

Article

How Has COVID-19 Changed the Way We Travel? Exploring Tourist Personality, Reactions to the Perceived Risk and Change in Travel Behavior

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Abstract: The COVID-19 pandemic created novel conditions for researching travel behavior and tourists' reactions in times of crisis, which largely differs from previous studies of travel behavior affected by local risks or lower travel and recreational risks. This study aims to provide an understanding of the relationship between tourist personality (MINI IPIP-6 and sensation seeking), tourists' reactions to travel risk perception and changes in their travel behavior influenced by the COVID-19 pandemic. To explore this, a global survey including 905 respondents from four countries (Spain, Croatia, Serbia and Russia) was conducted, while data were analyzed by Structural Equation Modeling (SEM) in AMOS. The findings suggest that tourist personality affects the changes in travel behavior influenced by COVID-19, both directly and via their reactions to travel risk.

Keywords: tourist personality; travel risk perception; travel behavior; COVID-19



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1. Introduction

The tourism industry has experienced many challenges up to now, some of them having global effects, such as the 9/11 attacks, financial crisis of 2008–2010, the epidemic of SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) and many others [1]. It was the third time in less than two decades that the world was hit by epidemics caused by a coronavirus [2], but the magnitude and effect of the new coronavirus (COVID-19) seemed to be without precedence [3]. Its fast spreading all over the world created fear among people [4], so even before the introduction of travel restrictions by various countries, many travelers started canceling their trips due to the fear and concern for their safety and security [5]. What is evident is that not all travelers responded the same to the crisis, some showing more restricted travel behavior than others. Thus, the current study is based on the belief that such differences in behavior are dependent on tourist personality and different reactions to the perceived risks. Hence, in the times ahead, the tourism industry needs to capture the psychological profile of people and explore how it relates to their travel behavioral responses to crises. This would mean differentiating the personality of those who will still travel without their changing behavior and those who would travel with restrictions or would cancel all their trips. Such information could assist managers in creating their promotional and re-branding campaigns.

Given this situation, it is necessary to bear in mind that research on travel behavior in risky situations is not a novel area of research. Many authors acknowledged that tourists

perceive and respond to risks differently based on their personality traits [6–12]. However, such studies were mainly based on natural hazards that occurred locally or on lower to moderate recreational and travel risks. When it comes to global risks, such as COVID-19 or previous epidemics of SARS, researchers specifically pointed out the importance of exploring travel behavior during times of crisis [13]. However, the study of Wen, Huimin and Kavanaugh [13] focused on travel behavior in general, without seeking empirical explanations of such behavior. The current study intends to go further by exploring the impact of tourist personality on tourists' reactions to the perceived risk and their change in travel behavior influenced by COVID-19. Besides the six basic personality traits, which are measured by the Mini IPIP-6 model, the study also explored how sensation seeking traits affect reactions to travel risks as well as changes in travel behavior in times of crisis. In light of this, three main research questions have been formed:

RQ1: How do tourists with different personality traits differ in their reactions to travel risk perception?

RQ2: How do tourists' reactions to travel risk affect change in travel behavior in the time of coronavirus?

RQ3: Are these relationships moderated by the announcement of the coronavirus pandemic?

In this paper, the official announcement of a coronavirus pandemic (11 March 2020) has been explored as a moderating variable, as we suppose that this “event” created more fear among people and moderated the influence of their personality on the reactions to travel risk and changes in travel behavior. Thus, this paper intends to find the answers to this research question and thus contribute to the theoretical knowledge in the field of travel behavior in risky times.

2. Literature Review and Hypothesis Development

2.1. COVID-19 and Tourism Studies

In the past two years, the influence of COVID-19 on tourism has been studied from many different perspectives. Besides numerous papers that dealt with managerial aspects of coping with the COVID crisis in tourism destinations and COVID-19 impacts on destinations [1,14–23], a significant number of studies also focused on tourist behavior in the time of crisis [21,24–31], due to its important practical and theoretical importance for the tourism industry. According to Yang, Zhang and Rickly [32] who have done a systematic literature review of early COVID-19 papers, some of the most popular topics referring to tourist behavior during COVID-19 included tourists' perceptions, intention to visit, psychology and their well-being.

According to them, papers dealing with the psychological effects and behavior of tourists mainly focused on how people feel about and respond to risk. Regarding psychological factors, some papers also explored the relationship between psychological traits and intention to visit [28,31,33], stress and fear caused by the pandemic [17,21,34], and adhering to pandemic rules [35]. However, there were no studies to explore the role of personality in tourists' reactions to the perceived risks and their changes in travel behavior influenced by COVID-19. The additional novelty of this study is that it tends to explore how the announcement of pandemics in the media affected the mentioned relationships.

2.2. Perception of Health Risk and Travel Behavior

People often avoid tourist destinations they perceive as “risky” for their safety and security [36]. No matter if these risks are health-related, or related to war, terrorism, political instability, crime or natural disasters, they greatly influence travel intentions and decision making [8,12,37–40]. Health risks, as an integral part of the nature of travel, could endanger the safety and security of travelers [41]. This can make tourists feel afraid, anxious and uncomfortable enjoying their travel or even going on a trip. In this way, the perception of risks largely influences tourist travel behavior [13,41]. In addition, a study by Wong and Yeh [42] indicated that tourists may react differently in cases where they feel that risks are too high; however, they do not explain what impacts such a difference in behavior.

There is a large body of literature concerning the impact of different risks on the tourism industry such as natural hazards [12,39,43,44], political instability and terrorism [45–48] or health-related risks such as SARS [13], MERS [49], malaria [50], etc. The study by Reisinger and Mavondo [8] found that tourists are the most concerned about terrorist threats, followed by health, financial and lastly, social and cultural risks. Moreover, they concluded that among all the risks associated with travel, political stability and a healthy environment that is free from epidemic disease, had a major effect on the tourist's perception of risk. The fact that makes the health risks, such as virus outbreaks, different in the context of tourism impacts is that they tend to spread globally and have an impact on a larger territory, compared to natural hazards or political instability which is usually related to the specific geographical region or location. When it comes to the existing studies on virus outbreaks and the travel industry, the literature is quite scarce, mainly focusing on the impacts on the travel industry and related sectors. The majority of papers deal with the impact of the first coronavirus SARS on the tourism industry [13,51,52]. These studies mainly showed that the outbreak of SARS influenced the changes in tourism behavior while traveling (reduced travel expenses, travel by land, travel to more isolated destinations, paying more attention to hygiene and safety when making travel decisions, are more interested in outdoor activities, eco-tourism and short-distance destinations) more than tourists' decision to travel. The first study on the influence of the COVID-19 outbreak on travel behavior was conducted by the M3 Center for Hospitality Technology and Innovation at the University of South Florida including 2000 travelers from more than 20 countries. This study showed that the perceived images of the affected areas are highly damaged, and 57.55% of respondents will not travel until the coronavirus threat is over.

