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Examination of the factors that influence public perception of mythically-based human behavior in disaster conditions

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Summary: Starting from the importance of risk perception for taking certain preventive measures to protect people and their property from disasters, the subject of the research is to examine the factors influencing public perception of mythically-based human behavior in disaster conditions. Using the random sampling method, 250 adult respondents were surveyed in the city of Belgrade, using a specially created and adapted survey questionnaire. The results of the research show that there is no statistically significant influence of gender, age, educational and economic factors on the public perception of human behavior in disaster conditions. The results of the research can be used to improve strategies and campaigns based on risk assessment, aimed at improving the safety of people in disasters.

Keywords: disasters, risk, public perception, mythically-based human behavior.

Introduction

Even though disasters have been present since the very beginning of human development, the number, frequency, and severity of their consequences have become worrying at the beginning of the 21st century. According to official statistics, "in the past two decades globally, in the period from 2000-2015, 700,000 people lost their lives, about 23 million were left homeless, and 1.4 million were injured" (Cvetković, Filipović & Gačić, 2019a, p. 963). High mortality, as well as the number of injured and displaced persons impose the need for more efficient management in disaster conditions, with the application of theoretical and practical solutions in the form of laws, strategies, manuals and brochures for the competent services, media and citizens in disaster conditions (Rico, 2019; Mano et al., 2019; Guo & Kaputsu, 2019; Mavrodieva et al., 2019).

In the past, the scientific research field wasn't sufficiently focused on human behavior in disaster conditions, but on the consequences of disasters.

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Because the health, social, economic and environmental consequences of disasters represent a great loss to the state, it was necessary to establish a link between human behavior and the consequences of such behavior in disaster conditions. Science was required to start a new chapter of research on human behavior in disaster conditions. The first research was started by Enrico Quarantelli and Rusell Dynes in 1972, the same year they published "When disaster strikes". Following in their footsteps, other researchers (Drabek, 1969; Quarantelli & Dynes, 1972; Heide, 2004; De Goyet, 2004; Eberwine, 2005; Gantt & Gantt, 2012; López-Carresi, 2013) researched the human behavior in disaster conditions, and they all agree that people in disaster conditions behave according to established patterns that they believe will have a positive outcome to the course of the disaster, i.e. according to existing myths about people's behavior in disaster conditions. Examining the behavior of citizens and myths related to it, mostly was the subject of scientists' thinking in the field of social-human sciences (Nedeljković, 2006; Garde, 2010; Kanižaj & Skoko, 2010; Krmpotić, 2018). Generally, myth is used to *"denote various types of social constructs, i.e. refers to something unreal, unverified, unproven or unprovable, untrue, manipulative, etc."* When the consideration of the modern use of myth is taken into account, there is a difficulty in distinguishing what a myth is from what it is not; hence an indispensable need to precisely determine the structure of a myth is imposed. According to Nedeljković (2006), the main components of myth are: rhetoric and the way of systematization and classification of the main theme. In the past, in the field of catastrophes, rhetoric referred to the use of terms such as panic, hospital overload, disease epidemics, food donations, clothes, money. Today, during the current COVID-19 pandemic, which can be classified as a catastrophe in terms of the human lives lost, the rhetoric in the field of catastrophes has changed and upgraded with new terms, and now abounds in greater use of neologisms (Nikolić, Cvetković & Zečević, 2020; Štrkalj, 2020). Different classifications of myths about human behavior in disaster conditions are represented in the literature. Researchers (Heide, 2004; De Goyet, 2004; Gantt & Gantt, 2012; López-Carresi, 2013; Cvetković, 2020) have identified three groups of myths. The first group includes general myths about disasters; the second group includes myths from the domain of health, while the third group includes myths from the domain of humanitarian aid.

