

# Can tourists get used to the threat? A comparative study of tourists' behavioral intention during the COVID-19 pandemic

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## Abstract

**Purpose** – The purpose of this paper is to present a model depicting the relationship between the behavioral intention of tourists in the conditions prevailing during a pandemic and other variables.

**Design/methodology/approach** – In constructing the research procedure, two measurements of tourist behavioral intention were taken into account, which were taken far apart in time. In verifying the developed model, the results of surveys of 1,615 people carried out in June 2021 and 917 people carried out in December 2021 were considered.

**Findings** – As a result of the habituation process, tourists show greater acceptance of the restrictions.

**Practical implications** – Information on the basis of which companies make management decisions plays a significant role in the creation of company value. In the tourism sector, the information concerns primarily consumer behavior.

**Originality/value** – Changes over time in risk perception, health protection motivation, and reactance due to perceived pandemic-related restrictions were taken into account in the context of behavioral intention towards tourism.

**Keywords** Behavioral intention, Tourism, Theory of planned behavior, Habituation

**Paper type** Research paper

## 1. Introduction

For nearly three years, individuals, organizations, and entire societies learned how to function under the conditions prevailing during the COVID-19 pandemic caused by the SARS-CoV-2 virus. The pandemic has been particularly hard for the tourism sector, which has been unable to offer its full range of services as a result of the numerous restrictions on travel and lodging, dining establishments, and relaxation areas. This has affected the financial health and the value of tourism companies and prompted questions about the future of individual entities under the conditions associated with the continuing epidemic threat. Although crises are an immanent feature of business, there is always the question of what will make a company overcome difficulties and return to the path of growth. Knowledge of customer behavior seems to be important in the search for answers to this question in the case of pandemics, as well as other phenomena that cause a collapse of demand. Such knowledge plays a key role in



making accurate management decisions, thereby influencing the company's financial condition and its ability to predict changes in consumer behavior and habits.

Tourists' behavior observed so far testifies to their constant adaptation to the new conditions shaped by the successive waves of the pandemic and to their sustained willingness to participate in tourism activities despite the existing risk of infection resulting from the emergence of new mutations of the Sars-Cov-2 virus. Scholars have already studied individuals' and organizations' adaptation to the different conditions during the pandemic in various contexts (e.g. [Aybar-Damali, McGuire, & Kleiber, 2021](#); [Berbekova & Uysal, 2021](#); [Galvin et al., 2021](#); [Lück & Aquino, 2021](#)). During the pandemic, which continues to affect companies' operations in a wide spectrum, they are developing mechanisms to adapt to changing market conditions. In this context, the study of the factors that shape tourists' decisions in changing circumstances is one of the interesting research threads, which is important for building flexible operating strategies for tourism companies, as well as for preparing, evaluating, and assessing financial and other forecasts. New research threads focus on the adaptive mechanisms that shape tourists' consumer behavior under the conditions of an ongoing pandemic ([Iio, Guo, Kong, Rees, & Wang, 2021](#); [Zhang, Cheng, & Liu, 2021](#)). Our study complements this new area of interest and aims to clarify how adaptive mechanisms influenced behavioral intentions concerning tourist travel (purchase of travel products), as well as the variables that shape them, i.e. (1) protective motivation, (2) risk perception of viral infection during tourist travel and its consequences, (3) the perception of the inconvenience of the pandemic restrictions, and (4) reactance to these restrictions. Determination of the behavioral intention to take tourist trips during a pandemic, when the SARS-CoV-2 virus is still present in public spaces, is important for the operational and strategic activities of organizations, not only in the tourism sector.

In the course of our study, we analyzed the factors shaping the behavioral intention concerning tourist travel of the residents of Gdańsk (Poland) whom we surveyed twice with an interval of six months. Repeating the survey in a different environment after another six months of the pandemic enabled us to broaden the previous considerations by adding an evaluation of possible adaptation to the new situation following the acceptance of the threat arising from the continued epidemic risk. The theory of habituation ([Peeke & Petrinovich, 1984](#)) underlined our considerations. It can explain the mechanisms behind the behavioral intention manifested by tourists. Adaptation – i.e. the final stage of the habituation process – allows people to function relatively normally in an altered state of the environment and occurs as a result of the extinction of responses to the stimuli that are constantly present in that environment. We applied the habituation theory as the foundation for studying the factors affecting behavioral intention regarding tourist travel at various stages of the SARS-CoV-2 pandemic. We aimed to determine if persistent exposure to the risk of contracting the virus alters risk perception, and views on the inconvenience of pandemic restrictions, and subsequently affects perceived resistance and motivation for health-conscious behaviors.

The first survey conducted in June 2021 allowed us to test a model in which the four factors identified above shaped the behavioral intention related to tourist travel. On the other hand, the second survey conducted in December 2021 – when the respondents already had more experience in coping with the pandemic and with the effects of the pandemic restrictions – allowed us to verify the hypotheses regarding the impact of the factor of duration of the pandemic, which contributed to individuals' adaptive behavior, derived from the habituation theory, as a variable that strengthens or weakens the effect of selected factors shaping the behavioral intention related to tourist travel.