Although some of these studies focused on the impact of risk on travel behavior and travel decisions, none of them have made the relation between tourists' reaction to the travel risk, their personality and their changes in travel behavior influenced by the risky situation. One study dealing with tourists' different reactions to risk has been conducted in the field of natural hazards by Thapa et al. [44], who analyzed wildfires in the context of Florida (USA). Their study identified three types of tourists based on their reactionary behaviors to the perceived risk—middle-risk Conscious Travelers (the most dominant), higher risk (Cautious Travelers) and lower risk (Courageous Travelers) segments. The current study intends to get a deeper insight into the psychological profile of those types of travelers and how these reactions to risks are related to the change in travel behavior influenced by the current global outbreak of COVID-19. Such findings could assist destination marketers and managers in creating their promotional and rebranding campaigns after the crisis. Tourism has been one of the sectors worst affected by the COVID-19 pandemic: hotels, restaurants, airlines and travel agencies had to stop their activity almost completely for a long period and only now touristic activity is slowly recovering back to pre-2020 levels. However, the pandemic has also accelerated the changes in tourist behavior and the transition to more sustainable models of tourism [53]. According to the UNWTO [54], international tourism is on track to reach 65% of pre-pandemic levels by the end of 2022, as the sector continues to recover from the pandemic. This indicates that destination marketers and managers still need to put extra effort to attract tourists by specifically tailored marketing and rebranding campaigns based on new research insights. In light of this, the current and similar research is still very much relevant in the post-pandemic period.

2.3. Perception of Health Risk and Travel Behavior

The notion that tourists show different travel behaviors in risky situations based on their personality is the idea that has intrigued scientists for almost five decades [7–12,55–57]. The existing studies dealing with crises and travel risks, as Aschauer [58] argues, focus on economic impacts rather than the psychological effects of tourism crises, without explaining the experience and behavior of travelers. Aschauer's [58] study intended to fill in this gap and explain perceptions of tourists at a risky destination affected by terrorism. His study revealed that psychological factors are those that matter. He found that openness for change

had the strongest influence on travel needs, while sensation seeking showed the only weak impact on security feelings during travel. Many studies claim that sensation seeking is related to risk perception and intention to visit risky destinations [6,7,9,10]. The majority of these studies show that people who score high in sensation seeking see destinations as less risky and show greater intention to visit them. However, Lepp and Gibson [6] argue that sensation seeking is not related to the perception of risk, but sensation seekers are more ready to travel to the regions of the world rated as riskier. In the context of this study, this would suggest that people who score high in sensation seeking will show less cautious travel behavior based on the perceived risk in times of crisis and would probably show greater intention to travel during risky times. Moreover, the study by Torres, Wei and Ridderstaat [59], which explored how sensation seeking affects tourists' willingness to purchase travel-related activities during COVID-19, revealed that sensation seeking is an important driver of consumers' willingness to purchase amidst the COVID-19 pandemic.

Based on this, the first hypothesis of the study is:

Hypothesis 1a. *Sensation seeking positively influences Courageous behavior.*

Hypothesis 1b. *Sensation seeking negatively influences Cautious behavior.*

When it comes to other personality traits and their influence on travel behavior and intention to visit risky locations, there are only a few studies in the tourism field. The study by Kovačić et al. [12] explored the role of six personality traits (Extraversion, Conscientiousness, Openness, Agreeableness, Neuroticism and Honesty–Humility) in travel behavior based on the perceived risk of natural hazards in Greece and found that Extraversion and Agreeableness positively influenced Conscious behavior. This indicates that people who are more extraverts and agreeable will still travel to a risky destination but in the case that they perceive as a moderate risk. Some other studies in tourism [8,60] also showed that extroverted and confident tourists will engage more frequently in risky activities. A few studies also explored the role of personality in tourists' intention to travel during the COVID-19 pandemic [28,31]. Tepavčević et al. [28] also concluded that travel intention during COVID-19 was positively influenced by Extroversion. Moreover, Talwar et al. [31] explored the influence of the Big Five personality traits on travel intentions during COVID-19 pandemics, and revealed that Extraversion had the strongest influence on intentions to travel during the pandemic. Based on this, we can suggest the following hypotheses:

Hypothesis 2. *Extraversion will positively influence Courageous behavior.*

Hypothesis 3a. *Agreeableness will positively influence Cautious behavior.*

Hypothesis 3b. *Agreeableness will negatively influence Courageous behavior.*

A study by Kovačić et al. [12] also showed that Conscientiousness positively influences Cautious behavior, meaning that conscientious people will certainly avoid such a destination even in case of low risk. Tepavčević et al. [28] also revealed that travel intention during COVID-19 was negatively affected by Conscientiousness. Taking into account that virus epidemics represent high health risks, it is also relevant to mention one study out of the tourism field, conducted by Weller and Tikir [61]. This study explored domain-specific risk taking and HEXACO personality (Extraversion, Emotionality, Agreeableness, Conscientiousness, Openness to Experience and Honesty–Humility). This study concluded that conscientiousness showed a significant negative effect on risk perception in all domains. In addition, Lee and Tseng [62] revealed that conscientiousness had a negative effect on the risk-taking attitude of recreationalists. Based on this, we suggest that:

Hypothesis 4a. *Conscientiousness will positively influence Cautious behavior.*

Hypothesis 4b. *Conscientiousness will negatively influence Courageous behavior.*

The study by Kovačić et al. [12] also revealed the negative influence of Openness on Cautious behavior is mediated by tourism worries. Moreover, Lee and Tseng [62] revealed that extraversion and openness positively influenced the risk-taking attitude of recreationalists. In addition, McCrae [63] found significant correlations between Openness to Experience and sensation-seeking traits, suggesting that we could expect similar relationships between these traits with behavior based on perceived risk. Talwar et al. [31] revealed that Openness to Experience had the strongest influence on travel intentions after the pandemic. Based on this, we suggest that:

Hypothesis 5. *Openness to Experience will influence Courageous behavior.*

The study by Korstanje [64] argued that risk perception is related to tourist personality, emphasizing the role of anxiety, which is tightly related to the personality trait neuroticism. This means that people who score high in neuroticism will be more cautious when deciding whether to travel in a risky period. Similarly, Tepavčević et al. [28] concluded that travel intention during COVID-19 was negatively affected by Neuroticism. Based on this, we suggest that:

Hypothesis 6. *Neuroticism will positively influence Cautious behavior.*

Weller and Tikir [61] revealed that in the health domain, emotionality impacts higher risk perceptions and risk taking, while lower Honesty–Humility was associated with greater health/safety risk taking but lower risk perceptions. Moreover, the study by Kovačić et al. [12] revealed the positive influence of Honesty–Humility on Cautious behavior. Based on this, we suggest that:

Hypothesis 7. *Honesty–Humility will positively influence Cautious behavior.*

In the context of changes in travel behavior influenced by a coronavirus, it is expected that:

Hypothesis 8. *Cautious behavior will positively influence all aspects of changes in travel behavior, namely (a) travel intentions, (b) travel preferences and (c) hygiene and safety.***Hypothesis 9.** *Courageous behavior will negatively influence all aspects of changes in travel behavior, namely (a) travel intentions, (b) travel preferences and (c) hygiene and safety.*

The hypotheses are presented in Figure 1.

