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# Contrasting the COVID-19 Effects on Tourism Safety Perceptions and Coping Behavior among Young People during Two Pandemic Waves: Evidence from Egypt

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**Abstract:** The aim of this study is to analyze the impact of COVID-19 on tourism safety perceptions, acceptance of restrictions, and the intention to change behavior during the COVID-19 pandemic among young people. Taking Egypt as a case study, a total of 386 respondents were surveyed in two different pandemic periods, with data being collected during the first wave, in April and May 2020, and during the second wave, in December 2020 and January 2021. Data was analyzed using partial least squares structural equation modelling (PLS-SEM) with multigroup analysis (MGA). Results reveal significant differences between the first and the second coronavirus waves regarding the effects of perceived risk. Findings point to the heightened potential of the youth market segment in the current context and suggest that youngsters' adaptive coping responses evolved towards self-regulatory behavior. Based on the results, theoretical and practical implications are drawn. Conceptually, the study has contributed to the clarification of the desensitization process experienced by youth over time, in the post-pandemic tourism context. Additionally, the activities' safety perceptions being examined per se enlightened the relationship between risk susceptibility, safety perceptions, and coping attitudes and behavior. Findings suggest that special attention should be paid to crowded group settings, such as youth events, advising that authorities and tourism services should target their communication to different population segments and use appropriate safety messaging according to the evolution of health crises.

**Keywords:** COVID-19; risk severity; risk susceptibility; tourism safety perceptions; coping behavior; acceptance of restrictions; Egypt

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## 1. Introduction

After the report of a novel severe acute respiratory syndrome in December 2019 in Wuhan, China, the World Health Organization declared a Public Health Emergency of International Concern [1,2]. At the time of writing, Coronavirus 2 (SARS-CoV-2) has been responsible for more than 6 million deaths in the world [3].

A number of major events with global impact have had significant negative effects on tourism flows during the past decades, such as terrorist attacks, war and military conflicts, natural disasters, such as the destructive tsunami in the Indian Ocean in 2004, and health hazards, such as severe acute respiratory syndrome (SARS) in 2003 [4,5]. Since tourism operates in a network system, combining numerous services, goods, and destinations [6,7], and plays a vital economic role in many economies around the world [8–10], this unprecedented health crisis has produced colossal economic impacts [11,12]. Among travel risk factors, health and well-being are a crucial concern for tourists [13–15]. The fall in the number of outbound trips, job loss, and the economic crisis were huge in east Asia after the outbreak of SARS in 2003 and in West Africa after the outbreak of the Ebola epidemic in 2014 [16],

Since 2020, people have stopped travelling due to the restrictions and lockdowns imposed worldwide [17], as well as the perceived risk for exposure to SARS-CoV-2 [18]. Currently, it is a fact that COVID-19 is "larger in size and scope than previous epidemics" [16] (p. 2), with unprecedented impacts on the tourism and hospitality industry [19], which is very sensitive to the health crisis and subsequent slow recoveries [20,21].

Given the global character of the COVID-19 pandemic, tourism recovery should be addressed by enhancing the governmental safety measures, as well as studying the perceived travel risks and individual coping behavior [22]. Although pandemics have generated a significant amount of research, limited studies exist regarding the specific impacts of this crisis on the younger generations, as well as their perceptions and acceptance of restrictions [21]. However, it is crucial to understand the tourism-related behaviors and attitudes of the young generations [23]. Young tourists constitute an attractive market segment [24] since research suggests that they tend to stay longer at the destinations and, with a high lifetime value, they are likely to return later in their lives [25]. Despite being a relatively under-researched segment [23], young people have a powerful influence on people of all ages and incomes [26]. In addition, this market segment, which is experiencing global growth and represents more than 23% of all the international travelers, is less likely to be deterred from travelling due to risk factors [27]: "When the going gets tough, the young keep travelling", since young travelers "are unlikely to be phased by economic problems, political unrest or epidemics" [25] (p. 7). Currently, with less frequent severe coronavirus cases than in adults [28], young people are also expected to return sooner to travelling as before.

In spite of the relevant research carried out regarding the COVID-19 pandemic and tourism, no study has yet been carried out that has analyzed the relationship among risk perceptions, travel attitudes, and plans throughout the pandemic, specifically among the youth. In order to overcome these gaps, this study examines the impacts of the perceived risk of COVID-19 on tourism safety perceptions, acceptance of restrictions, and behavioral intentions, specifically among young people amidst the pandemic, by contrasting data collected in the first and second waves in Egypt.

The next section provides a theoretical framework of the study by reviewing the main constructs included in the proposed conceptual model. After describing the methodology used, the results are presented and discussed. The conclusion of the paper emphasizes implications and suggestions for further research.

## 2. Theoretical Background

There are multiple theories that have been advanced for safety and risk in the context of tourism [29]. The risk perception attitude (RPA) is a theoretical framework that provides a broad understanding of the risk perception attitudes of individuals in the tourism context [30]. Within the RPA framework [15], perceived risk includes two main dimensions: (i) perceived severity: fear and stress provoked by the fear of being infected by the disease in the individual and public sphere; (ii) perceived susceptibility: risk perceptions of travel and participation in leisure activities. The efficacy beliefs also comprise two dimensions: (i) self-efficacy: acceptance of control and civilian restriction measures; (ii) response efficacy: intentions to adopt protective behaviors. Accordingly, the health belief model (HBM), a theoretical framework frequently used in the analysis of health-related behaviors, considers that perceived risk comprises two dimensions: risk susceptibility (people's perception of vulnerability towards a particular health risk) and risk severity (which pertains to individuals' subjective perception of the seriousness of the health risk) [31,32]. Taking the theory of planned behavior [33] as a framework, negative emotions and susceptibility have been studied, among others, as antecedents of attitudes towards travel, travel avoidance behavior, and protection motivation [16,18].