Repeated disasters can be useful in gaining experience that we didn't have until then (Kešetović & Milašinović, 2012), but we must be guided by professional standards in managing every new disaster. According to Cvetković (2020), the problems of mythically-based behavior are the following: organizing efficient disaster protection may be disabled if citizens don't have true and verified information on potential hazards; problems in implementing effective disaster protection due to the belief that we can't fight the nature; difficulties in disaster management; difficulties in organizing the protection and rescue of people and their property. Unacceptable behavior of the competent authorities, services, media and citizens according to the established myths can influence the state, society and citizens reaching a satisfactory level of protection against disasters. Because of that, extensive activities are needed, primarily in the media, to eradicate mythically-based

behavior. This time the media must be an ally and help educate people to achieve a satisfactory level of accurate information about adequate and recommended ways of behaving in disaster conditions. Any behavior that isn't based on scientific facts is the domain of a mythical interpretation of reality and for that reason, it's extremely important to effectively manage myths.

As myths can also be useful under special circumstances, we find that certain consequences of practicing myths can also be positive and useful (De Goyet, 2007). One such myth concerns blood donations. Namely, it's assumed that they are always needed after disasters because they facilitate the provision of first and medical aid to people. Its negative consequences in the conditions of catastrophes are often forgotten. According to Heide (2004), the negative consequences of excessive blood donations are: medical staff overburdening; an overload of medical institutions, as well as medical vehicles. It turns out that our country has been looking at disasters caused by natural hazards from a phenomenological point of view for years, and has failed to raise the protection and rescue system to the necessary level. The shortcoming was mostly reflected in the inefficient initial response of local government units, which are the first in the chain of response, together with the delayed reaction of the state leadership to declare a state of emergency (Center for Euro-Atlantic Studies, 2016).

A review of the literature on mythically-based human behavior in disaster conditions

In reality, answering the question of what entices the sustainability of acceptable and unacceptable patterns of behavior is by no means an easy task, and requires a comprehensive synthesis of the views of several researchers in the field of disasters, as well as researchers from other fields, such as sociologists, political scientists, lawyers, psychologists, psychiatrists, ethnologists and historians, etc. (Quarantelli & Dynes, 1973; Morgan & De Goyet, 2005; Heide, 2005; De Goyet, 2007; Sun, 2012; Kešetović & Milašinović, 2012; Alexander, 2014; Cvetković, 2020). Disaster management can't involve a simple copy of the previous experiences of the forces and subjects of the protection and rescue system, because they have their positive and negative sides, and the latter should be avoided. The negative sides are mostly related to the use of myths in the actions of protection and rescue of the injured. Mijanović (2010) points out that journalistic ethics is the first to be degraded during the catastrophes, but also the competition and time-related pressure that the information about deaths, epidemics, donations, material damage is published as soon as possible also contribute to the placement of myths. De Goyet (2007) doesn't want to give any detailed analysis of the connection between myths and people who are willing to practice them. He points out that these myths are embedded in the psyche of the people of Western civilization, and he suggests educating people as an effective countermeasure. Also, De Goyet (1999) believes that the myth about things returning to normal in a few weeks could cause serious damage to disaster victims if the public is convinced that things will indeed return to normal in a few weeks. The

process of restoration, damage repair and return to normal life in reality takes years and is a product of work, effort and financial investment. Encouraging expectations that life will return to normal in a few weeks after the catastrophe is unrealistic. Some authors believe that "return to normal life rarely happens quickly, it takes months and years, hence such expectations can be in vain" (Jacob et al., 2008, p. 561).

The second group of myths includes myths from the domain of health, which emphasize the need for blood donations, drugs, equipment and materials after disasters. Also, this group includes myths that show the most common emotional reactions of disaster victims. It's a fact that people feel fear and insecurity when disasters happen. The way of reacting is individual so the reactions are different, and through the presentation of the most common medical myths, we will investigate whether the victims of the catastrophe are more empathetic or selfish. Because medical myths are among the frequent and often practiced myths, it shouldn't be a surprise that a large number of papers have dealt with this issue (Clarke, 2002; Morgan & De Goyet, 2005; Heide, 2005; Lopez-Carresi, 2013; Drury, Novelli & Stott, 2013). The willingness of researchers, such as De Goyet, to personally engage during the 1976 Guatemala earthquake to unravel myths and present scientific facts also shouldn't be a surprise. De Goyet, in his work "Myths, the ultimate survivors in disasters" wrote the following: "I would like people to always be this solidly united, altruistic and ready to help each other as today; I would like them to help each other every day" (De Goyet, 2007, p.15). In a 1976 study, De Goyet dispelled the myth that people behave apathetically, disinterestedly, and are much more supportive, altruistic, and willing to help when it's the hardest.