By testing the proposed hypotheses in the tourism field and in the new context of the pandemic of COVID-19, this research will provide a deeper understanding of factors affecting travel behavior and decision making in a specific situation when the risk is present globally.

3. Materials and Methods

3.1. Study Sample

The study sample consists of 905 participants residing in four countries: Spain, Croatia, Serbia and Russia. The study applied convenience sampling, which refers to the inclusion of individuals in the sample who are easiest to reach, willing to participate and older than 18 years.

Table 1 shows the socio-demographic characteristics of the respondents.

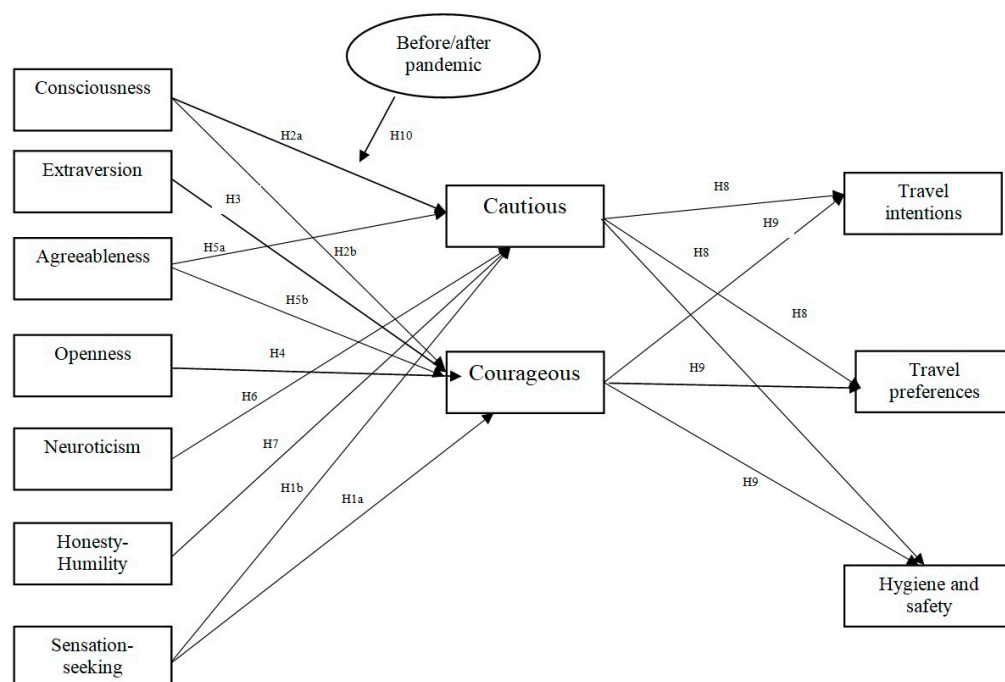


Figure 1. The proposed model with the hypotheses.

Table 1. Socio-demographic characteristics and travel habits of respondents in % (N = 905).

Gender		Marital Status	
Male	53.6	Single	41.2
Female	46.4	I have a boyfriend/girlfriend	27.7
		I live in an extramarital union	4.1
		I am married without children	5.3
		I am married and have a child/children	18.7
		Divorced	2.1
		Widow/widower	0.9
Age		Frequency of Traveling	
Range 18–72		I have never been abroad	14.3
Average: 35.40, Std, 11.793		I have traveled abroad several times	31.8
		I travel abroad once a year	25.3
		I travel abroad several times a year	25
		I travel abroad once a month	3.6
Education		I Usually Travel with	
Elementary school	1.3	Family with children	24.4
Secondary school	24.2	Family (family members without children)	19.6
Higher school/college	30.1	Friends	35.9
Faculty/Master's/PhD	44.4	Partner	12.3
		Business partner	2.5
		Alone	5.2
Country of Residence			
Spain	22.65		
Croatia	19.89		
Serbia	29.83		
Russia	27.63		

There was a slightly higher number of female respondents (53.6%), and the average age of the participants was 35.4. The majority of respondents are highly educated (44.4%). When it comes to marital status, the majority of respondents were single or in a relationship. Most

frequently, they traveled abroad several times to date, or they travel once a year or several times a year. The respondents usually travel with friends, but also with children (Table 1).

3.2. Instruments

Data were collected through a questionnaire (see Supplementary Materials) that consisted of five parts. The first part included the socio-demographic characteristics of respondents (gender, age, education, marital status, country of origin) but also the frequency of travel and usual travel companions. The second part measured perceived travel risk. The scale by Thapa et al. [44] was slightly adjusted for this study to put it in the context of perceived travel risk related to coronavirus. The answers were measured on a 5-point Likert scale (1—I totally disagree, 5—I totally agree). The third part of the questionnaire measured the personality traits of the respondents. The personality of the respondents was measured by the MINI IPIP-6 (Extraversion, Neuroticism, Agreeableness, Conscientiousness, Openness to Experience, Honesty–Humility), a 24-item scale developed by Međedović and Bulut [65]. Međedović and Bulut [65] described these six traits as follows: Neuroticism (emotional instability, tendency to feel negative emotions), Extraversion (enjoyment in social interaction, gregariousness, activity), Agreeableness (cooperation, avoids arguments, empathy), Conscientiousness (orderliness, long-term planning, prudence), Openness to Experience (creative, openness to ideas, inquisitiveness) and Honesty–Humility (tendency to be fair and genuine when dealing with others in the sense of cooperating with others, even when someone might utilize them without suffering retaliation).

In addition to this, the fourth part included Sensation seeking as a personality trait measured by the 8-item scale developed by Hoyle et al. [66]. The answers were measured on a 5-point Likert scale (1—I totally disagree, 5—I totally agree). Finally, change in travel behavior influenced by the coronavirus was measured using the scale from Wen, Huimin and Kavanaugh [13] that was originally developed for measuring the impacts of SARS on the consumer behavior of Chinese domestic tourists. The answers were measured on a 5-point Likert scale (1—I totally disagree, 5—I totally agree).

3.3. Procedure

The survey has been conducted from the middle of February until the beginning of April 2020. It has been distributed by a combined approach—a standard pen-and-paper survey shared with friends, family and colleagues who also shared it with their close circle of people that they were seeing during the pandemic (in Spain, Croatia, Serbia, Russia) and an online Google doc survey used to approach respondents online. The online questionnaire has been shared by Facebook and email and respondents were asked to share the questionnaire to their social circles around the world (a combination of convenient sample and the snowball technique). A combination of pen-and-paper survey and online survey was used as it provided the possibility to include more individuals in the research, as the online survey was shared through social media and email and it was easier to reach the participants who were very cautious at that time. The lockdown in all four countries from March to June 2020 certainly made it more difficult to collect data in person, so the online versions were easier to distribute.