In public health crisis contexts, people deal with their fear by employing different coping strategies, which foster individual adaptability and mitigate related contextual losses [16]. Addressing the main constructs under analysis, in the following sub-sections,

perceived risks and tourism safety perceptions are discussed, as well as the resulting coping behavior in post-pandemic times, namely the acceptance of restrictions and adaptative behavioral intentions.

### *2.1. Perceived Risks*

Bauer [34], in his seminal work in the domain of behavioral studies, introduced the idea that consumption involves risk. Since then, the perceived risk theory has been widely used in subsequent research addressing consumer choice [35,36]. Perceived risk refers to the consumer's perception of uncertainty of unfavorable outcomes and negative consequences [37].

Potential risks in different tourism contexts have been studied, which include financial, political, physical, health, equipment, and socio-psychological dimensions [38]. In the past decades, several factors affected the tourism industry worldwide. Disruptive events, such as terrorist attacks, crime and violence, wars and political instability, natural catastrophes, and diseases caused drastic tourism crises [14]. Health risks constitute one of the most impactful risk types, leading tourists to enhance self-protective measures and behaviors [38]. With the improvement of people's safety awareness, as well as the global impact and flow of information regarding the COVID-19 pandemic, health risks have become a major concern for tourists [38] and, combined with governmental restrictions, have deterred travelling [21]. Referring to one's evaluation of the likelihood of personal health harms and the assessment of their magnitude and effects, perceived health risks can be examined in terms of perceived susceptibility and perceived severity [39].

### *2.2. Tourism Safety Perceptions*

In the tourism and recreation contexts, safety is a projected condition since tourists or recreationists want to avoid situations that can menace their integrity [40] during the buying and consumption processes of travelling services, especially factors such as diseases, accidents, violence and crime, terrorism, wars, and armed conflicts [41,42]. Considered as the perception of the absence of risk, perceived safety can be considered an affective element of perceived risk and is a central aspect of tourists' decision-making, especially in threatening times and contexts [30].

In the present context, health risks are associated not only with travelling but also with tourism experiences. The tours and activities sector has been one of the fastest-growing categories for venture-capital investment [43]. Currently, tourism activities involving close contact with other participants and requiring people frequently touching surfaces and objects imply a major risk for people, resulting in "immunity pods" that stay away from conventional hotels, restaurants, activities, and crowds [44]. Limited travel activities are proven to be a risk-reducing mechanism during a health crisis [45]. Thus, it is pertinent to consider tourism safety perceptions regarding the whole tourism experience, detaching travelling from perceptions related to tourism activities.

### *2.3. Acceptance of Restrictions*

The current pandemic has imposed lockdowns and quarantines, physical distancing, closure of public services and education institutions, and suspension of events [17,46]. Travel restrictions, by means of closed borders, travel bans, and cancelled flights, have affected over 90% of the world's population, both at the international and domestic level, negatively impacting economies and the tourism systems [21]. Additionally, although governmental and individual measures, such as distancing, self-isolation, and travel restrictions, have had a strong impact on citizens' daily lives with regards to mobility, travel plans, mental health, and economic conditions, they have prevented millions of additional infections and have reduced the number of deaths during the pandemic [47]. Even if young people are less affected by severe SARS-CoV-2, they constitute active routes of transmission and may be more likely to ignore appropriate measures [48]. Therefore, it is pertinent to analyze their acceptance of the restrictions and security measures imposed by their national

governments [21]. Within the risk perception attitude framework, acceptance of control and civilian restriction measures can be understood in the domain of self-efficacy beliefs.

### *2.4. Intentions to Change Behaviour*

Health risk perceptions associated with the COVID-19 pandemic are expected to affect tourists' behaviors and decisions [49]. In fact, the risk to health and wellbeing has been studied as an antecedent of coping or adaptative behavior [16,49]. As postulated by the risk perception attitude framework, response efficacy refers to the intentions to adopt protective behaviors. Negative emotions affect one's risk perception attitude, as well as subsequent decisions on enacting preventive measures [15]. Furthermore, based on the protection motivation theory, perceived risk comprising the perceived vulnerability and severity toward health risk is understood as an antecedent of protective behavior, given that the perception of threats would encourage people to act in order to reduce their risk [38]. Moreover, the theory of planned behavior is widely used to predict various behaviors [50] and a salient model to measure travelers' health risk perceptions and protective behaviors [41].

Age is a relevant influencing factor of the adoption of protective behavior [48], which should be further explored in this pandemic context, since young people's higher perception of invulnerability may reduce risk-protective behavior [49]. Furthermore, the habituation model [51] provides an explanation for a desensitization phenomenon: throughout the evolution of the activation of fear, there is a minimization of anxiety and protective behaviors by means of habituation [52]. This makes it relevant to analyze the COVID-19 impacts on individual perceptions and intentions, while contrasting different pandemic periods.

## 3. Conceptual Framework and Hypothesis Development

The study takes the risk perception attitude [53], the health belief model [31,32], and the theory of planned behavior [33] as theoretical frameworks, considering that cognitive and affective processing may modulate risk perceptions and protective behavior [48] and that the influence from health risk beliefs on risk prevention behavior needs more exploration [38]. Given that the outbreak of the COVID-19 virus has heightened the perceived risk associated with tourism and has influenced the perceived safety of travel and tourism experiences [54] and the corresponding coping behavior [16], we explore these interrelationships, but specifically among young people and considering two different pandemic periods.