From the group of health myths, there is also the myth about the need for blood donations in the conditions of disasters. We are aware that the problem of blood shortage is present on a global level because there isn't enough blood (Veljković, 2020). However, in disasters, there seems to be more than enough. Disasters involving human casualties are seen by citizens as in need of blood donations, so blood donors are a regular occurrence in disasters. Rivers of people standing tirelessly for hours to donate blood is a scenario observed in almost every disaster. According to Heide (2004), after the terrorist attack on the World Trade Center building in New York in 2001, state officials called on people through the media to be blood donors, and they gladly accepted the invitation and waited their turn. In addition to Heide, another author, Argothy (2003), claims that after the aforementioned terrorist attack, a large number of engaged volunteers were noticed waiting their turn to donate blood, in addition to citizens standing in line for hours. When a disaster knocks on the door, it seems that the blood donors are always at home and ready to help. Another question looking for an answer when it comes to blood donations refers to the motive that drives people to be blood donors in the conditions of disasters. The answer is human suffering. Man's natural human reaction is to help others in need, and people do that.

Experts in the field of disaster management warn us that we need to be careful when it comes to donations and blood donations because each disaster has its

specific requirements (De Goyet, 2007). Donations that don't aim to meet the most essential needs of the affected community can cause problems. Heide (2004) cites the following problems related to blood donations: overcrowding of hospitals with blood donors; increased involvement of medical workers in the reception, processing and storage of blood units; as well as the use of material resources to transport blood units to nearby blood banks.

In recent years, there has been a great interest of researchers in studying panic in disaster conditions, so the scientific literature has a large number of depictions of human behavior believed to be panic in disaster conditions (Clarke, 2002; Drury, Cocking & Reicher, 2009; Frey, Savage & Torgler, 2011; Gantt & Gantt, 2012). In the literature, panic is often defined as unforeseen intense anxiety that causes feelings of fear and horror, with accompanying physiological disorders (Brabazon et al., 2020). Panic behavior is an irrational, reckless and selfish state when one only thinks about one's own life and it's expressed with complete disrespect for the people around. To reach the panic mode, according to Heide (2004), the following conditions need to be met: awareness of the impossibility of escaping because the escape routes are closed; there is no hope that anyone will help; victims become aware that there is no way out of a given situation because space is limited. A comparative analysis of two different events from the literature will determine whether or not people are prone to panic reactions. The first example relates to a study of youth behavior during a fire at a Beverly Hills club in 1997 (Heide, 2004). They were asked several questions about their behavior and the behavior of others during the fire. The statements they made can be reduced to the following answer: "we felt fear for our lives and the lives of our friends, as well as the desire to save ourselves" (Heide, 2004, p. 339). When asked to define their behavior, they said their behavior was panic-fueled; when asked which action involved panic behavior, they cited running away (Heide, 2004). The fact is that people run away in life-threatening situations because they fear for their lives. In the example of the fire in the Beverly Hills club, people fled, but no one used their strength and superiority to injure others and provide themselves with access to the club exit (Heide, 2004).

Investigating people's panic behavior in another example, Drury asked the survivors the same question after the terrorist attack on London in 2005 and learned the following from a London subway passenger "No one acted recklessly, people tried to escape from the train, but no one was hurting others in the process" (Drury, Cocking & Reicher, 2009, p. 76). The absence of panic in disaster conditions is also present in the research of others, and it has proven true that people help rather than panic, if they see that others are in trouble and that they can help them (Trainor, Barsky & Torres, 2006). Clarke also pointed out the sacrifice, caring for others and the desire to help in disasters while researching the fire at the Beverly Hills club. Namely, he found that in most cases people behave protectively, consciously wanting to help each other (Clarke, 2002). The Gantt couple advocates the complete elimination of panic from the discussion of human behavior in disasters as unnecessary, insisting that disasters are not a terrain for selfish individuals; their number is the least in disasters (Gantt & Gantt, 2012). Various authors (Heide, 2004;