The survey was distributed in the following languages: Spanish, Croatian, Serbian and Russian. The questionnaire was back-translated to English in order to ensure the original meaning of the questions. The respondents were informed about the purpose of the questionnaire and that their participation is voluntary and anonymous. The total number of distributed questionnaires was 1200, out of which 905 were successfully completed (with 407 questionnaires collected online and 498 paper questionnaires), meaning that the response rate was 75.41%.

3.4. Data Analysis

To test our hypotheses, SEM (Structural equation modeling) in AMOS was used. Before conducting SEM, exploratory factor analysis was employed to check the factor structures

(perceived travel risk and tourist behavior influenced by coronavirus). To evaluate the goodness of the model fit in SEM, the following model fit indices were used: chi-square statistics (χ^2), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Goodness-of-Fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA). CFI, TLI and GFI generally have recommended fit indices greater than 0.9 for a satisfactory model fit, whereas an RMSEA value below 0.08 often demonstrates an acceptable fit [65]. For a satisfactory fit, the chi-square value should not be significant. Moreover, a series of multi-group analyses were conducted to test the model differences between respondents who filled in a questionnaire before and after the pandemic was officially announced by WHO.

4. Results

4.1. Descriptive Statistics and Measurement Model Validity

The descriptive statistics for all variables are presented in Table 2. It can be seen that Cronbach’s alpha coefficient for all variables/dimensions was above the recommended 0.7. This means that the instruments used in the study are reliable and that they measure the given constructs. Before conducting the path model, the convergent and divergent validity of the constructs were calculated to check the measurement model validity.

Table 2. Descriptive statistics and measurement model validity.

Variable	Mean	Std.	α	AVE	CR
Cautious behavior (10 items)	3.79	0.864	0.877	0.411	0.868
Courageous behavior (6 items)	2.37	0.970	0.823	0.488	0.847
Travel intentions (7 items)	3.25	1.13	0.903	0.542	0.891
Travel preferences (6 items)	2.60	0.904	0.769	0.468	0.813
Hygiene and safety (7 items)	3.57	1.06	0.915	0.625	0.910
Sensation seeking (8 items)	3.08	0.892	0.819	0.557	0.865
Conscientiousness (4 items)	3.88	0.757	0.750	0.479	0.711
Extraversion (4 items)	3.33	0.871	0.723	0.528	0.817
Openness to experience (4 items)	3.61	0.699	0.711	0.438	0.770
Agreeableness (4 items)	3.93	0.768	0.786	0.502	0.797
Neuroticism (4 items)	3.02	0.794	0.713	0.431	0.699
Honesty–Humility (4 items)	3.10	0.943	0.782	0.590	0.852

The convergent validity of each dimension was examined by calculating the score of the average variance extracted (AVE, see [67]). A substantial convergent validity was achieved when all item-to-factor loadings were significant and the AVE score was higher than 0.50 within each dimension; an AVE higher than 0.40 was still acceptable if composite reliability (CR) was higher than 0.60 [68,69]. The results showed that all dimensions had an AVE higher than 0.40 and CR higher than 0.60 (Table 2) which indicates good convergent validity. Discriminant validity was then checked by comparing the average variances extracted (AVEs) for each latent factor with the squared correlation estimates between latent constructs. Fornell and Larcker [68] noted that the discriminant validity is guaranteed when the AVEs are greater than the squared correlation estimates.

The squared correlations based on total scores ranged from 0.00 to 0.370, which was lower than AVE (Table 3). Thus, the results confirmed that all dimensions have sufficient discriminant validity [68,70].

Table 3. Correlation estimates and average variances extracted (shown in italic).

	1	2	3	4	5	6	7	8	9	10	11	12
1. Cautious	<i>0.411</i>											
2. Courageous	0.340	<i>0.488</i>										
3. Sensation seeking	0.017	0.031	<i>0.542</i>									
4. Consciousness	0.024	0.015	0.002	<i>0.468</i>								
5. Extraversion	0.002	0.001	0.030	0.027	<i>0.625</i>							
6. Openness	0.001	0.000	0.031	0.002	0.020	<i>0.557</i>						
7. Agreeableness	0.011	0.015	0.007	0.023	0.014	0.026	<i>0.479</i>					
8. Honesty–Humility	0.008	0.000	0.019	0.002	0.012	0.001	0.023	<i>0.528</i>				
9. Neuroticism	0.007	0.000	0.001	0.030	0.023	0.010	0.005	0.018	<i>0.438</i>			
10. Travel intentions	0.575	0.342	0.013	0.024	0.005	0.001	0.005	0.007	0.004	<i>0.502</i>		
11. Travel preferences	0.259	0.085	0.000	0.011	0.001	0.001	0.000	0.005	0.001	0.370	<i>0.431</i>	
12. Hygiene and safety	0.297	0.172	0.018	0.031	0.002	0.000	0.015	0.006	0.001	0.326	0.244	<i>0.59</i>

4.2. Exploratory Factor Analysis (EFA) for Perceived Travel Risk

The scale used in this paper for measuring tourists' reactions to the perceived travel risk is the scale developed by Thapa et al. [44] who applied it in their paper about wildfires in Florida to differentiate three types of tourists according to their perceived travel risk (Cautious, Courageous and Conscious travelers). As the scale was slightly adjusted to measure perceived travel risk related to coronavirus, the principal component analysis was applied to verify the factor structure. The representativeness was good (KMO = 0.899) and Bartlett's sphericity test was significant ($\chi^2(66) = 6328.56, p < 0.001$), which confirmed that the data are suitable for the analysis. Based on the parallel analysis, two dimensions (Cautious and Courageous tourists) were extracted with 50.74% of the variance explained. Promax rotation was applied since the extracted components were correlated.

Exploratory factor analysis (EFA) showed that in this study, there is no “middle” segment, and all respondents were grouped into two categories—Cautious and Courageous (Table 4).

Table 4. Pattern matrix of the proposed model (N = 905).

	Cautious Tourist $\alpha = 0.864$	Courageous Tourist $\alpha = 0.970$
R1. Security is the most important factor when deciding where to travel.	0.627	
R2. When deciding where to travel, the risk of coronavirus is not an important factor.	0.555	
R3. Security is the most important attribute that destinations can offer.	0.581	
R4. I consider the coronavirus to represent a real risk to tourism security in China	0.664	
R5. I consider coronavirus to represent a real risk for tourism security in the rest of the world	0.607	
R6. I would travel somewhere only if I'm sure it is safe from coronavirus	0.697	
R7. The possibility of coronavirus in China deters me from traveling there.	0.722	
R8. The possibility of coronavirus deters me from traveling in general	0.518	
R9. When I try to decide between destinations, I would choose those which do not have a high risk of coronavirus	0.69	
R10. If a particular destination in the world has been affected by a coronavirus, I will not travel there.	0.657	
R11. I would like to travel, but negative news about coronavirus discourages me	0.534	
R12. Coronavirus would not affect my decision to go to China (in case I was due to travel there)		0.601
R13. Coronavirus would not affect my decision to travel to other parts of the world		0.838
R14. The negative experiences of other people with coronavirus did not affect my decision to travel		0.796
R15. Security is not so important when I evaluate the different destinations to travel to		0.58
R16. I would not let coronavirus prevent me from traveling to my final destination		0.767

Cautious and Courageous tourists showed very different reactions to perceived travel risks. For Cautious tourists, security was very important when choosing a destination. Thus, they would travel to a certain destination only if they were sure they would be safe. Otherwise, they would avoid such trips. For Courageous tourists, security was not

so important when deciding where to travel. They probably would not cancel their trip because of the risky situation—i.e., the risky situation would not affect their travel plans and decisions.