Thus, we aimed to show how the impact of the analyzed factors (reactance, protective motivation, perceived risk, and perceived restrictions) on the behavioral intention concerning tourist travel changed after the subsequent six months of the pandemic and, consequently, to verify the validity of using the developed model to explain tourist behavioral intention under

the conditions prevailing during the pandemic. We used a linear regression procedure to verify the model.

## 2. Literature review

### 2.1 *Changes in consumer behavior in light of the habituation theory*

From the first months of 2020, consumers have been constantly bombarded with information about the course of the COVID-19 disease, the mutations of the Sars-Cov-2 virus that causes it, and the resulting risks to their lives and health. The media constantly reported on the number of cases and deaths, the restrictions imposed, and the pandemic's impact on the economic, socio-cultural, and psychological situation. In March 2020, the COVID-19 disease seemed to be extreme and deadly, and entail an unpredictable course. Two years later, it became part of a new pandemic normalcy. We may assume that this changed both because of the mass vaccination, which built up the so-called herd immunity in the population, and the psychological adaptation mechanisms, described, among others, by the habituation theory.

We based our considerations on the habituation theory, which we adopted for the study of consumer behavior from behavioral psychology (Peeke & Petrinovich, 1984). Behavioral psychology research notes that individuals tend to extinguish their responses to stimuli that are constantly present if their observation does not bring about significant changes. This preserves their ability to respond to stimuli that are genuinely new. In humans, automatic phenomena are also joined by higher-order processes, as described by the AREA (attention, response, explanation, adaptation) model (Wojciszke, 2020, p. 254). Initially, a new stimulus draws attention and triggers a response and an attempt to understand the processes or the events taking place. After some time, individuals adapt to the new situation, which becomes normal for them. In social sciences, adaptation refers to the capacity to act according to the norms, demands, and constraints of a given community (Uglanova, 2014). In this context, habituation involves the cognitive process of becoming accustomed, and behavioral changes are observed in how consumers respond to the stimuli they encounter in their surroundings. (Liberali, Gruca, & Nique, 2011). For negative stimuli, the process culminating in adaptation is usually longer than for positive stimuli.

Social sciences study various adaptation processes in individuals using the habituation theory. This was the purpose of the meta-analysis of studies on the responses that were manifested by individuals on communication and technology platforms in response to extremely stressful events (e.g. natural or technological disasters). Gaspar, Yan and Domingos (2019) found that individuals fulfill three different types of adaptive functions in response to crises.

Another study of adaptive behavior in a harsh and unpredictable environment was Fenneman and Frankenhuis's (2020) study of impulsive behavior. Studies related to the COVID-19 pandemic have analyzed the adaptive behavior of individuals (Aybar-Damali *et al.*, 2021) and organizations (Loblay, Garvey, Shiell, Kavanagh, & Hawe, 2022; Çakmak, Lie, Selwyn, & Leeuwis, 2021). Nkengasong *et al.* (2020), Ayaz-Alkaya and Dülger (2022), Aksoy, Abiç, Değirmenci and VefikuluçayYılmaz (2021), and Knowles and Olatunji (2021) also studied emotional responses related to COVID-19 according to the habituation theory.

### 2.2 *Behavioral intentions related to tourism under pandemic conditions*

The COVID-19 pandemic provided an opportunity for research into consumer behavior in various areas, including tourism activities. The studies conducted during the pandemic allowed researchers to, among other things, state that as a result of the pandemic, some people show behavioral intentions to search for outdoor tourist attractions (Randler, Tryjanowski, Jokimäki, Kaisanlahti-Jokimäki, & Staller, 2020; Cheng *et al.*, 2022). The authors

indicated that this type of tourism can contribute to economic recovery and help address mental health issues worldwide. Zhang, Cheng and Liu (2021) present a different perspective on the behavioral intentions of tourists during the pandemic. They studied Chinese tourists' intentions to travel and their adaptive behaviors exhibited under the influence of COVID-19. Zhang *et al.* (2021) confirmed that Chinese tourists exhibit positive adaptive behavior influenced by the perceived COVID-19 severity, the opinion on coping with the pandemic at the societal level, the perceived support from other people, the perceived effectiveness of information from the social media, and the intention to travel during the COVID-19 pandemic.

Meanwhile, Poulaki and Nikas studied the behavioral intentions of Greek tourists after the first pandemic wave. In their questionnaire on travel destination intentions, mode of transportation, and type of accommodation, they included perceptions of international standards of health protection against the virus. Poulaki and Nikas' article illustrates the tourist intentions of Greeks and their perceptions regarding the safety measures implemented at destinations and by tourism companies (Poulaki & Nikas, 2021). Pappas (2021) conducted another study of Athenians' holiday tourism intentions during the total lockdown in Greece. The study considered the impact of the perceived risk related to travel, the choice of a specific destination, the consumption of meals during holidays, and the perception of the impact of the COVID-19 pandemic on the psychological and economic aspects of the respondents' lives. As a result of his analysis, Pappas found that, especially for older respondents, the risks associated with holiday trips impacted the respondents' intentions concerning their holidays associated with COVID-19. According to research conducted by Pappas (2021), the monthly income of the respondents may also be significant when expressing specific behavioral intentions in the study in question.