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Frey, Savage & Torgler, 2011; Gantt & Gantt, 2012) point out that advocating for panic in disaster conditions aims to cover up failure. Failure in the work of the competent authorities and poor technical solutions of buildings, facilities, means of transport, or poor organizational management, proved to be the main culprit for deaths in these examples. In the event of a fire at the Beverly Hills club, the main culprit of the accident is an inadequately designed building with an insufficient number of exits in case of fire (Gantt & Gantt, 2012).

The work of two researchers (Heide, 2004; López-Carresi, 2013) studied another myth from the group of health myths, the myth of the "disaster syndrome"; both researchers agree that there's a possibility that fewer victims of the disaster may be susceptible to the syndrome, but the number will be minor and one can't speak of dominant behavior. The phrase "catastrophe syndrome" implies a state of regression in the behavioral sense of the victims of the catastrophe, because the consequences of the catastrophe for the victims are a traumatic experience from which there is no way out and the only salvation is the help of competent services and organizations. After the earthquake in Mexico in 1985, it was noticed that a large number of people united and volunteered to help rescuers in the search for people who were under the rubble (Jacob et al., 2008). Altruism, prosocial behavior and awareness of the need for help are always present in people. In the conditions of catastrophes, people help not only the injured but also the rescue services. Pantelić (2016) also confirmed that this is true, when more than 200,000 Soviet citizens engaged and helped the authorities after the nuclear catastrophe in Ukraine.

One of the oldest and most stubborn myths from the second group is the myth that disasters cause antisocial behavior (Berrebi, Karlinsky & Yonah, 2020; Sutton & Kaufmann, 2018), and it survives and persists today with its long practice, especially the behavior practice of relevant services members, such as the police. The starting point of the myth is that disasters create the possibility of increasing the number of committed crimes in the area affected by the disaster, such as robbery, violence, traffic violations, etc. (Heide, 2004). A review of the scientific literature shows that looting is rare in disasters happening in America. It's most often transient in nature and usually performed by small groups of people and in secret (Tierney, Bevc & Kuligowski, 2006). The literature mentions the robbery on the island of St. Croix as the most prominent case of criminal behavior. Quarantelli states the following as the factors that contributed to the robbery on the island: destroyed infrastructure; the inability of security agencies to cope with the control of the situation; insecurity of disaster victims regarding the arrival of aid; as well as high pre-disaster crime rates (Tierney, Bevc & Kuligowski, 2006).

Regarding donations (food, money, clothes and medicines) as typical representatives of the myths from the third group, it's important to mention that people are more willing to donate all these material resources than money and that it's recommended to first consult the competent authorities when it comes to donations of clothes (Nogami, 2018). When it comes to donations of consumer drugs, they are never needed and donor countries should refrain from sending them to the affected area, while the need for specific types of drugs used in the treatment

of certain diseases may be of help for the affected (Lopez-Caressi, 2013). When it comes to providing food products in disaster conditions, that falls under the leadership of the Emergency Situations Headquarters and is implemented in three ways: providing from commodity reserves; procurement on the domestic market; donations. If we leave aside the first two ways of providing food in disasters, we witness that the third way, donation of expired food, is widely practiced by our and international organizations due to high prices of destroying expired food (Ranisavljević & Vudragović, 2017). Back in 1953, after the devastating tornado in the city of Waco, Texas, it was realized that the situation with food donations can cause big problems, when one of the main problems of the competent disaster management services was disposing of incoming sandwiches to avoid their expiration, instead of helping the affected population (Heide, 2004).

