-to-know.html

CDC. (2021). COVID-19 Vaccinations in the United States. https://covid.cdc.gov/covid-data-tracker/#vaccinations

Chan, M.-p. S., Winneg, K., Hawkins, L., Farhadloo, M., Jamieson, K. H., & Albarracín, D. (2018). Legacy and social media respectively influence risk perceptions and

protective behaviors during emerging health threats: A multi-wave analysis of communications on Zika virus cases. *Social Science & Medicine, 212*, 50-59.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research, 295*(2), 295-336.

Choi, D.-H., Yoo, W., Noh, G.-Y., & Park, K. (2017). The impact of social media on risk perceptions during the MERS outbreak in South Korea. *Computers in Human Behavior, 72*, 422-431. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7126097/pdf/main.pdf

Chong, M., & Choy, M. (2018). The social amplification of haze-related risks on the Internet. *Health communication, 33*(1), 14-21.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *NJ Lawrence Earlbaum Associates*.

Coleman, C.-L. (1993). The influence of mass media and interpersonal communication on societal and personal risk judgments. *Communication Research, 20*(4), 611-628.

Dillard, A. J., Ferrer, R. A., Ubel, P. A., & Fagerlin, A. (2012). Risk perception measures' associations with behavior intentions, affect, and cognition following colon cancer screening messages. *Health psychology, 31*(1), 106.

Do, H. J., Lim, C.-G., Kim, Y. J., & Choi, H.-J. (2016). Analyzing emotions in twitter during a crisis: A case study of the 2015 Middle East Respiratory Syndrome outbreak in Korea. 2016 international conference on big data and smart computing (BigComp),

Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L., Recchia, G., Van Der Bles, A. M., Spiegelhalter, D., & van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research*, 1-13.

Dunlop, S., Wakefield, M., & Kashima, Y. (2008). Can you feel it? Negative emotion, risk, and narrative in health communication. *Media Psychology, 11*(1), 52-75.

Floyd, M. F., Gibson, H., Pennington-Gray, L., & Thapa, B. (2004). The effect of risk perceptions on intentions to travel in the aftermath of September 11, 2001. *Journal of Travel & Tourism Marketing, 15*(2-3), 19-38.

Freimuth, V. S., & Hovick, S. R. (2012). Cognitive and emotional health risk perceptions among people living in poverty. *Journal of health communication, 17*(3), 303-318.

Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Wang, Y., Fu, H., & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. *PloS one, 15*(4), e0231924.

Garson, G. D. (2016). *Partial least squares. Regression and structural equation models*.

Golets, A., Farias, J., Pilati, R., & Costa, H. (2020). COVID-19 pandemic and tourism: The impact of health risk perception and intolerance of uncertainty on travel intentions.

Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. *Journal of Sustainable Tourism*, *29*(1), 1-20.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM), 2nd Ed*. Sage publications.

Han, G., Zhang, J., Chu, K., & Shen, G. (2014). Self–other differences in H1N1 flu risk perception in a global context: a comparative study between the United States and China. *Health communication, 29*(2), 109-123.

Hassan, M. S., Al Halbusi, H., Najem, A., Razali, A., Williams, K. A., & Mustamil, N. M. (2020). Impact of Risk Perception on Trust in Government and Self-Efficiency During COVID-19 pandemic: Does Social Media Content Help Users Adopt Preventative Measures?

Hu, L.-t., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological methods, 3*(4), 424.

Huang, X., Dai, S., & Xu, H. (2020). Predicting tourists' health risk preventative behaviour and travelling satisfaction in Tibet: Combining the theory of planned behaviour and health belief model. *Tourism Management Perspectives, 33*, 100589.

Ivanova, M., Ivanov, I. K., & Ivanov, S. (2020). Travel behaviour after the pandemic: the case of Bulgaria. *Anatolia*, 1-11.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36.

Kasperson, R. E., Renn, O., Slovic, P., Brown, H. S., Emel, J., Goble, R., Kasperson, J. X., & Ratick, S. (1988). The social amplification of risk: A conceptual framework. *Risk analysis, 8*(2), 177-187.

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec), 11*(4), 1-10.