As previously discussed, perceived non-susceptibility or lower vulnerability is believed to have a positive impact on tourism safety perceptions and a negative impact on the acceptance of restrictions. In fact, in the tourism context, the higher the perceived susceptibility of potential risks is, the more people accept preventative actions [49]. Moreover, scholars generally believe that the public's perception of risk is affected by individual characteristics, as well as by time and event progress [55]. The reduced reported symptomatology related with COVID-19 can cause desensitization regarding the relevance of the problem [48]. Thus, since young people were expected to perceive lower risk susceptibility as time passed and the pandemic evolved, given the potential desensitization process, which can influence their tourism safety perceptions and acceptance of restrictions, we hypothesize the following significant differences between respondents surveyed during the first and the second wave:

**Hypothesis 1 (H1).** *The positive effect of the perceived non-susceptibility to COVID-19 contagion on the travel safety perceptions is significantly higher in the second wave period when compared to the first wave.*

**Hypothesis 2 (H2).** *The positive effect of the perceived non-susceptibility to COVID-19 contagion on the activities' safety perceptions is significantly higher in the second wave period when compared to the first wave.*

**Hypothesis 3 (H3).** *The negative effect of the perceived non-susceptibility to COVID-19 contagion on the acceptance of restrictions is significantly stronger in the second wave period when compared to the first wave.*

Negative emotions, which express risk severity perceptions, may have a positive effect on coping beliefs and intentions [56], namely on the acceptance of restrictions and intentions to change behavior. On the contrary, lower severity risk perception may reduce youngsters' individual awareness of prevention and control, which is not conducive to the implementation of governmental containment measures [55]. Since young people are less affected by severe COVID-19 disease and are expected, during the course of the pandemic, to evolve regarding their adaptative coping beliefs and behavior given the lessened restrictions and their more confident self-efficacious behavior, we hypothesize the following significant differences contrasting the first and the second wave:

**Hypothesis 4 (H4).** *The positive effect of the perceived COVID-19 risk severity on the acceptance of restrictions is significantly lower in the second wave period when compared to the first wave.*

**Hypothesis 5 (H5).** *The positive effect of the perceived COVID-19 risk severity on the intentions to change behaviour is significantly higher in the second wave period when compared to the first wave.*

As an affective manifestation, perceived safety may also mediate the relationships between risk perceptions and coping beliefs and behavior [30], with an expected negative impact on the acceptance of restrictions and intentions to change behavior. Additionally, considering the habituation process and its consequent desensitization effect, which may increase tourism safety perceptions and their evolving impact on coping beliefs and behavior, we postulate the following hypotheses:

**Hypothesis 6 (H6).** *The negative effect of the perceived travel safety perceptions on the intentions to change behaviour is significantly higher in the second wave period when compared to the first wave.*

**Hypothesis 7 (H7).** *The negative effect of the perceived activities' safety perceptions on the acceptance of restrictions is significantly higher in the second wave period when compared to the first wave.*

Figure 1 presents the research model relationships proposed in the present paper. We consider the evolution of risk perception during the pandemic [57] and its effects, contrasting the model's estimation results based on two different samples surveyed during two different pandemic periods.

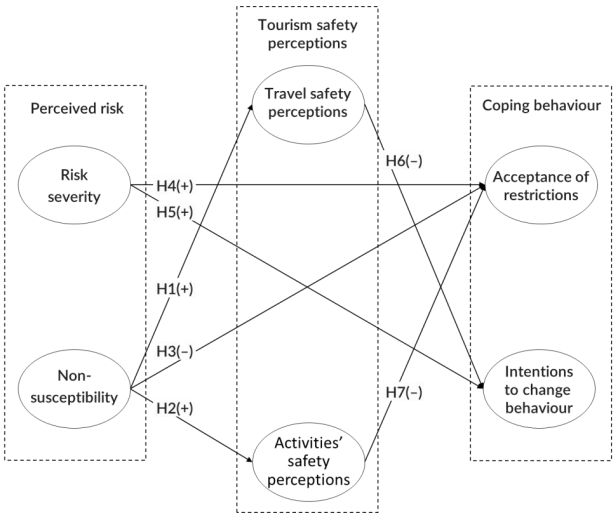


**Figure 1.** Proposed conceptual model.

## 4. Study Context

Egypt was chosen as the study setting due to its being one of the most important tourism destinations in the Mediterranean region, benefiting from a particular geographical situation linking three regions—Europe, Africa, and the Middle East. Tourism plays a crucial role in the Egyptian economy [58]. After the instability created by the Arab Spring, international arrivals dropped, with domestic tourism sustaining the tourism sector. After recovery, in 2017, domestic travel spending still generated 48% of direct Egyptian Travel and Tourism gross domestic product (GDP), with the travel and tourism sector's contribution to the GDP hitting 11.9% of the total economy and providing 2.48 million jobs [59]. In the country, the population under 30 years old represents 37.5% of the total 102 million residents [60] and 22% of Egyptian travelers [61]. However, as has been the case worldwide, the present pandemic has disrupted the tourism and travel industry in the country.