The media also plays a major role in spreading myths, which to some extent can inhibit the actions of rescue services. Incorrect information can often interfere with their work. During the floods in the Dominican Republic in 2004, the media caused the burial of a large number of victims without prior identification, explaining that an epidemic of infectious diseases would break out, while some health experts called the area affected by the flood a "Bacteria Factory" that should be burned as soon as possible, by calling for the cremation of the dead (Morgan et al., 2005). The persistence of this myth is also discussed in the paper "Myths, the ultimate survivors in disasters". The author of the mentioned work, De Goyet (2007), is skeptical about the possibility of any change in the practice of rescue services and advocates for the introduction of a concrete strategy for the citizen, rescue services and media behavior in disaster conditions.

Methodological framework

Starting from the importance of risk perception for taking certain preventive measures to protect people and their property from disasters, the subject of research is to examine the factors influencing public perception of mythically-based human behavior in disaster conditions. The scientific goal of the research is the scientific description of the public perception of mythically-based behavior of people in the conditions of catastrophes.

Sample

In 2020, 250 adult respondents were interviewed in the city of Belgrade by the random sampling method. Having in mind the population of citizens residing in Belgrade, every sixth passerby near the central city square was interviewed. If it was stated that a passerby doesn't reside in the Belgrade area, he wouldn't be included in the sample and, in the same mentioned way, the next sixth passerby would be selected. Members of the male and female populations are represented in equal numbers in the total number of respondents included in the sample. In relation to the

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age of the respondents, it was determined that the sample covered most respondents aged 30 to 50 (35.2%). Also, 34% of respondents are between 18 and 30 years of age, while respondents older than 50 years are represented in a slightly lower percentage than previously mentioned, i.e. 30%. In relation to the educational level, more than half of the respondents included in the sample have completed high school (50.4%), while 20.8% of respondents indicated that they have completed college. In addition, 11.2% have higher education, 4.4% completed master studies, while only 2% of respondents cited doctoral studies. Of the total number of respondents, the largest number, i.e. 54.4% of respondents, are married, 34% of respondents pointed out that they have no partners, 8.8% of respondents are divorced, while widows/widowers make up 2.8% of respondents. Concerning the employment status, the results show that 75.2% of respondents are employed, while 18.4% pointed out that they are not. In addition, 6.4% of respondents are retired. Concerning the number of household members, it was determined that 22.4% of households have four members, 21.6% have five members, 20% include three members, while households that include only one member are represented by 10%.

Table 1. Basic demographic and socio-economic information of respondents *(n = 250).*

Variable	Category	(f)	%
Gender	Male	125	50
	Female	125	50
Age	18-30	85	34
	30-50	88	35.2
	50+	77	30.8
Marital status	Not in a relationship	85	34
	In a relationship	136	54.4
	Married	22	8.8
	Divorced	7	2.8
Education	Primary	28	11.2
	Secondary	126	50.4
	Higher	28	11.2
	College	52	20.8
	Master	11	4.4
Employment status	Employed	188	75.2
	Unemployed	46	18.4
	Retired	16	6.4
Income	Up to 25.000	29	11.6
	26.000-75.000	123	49.2
	Over 76.000	98	39.2
Total		250	100

Survey questionnaire

Several steps have been taken to implement the research in the process of creating and adapting a questionnaire on the perception of human behavior in disaster conditions. The first step identified significant and relevant scientific papers that investigated the public perception of human behavior in disaster conditions (Jacob et al., 2008; Gantt & Gantt, 2012; Heide, 2004; López-Carresi, 2013; Clarke, 2002; Trainor, Barsky & Torres, 2006). The second step selected and adapted the questions according to the socio-political and economic environment in Serbia, based on the analysis of the mentioned works and their research instruments. The questionnaire contains a general part with questions related to the characteristics of the respondents and another part related to specific variables on the perception of human behavior in disaster conditions such as knowledge and information, human behavior before, during and after the disaster, risk perception, volunteerism, etc. The questions in the questionnaire were written in simple language, with very little use of professional terminology, therefore designed to be clear and understandable to respondents. Also, attention was paid to clarifying any doubts and determining whether the respondents understand all the questions.

Data analysis

Descriptive statistical analyzes examined the demographic and socio-economic information of the respondents, as well as the answers to the questions asked. The analysis of variance (ANOVA) and the Chi-square test examined the relationships between the selected independent and dependent variables. Statistical analysis was performed using SPSS Statistic 17.0 (IBM SPSS Statistics, New York, USA).