4.3. Exploratory Factor Analysis (EFA) for Changes in Tourist Behavior Influenced by a Coronavirus

The scale used in this paper for measuring the changes in tourist behavior influenced by COVID-19 was the scale developed by Wen, Huimin and Kavanaugh [13] for measuring the impacts of SARS on the consumer behavior of Chinese domestic tourists. To explore the factor structure, principal component analysis was applied. The representativeness was good ($KMO = 0.927$) and Bartlett's sphericity test was significant ($\chi^2(66) = 11,863.24$, $p < 0.001$), which confirmed that the data are suitable for the analysis. Three dimensions were extracted with 62.41% of the variance explained (Table 5). Varimax rotation was applied since the extracted components were not correlated. Factor structure coincided with the factor structure in the study of Wen, Huimin and Kavanaugh [13], but the factors were renamed for better understanding: Travel intentions, Travel preferences, Hygiene and safety. Only one item (I will not take wild animals as food in the future) in the current model belongs to the Hygiene and safety factor instead of Travel preferences as in the original model, probably because respondents relate eating wild animals with their health safety.

Table 5. Excerpt of the rotated component matrix of the proposed model (N = 905).

	Travel Intentions $\alpha = 0.903$	Travel Preferences $\alpha = 0.769$	Hygiene and Safety $\alpha = 0.915$
I will cancel/I have cancelled all my business travels during the coronavirus period.	0.817		
I will cancel/I have cancelled all my leisure travels during the coronavirus period.	0.814		
Because of coronavirus, I believe traveling in China will be unsafe	0.617		
I will greatly reduce my travel plans in the next 12 months.	0.785		
I will avoid traveling to crowded big cities after coronavirus.	0.712		
In choosing tourist destinations, I will avoid coronavirus-affected areas.	0.653		
I will reduce the length of travel because of the coronavirus.	0.731		
Because of the coronavirus, my interest in participating in outdoor activities and eco-tourism has increased.		0.533	
I prefer areas within a short distance for leisure travel because of the lower risk of coronavirus.		0.605	
I will reduce the possibility of joining tour groups because of the coronavirus.		0.468	
I prefer to stay in high-quality star hotels because of the lower risk of coronavirus.		0.578	
I prefer traveling with family members and relatives during the coronavirus risky period.		0.755	
I prefer separate dining while traveling with a tour group.		0.661	
I will not take wild animals as food in the future.			0.353
I will care more about the hygiene and safety of the tourist sites because of the coronavirus.			0.829
I care more about the hygiene and safety of the public recreation sites because of the coronavirus.			0.867
I care more about the hygiene and safety of the means of transportation because of the coronavirus.			0.873
I care more about the health of the members in the tour group because of the coronavirus.			0.767
I care more about the hygiene and safety of the hotels because of the coronavirus.			0.862
I care more about the hygiene and safety of the daily necessities while traveling because of the coronavirus.			0.852

4.4. Level of Concern before and after Pandemics

Since the data collection for this study began in February and ended at the beginning of April, during this period, the perception of respondents might have changed due to the situation escalation in Europe and the official announcement of a pandemic by the WHO. To check if this influenced the level of respondents' concern as well as their perceived risk, mean values for these variables were calculated and compared for two samples (the sample was divided by the time of data collection—before and after the 11th of March when the pandemic was officially announced—N before = 499, N after = 406).

Table 6 shows the concern that travelers or somebody from their family will become a victim of coronavirus increased after the official announcement of the pandemic and in the following period. The situation was the same in the case of travelers' reaction to the perceived travel risk—they showed more cautious and less courageous behavior after the announced pandemic. Based on these findings, the authors assumed that the time when the surveys were completed might moderate the influence of personality traits on the perceived travel risk among travelers. This is why the moderation effect of this variable was tested by multigroup analysis in AMOS. Based on this, we can formulate hypothesis 10.

Table 6. Perceived risk and concern before and after the COVID-19 pandemic was announced.

before/after a Pandemic		Mean	Std. Deviation
Before 11th of March	I am concerned that I or someone from my family could be a victim of coronavirus	3.472	1.4711
	Cautious travellers	3.65	0.879
	Courageous travellers	2.51	0.944
After the 11th of March	I am concerned that I or someone from my family could be a victim of coronavirus	4.047	1.2275
	Cautious travellers	4.03	0.783
	Courageous travellers	2.14	0.971

Hypothesis 10. *The time of survey completion (before/after pandemic) will moderate the relationship between personality traits and Cautious/Courageous behavior.*

4.5. Results of the Path Model

The path model was conducted to test the suggested hypotheses of the study. The results of the first model did not provide a satisfactory model fit, suggesting the inclusion of a direct effect between Agreeableness and Hygiene and safety, Conscientiousness and Hygiene and safety, Sensation seeking and Travel preferences as well as Extraversion and Travel preferences. After running the model again, the structural model estimation indicated good fit indices. GFI = 0.994, RMR = 0.019, NFI = 0.986, RFI = 0.969, TLI = 0.995 and RMSEA = 0.014 were acceptable for addressing the hypothesized interrelations between each latent factor; the chi-square statistic was insignificant ($\chi^2 = 37.329$, df = 30, $p = 0.168$) which also confirmed the good model fit.

The results of our hypothesis tests indicated that all study hypotheses were supported, except for Hypotheses 3, 4 and 9b (Table 7).

Table 7. The results of hypothesis testing.