Koo, C., Joun, Y., Han, H., & Chung, N. (2016). A structural model for destination travel intention as a media exposure. *International Journal of Contemporary Hospitality Management*.

Lee, C.-K., Song, H.-J., Bendle, L. J., Kim, M.-J., & Han, H. (2012). The impact of non-pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: A model of goal-directed behavior. *Tourism Management, 33*(1), 89-99.

Lerner, J. S., Gonzalez, R. M., Small, D. A., & Fischhoff, B. (2003). Effects of fear and anger on perceived risks of terrorism: A national field experiment. *Psychological science, 14*(2), 144-150.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & emotion, 14*(4), 473-493.

Li, J., Nguyen, T. H. H., & Coca-Stefaniak, J. A. (2020). Coronavirus impacts on post-pandemic planned travel behaviours. *Annals of Tourism Research*.

Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. (2020). The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *International journal of environmental research and public health, 17*(6), 2032.

Li, S. R., & Ito, N. (2021). "Nothing Can Stop Me!" Perceived Risk and Travel Intention Amid the COVID-19 Pandemic: A Comparative Study of Wuhan and Sapporo. In *Information and Communication Technologies in Tourism 2021* (pp. 490-503). Springer.

Lin, C. A., & Lagoe, C. (2013). Effects of news media and interpersonal interactions on H1N1 risk perception and vaccination intent. *Communication Research Reports, 30*(2), 127-136.

Liu, L., Xie, J., Li, K., & Ji, S. (2020). Exploring How Media Influence Preventive Behavior and Excessive Preventive Intention during the COVID-19 Pandemic in China. *International journal of environmental research and public health, 17*(21), 7990.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological bulletin, 127*(2), 267.

Luo, J. M., & Lam, C. F. (2020). Travel Anxiety, Risk Attitude and Travel Intentions towards "Travel Bubble" Destinations in Hong Kong: Effect of the Fear of COVID-19. *International journal of environmental research and public health, 17*(21), 7859.

Mahmoud, A. E.-B. A. H., & Abdelbaki, O. F. (2019). Behavioral Intentions and Cognitive-Affective Effects of Exposure to YouTube Advertisements among College Students. 21-1), 18(2019, المجلة العلمية لبحوث العلاقات العامة و الإعلان.

Maser, B., & Weiermair, K. (1998). Travel decision-making: From the vantage point of perceived risk and information preferences. *Journal of Travel & Tourism Marketing, 7*(4), 107-121.

Moreira, P. (2008). Stealth risks and catastrophic risks: On risk perception and crisis recovery strategies. *Journal of Travel & Tourism Marketing, 23*(2-4), 15-27.

Morton, T. A., & Duck, J. M. (2001). Communication and health beliefs: Mass and interpersonal influences on perceptions of risk to self and others. *Communication Research, 28*(5), 602-626.

Motta Zanin, G., Gentile, E., Parisi, A., & Spasiano, D. (2020). A Preliminary Evaluation of the Public Risk Perception Related to the COVID-19 Health Emergency in Italy. *International journal of environmental research and public health, 17*(9), 3024.

Nazione, S., Perrault, E., & Pace, K. (2021). Impact of Information Exposure on Perceived Risk, Efficacy, and Preventative Behaviors at the Beginning of the COVID-19 Pandemic in the United States. *Health communication, 36*(1), 23-31.

Nazneen, S., Hong, X., & Ud Din, N. (2020). COVID-19 Crises and Tourist Travel Risk Perceptions. *Available at SSRN 3592321*.

Neuburger, L., & Egger, R. (2020). Travel risk perception and travel behaviour during the COVID-19 pandemic 2020: a case study of the DACH region. *Current Issues in Tourism*, 1-14.

Nunnally, J. C. (1994). *Psychometric theory 3E*. Tata McGraw-hill education.

Oh, S.-H., Lee, S. Y., & Han, C. (2020). The effects of social media use on preventive behaviors during infectious disease outbreaks: The mediating role of self-relevant emotions and public risk perception. *Health communication*, 1-10.