Research on tourists' behavioral intentions during the COVID-19 pandemic mostly demonstrated the impact of the perceived risk associated with the pandemic (Golets, Farias, Pilati, & Costa, 2023), the fear felt (Onat, Karakuş, Pimentel, & Doğan, 2021), and respondents' protective motivation (Zhang *et al.*, 2021) influencing the intention studied.

Despite its sometimes extreme course, the COVID-19 pandemic became a part of everyday life as time passed. Consumers' initial panic response (Chen, Jin, Yang, & Cong, 2022; Taylor, 2021) began to wane over time and they began to adapt to the market conditions (Zhang *et al.*, 2021, Zhang, Song, Wen, & Liu, 2021).

### 3. Research framework

#### 3.1 Research model and hypotheses

We constructed the theoretical framework for the development of the original model for the study of tourists' behavioral intention by means of the theory of planned behavior (Ajzen, 1991), the risk perceived by consumers (Cox, 1967; qtd. in Hasan, Ismail, & Islam, 2017), the reactance theory (Brehm, 1966), and the protection motivation theory (Rogers, 1975). We adapted the questions used in previous studies for the designed questionnaire (Table 1).

The respondents provided their answers on a seven-point Likert scale. In the first survey conducted in June 2021, we found that the perceived risk, the perceived restrictions, the reactance, and the motivation for healthy behavior were statistically significant variables in determining the behavioral intention concerning tourist travel under the conditions associated with the COVID-19 pandemic (Beben, Kuczamer-Kłopotowska, Młynkowiak-Stawarz, & Półbrat, 2021).

When constructing the research procedure, which included two measurements of tourists' behavioral intentions taken at different times, we assumed that the individuals' aforementioned desire to restore pre-pandemic tourist activity may result from the habituation process. We assumed that the respondents ignored the ever-present information about the SARS-CoV-2 pandemic in their surroundings because the situation they observed in the following months of

**Table 1.**  
Constructs and  
measurement items

Construct	Items	Measures	Supporting references
Behavioral intention	Q1	If I had the possibility of going on a tourist trip during the COVID-19 pandemic, I would consider such an option	Reddy, York and Brannon (2010), pp. 515–516
Perceived restrictions	Q2	Restrictions introduced due to COVID-19 threaten my freedom of choice related to the possibility of going on a tourist trip	Dillard and Shen (2005), Kavvouris, Chrysochou and Thøgersen (2020)
	Q3	Restrictions pertaining to tourist trips, introduced on account of COVID-19, are burdensome for me	Dillard and Shen (2005), Kavvouris <i>et al.</i> (2020)
Reactance	Q4	How important is the possibility of going on a tourist trip to a freely selected place at a freely selected time for you?	Ding, Legendre, Han and Chang (2021)
	Q5	I feel angry when I think about the restrictions related to tourist trips introduced on account of the COVID-19 pandemic	Rains and Turner (2007)
	Q6	When I discuss restrictions and bans related to tourist trips, I express my opposition against them	Kavvouris <i>et al.</i> (2020)
Perceived risk	Q7	In my opinion, a tourist trip is nowadays (June 2021): risky/safe	Cui, Liu, Chang, Duan and Li (2016), Huang, Chuang and Lin (2008)
Protection motivation	Q8	I believe that taking protection measures with respect to own health during a tourist trip is necessary	Wang, Liu-Lastres, Ritchie and Mills (2019)
<b>Source(s):</b> Authors' own elaboration			

the pandemic did not bring about significant changes in their lives. To test the validity of the assumption based on the habituation theory, we first compared the epidemic restrictions in Poland in June and December 2021 and the data on the number of infections and the number of deaths, presented in the following section – which objectively illustrate the pandemic situation in Poland during the study periods – with how the respondents felt about the inconvenience of these restrictions in June and December 2021. Accordingly, we formulated the following hypothesis:

*H1.* The perceived inconvenience of pandemic restrictions decreases over the long term, regardless of their objective characteristics.

Habituation is a process that occurs over time and is linked to exposure to stimuli present in the environment. Therefore, in designing a study on the behavioral intention of tourists during the COVID-19 pandemic, we planned to conduct two identical questionnaire surveys six months apart. The weakness of this construct is the inability to control how often the respondents encounter pandemic-related stimuli. However, we assumed that the respondents who participated in the study came from the same population and experienced exposure to COVID-19 pandemic-related stimuli to a similar extent. Indeed, the pandemic was present in public discourse and remained widely reported in all types of media for a period of nearly two years (until the date of the second survey). At the start of the second survey, we assumed that habituation as a process experienced by individuals would affect their adaptive behavior, which may manifest itself in a less intense response to the stimuli associated with the COVID-19 pandemic. The model we examined involved different factors related to how people perceive pandemic restrictions. These factors included how the restrictions affected their ability to travel as tourists, their sense of resistance to these measures, and their perceived

infection risk. We also assumed that habituation does not change the intention to protect health, which, according to the protection motivation theory, remains independent of external pandemic constraints. Based on this, we formulated the following hypotheses:

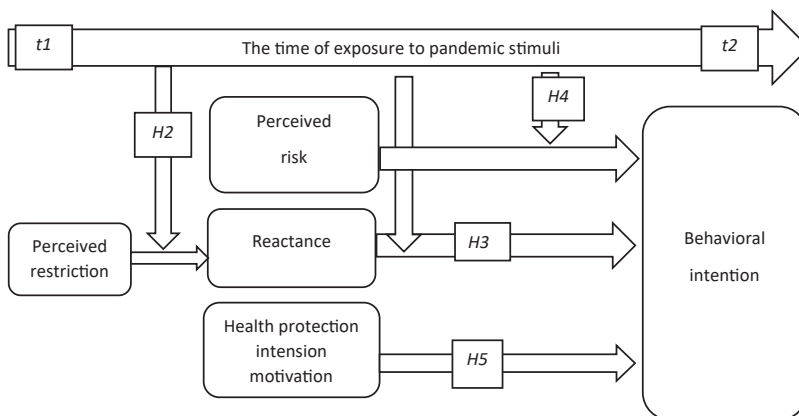
- H2. The relationship between how people perceive travel restrictions in the COVID-19 pandemic and their reactance weakens in the long term.
- H3. The relationship between the reactance and the intention to tourist travel during the COVID-19 pandemic becomes weaker in the long term.
- H4. The relationship between the perceived risk associated with COVID-19 and the intention to tourist travel during the COVID-19 pandemic becomes weaker in the long term.
- H5. There is a relationship between the intention to protect health and the intention to tourist travel during the COVID-19 pandemic.

Considering the variables studied and the hypotheses proposed, we prepared a detailed study model illustrated in Figure 1.

When building the research model, we assumed that variables in the form of the risk perceived by the consumers, the perceived inconvenience of the restrictions, the perceived reactance, and the protective motivation would less and less clearly explain the behavioral intention concerning tourist travel as the COVID-19 pandemic continued, because they would elicit weaker and weaker responses from consumers. Consumer adaptation to the changing pandemic situation may be the result of the habituation process associated with individuals becoming accustomed to information about the pandemic and the restrictions in place. By comparing how respondents perceive the pandemic at two different times (t1 and t2), we could illustrate how the habituation process is significant over time for adapting to crises.

### 3.2 Research method

To elaborate on the survey results, we had to analyze both primary and secondary data. The analysis of secondary data covered the regulations that were the source of restrictions applied to public places, means of transportation, restaurants, etc., as well as data on the number of recorded cases of SARS-CoV-2 infections and deaths of patients with COVID-19. The data formed the formal and legal context for people's actual behavior. The second study



Source(s): Authors' own elaboration

Figure 1. Research model

area was the subjective perception of pandemic restrictions shaped by observation of the environment and the information appearing in the media. We examined the restrictions perception using three questions (Dillard & Shen, 2005; Kavvouris *et al.*, 2020) that constituted the restriction perception index. The Cronbach's alpha for the created index was 0.92, which was a very high score that showed the tool's reliability.

To verify H1, i.e. to check whether the differences between the perceptions of the restrictions between the respondents in June 2021 and December 2021 were statistically significant, we used the Mann–Whitney *U* test (Francuz & Mackiewicz, 2012). We also used Mann–Whitney *U* test to examine if there were statistically significant differences in how the study groups responded in terms of the variables we examined, including reactance, perceived risk, protective motivation, vaccination rate, and behavioral intention. To verify H2–5, we compared the results of regression analyses for the previously developed study model of tourist behavioral intention under pandemic conditions in June and December 2021.

We collected the data that constituted the basis for the analysis during two separate surveys conducted using the CAPI method with the help of questionnaires distributed to respondents in the Gdańsk Tourism Organization's research panel. In each survey, the respondents answered the same set of questions. We conducted the first survey in June 2021 and the second – six months later, in December 2021. In line with the adopted theoretical framework, both questionnaires concerned the opinions about the factors that influence the intention to participate in tourist travel during the COVID-19 pandemic. After the first survey, we accepted responses from 1615 complete questionnaires for analysis, while after the second survey, we accepted responses from 917 complete questionnaires. When analyzing the collected results, it is important to consider the fact that both samples were independent and selected in a non-random manner.

#### 4. Data analysis

##### 4.1 Characteristics of the respondents participating in the survey

We took both samples for the study from the same population; the respondents were residents of Gdańsk (Poland) registered in the so-called Gdańsk resident card system. Table 2 shows a comparison of the demographic characteristics of the respondents surveyed in June 2021 and December 2021.

Although we could not replicate the June survey with an identical sample, an analysis of the data summarized in Table 2 indicated that the demographic structure of the study groups was very similar, which allowed us to compare them.

##### 4.2 Status of the pandemic and pandemic restrictions during both surveys

When analyzing the information depicting the development of the pandemic in Poland (Table 3) and the regulations on epidemic restrictions, it should be noted that in the course of

Gender	VI (%)	XII (%)	Education	VI (%)	XII (%)	Age	VI (%)	XII (%)
Female	60.8	58.7	Elementary	0.5	0.2	18–30	16.5	13.4
Male	37.9	39.0	Vocational	1.4	2.2	31–40	33.1	29.4
Refusal to answer	1.3	2.3	Secondary	19.5	19.7	41–50	28.4	30.2
			Higher	78.6	77.9	51–60	10.9	13.2
						61+	11.1	13.7
Total	100	100	Total	100	100	Total	100	100

Source(s): Authors' own elaboration

**Table 2.**  
Characteristics of the respondents surveyed in June and December 2021

the second survey held in December 2021, the situation was much more serious than in June 2021.