Egypt reported the first case of COVID-19 infection in Africa in mid-February 2020, with the second wave of COVID-19 striking the country from November 2020 until January 2021 [62]. In Egypt, after the first cases of COVID-19 were registered, protective measures were taken, including suspension of commercial internal passenger flights. National authorities took several critical decisions and implemented practices or initiatives related to financial policies, health and hygiene, workforce and training, marketing, and domestic tourism to cope with the pandemic [63]. With lighter protective measures, the government opened airports and hotels for domestic tourism and transferred to the citizens the responsibility of adopting their own precautionary measures [64]. Nonetheless, the Egyptian government implemented measures in collaboration with the hotel industry through regular health and hygiene checks at hotels, as well as promoting health awareness through the media [65]. Tourism was thus one of the sectors where the Egyptian government focused its measures to increase tourists' safety [63] and to ensure that workers in the tourism sector continued to work with due safety, while motivated and committed with their jobs [66], thereby contributing to a more resilient sector [65,67].

## 5. Methods

The population under study were 18- to 29-year-old residents in Egypt. Although there is substantial variation in studies, for the purpose of this study, we considered youth aged under 30 years, as in line with other studies in tourism [68,69] and pandemic health [70,71]. The questionnaire was designed according to the research model and hypotheses formulated, including six constructs adapted from previous studies, using 5-point Likert scales: risk severity [72], non-susceptibility [15], travel safety perceptions and activities' safety perceptions [73], acceptance of restrictions [74], and intentions to change behavior [74]. The original scales were translated into Arabic by native speakers and back translated into English to avoid translation errors. University students were invited to answer the online survey through social media and mailing lists. Those who agreed to participate were subsequently asked to share the study link with at least 10 friends. The study complied with all data protection rules. The questionnaire started with a description of the purpose of the study, the topics to be discussed, and the manner and form in which data would be collected, and confidentiality would be maintained, including the identity of the researchers and whom to contact for further information. Thereafter, the participants were asked to declare their informed consent. With a snowball sampling approach, the data was collected via an online survey from 20 April 2020 to 9 May 2020 ($n$ = 206) and from 26 December 2020 to 5 January 2021 ($n$ = 180), with 386 surveys valid for analysis. Following other recent multivariate quantitative work that handled closely-related phenomena in the region [66,67], data was analyzed using SmartPLS 3, comparing the results of the first wave and the second wave by means of partial least squares structural equation modelling (PLS-SEM) with multigroup analysis (MGA), based on the work of Hair et al. [75].

As presented in Table 1, the majority of young people surveyed during both periods were female (first wave, 76.2%; second wave, 76.2%), attending or having concluded

university. The sample was mainly composed of non-frequent international travelers who had undertaken, on average, less than five trips abroad over the last three years, even if more than approximately a quarter of the participants in either of the two data collection periods had travelled outside their country at least six times in the last three years. The two sample groups show a reasonable balance between them with regard to the analyzed characteristics.

**Table 1.** Sociodemographic characteristics and travel behavior of participants.

| Characteristics | COVID-19 1st Wave *n* = 206 | | COVID-19 2nd Wave *n* = 180 | |
|---|---|---|---|---|
| | ***n*** | **%** | ***n*** | **%** |
| Gender | | | | |
| Female | 157 | 76.2 | 130 | 72.2 |
| Male | 47 | 22.8 | 50 | 27.8 |
| Other/prefer not to say | 2 | 1.0 | 0 | 0 |
| Age (mean) | 21.6 years | | 20.7 years | |
| Education | | | | |
| Middle school | 4 | 2.0 | 8 | 4.5 |
| High school | 2 | 1.0 | 4 | 2.2 |
| University or postgraduate degree | 200 | 97.1 | 168 | 93.3 |
| Occupation | | | | |
| Student | 192 | 93.2 | 173 | 96.1 |
| Other | 14 | 7 | 7 | 4 |
| Unemployed | 0.0 | 0.0 | 0.0 | 0.0 |
| Number of trips abroad in the last 3 years | | | | |
| Less than 5 trips | 154 | 74.8 | 123 | 68.3 |
| 6 to 10 trips | 29 | 14.1 | 34 | 18.9 |
| More than 10 trips | 21 | 10.2 | 23 | 12.8 |
| Missing | 2 | 1.0 | 0 | 0.0 |

## 6. Results and Discussion

Preliminary factor analysis allowed us to ensure internal consistency of the scales used, retaining the majority of the items of each construct. For instance, the items regarding the activities' safety perceptions of "Going to beaches, rivers or lakes" and "Going to natural areas such as national parks or forests" were deleted since these outdoor activities were perceived as safer by participants and Cronbach's index of internal consistency would significantly increase if these items were deleted. Once established, the internal consistency of the scales with the items retained and the mean value of each scale could be considered for analysis. As Table 2 shows, there are some differences comparing first wave and second wave respondents. Considering descriptive statistics, acceptance of restrictions somewhat decreased ($M$ = 4.25 versus $M$ = 3.93) and, in contrast, the non-susceptibility beliefs ($M$ = 1.46 versus $M$ = 1.61) and particularly the travel safety perceptions ($M$ = 1.64 versus $M$ = 2.08) and the activities' safety perceptions ($M$ = 1.40 versus $M$ = 1.88) increased. However, the risk severity perceptions ($M$ = 3.98 versus $M$ = 3.90) and especially the intentions to change behavior did not register significant alterations ($M$ = 3.75 versus $M$ = 3.74). With the evolution of the pandemic, respondents are thus less inclined to accept restrictions and more confident with regards to travelling.