Oh, S.-H., Paek, H.-J., & Hove, T. (2015). Cognitive and emotional dimensions of perceived risk characteristics, genre-specific media effects, and risk perceptions: the case of H1N1 influenza in South Korea. *Asian Journal of Communication, 25*(1), 14-32.

Paek, H.-J., Oh, S.-H., & Hove, T. (2016). How fear-arousing news messages affect risk perceptions and intention to talk about risk. *Health communication, 31*(9), 1051-1062.

Park, K., & Reisinger, Y. (2010). Differences in the perceived influence of natural disasters and travel risk on international travel. *Tourism Geographies, 12*(1), 1-24.

Perić, G., Dramićanin, S., & Conić, M. (2021). The impact of Serbian tourists' risk perception on their travel intentions during the COVID-19 pandemic. *European Journal of Tourism Research, 27*, 2705.

Pidgeon, N., Hood, C., Jones, D., Turner, B., & Gibson, R. (1992). Risk perception. *Risk: Analysis, perception and management*, 89-134.

Reisinger, Y., & Mavondo, F. (2005). Travel anxiety and intentions to travel internationally: Implications of travel risk perception. *Journal of travel research, 43*(3), 212-225.

Rittichainuwat, B. N., & Chakraborty, G. (2009). Perceived travel risks regarding terrorism and disease: The case of Thailand. *Tourism Management, 30*(3), 410-418.

Roehl, W. S., & Fesenmaier, D. R. (1992). Risk perceptions and pleasure travel: An exploratory analysis. *Journal of travel research, 30*(4), 17-26.

Sánchez-Cañizares, S. M., Cabeza-Ramírez, L. J., Muñoz-Fernández, G., & Fuentes-García, F. J. (2020). Impact of the perceived risk from Covid-19 on intention to travel. *Current Issues in Tourism*, 1-15.

Shearer, E. (2021). *More than eight-in-ten Americans get news from digital devices.* Pew Research Center. https://www.pewresearch.org/fact-tank/2021/01/12/more-than-eight-in-ten-americans-get-news-from-digital-devices/

Shepperd, J. A., Waters, E. A., Weinstein, N. D., & Klein, W. M. (2015). A primer on unrealistic optimism. *Current directions in psychological science, 24*(3), 232-237.

Shim, M., & You, M. (2015). Cognitive and affective risk perceptions toward food safety outbreaks: mediating the relation between news use and food consumption intention. *Asian Journal of Communication, 25*(1), 48-64.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2007). The affect heuristic. *European journal of operational research, 177*(3), 1333-1352.

Slovic, P., & Weber, E. U. (2002). Perception of risk posed by extreme events. *Regulation of Toxic Substances and Hazardous Waste (2nd edition)(Applegate, Gabba, Laitos, and Sachs, Editors), Foundation Press, Forthcoming*.

Snyder, L. B., & Rouse, R. A. (1995). The media can have more than an impersonal impact: The case of AIDS risk perceptions and behavior. *Health communication, 7*(2), 125-145.

So, J., Kuang, K., & Cho, H. (2016). Reexamining fear appeal models from cognitive appraisal theory and functional emotion theory perspectives. *Communication Monographs, 83*(1), 120-144.

So, J., Kuang, K., & Cho, H. (2019). Information seeking upon exposure to risk messages: Predictors, outcomes, and mediating roles of health information seeking. *Communication Research, 46*(5), 663-687.

Sönmez, S. F., & Graefe, A. R. (1998). Determining future travel behavior from past travel experience and perceptions of risk and safety. *Journal of travel research, 37*(2), 171-177.

Statista. (2020a). *Coronavirus: impact on the tourism industry worldwide - Statistics & Facts*. https://www.statista.com/topics/6224/covid-19-impact-on-the-tourism-industry/

Statista. (2020b). *Coronavirus (COVID-19): vaccines and treatments*. https://www.statista.com/topics/6172/coronavirus-covid-19-vaccines-and-treatments/

Statista. (2021). *Public opinion on the most important factors when deciding to go on vacation after a coronavirus (COVID-19) vaccine is available in the United States as of March 2021*. https://www.statista.com/statistics/1229452/us-opinion-on-travel-after-covid-19-vaccine-available/

Tabachnick, B. G., & Fidell, L. S. (2001). Principal components and factor analysis. *Using multivariate statistics, 4*(1), 582-633.