When comparing the extent of restrictions mandated by universal laws, it is important to consider that during the first survey, the Polish government was conducting a process aimed at lifting these restrictions (Dz.U. z 2021 r., poz. 879; poz. 905; poz. 957; poz. 1013; poz. 1054; poz. 1116; poz. 1125; poz. 1145). When easing the restrictions in June, the government stressed that it did not mean an end of the fight against the coronavirus and reminded people of the basic safety rules in force, such as covering the nose and mouth, keeping a distance of at least 1.5 m from others, washing or disinfecting hands, and ventilating rooms.

When we repeated the survey in December, the situation was different, as the government decided to gradually tighten restrictions due to the significant increase in the number of infections. The maximum occupancy rates of auditoriums in public meeting places shrank from 75% of available seats to 50%. Noteworthy, the limits did not include those vaccinated against SARS-CoV-2, whose percentage in the total population increased from 35% in June to more than 55% in December 2021. This may have made the subjective perception of the restrictions less severe. However, the situation was changing dynamically and on December 15, 2021, the government decided to temporarily close clubs and discos, but introduced an exemption for New Year's Eve from December 31, 2021, to January 01, 2022 (Dz.U. z 2021 r., poz. 1878; poz. 1967; poz. 2177; poz. 2311).

Although, objectively, the situation in December was much worse than in June 2021, we assumed that the perception of the risks and the restrictions among respondents may be different. To check whether the differences between the perceptions of the restrictions among the respondents in June 2021 and December 2021 were statistically significant, we used the Mann–Whitney *U* test and formulated a null hypothesis regarding the lack of significant statistical differences in the distributions of the responses regarding perceptions of pandemic restrictions among the respondents in June and December 2021, which we verified using the Mann–Whitney *U* test and, consequently, rejected.

While the difference between respondents' opinions on the perceived restrictions expressed in June and December was statistically significant, this did not mean that people perceived the restrictions in place in December as more severe than those in June. When analyzing the results, we observed that responses with a strong negative perception of the restrictions predominated in both periods. However, an analysis of the average results in both groups shows that in June 2021, the respondents perceived the restrictions as more inconvenient than in December 2021, even though the restrictions in December were formally stricter. We saw it reflected both in the arithmetic average, which dropped from 5.39 to 4.81, and the median, which reduced in the value of the index of the perception of pandemic travel restrictions from 5.71 (June) to 5.00 (December) (Table 4). Furthermore, we noticed an increased percentage of respondents who did not find the restrictions particularly

	30 June 2021	31 December 2021
Total confirmed cases	2.88 million	4.09 million
Total confirmed deaths	75,021	96,415
Daily new confirmed COVID-19 cases (7-day rolling average)	103	10,774
Hospitalized	1,062	20,762
Percentage vaccinated	1 dose 44.5%	1 dose 57.1%
	2 doses 35.0%	2 doses 55.5%
		3 doses 18.1%

**Table 3.** Summary of the data on the status of the pandemic in June and December 2021 in Poland

**Source(s):** Authors' own elaboration based on <https://ourworldindata.org/coronavirus/country/poland> (DOA: March 20, 2022)



**Table 4.**  
Inconvenience of  
selected types of  
restrictions on tourist  
travel

Restriction Month of the study	Crossing national borders		The use of means of transport (planes, trains and buses)		The use of tourist attractions (e.g. amusement parks and cultural sites)		The use of restaurants		Staying in hotels and guesthouses	
	VI	XII	VI	XII	VI	XII	VI	XII	VI	XII
Average	5.75	5.26	5.44	4.81	5.33	4.65	5.40	4.48	5.13	4.50
Median	6.00	6.00	6.00	5.00	6.00	5.00	6.00	5.00	5.00	5.00
Standard deviation	1.53	1.91	1.62	1.97	1.59	1.93	1.63	1.98	1.63	1.93

**Source(s):** Authors' own elaboration

inconvenient in December. When analyzing the distribution of the responses regarding the perceptions of the inconvenience of the different types of restrictions covered by the study, we observed a decrease in the inconvenience of the restrictions in all categories, with those related to crossing the national border perceived as the most severe.

When comparing the legal status of the tourist restrictions – which were more severe in December than in June – with the respondents' subjective perception thereof, we can infer that the respondents have adapted, as they saw stricter restrictions as less bothersome. Such results confirm H1, which states that in the long term, people perceive the pandemic restrictions as less and less inconvenient, regardless of their objective severity.

#### 4.3 A comparative analysis of the research results

As a part of the study, we tested a model in which behavioral intentions are a function of three variables, i.e. the potential tourist's perceived reactance (through the lens of the perceived pandemic constraints), the perceived risk of tourist travel during the pandemic, and the perceived motivation for protective behavior (protection of health) (Beben *et al.*, 2021). Using the data from two independent surveys collected in June and December 2021, the Mann–Whitney *U* test has been conducted. The Mann–Whitney *U* test indicated that the difference in the responses regarding protective motivation for the independent samples surveyed in June and December was not statistically significant. This means that the protective motivation was not related to the pandemic's duration. For perceived risk, behavioral intention, reactance, and constraint perception, the Mann–Whitney *U* test suggests that we should reject the null hypotheses and accept the alternative hypotheses, indicating differences in response distributions based on the study month. We prepared a frequency table to compare in detail the responses given by the respondents for the studied indicators (Table 5).