However, these mean differences between first and second wave results must be further examined, particularly when exploring the relationships among the constructs under analysis and their evolution. To this end, the structural equation modelling was used, as compared to other statistical approaches: it "provides much more detail about the statistical relationships between all the variables included in a model" [76] (p. 48). Among structural equation modelling techniques, PLS-SEM is particularly appropriate in tourism studies for a number of reasons, including sample size and non-normality issues [76]. The

multigroup PLS-SEM approach was thus used to identify significant differences between respondents surveyed during the first and second wave, with respect to the research model hypotheses. Firstly, the reliability and validity of the measurement model were confirmed (Table 3). Internal consistency reliability was attested with composite reliability (CR) of all constructs considerably above 0.70. Convergent validity was also confirmed since average variance extracted (AVE) values surpassed the reference of 0.50. The recommended criterion of the heterotrait–monotrait (HTMT) ratio of correlations ($HTMT_{.90}$ criterion) allowed us to establish discriminant validity. As for the predictive power of the model, with the $R^2$ of all constructs above 0.10, a main difference exists between the two model estimations: in the first wave, the highest $R^2$ is that of the acceptance of restrictions ($R^2 = 0.443$), explaining 44.3% of the variance, while, in the second wave, the highest $R^2$ is that of the intentions to change behavior ($R^2 = 0.519$), accounting for 51.9% of the variance. Once the validity of the measurement model was checked, the causal relationships of the structural model were analyzed, using the bootstrapping method.

**Table 2.** Descriptive analysis.

| Construct/Associated Items | COVID-19 1st Wave | | | COVID-19 2nd Wave | | |
|---|---|---|---|---|---|---|
| | ***M*** | ***SD*** | ***α*** | ***M*** | ***SD*** | ***α*** |
| Risk severity (TS) | 3.98 | 1.33 | 0.808 | 3.90 | 1.32 | 0.826 |
| 1. I am concerned that I or someone from my family could be a victim of coronavirus | 4.16 | 1.44 | | 4.08 | 1.38 | |
| 2. I have been bothered and feel nervous by coronavirus fear | 3.81 | 1.46 | | 3.72 | 1.47 | |
| Non-susceptibility (NS) | 1.46 | 1.03 | 0.868 | 1.61 | 1.16 | 0.944 |
| 1. Normal citizens are not likely to be victims of coronavirus | 1.52 | 1.14 | | 1.61 | 1.21 | |
| 2. Tourists are not likely to be victims of coronavirus | 1.39 | 1.06 | | 1.60 | 1.18 | |
| Travel safety perceptions (TSP) | 1.64 | 0.90 | 0.871 | 2.08 | 1.10 | 0.909 |
| 1. Travelling abroad with my family is very safe | 1.76 | 1.33 | | 2.17 | 1.35 | |
| 2. Travelling abroad to visit friends or relatives is perfectly safe | 1.60 | 1.25 | | 2.04 | 1.41 | |
| 3. Vacation travel abroad is perfectly safe | 1.50 | 1.19 | | 1.88 | 1.33 | |
| 4. Travelling abroad for business or work is perfectly safe | 1.54 | 1.12 | | 2.06 | 1.33 | |
| 5. I feel very comfortable travelling abroad right now | 1.46 | 1.16 | | 1.95 | 1.43 | |
| 6. Travelling in my country to visit friends or relatives is perfectly safe | 1.87 | 1.19 | | 2.28 | 1.42 | |
| 7. Travelling in my country for business or work is perfectly safe | 1.76 | 1.12 | | 2.19 | 1.32 | |
| Activities' safety perceptions (ASP) | 1.40 | 0.72 | 0.940 | 1.88 | 0.93 | 0.941 |
| 1. Doing sports in closed spaces | 1.47 | 1.00 | | 1.92 | 1.23 | |
| 2. Shopping in shopping malls, streets, markets | 1.60 | 1.01 | | 1.96 | 1.15 | |
| 3. Sightseeing and going on organized visits | 1.55 | 1.04 | | 2.20 | 1.29 | |
| 4. Visiting art galleries, museums, monuments | 1.43 | 0.93 | | 2.07 | 1.22 | |
| 5. Going to casinos or gambling | 1.22 | 0.75 | | 1.49 | 1.02 | |
| 6. Going to concerts, festivals, shows | 1.25 | 0.80 | | 1.55 | 1.11 | |
| 7. Visiting historical and cultural sites, and city centres | 1.47 | 1.00 | | 2.04 | 1.24 | |
| 8. Going out at night, dancing, going to nightclubs or discos | 1.25 | 0.82 | | 1.56 | 1.10 | |
| 9. Dining in restaurants | 1.44 | 0.92 | | 2.34 | 1.23 | |
| 10. Attending sports events | 1.41 | 0.94 | | 1.88 | 1.20 | |
| 11. Going to amusement or theme parks | 1.31 | 0.83 | | 1.71 | 1.09 | |
| Acceptance of restrictions (RA) | 4.25 | 1.15 | 0.934 | 3.93 | 1.14 | 0.909 |
| 1. Total closure of borders | 4.05 | 1.41 | | 3.36 | 1.57 | |
| 2. Preventing citizens coming from areas affected by the disease, from entering my country | 4.26 | 1.31 | | 4.12 | 1.34 | |
| 3. More control on all countries' borders | 4.41 | 1.23 | | 4.12 | 1.30 | |
| 4. Limitations in my country to receive migrants and foreigners | 4.20 | 1.36 | | 3.90 | 1.37 | |
| 5. Mandatory quarantine in case of disease diagnosis | 4.40 | 1.29 | | 4.27 | 1.23 | |
| 6. Limitations in all countries to receive migrants and foreigners | 4.18 | 1.31 | | 3.81 | 1.44 | |
| Intentions to change behaviour (ICB) | 3.75 | 1.32 | 0.726 | 3.74 | 1.30 | 0.826 |
| 1. I am thinking of changing travel or vacation plans due to the fear of coronavirus | 3.85 | 1.57 | | 3.81 | 1.45 | |
| 2. I am thinking about changing many aspects of my life and routines due to the fear of coronavirus | 3.66 | 1.41 | | 3.67 | 1.36 | |

Note. *M* = mean; *SD* = standard deviation; *α* = Cronbach's alpha.