Tsaur, S.-H., Tzeng, G.-H., & Wang, K.-C. (1997). Evaluating tourist risks from fuzzy perspectives. *Annals of Tourism Research, 24*(4), 796-812.

Tyler, T. R. (1980). Impact of directly and indirectly experienced events: The origin of crime-related judgments and behaviors. *Journal of Personality and Social Psychology, 39*(1), 13.

Tyler, T. R., & Cook, F. L. (1984). The mass media and judgments of risk: Distinguishing impact on personal and societal level judgments. *Journal of Personality and Social Psychology, 47*(4), 693.

UNWTO. (2020). *Tourism Back to 1990 Levels as Arrivals Fall by More than 70%.* https://www.unwto.org/news/tourism-back-to-1990-levels-as-arrivals-fall-by-more-than-70

Wachyuni, S. S., & Kusumaningrum, D. A. (2020). The Effect of COVID-19 Pandemic: How are the Future Tourist Behavior? *Journal of Education, Society and Behavioural Science*, 67-76.

Wilson, M. E. (1995). Travel and the emergence of infectious diseases. *Emerging infectious diseases, 1*(2), 39.

World Health Organization. (2020). *WHO Coronavirus Disease (COVID-19) Dashboard*. https://covid19.who.int/

Wu, X., & Li, X. (2017). Effects of mass media exposure and social network site involvement on risk perception of and precautionary behavior toward the haze issue in China. *International Journal of Communication, 11*, 23.

Yang, J. Z., & Chu, H. (2018). Who is afraid of the Ebola outbreak? The influence of discrete emotions on risk perception. *Journal of Risk Research, 21*(7), 834-853.

Yıldırım, M., Arslan, G., & Özaslan, A. (2020). Perceived risk and mental health problems among healthcare professionals during COVID-19 pandemic: exploring the mediating effects of resilience and coronavirus fear. *International journal of mental health and addiction,* 1-11.

Yıldırım, M., & Güler, A. (2020). Factor analysis of the COVID-19 Perceived Risk Scale: A preliminary study. *Death Studies*, 1-8.

Yoo, W., Paek, H.-J., & Hove, T. (2018). Differential effects of content-oriented versus user-oriented social media on risk perceptions and behavioral intentions. *Health communication*.

Yu, Q., & Mao, W. (2020). Effectiveness of communication on epidemic personal protection with community residents via new media during COVID-19 outbreak: Data from China. *Journal of Media and Communication Studies, 12*(3), 23-38.

Zeballos Rivas, D. R., Lopez Jaldin, M. L., Nina Canaviri, B., Portugal Escalante, L. F., Alanes Fernández, A. M., & Aguilar Ticona, J. P. (2021). Social media exposure, risk perception, preventive behaviors and attitudes during the COVID-19 epidemic in La Paz, Bolivia: A cross sectional study. *PloS one, 16*(1), e0245859.

Zhan, L., Zeng, X., Morrison, A. M., Liang, H., & Coca-Stefaniak, J. A. (2020). A risk perception scale for travel to a crisis epicentre: Visiting Wuhan after COVID-19. *Current Issues in Tourism*, 1-18.

Zhu, H., & Deng, F. (2020). How to influence rural tourism intention by risk knowledge during COVID-19 Containment in China: mediating role of risk perception and attitude. *International journal of environmental research and public health, 17*(10), 3514.

APPENDIX A

QUESTIONNAIRE

Dear Participants,

My name is Chunsheng Jin. I am a graduate student studying Hospitality and Tourism Management at the University of South Carolina. You are invited to participate in this study.

I am studying individuals' risk perceptions and travel intention during the COVID-19 pandemic. If you decide to participate, you will fill out an online survey. The survey will include some questions directly related to COVID-19, like questions about your information exposure, risk perception, emotions, travel intention, and so forth. Some demographic questions such as age, gender, income, race, and education will also be asked. The study will take about 10 minutes.

This study is targeted at adults in the United States; thus, respondents should be 18 or older and have continuously lived in the United States during the COVID-19 pandemic.