**Table 5.**  
Summary statistics for  
constructs for surveys  
in June and  
December 2021

Variables Month of the study	Behavioral intention		Reactance		Perception of the restrictions		Perceived risk		Protective motivation	
	VI	XII	VI	XII	VI	XII	VI	XII	VI	XII
Average	4.99	5.29	5.00	4.68	5.39	4.81	2.48	3.85	5.92	5.91
Median	5.00	6.00	5.00	4.67	5.71	5.00	2.50	3.75	6.00	7.00
Dominant	7.00	7.00	7.00	7.00	7.00	7.00	2.50	3.50	7.00	7.00
Standard deviation	1.98	1.87	1.52	1.69	1.32	1.68	0.70	1.09	1.42	1.60

**Source(s):** Authors' own elaboration

An analysis of the responses' median shows differences between the studied samples. Reactance, i.e. the resistance to travel restrictions due to the COVID-19 pandemic, related to the ability to travel freely at any time, diminished slightly as the pandemic persisted. Median analysis for June and December indicated a reduction in the resistance toward the restrictions and a decrease in the feeling of anger triggered by the restrictions. Moreover, people perceived the restrictions in December as less inconvenient than in June. The question about the perceived risk concerned various types of tourist travel and a comparison of the possibility of infection with the coronavirus at home and during certain types of tourist travel. In December, the median changed, meaning that more people began to perceive the risks of a tourist trip as lower than in June. These results were consistent with the habituation theory. They indicated that the respondents were getting used to the stimuli associated with the pandemic and adapting to the new situation, showing a higher intention concerning tourist travel in December than in June. They felt a lower degree of reactance related to the pandemic restrictions, perceived a lower risk associated with tourist travel in the pandemic environment, and perceived pandemic restrictions as less inconvenient as the pandemic continued.

After comparing the significance of differences in the responses related to the studied indicators, we also confirmed the model's suitability for explaining tourist behavioral intentions during the pandemic (see Table 6). We used a linear regression procedure to verify the model. The table below shows the results of the model used to examine the impact of reactance, perceived risk, and protective motivation on behavioral intention. The study also included the perceptions of the restrictions for which reactance was the mediating variable (Zakrzewska-Bielawska, 2018).

In June, the relationships studied proved statistically significant. In contrast, in December, the perception of the restrictions changed and proved to be statistically insignificant. Thus, we rejected H2. A comparative analysis of the statistical significance of the studied relationships and their magnitudes confirmed H3, which states that the relationship between the reactance and the intention to travel during the COVID-19 pandemic weakens in the long term. The comparative analysis also confirmed H4, which states that the relationship between the perceived risk associated with COVID-19 and the intention to travel during the pandemic weakens in the long term. We also accepted H5, which states that there is a relationship between the intention to protect health the intention related to tourist travel during the COVID-19 pandemic.

Month of the study	Non-standardized coefficients				Standardized coefficients		t		p value	
	B		Standard error		Beta		VI	XII	VI	XII
	VI	XII	VI	XII	VI	XII	VI	XII	VI	XII
(Constant)	3.793	4.347	0.329	0.390			11.516	11.154	0.000	0.000
Reactance	0.550	0.540	0.039	0.053	0.422	0.487	14.048	10.112	0.000	0.000
Perceived risk	-0.631	-0.502	0.066	0.055	-0.222	-0.293	-9.621	-9.049	0.000	0.000
Perception of the restrictions	0.118	-0.036	0.041	0.049	0.079	-0.032	2.866	-0.734	0.004	0.463
Protective motivation	-0.105	0.089	0.030	0.038	-0.076	0.076	-3.465	2.353	0.001	0.019

Note(s): (1) Dependent variable: intention

Source(s): Authors' own elaboration

**Table 6.** Comparison of the studied variables at the regression analysis in June and December 2021

In the course of an analysis of the variables considered during the survey in June and December, we developed a model that considers the time of exposure to the stimuli associated with the pandemic. Consequently, we found that the perceptions of the restrictions and the protective motivation – when considering the pandemic’s duration – were not statistically significant when formulating the behavioral intention regarding tourist travel. A model that considers the timing of the exposure to the pandemic environment and uses fewer variables better explains the respondents’ tourist behavioral intention than the model that we tested in June and December, because there were differences between the studied groups related to the importance of individual variables. We can explain these changes by applying the assumptions of the habituation theory. The revised model (Table 7) considers the time of exposure to the pandemic stimuli, which is crucial when individuals become accustomed to the perceived restrictions and take adaptive action due to the habituation process they may experience.

A model that considers the time of exposure to the stimuli associated with the pandemic allowed for the study of tourist behavioral intention using the variables “perceived risk,” “reactance,” and “time of exposure to stimuli.” Table 8 shows a comparison of the analyses results. The originally developed model (with the variables “reactance,” “perceived risk,” and “protective motivation,” and the mediating variable “perception of restrictions”) better explained tourist behavioral intention in June (adjusted  $R^2 = 0.452$ ) than in December (adjusted  $R^2 = 0.386$ ), which is consistent with the assumptions of the habituation theory. At the same time, the newly tested model that considered the time of exposure to the pandemic stimuli could found further research related to the determination of the behavioral intention of tourists in the pandemic environment.