Thereafter, the partial measurement invariance of the two groups of respondents was established (Table 4), allowing for the comparison and interpretation of the group-specific differences of the results of the two data collection periods.

Table 5 shows the results after MGA testing for hypotheses 1 through 7, validating three significant differences between respondents' perceptions and plans surveyed in the first and second wave. As also illustrated in Figure 2, the direct effects of risk severity on the acceptance of restrictions (H4) and on intentions to change behavior (H5) are significantly different. Risk severity registers a higher significant effect on the acceptance of restrictions among the first wave respondents (MGA $p$-value = 0.005; permutation test $p$-value = 0.004; $p < 0.01$); in contrast, it exhibits a higher significant impact on intentions to change behavior among the second wave respondents (MGA $p$-value = 0.044; permutation test $p$-value = 0.049; $p < 0.05$). Results also suggest an evolving effect of activities' safety perceptions on acceptance of restrictions (H7): among the second wave respondents, the more they perceived tourist activities as safe, the less they tended to accept governmental restrictions (MGA $p$-value = 0.029; permutation test $p$-value = 0.028; $p < 0.05$).

**Table 3.** Assessment results of the measurement model.

| Construct/Associated Items | Loadings | | CR | | AVE | |
|---|---|---|---|---|---|---|
| | 1st Wave | 2nd Wave | 1st Wave | 2nd Wave | 1st Wave | 2nd Wave |
| Risk severity (TS) | | | 0.912 | 0.921 | 0.838 | 0.853 |
| TS1 | 0.916 | 0.923 | | | | |
| TS2 | 0.914 | 0.923 | | | | |
| Non-susceptibility (NS) | | | 0.939 | 0.973 | 0.885 | 0.947 |
| NS1 | 0.941 | 0.975 | | | | |
| NS2 | 0.940 | 0.972 | | | | |
| Travel safety perceptions (TSP) | | | 0.901 | 0.928 | 0.566 | 0.648 |
| TSP1 | 0.674 | 0.817 | | | | |
| TSP2 | 0.844 | 0.878 | | | | |
| TSP3 | 0.779 | 0.868 | | | | |
| TSP4 | 0.790 | 0.857 | | | | |
| TSP5 | 0.691 | 0.729 | | | | |
| TSP6 | 0.730 | 0.765 | | | | |
| TSP7 | 0.745 | 0.702 | | | | |
| Activities' safety perceptions (ASP) | | | 0.949 | 0.950 | 0.631 | 0.635 |
| ASP1 | 0.763 | 0.814 | | | | |
| ASP2 | 0.721 | 0.784 | | | | |
| ASP3 | 0.740 | 0.717 | | | | |
| ASP4 | 0.801 | 0.796 | | | | |
| ASP5 | 0.822 | 0.854 | | | | |
| ASP6 | 0.868 | 0.845 | | | | |
| ASP7 | 0.790 | 0.766 | | | | |
| ASP8 | 0.802 | 0.872 | | | | |
| ASP9 | 0.749 | 0.693 | | | | |
| ASP10 | 0.862 | 0.797 | | | | |
| ASP11 | 0.807 | 0.811 | | | | |
| Acceptance of restrictions (RA) | | | 0.948 | 0.932 | 0.752 | 0.695 |
| RA1 | 0.785 | 0.740 | | | | |
| RA2 | 0.800 | 0.851 | | | | |
| RA3 | 0.909 | 0.847 | | | | |
| RA4 | 0.897 | 0.856 | | | | |
| RA5 | 0.910 | 0.841 | | | | |
| RA6 | 0.892 | 0.861 | | | | |
| Intentions to change behaviour (ICB) | | | 0.880 | 0.920 | 0.785 | 0.852 |
| ICB1 | 0.879 | 0.931 | | | | |
| ICB2 | 0.893 | 0.915 | | | | |

Note. See Table 2 for the wording of the items; CR = composite reliability; AVE = average variance extracted.

**Table 4.** Results of invariance measurement testing using permutation.

| Constructs | Configural Invariance (Same Algorithms for Both Groups) | Compositional Invariance (Correlation = 1) | | Partial Measurement Invariance Established | Equal Mean Assessment | | | Equal Variance Assessment | | | Full Measurement Invariance Established |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C = 1 | Confidence Interval (CIs) | | Differences | Confidence Interval (CIs) | Equal | Differences | Confidence Interval (CIs) | Equal | |
| TS | Yes | 1.000 | [0.999; 1.000] | Yes | −0.061 | [−0.199; 0.198] | Yes | −0.013 | [−0.289; 0.274] | Yes | Yes |
| NS | Yes | 1.000 | [0.999; 1.000] | Yes | 0.137 | [−0.196; 0.199] | Yes | 0.240 | [−0.490; 0.461] | Yes | Yes |
| TSP | Yes | 0.991 | [0.990; 1.000] | Yes | 0.437 | [−0.20. 0.205] | No | 0.412 | [−0.376; 0.369] | No | No |
| ASP | Yes | 0.998 | [0.997; 1.000] | Yes | 0.534 | [−0.200; 0.198] | No | 0.523 | [−0.547; 0.517] | No | No |
| RA | Yes | 0.999 | [0.999; 1.000] | Yes | −0.260 | [−0.200; 0.204] | No | −0.019 | [−0.347; 0.353] | Yes | No |
| ICB | Yes | 0.999 | [0.998; 1.000] | Yes | −0.013 | [−0.203; 0.200] | Yes | −0.038 | [−0.246; 0.234] | Yes | Yes |