Your participation is entirely voluntary and anonymous. Participating in the study is your decision. You may discontinue participation in the study at any time. All information you provide will be kept confidential. You will receive $ 0.75 for your participation.

Please feel free to contact me at cjin@email.sc.edu if you have any questions about the study. If you have any questions about your rights as a research participant, you

may contact the Office of Research Compliance at the University of South Carolina at 803-777-7095.

Thank you for your participation. If you would like to participate in this study, please click "Yes" for each of the following questions and start the survey. If you do not want to take the survey, please click "No" and you will be exited from the survey.

Best regards,

Chunsheng Jin

	Yes	No
I am age 18 or older.	○	○
I have lived in the United States for the entire year (March 2020 ~ Present) during the COVID-19 pandemic.	○	○
I want to participate in this study and continue with the study.	○	○

Information Exposure

How often have you read, watched, or heard anything about COVID-19 from the following mass media channels over the past year?

	Not at all			Sometimes			Very often
Television news programs	○	○	○	○	○	○	○
Print newspapers	○	○	○	○	○	○	○
News apps on mobile phones/news websites	○	○	○	○	○	○	○
Radio (e.g., traditional and internet-based radio)	○	○	○	○	○	○	○
Generally speaking, how often have you	○	○	○	○	○	○	○

received the information of COVID-19 from the mass media (the above-mentioned forms of mass media) over the past year?							

How often have you read, watched, or heard anything about COVID-19 from social media, such as Facebook, Twitter, Instagram, YouTube, blogs and etc. over the past year?

Not at all	○	○	○	○	○	○	○	Very often

How much have the following people talked to you about COVID-19 over the past year?

	Not at all			A moderate amount			A great deal
Peers (e.g., colleagues, classmates, friends)	○	○	○	○	○	○	○
Family	○	○	○	○	○	○	○
Health care professionals (e.g., doctors, nurses)	○	○	○	○	○	○	○
Other people	○	○	○	○	○	○	○
Generally speaking, how much have you received the information of COVID-19 from the different people (the above-mentioned people) over the past year?	○	○	○	○	○	○	○

Thinking about the information about COVID-19 you have received from the following sources: Mass media (e.g., Television news, newspapers, news websites, radio), Social media (e.g., Facebook, Twitter, Instagram, etc.), and Interpersonal communication (e.g., Peers, family, other people),

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
COVID-19 Information I received from Mass media is accurate.	○	○	○	○	○	○	○
COVID-19 Information I received from Mass media is relevant.	○	○	○	○	○	○	○
COVID-19 Information I received from Social media is accurate.	○	○	○	○	○	○	○
COVID-19 Information I received from Social media is relevant.	○	○	○	○	○	○	○
COVID-19 Information I received from Interpersonal communication is accurate.	○	○	○	○	○	○	○
COVID-19 Information I received from Interpersonal communication is relevant.	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The source of Mass media providing the COVID-19 information is trustworthy.	○	○	○	○	○	○	○
The source of Mass media providing the COVID-19 information is credible.	○	○	○	○	○	○	○
Please select the option representing 'Strongly agree'	○	○	○	○	○	○	○
The source of Social media providing the COVID-19 information is trustworthy.	○	○	○	○	○	○	○
The source of Social media providing the COVID-19 information is credible.	○	○	○	○	○	○	○
The source of Interpersonal communication is trustworthy.	○	○	○	○	○	○	○
The source of Interpersonal communication is credible.	○	○	○	○	○	○	○

Emotions: Fear, Anger, and Anxiety

Please indicate the degree to which you agree or disagree with the following statements regarding your fear level.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am fearful of COVID- 19.	○	○	○	○	○	○	○
I am frightened by COVID-19.	○	○	○	○	○	○	○
I am scared of COVID- 19.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements regarding your anger level.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am angry with COVID- 19.	○	○	○	○	○	○	○
I am irritated at COVID- 19.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements regarding your anxiety level.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am anxious about contracting COVID-19.	○	○	○	○	○	○	○
I am worried about contracting COVID-19.	○	○	○	○	○	○	○