Hypothesis		B	S.E.	t-Value	p-Value	Result
H1a.	Sensation seeking→Courageous	0.179	0.035	5.071	0.000	Supported
H1b.	Sensation seeking→Cautious	−0.123	0.031	−3.925	0.000	Supported
H2.	Extraversion→Courageous	−0.013	0.031	−0.417	0.677	Not supported
H3a.	Agreeableness→Courageous	−0.117	0.041	−2.819	0.005	Supported
H3b.	Agreeableness→Cautious	0.104	0.037	2.823	0.005	Supported
H4a.	Consciousness→Cautious	0.177	0.037	4.735	0.000	Supported
H4b.	Consciousness→Courageous	−0.130	0.042	−3.110	0.002	Supported
H5.	Openness→Courageous	−0.056	0.038	−1.452	0.147	Not supported
H6.	Neuroticism→Cautious	0.087	0.030	2.961	0.003	Supported
H7.	Honesty–Humility→Cautious	0.087	0.025	3.478	0.000	Supported
H8a.	Cautious→Travel intentions	0.827	0.033	25.328	0.000	Supported
H8b.	Cautious→Travel preferences	0.548	0.030	18.193	0.000	Supported
H8c.	Cautious→Hygiene and safety	0.547	0.041	13.366	0.000	Supported
H9a.	Courageous→Travel intentions	−0.247	0.027	−9.095	0.000	Supported
H9b.	Courageous→Travel preferences	−0.007	0.033	−0.218	0.828	Not supported
H9c.	Courageous→Hygiene and safety	−0.148	0.035	−4.246	0.000	Supported
Direct Effects Suggested by the Model		B	S.E.	t-Value	p-Value	Result
	Agreeableness→Hygiene and safety	0.081	0.036	2.256	0.024	Confirmed direct effects
	Consciousness→Hygiene and safety	0.089	0.037	2.416	0.016	Confirmed direct effects
	Extraversion→Travel preferences	−0.087	0.027	−3.253	0.001	Confirmed direct effects
	Sensation seeking→Travel preferences	0.105	0.026	4.000	0.000	Confirmed direct effects

More specifically, Sensation-seeking was positively related to Courageous behavior (Hypothesis 1a: $\beta = 0.179$, $t = 5.071$), and negatively to Cautious behavior (Hypothesis 1b: $\beta = -0.123$, $t = -3.925$). Contrary to expectations Extraversion and Openness to Experience did not show a significant influence on Courageous behavior, so Hypotheses 2 and 5 were rejected. Furthermore, Agreeableness was shown to positively influence Cautious behavior (Hypothesis 3a: $\beta = 0.104$, $t = 2.823$), and negatively influence Courageous behavior (Hypothesis 3b: $\beta = -0.117$, $t = -2.819$). The concept of Consciousness was significantly positively related to Cautious behavior (Hypothesis 4a: $\beta = 0.177$, $t = 4.735$), and negatively related to Courageous behavior (Hypothesis 4b: $\beta = -0.130$, $t = -3.110$). Neuroticism was significantly positively related to Cautious behavior (Hypothesis 6: $\beta = 0.087$, $t = 2.961$), while Honesty–Humility was positively related to Cautious behavior (Hypothesis 7: $\beta = 0.087$, $t = 3.478$).

The results also indicate that:

Cautious behavior was positively related to Travel intentions (Hypothesis 8a: $\beta = 0.827$, $t = 25.328$), Travel preferences (Hypothesis 8b: $\beta = 0.548$, $t = 18.193$) and Hygiene and safety (Hypothesis 8c: $\beta = 0.547$, $t = 13.366$). Courageous behavior was negatively related to Travel intentions (Hypothesis 9a: $\beta = -0.248$, $t = -9.095$) and Hygiene and safety (Hypothesis 9c: $\beta = -0.148$, $t = -4.246$), while the influence on Travel preferences was not significant, so Hypothesis 9b was rejected.

The modification indices in AMOS also suggested adding some new relationships that were not hypothesized before conducting the study. For instance, it was suggested that certain personality traits directly affect the changes in travel behavior influenced by coronavirus: Agreeableness and Consciousness directly positively influence Hygiene and safety; Extraversion negatively influences Travel preferences while Sensation seeking positively influences changes in Travel preferences. These relationships were tested and found to be statistically significant. The results are presented in Figure 2.

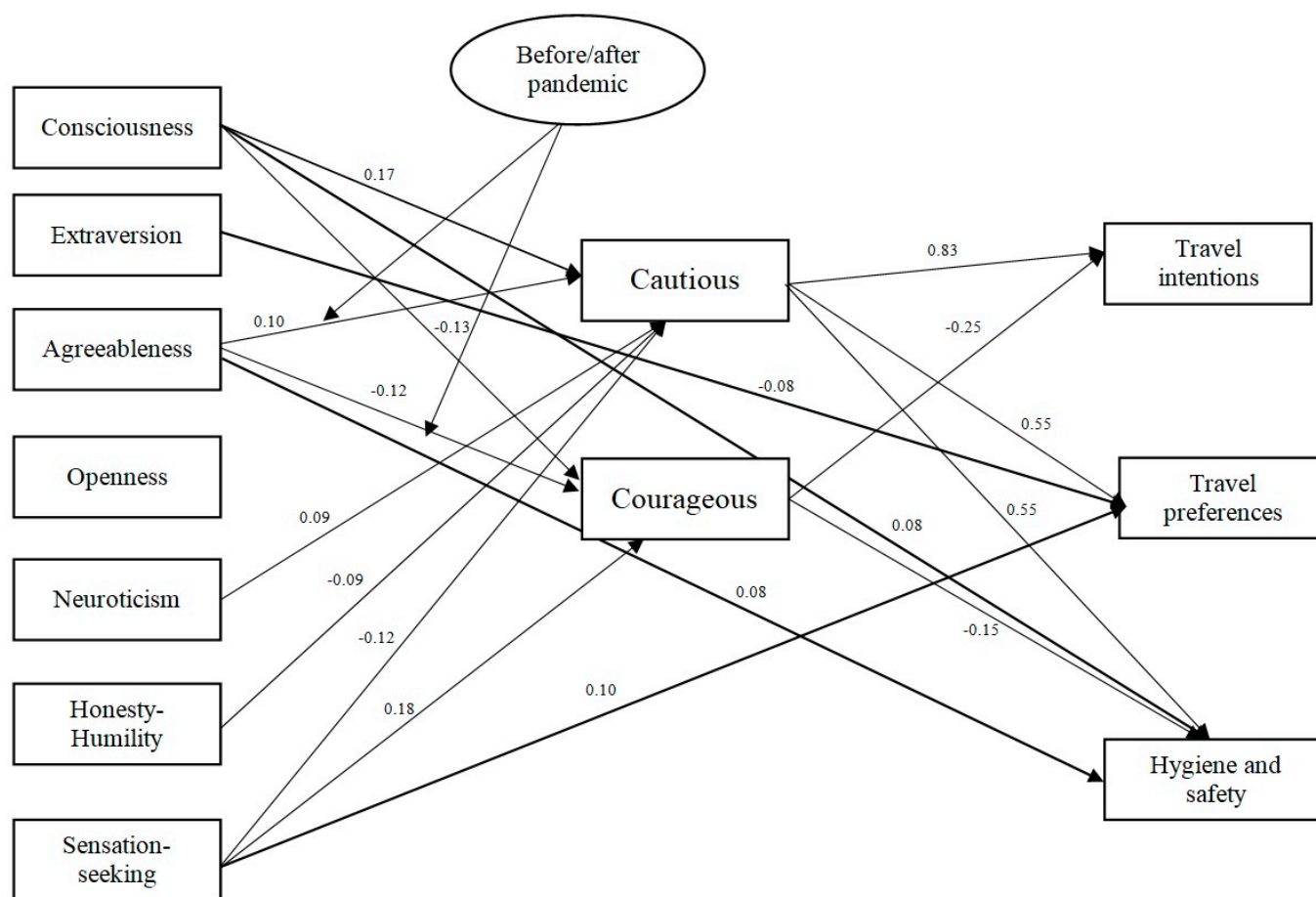


Figure 2. Final structural model.