**Table 5.** Hypotheses testing.

| Hypothesis | Path Coefficient | | Confidence Interval (95%) Bias Corrected | | Path Coefficient Difference | *p*-Value Difference | | Supported |
|---|---|---|---|---|---|---|---|---|
| | COVID-19 1st Wave | COVID-19 2nd Wave | COVID-19 1st Wave | COVID-19 2nd Wave | | MGA | Permutation Test | |
| H1. Non-susceptibility → Travel safety perceptions | 0.316 | 0.381 | [0.090; 0.493] | [0.217; 0.520] | –0.064 | 0.614 | 0.620 | No/No |
| H2. Non-susceptibility → Activities' safety perceptions | 0.386 | 0.496 | [0.171; 0.582] | [0.315; 0.657] | –0.110 | 0.412 | 0.420 | No/No |
| H3. Non-susceptibility → Acceptance of restrictions | –0.137 | –0.032 | [–0.260; –0.050] | [–0.200; 0.120] | –0.105 | 0.271 | 0.288 | No/No |
| **H4. Risk severity → Acceptance of restrictions** | 0.651 | 0.367 | [0.521; 0.759] | [0.196; 0.514] | 0.284 | 0.005 | 0.004 | **Yes/Yes** |
| **H5. Risk severity → Intentions to change behaviour** | 0.543 | 0.715 | [0.397; 0.661] | [0.599; 0.808] | –0.172 | 0.044 | 0.049 | **Yes/Yes** |
| H6. Travel safety perceptions → Intentions to change behaviour | –0.040 | –0.031 | [–0.160; 0.093] | [–0.141; 0.084] | –0.009 | 0.916 | 0.920 | No/No |
| **H7. Activities' safety perceptions → Acceptance of restrictions** | –0.054 | –0.297 | [–0.194; 0.053] | [–0.449; –0.117] | 0.243 | 0.029 | 0.028 | **Yes/Yes** |

Note. Significant differences are highligted in bold in the table.

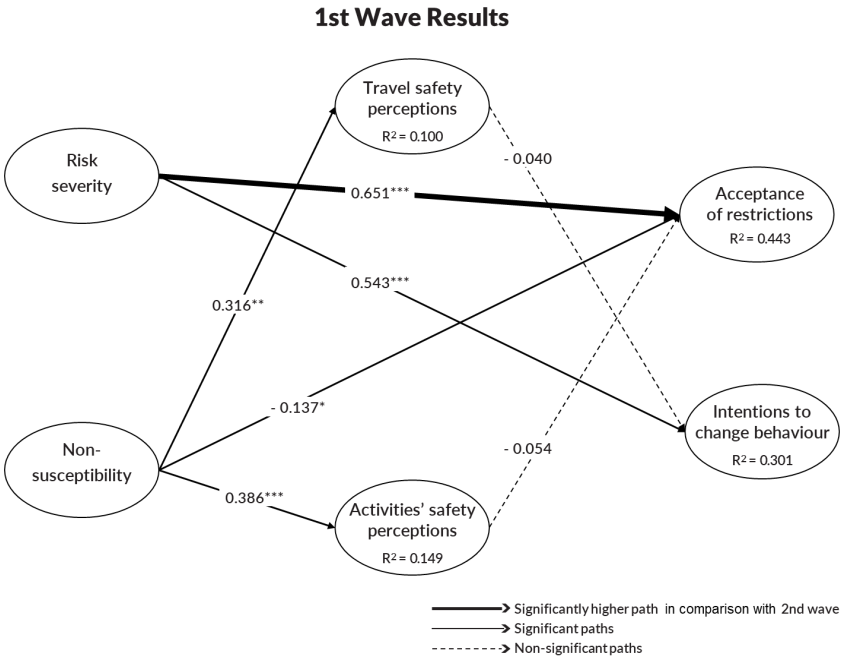


**Figure 2.** *Cont.*

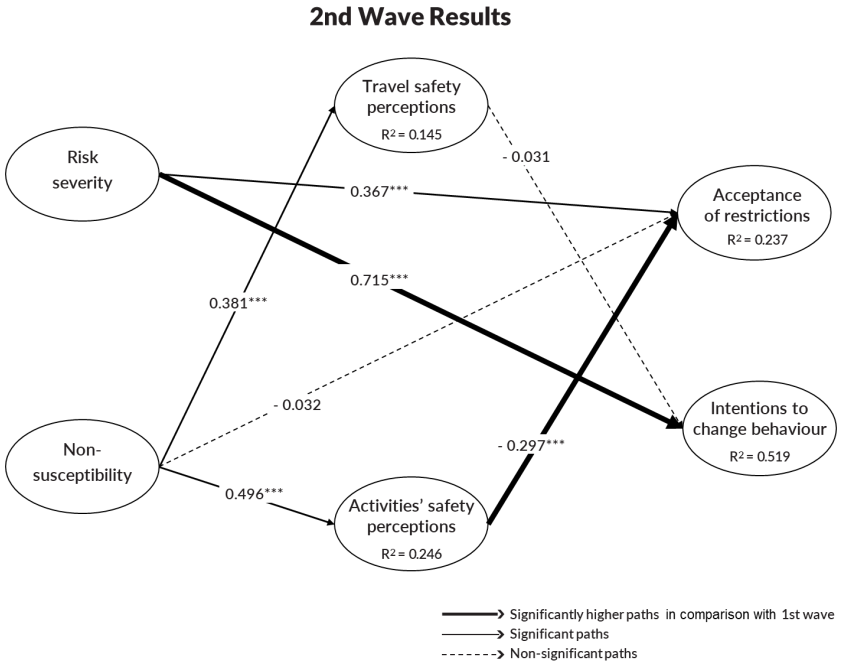


**Figure 2.** Results in the first wave and second wave of COVID-19. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.5$ (two-tailed test).