**Table 7.**  
Regression analysis results for the model that considers the time of exposure to the pandemic stimuli

A model taking into account the time of exposure to the pandemic stimuli	Non-standardized coefficients		Standardized coefficients		<i>p</i> value
	B	Standard error	Beta	t	
(Constant)	2.115	0.170		12.424	0.001
Reactance	0.595	0.022	0.486	27.046	0.001
Perceived risk	-0.538	0.040	-0.300	-13.320	0.001
Time of exposure to pandemic stimuli (months of the study)	1.233	0.081	0.305	15.289	0.001

**Note(s):** Dependent variable: intention  
**Source(s):** Authors’ own elaboration

**Table 8.**  
Comparison of regression models summaries for the dependent variable “tourist behavioral intention during the pandemic”

	R	R-square	Adjusted R-square	Standard estimation error	Change of R-square	F of the change	df1	df2	<i>p</i> value
June	0.675 <sup>a</sup>	0.455	0.454	1.46135	0.455	336.633	4	1,610	0.001
December	0.623 <sup>a</sup>	0.389	0.386	1.46876	0.389	144.985	4	912	0.001
The model with the time variable	0.647 <sup>b</sup>	0.419	0.418	1.48497	0.419	606.505	3	2,528	0.001

**Note(s):**  
(1) Predictors: (constant), protective motivation, reactance and perceived risk; dependent variable: intention  
(2) Predictors: (constant), time of exposure to the pandemic stimuli, perceived risk and reactance; dependent variable: intention  
**Source(s):** Authors’ own elaboration

Given these results, we present a linear regression plot with three predictors, which makes it possible to determine the behavioral intentions of tourists in the pandemic environment, considering the reactance in connection with the situation under study, the perceived risk, and the time when the individuals were exposed to the pandemic stimuli.

$$\begin{aligned} &\text{Tourist behavioral intention during the pandemic} \\ &= 2,21 + 0,59 \text{ Reactance} + (-0,54) \text{ Risk} + 1,23 \text{ Time} \end{aligned}$$

Based on the regression coefficients, we found that the reactance ( $\beta = 0.49; p < 0.01$ ), the perceived risk ( $\beta = -0.3, p < 0.01$ ), and the time of exposure to the stimuli ( $\beta = 0.31, p < 0.01$ ) were significant predictors of tourist behavioral intention during the COVID-19 pandemic, and the proposed model provided a good fit for the data ( $F(3,2528) = 606.51, p < 0.01$ ) and explained 42% of the variation in the tourist behavioral intention ( $R^2 = 0.418$ ).

Concluding, habituation moderated the relationship between the perception of the restrictions on tourist travel during the COVID-19 pandemic and the reactance. Therefore, this relationship is less closely linked to tourist behavioral intention in the long term. The relationship between the perception of the restrictions and the reactance was statistically significant only when tourists' behavioral intentions in June. In December, it was no longer significant. In the model's final version, we removed this variable along with all the interactions it produced, because it did not improve the model's fit.

An examination of the differences between the groups showed that the differences between the June and December groups were statistically significant in terms of their perceived reactance and perceived risk. When comparing the regression results for the June and December models, we also noted that the impact of the reactance and the perceived risk weakens with time and with longer exposure to the pandemic stimuli. Moreover, the December model had less predictive power than the June model in the context of the moderating role of the elapsed time and the exposure to the stimuli associated with the pandemic, which we can explain with the habituation process.

## 5. Discussion

The study results regarding the habituation process related to the community's adaptation to the pandemic situation in the context of tourism are consistent with findings concerning the impact of habituation on adaptations in other areas of life during the pandemic. [Costa, Kristensen, Dreher, Manfro and Salum \(2022\)](#) studied how the passage of time affects COVID-19-related anxiety. According to their findings, anxiety decreased over time, which is a result of habituation to the pandemic fear or higher intolerance of uncertainty during the pandemic's early stages. *Costa et al.* also note that this was not related to the number of deaths recorded as a result of the pandemic in the studied periods. Similarly, in our results, the number of restrictions (higher in December than in June), the number of vaccinated individuals, and the number of reported cases were not significant in the area of behavioral intentions regarding tourist travel. The participants did perceive the risk associated with tourist travel. However, they perceived it stronger in June (when there were fewer reported cases) than in December (when they had become accustomed to those messages).

The study conducted by [Zhang et al. \(2021\)](#) does not consider the influence of time on tourist behaviors. However, it shows that Chinese tourists took the severity of the pandemic into account, leading to positive adaptive behaviors. The significance of reactance in our study was not consistent with these findings. However, this may be due to cross-cultural differences and the stronger pro-social orientation of Chinese individuals compared to Poles ([Boski, 2009](#)). [Pappas \(2021\)](#) emphasizes the importance of age in relation to declared travel intentions during the pandemic. This is a topic that requires further investigation.