4.6. Moderation Effects

To check if the model differs between the groups of respondents who filled in the questionnaire before and after the pandemic, multi-group analyses were applied following Byrne's [71] recommendations (Hypothesis 10). Multi-group analysis in structural equation modeling (SEM) is another form of moderation analysis but using categorical variables or grouping variables (in this case, we had two groups—before and after the pandemic). The sample was divided by the date of filling in the survey, with 11 March 2020 (the official announcement of a pandemic) being a dividing point. The multi-group analyses were then conducted to examine how path coefficients connecting each concept vary across those two groups. Moderation effects were explored by a series of chi-square difference tests between constrained and unconstrained models. The results of moderation tests revealed that the model significantly differed between the two groups, as the results showed a significant chi-square difference between constrained and unconstrained models ($\chi^2 = 40.783$, $df = 17$, $p = 0.001$). This led to the confirmation of Hypothesis 10. Paths that were shown to have different weights and significance in two samples were tested to check if there is a significant chi-square difference between constrained and unconstrained models. The results are shown in Table 8.

This suggests that the path coefficient connecting Agreeableness and Cautious behaviors, as well as Agreeableness and Courageous behavior, varied across the two groups of respondents. This means that in the sample after pandemic (which also influenced higher risk perception), Agreeableness had a significant effect on Cautious and Courageous behaviors, while this effect was not significant in the sample before the pandemic. However, the moderation test results failed to confirm the moderation effect in the case of Agreeableness, Extraversion, Consciousness and Hygiene and safety (Table 8).

Table 8. The results of the moderation test.

Tested Paths	Before	After	Unconstrained	Constrained	Difference Test	Results
Agreeableness → Courageous	0.003	−0.3 *	72.613	86.185 *	13.572 *	Supported
Agreeableness → Cautious	−0.041	0.322 *	99.527	72.613 *	26.914 *	Supported
Agreeableness → Hygiene and safety	0.075	0.113 *	72.613	72.87	0.256	Not supported
Consciousness → Hygiene and safety	0.028	0.149 *	72.613	75.26	2.646	Not supported
Extraversion → Hygiene and safety	−0.116	−0.048	72.613	74.16	1.546	Not supported

* Significant at 0.01 level.

5. Discussion

The main aim of the study was to contribute to our understanding of how tourist personality (Extraversion, Openness, Agreeableness, Consciousness, Neuroticism, Honesty–Humility) and sensation-seeking traits affect reactions to the perceived travel risk as well as how the reactions to the perceived travel risk affect the changes in travel behavior influenced by the COVID-19 pandemic. The study also intended to explore how the hypothesized model differs in the sample that completed the questionnaire before and after the announced pandemic, to check possible moderation effects on the reactions to the perceived travel risk and the changes in travel behavior. The first research question referred to the influence of tourist personality on tourists' reactions to travel risk perception, namely Cautious and Courageous behavior. The findings indicate that people who scored high in sensation seeking tended to show more Courageous behavior and less Cautious behavior as a reaction to travel risk perception. This is in line with the study of Lepp and Gibson [57], who showed that sensation seekers show a higher tendency to travel to the riskier parts of the world, but also with many previous studies that revealed the greater intention of sensation seekers to visit risky destinations [7,9,10].

Furthermore, more conscious individuals, as expected, showed more cautious reactions to travel risk, while less conscious travelers showed more courageous behavior. This is in line with the findings of the study of natural hazard risk perception by Kovačić et al. [12] which observed similar results. Thus, highly conscientious people will avoid traveling, even in the cases where there is a low risk to their health.

Even though Extraversion and Openness to experience were expected to have a positive influence on Courageous behavior based on previous studies that showed that extraversion and openness positively influenced the risk-taking attitude and engagement in risky activities [8,28,31,60,62], in this study these traits did not show significant influences. This may be because health risks, such as ones influenced by COVID-19, are a different type of risk compared to the risk one can perceive for risky recreational or tourist activities; thus, when it comes to high health risks such as those of the coronavirus, these personality traits did not seem to be connected with tourists' reactions to travel risk perception, which provides a new understanding of the role of personality in the reactions to the perceived risk. Even newer studies done during the COVID-19 pandemic [28,31] have been done at a time when vaccines were available to people, which probably contributed to the sense of security and might moderate these relationships. Such a claim was confirmed in the research of Boto-García and Francisco Baños Pino [72] who revealed that vaccination against COVID-19 increased the likelihood of taking a holiday. On the other hand, the current study has been done in the initial phase of the pandemic, when no vaccines or tests were easily available to people.

Furthermore, people who scored high in Agreeableness showed more Cautious behavior while low Agreeableness was connected with Courageous behavior. This is in line with the findings of Kovačić et al. [12], which showed that agreeable persons will travel to risky destinations only if they perceive it to be a low to moderate risk (they were shown to have conscious behavior—somewhere between cautious and courageous behavior). This

may also explain why the relationship between Agreeableness and Cautious/Courageous behavior was moderated by the announcement of the pandemic (which was connected with the perception of higher risk and more concern for safety). Additional analysis showed that after a pandemic is announced, people were more worried about their own and their family's security and people showed higher scores on cautious behavior. In the case before the pandemic announcement, agreeableness did not seem to affect reactions to travel risk perceptions, while after the pandemic announcement, agreeableness had a significant influence. This might be because agreeable persons, after the announcement of the pandemic, will probably show more empathy and worry not only for themselves but also for their close social circle, which may result in more cautious behavior.

The results also indicated that individuals who scored high in Neuroticism will show more Cautious behavior. This is in line with Korstanje [64] who discussed the tight connection between anxiety and neuroticism, suggesting that more anxious and neurotic individuals will be more cautious when deciding whether to engage in risky travel. Additionally, this finding can be connected with the finding of Tepavčević et al. [28] that Neuroticism negatively affected tourists' intention to travel.

Finally, the personality trait Honesty–Humility was positively related to Cautious behavior. Previous studies also showed that lower honesty/humility was associated with greater health/safety risk taking [61] and that individuals who score high in honesty–humility and are more worried will show more cautious behavior [12]. People with high scores on the Honesty–Humility scale avoid manipulating others for personal gain, feel little temptation to break rules and feel no special entitlement to elevated social status [73], which could explain why they show a tendency to be more cautious in times of crisis—they don't have a need as low honesty–humility individuals to travel and enjoy luxury things to elevate their status, but they are not tempted to break rules meaning the risk may not be tempting for them, and they care about other people, not only personal gain.