These differences suggest that, as a result of the minimization of anxiety and habituation effect [52], as time goes by, youngsters seem to rely more on their own precautionary behavioral measures [77,78] than on political and travel restrictions. Additionally, with a serious effect on society, economy, and mobility, these restrictions have been progressively reduced over time.

Findings suggest that it was the effects of the perceived coronavirus risk that especially evolved during the pandemic. Though perceived non-susceptibility shows increasing effects on travel and activities' safety perceptions, as well as on the acceptance of restrictions, differences between the first wave and the second wave results are not statistically significant. Additionally, the statistically significant augmented effect of activities' safety perceptions on acceptance of restrictions highlights that perceived safety, with regards to activities, has higher predictive power than more general perceptions about travel safety.

## 7. Conclusions

Results reveal significant differences between young people surveyed during the first and second coronavirus waves, particularly in the effects of risk severity on acceptance of restrictions and intended adaptive behavior. Arguably because they are less affected than other age groups by severe forms of COVID-19 and are increasingly confident in their self-efficacious behavior, results show that, over time, youngsters tend to be less inclined to accept the imposition of pandemic restrictions and feel safer about travelling.

Conceptually, the study adds to the health crisis literature, clarifying the relationships among risk perceptions, tourism safety perceptions, acceptance of restrictions, and coping behavioral intentions among young people, following COVID-19. Specifically, by integrating three different theories pertaining to health, consumer behavior, and tourism fields, this study presents an innovative perspective on the study of tourism and health crisis.

Within the risk perception attitude (RPA) theoretical framework [15], the present study provided a broad understanding of youngsters' attitudes, suggesting that this segment is soon ready to return to leisure and tourism activities, confirming past studies [21,22,45,46,48,79].

As the health belief model (HBM) is concerned [31,32], findings suggest that coping with COVID-19 risks evolved more towards self-responsibility and the adaptation of individual protective behaviors than on the basis of governmental restrictions, which were

also, over the course of the pandemic, temporarily and progressively lessened. These results may be explained by the minimization of anxiety and acceptance of restrictions by means of habituation [52]. Simultaneously, youngsters seem to have internalized responsibility for taking their own precautionary measures, maintaining the intention to change their own behaviors [77,78].

Furthermore, the study has contributed to the exploration of the youth desensitization process [52] in the tourism context and its specific effects regarding safety perceptions, acceptance of restrictions, and protective behavioral intentions. Moreover, as travelling in small groups or "vacation pods" [80] and engaging in limited travel activities is proven to be a risk-reducing mechanism during a health crisis [45], safety perceptions of activities were examined per se, which enlightened the relationship between susceptibility, safety perceptions, and coping attitudes, as well as self-regulatory behavior.

Pragmatically, the study highlights a call for various strategies to handle risk and re-establish travel, particularly among young people, who represent the future of tourism markets. Young people are expected to travel and engage earlier in activities that imply close contact and are more crowded. Findings point to the heightened potential of the youth market segment in the current context. They indicate higher perceptions of safety as the pandemic evolves and at the same time maintain intentions for self-regulatory behavior. This specific finding brings important clues to tourism organizations that should build differentiated marketing strategies for a segment that may fuel the tourism sector recovery. Nevertheless, since activities' safety perceptions exhibit a growing negative impact on the acceptance of restrictions, special attention should be paid to crowded group settings, such as youth events, since they still constitute active routes of transmission of the disease and appropriate measures are more likely to be ignored [48]. Grounded on cognitive and behavior psychology [81], authorities and tourism services should target their communication to different population segments, as well as adapt their messages according to the evolution of health crises, considering the inherent psychological process of desensitization. It also seems advisable for policymakers and practitioners to include appropriate safety messaging [21,79], considering activities on offer, and develop marketing efforts, promoting a safer, more diverse, and more sustainable product portfolio, such as destinations experiencing undertourism, outdoor activities, and nature-based travel [82].

In Egypt, after the Arab Spring and consequent instability, international arrivals decreased, and residents drove the sector. Now, Egyptian youngsters, less fearful and less affected by severe forms of COVID-19, will probably be key in the coming years. Since they are expected to start travelling sooner, results highlight the relevance of stressing the adoption of precautionary measures among young people and the increasing consideration they give to the safety of the activities performed while travelling.

Finally, the limitations of this study should be acknowledged. The study was conducted only in Egypt, the sampling approach was non-probabilistic, and the number of respondents is somewhat limited. Although data collection took place at two different points in time, we did not survey the same participants given the snowball sampling approach used and the participants' anonymity. Also derived from the severe pandemic constraints when the data collection started, we did not survey tourists, but mostly university students, which is a limitation of the study and hampers generalization for the whole young population in Egypt. Future research should further investigate the effects of the COVID-19 disaster on adaptive behavior, travel plans, and activity preferences among young people, as well as develop cross-national studies and comparative analysis with other age groups.

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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

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