Thanks to modeling and statistical inference, it is possible to evaluate the measures applied during the COVID-19 pandemic in various areas related to consumer behavior. Of course, data availability and correct parameterization for different models remain of key importance (Kretzschmar *et al.*, 2022). However, this type of analysis allows for an interdisciplinary view of the pandemic's effects. The combination of the habituation theory, the theory of planned behavior, the theory of protective motivation, and the reactance process is an example of an expert study that combines psychological, social, and marketing approaches in the study of tourists' behavior and can serve in the management decision-making process in tourism companies or to forecast changes in the companies' value.

The new approach to studying tourism and tourists during the pandemic demands a comprehensive understanding of consumer behaviors, particularly those influencing consumer choices, which includes the investigation of behavioral intentions. Despite numerous efforts on the part of healthcare organizations, the threat of a pandemic caused by COVID-19 or another "Disease X" will not disappear overnight (Grubaugh *et al.*, 2019; Behl *et al.*, 2022); hence the importance of studying the pandemic's impact on different areas of individuals' lives. We tackled the difficulties of modeling responses and interventions in anticipation of similar situations in the future, a subject that had been previously underexplored in the context of tourists' behavioral intentions (Priesemann *et al.*, 2021).

## 6. Conclusions

Research on how to cope during a pandemic is useful for identifying and discussing the challenges that organizations face due to possible future pandemic threats (Kretzschmar *et al.*, 2022). Enriching the interdisciplinary discussion with conclusions about the course of the COVID-19 pandemic will allow scientists, politicians, business representatives, and consumers to better prepare for required during another future pandemic (Behl *et al.*, 2022). Some researchers point to the unpreparedness of the tourism sector for extreme events and the lack of plans and strategies that would stipulate the actions needed to quickly mitigate, prepare, respond, and adapt to difficult situations (Mugnano & Carnelli, 2017). Observation of how consumers respond to impediments makes it possible to prepare such plans, which will take into account consumers' needs and expectations. Moreover, the pandemic has also become a breeding ground for innovative solutions in the tourism sector that consider both tourists' safety and other ways to spend free time, such as virtual museums. Our analysis provides a better grasp of consumer behavior and serves as a foundation for finding more efficient methods to help tourism companies adapt to changing circumstances. This includes developing solutions to sustain these organizations' value even during pandemic crises. Through the habituation process, people become more accustomed to the information about the Sars-CoV-2 virus, leading to a better understanding and acceptance of the situation as normal and ordinary. Previous very emotionally charged stimuli cease to surprise and the normality thus formed becomes everyday experience.

As a result of the habituation process, tourists show greater acceptance of the restrictions, which no longer arouse so much opposition and anger; hence the perceived reactance is weaker in the long term. At the same time, restrictions become neutral stimuli, in effect arousing less and less opposition and become a part of an everyday life to which tourists adapt. Likewise, the perception of the risk associated with travel changes in the long term, which is ultimately good news for the travel industry. Adaptation to restrictions, viewing tourist travel as safer, feeling less reactance, and expressing a desire to travel present an opportunity for the tourism industry to design safer offerings for future tourists. It is crucial to monitor how these factors change over the course of the pandemic.

## 7. Limitations and future research

The generalization of the study results is limited due to the sample selection applied. Given the designed research procedure, which involved two measurements of behavioral intention separated in time, it was important that both groups were as similar as possible. Therefore, the use of a specific, identified group of respondents was justified. Undoubtedly, the applied methodology made it difficult to predict behaviors in other groups. However, the research results can serve as a starting point and inspiration for a more in-depth analysis of habituation to critical events in a broader context. We selected Gdańsk residents because of methodological and organizational considerations. Moreover, Gdańsk is an important tourist center in the European Baltic region and the capital city of the Pomeranian Voivodeship, which records the highest tourist traffic density in Poland (Cierpiat-Wolan, 2021). Therefore, it is important to study the reactions and behaviors of residents in such regions, which are more exposed to pandemic threats.

Another study limitation pertains to the relatively short time span between research rounds. Despite the extended duration of the pandemic, we chose a six-month period aligning with the holiday season, considering the importance of the tourism subject. However, this decision might raise concerns regarding the participants' limited exposure to pandemic-related stimuli, which could potentially lead to an underestimation of the significance of the habituation process.'

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**List of amendments to the Regulation of the Council of Ministers**

Rozporządzenie Rady Ministrów z dnia 10 maja 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 879

Rozporządzenie Rady Ministrów z dnia 14 maja 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 905

Rozporządzenie Rady Ministrów z dnia 25 maja 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 957

Rozporządzenie Rady Ministrów z dnia 4 czerwca 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1013

Rozporządzenie Rady Ministrów z dnia 11 czerwca 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1054

Rozporządzenie Rady Ministrów z dnia 22 czerwca 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1116

Rozporządzenie Rady Ministrów z dnia 23 czerwca 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1125

Rozporządzenie Rady Ministrów z dnia 25 czerwca 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1145

Rozporządzenie Rady Ministrów z dnia 15 października 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1878

Rozporządzenie Rady Ministrów z dnia 28 października 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 1967

Rozporządzenie Rady Ministrów z dnia 29 listopada 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 2177

Rozporządzenie Rady Ministrów z dnia 14 grudnia 2021 r. zmieniające rozporządzenie w sprawie ustanowienia określonych ograniczeń, nakazów i zakazów w związku z wystąpieniem stanu epidemii, Dz.U. z 2021 r., poz. 2311

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