The second research question was related to exploring the relationship between reactions to travel risk perception and changes in travel behavior during the COVID-19 pandemic. Cautious behavior was positively related to the changes in Travel intentions, Travel preferences and Hygiene and safety. This means that more cautious individuals are more ready to cancel or reduce their travel plans because of the coronavirus and avoid more risky destinations (travel intentions); they will also change their preferences when traveling, opting more for options they perceive as safer such as outdoor activities, close destinations, traveling individually, staying in high-star hotels, etc. (travel preference) and will care more about hygiene and safety in all aspects of travel (transport, hotels, recreation, tourist sites, etc.). Courageous individuals will show less intention to cancel or modify their travel plans and will show less care about hygiene and safety during travel.

The model also revealed direct positive influences of Agreeableness and Conscientiousness on Hygiene and safety; a negative influence of Extraversion on Travel preferences and a positive influence of Sensation seeking on the changes in Travel preferences. This indicates that persons who are conscientious and agreeable (empathetic and altruist people who care about others) will take more care about hygiene and safety while traveling as they tend to be more responsible towards themselves and others. Extraverts will not change their travel preferences because of coronavirus. This may be because the changes in travel preference are largely concerned with staying away from groups and other people and more individual activities, while extraverts like to travel with company, meet others and engage in group activities. Finally, sensation seekers will change their travel preferences because of the coronavirus, although this is contrary to what was expected. However, a change in travel preference might be perceived as a novelty for sensation seekers as they like to try or explore, so this might explain such a relationship. The last research question intended to explore the moderation effect of the official announcement of a coronavirus pandemic (11 March 2020) on the relationship between tourists' personality, reactions to travel risk and changes in travel behavior. The research confirmed the moderating effect of the official announcement of a coronavirus pandemic, since in the sample after the

pandemic announcement (which also influenced higher risk perception), Agreeableness had a significant positive effect on Cautious behavior and negative effect on Courageous behavior, while this effect was not significant in the sample before the pandemic. This is in line with the claim of Talwar et al. [31] who stated that individuals high on agreeableness tend to follow rules and guidelines, and will avoid non-essential travel until the recommendations change. This could explain why agreeableness did not show a significant effect in the sample before pandemic announcement. Such findings can find their application in the post-COVID period as well, as they show that people who score high in agreeableness will be willing to travel again when the governments recommend so, while on the other hand, highly neurotic individuals will be more cautious and restricted in their travel behavior regardless of government suggestions.

6. Conclusions

The main findings of the study can be summarized through important theoretical and practical implications that can be derived from this research.

6.1. Theoretical Contributions

The current research contributes to the existing theory in several ways. First, it contributes to the understanding of the relationship between tourist personality, tourists' reactions to travel risk perception and changes in their travel behavior during the time of the COVID-19 pandemic. The fact that this was the biggest pandemic in recent decades, because of huge media coverage and the fact that even doctors and governments were not sure what is the right way to deal with it, caused even more insecurity in people. Moreover, the measures were very harsh in many of the countries where the research was conducted (border closure), and this also caused more fear, concern and distrust of travel in people. The global risk of coronavirus created an atmosphere of high threat for travelers' health, so exploring the mentioned constructs in this context has important implications for theory. The findings provided empirical evidence that tourist personality affects changes in travel behavior influenced by a coronavirus, both through their reactions to travel risks (cautious and courageous behavior) but also directly (specifically agreeableness, consciousness, extraversion, sensation seeking). Another important finding is that extraversion and openness to experiences, in specific high-risk situations such as the current pandemic in the time when no vaccines were available to people, did not influence reactions to travel risks, contrary to previous studies that proved their influence in cases of lower and moderate travel risks. In the current study, however, extraversion showed a direct influence on travel preferences, indicating that extraverts might not be ready to change their travel style if this means a more individualistic travel style and distancing from other people. Furthermore, this is the first study to confirm the linkage between reactions to travel risks (cautious and courageous) and changes in travel behavior influenced by COVID-19.

Additionally, the study has found that the announcement of the pandemic, which was related to higher worry and more cautious behavior, moderated the relationship between agreeableness and cautious/courageous behavior since this relationship did not exist in the sample before the pandemic, showing that effect of agreeableness depends not only on the level of risk and worry but probably on the fact that agreeable people are more likely to follow the governmental rules and suggestions related to travel.

6.2. Practical Implications

It is clear that COVID-19 is going to have a tremendous psychological and sociological impact on the way people make travel decisions. Crosby [74] predicts that the price will be a secondary factor when making travel decisions, compared to the perception of risk. A fear of crowds and places with a lot of travelers and an immense need for movement, could result in shorter and closer trips and changed tourist behavior. It is evident that fear will diminish over time but the pandemic's effects on travel behavior will take longer to eliminate, depending on how long the "perception of high risk" will last among travelers. This is why

destination marketers have an important role in managing these perceptions, as properly shaped tourism communication could motivate consumers to travel to destinations that offer them more security and confidence, decreasing the perception of risk [74]. DMOs will struggle to attract tourist again, and knowing how tourists will change their travel habits and preferences could help them shape new marketing campaigns and adapt destination offers. For instance, marketing campaigns addressing agreeable and conscious individuals should communicate measures that were undertaken to increase all elements of hygiene and safety at the destination. Sensation seekers might be attracted by the changed style of travel and novel activities. To attract extroverts, marketers should be careful in promoting the tourist experience without entertainment and interaction. Depending on the situation, the promotion of virtual and digital interactions might be a temporary solution. Courageous individuals probably will not change their travel habits and will be easier to attract. On the contrary, marketers should place additional effort to promote high safety and security at the destination to attract cautious individuals. For cautious individuals, marketers should provide a lot of information about the current state of security at the destination, emphasizing measures undertaken to maintain the good health and safety of their guests. It seems that this was particularly recognized by accommodation facilities in the post-pandemic period, as they introduced a special certification program called “Clean and Safe”, first introduced by Turismo de Portugal, ensuring the existence of an internal protocol that defines the necessary prevention, control and surveillance procedures in accommodation facilities. Clean and Safe companies are now covered by the European Tourism COVID-19 Safety Seal and there is 22,279 stamps already issued with 42,520 people trained [75].

6.3. The Study Limitations and Future Research

Besides important theoretical and practical contributions, this study is not without limitations. The concepts such as reactions to travel risk and changes in travel behavior are based on respondents’ self-reporting, meaning that it is not certain how respondents would behave after the pandemic finishes. Thus, it would be interesting to conduct research again, in the post-crisis period, to see how the respondent’s preferences, habits and travel behaviors changed, to compare it with the current findings and to see if there are any differences and what might influence those differences in the research results. One more limitation could be convenience sampling, as a more stratified sample could deliver more precise findings, although it is not expected that the differences would be significant. In addition, the survey was conducted in four countries, three of which are in Eastern Europe and one in Western Europe. The study could benefit from including more countries from Western Europe in the survey.

Future research should also focus on exploring socio-demographic influences on the changes in travel behavior influenced by COVID-19, which could reveal market segments that will be the most hit by the crisis and the most difficult to motivate to travel again.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su15031951/s1>, Supplementary File—QUESTIONNAIRE.

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