I am concerned about contracting COVID-19.	○	○	○	○	○	○	○

Self-Efficacy

Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I can avoid COVID-19 infection.	○	○	○	○	○	○	○
I know how to avoid COVID-19.	○	○	○	○	○	○	○
I can overcome infection even if I am infected by COVID-19.	○	○	○	○	○	○	○

Risk Perception

Please indicate the degree to which you agree or disagree with the following statements regarding your risk perception.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
COVID-19 is a serious problem.	○	○	○	○	○	○	○
COVID-19 is a frightening disease.	○	○	○	○	○	○	○
I am very likely to get the COVID-19.	○	○	○	○	○	○	○
If I get the COVID-19, it will be severe.	○	○	○	○	○	○	○
If I get the COVID-19, it will be risky.	○	○	○	○	○	○	○

Travel Intention

Please indicate the degree to which you agree or disagree with the following statements regarding your travel intention **during** the COVID-19 pandemic.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
During the COVID-19 pandemic, I intend to travel.	○	○	○	○	○	○	○
During the COVID-19 pandemic, If I need to travel for work, I intend to do so.	○	○	○	○	○	○	○
During the COVID-19 pandemic, If I need to travel for leisure, I intend to do so.	○	○	○	○	○	○	○

Please indicate the degree to which you agree or disagree with the following statements regarding your travel intention **after** the COVID-19 pandemic ends.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
After the COVID-19 pandemic, I intend to travel.	○	○	○	○	○	○	○
After the COVID-19 pandemic, If I need to travel for work, I intend to do so.	○	○	○	○	○	○	○
After the COVID-19 pandemic, If I need to travel for leisure, I intend to do so.	○	○	○	○	○	○	○

Travel Preferences

Please select *all* your travel preferences **during** the COVID-19 pandemic.

- ☐ I prefer domestic trip during the pandemic.
- ☐ I prefer to travel internationally during the pandemic.
- ☐ I prefer to travel with family during the pandemic.
- ☐ I prefer to travel with friends during the pandemic.
- ☐ I prefer travel by car during the pandemic.
- ☐ I prefer travel by airplane during the pandemic.
- ☐ I prefer to travel to destinations where service providers pay more attention to hygiene and cleaning during the pandemic.
- ☐ Other preferences (Please specify) _____

Please select *all* your travel preferences **after** the COVID-19 pandemic ends.

- ☐ I prefer domestic trip after the pandemic.
- ☐ I prefer to travel internationally after the pandemic.
- ☐ I prefer to travel with family after the pandemic.
- ☐ I prefer to travel with friends after the pandemic.
- ☐ I prefer travel by cars after the pandemic.
- ☐ I prefer travel by airplane after the pandemic.
- ☐ I prefer to travel to destinations where service providers pay more attention to hygiene and cleaning after the pandemic.
- ☐ Other preferences (Please specify) _____

Demographic Questions

Have you fully received COVID-19 vaccine?

1) Yes
2) No

What is your gender?

1) Male
2) Female
3) Prefer not to say

What is your age? _____

What is your political affiliation?

1) Democrat
2) Republican
3) Independent
4) Prefer not to say

What is your religion?

1) Christianity
2) Judaism
3) Islam
4) Buddhism
5) Prefer not to say
6) Other (Please specify) _____

What is your current marital status?

1) Married
2) Single

3) Widowed/Divorced/Separated

What is the highest level of education you have completed?

1) High school degree or lower
2) Some college or Associate degree
3) Bachelor's degree
4) Graduate degree or above

What was your total household income before taxes during the past 12 months?

1) Less than $20,000
2) $20,000-$40,000
3) $40,001-$60,000
4) $60,001-$80,000
5) $80,001-$100,000
6) $100,001-$150,000
7) $150,001-$200,000
8) $200,001-$300,000
9) $300,001 or above

What is your current employment status?

1. Student
2. Full-Time Employed
3. Part-Time Employed
4. Unemployed and looking for work
5. Homemaker or stay-at-home parent
6. Retired

What is your ethnic group?

1) Caucasian
2) African American
3) Hispanic
4) Asian
5) Native American
6) Multi-racial
7) Prefer not to say
8) Other (Please specify) _____

Thank you for completing the survey!