Results

Examining the perception of the respondents, the respondents were asked what disasters mean to them in the context of their frequency. More than half of the respondents (52.6%) pointed out that disasters are rare events for them. In addition, 21.2% of respondents perceive catastrophes as extremely rare events, while 6.8% of respondents point out that disasters are events that never happen. In contrast, 20.4% of the respondents included in the sample point out that catastrophes are phenomena that occur with a high frequency (Table 2).

Table 2. Overview of respondents' opinions on disasters in the context of their frequency.

	N	%
Rare events	129	51.6
Extremely rare events	53	21.2
Frequent events	51	20.4
Very frequent events	17	6.8
Total	250	100.0

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Starting from the importance of knowledge and its impact on human behavior, the second question referred to the possession of knowledge about the floods that hit Serbia in 2014, intending to check whether the floods were disastrous; as many as 83.6% of respondents answered in the affirmative, while the remaining 16.4% believe that the floods have not acquired the characteristics of disasters. The following questions were related to the knowledge of the history of major catastrophes in the world (Pantelić et al., 2017), and for the question "Do you know that the first nuclear disaster occurred in Chernobyl (Ukraine) in 1986?", the largest number of respondents (86%) answered in the affirmative, while 14% of respondents point out that they are not familiar with the stated statement or do not agree with it. While the question of whether they believe that the Titanic sinking on April 15, 1912 (shown in the famous film spectacle) had the characteristics of a catastrophe, the largest percentage (64%) answered in the affirmative, while the remaining 36% of respondents believe that the accident didn't have the characteristics of a catastrophe. When it comes to respondents' attitudes towards disaster-forecasting technologies, the results show that 70.4% of respondents believe that disaster-forecasting technologies have advanced enough that it's impossible to talk about disasters that would lead to the destruction of the human species, while 29, 6 % of respondents believe that this is not the case. However, when asked whether it is possible to predict all catastrophes in the world (floods, fires, earthquakes, plane crashes, nuclear accidents, etc.), as many as 83% of respondents pointed out their fears and believe that such a thing is not possible. Concerning the total number of respondents, there is still a small number, i.e. 16.4% of respondents, who believe that it's quite possible to predict all types of disasters in the world.

Some natural disasters have destructive effects and their consequences are often such that they leave people without crops and food that's necessary for life. Although not all natural disasters are of destructive intensity, a large percentage of respondents believe that food donations are necessary after natural disasters, because affected people are indeed left without their crops, so 89.6% of respondents agree, while 10.4% of respondents deny the necessity of said donations. Next to the fact that natural disasters can leave people without food, their homes may be damaged or destroyed to the ground, and when asked about the best ways to help people who lost their homes after disasters, the largest percentage (49.6%) of the respondents stated the construction of a new house or the renovation of an old one (25.2%). Also, several respondents (8.8%) stated the purchase of a prefabricated house as the best way to help people who were left homeless due to the consequences of disasters. As the process of reconstruction of the affected area is a long process and a product of work, effort and joint investment of a large number of actors, when asked how long it takes for the disaster-affected area to return to optimal condition, almost half of respondents said it takes several years. Those who are more optimistic, in a slightly lower percentage, 29.6%, cited several months as an answer, while 14.4% of respondents pointed to a few weeks as a necessary recovery period for the affected area (Table 3).

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Table 3. Review of opinions on how long it takes for the situation in the affected area to return to normal.

	N	%
A few weeks	36	14.4
A few months	74	29.6
A few years	122	48.8
Other	18	7.2
Total	250	100.0

Scientific literature analysis showed that donations of clothes are believed to be necessary during disasters, and when asked whether it's necessary to donate clothes in disaster conditions, 84.4% of respondents answered in the affirmative, while 15.6% of respondents answered in the negative. Examining attitudes about the possibility of abusing disasters, i.e. the possibility that people in disaster conditions have unrealistic demands (e.g. requests for donation of marked clothes), the results show that 68% of respondents emphasize the validity of this possibility, while, on the contrary, 32% answered negatively, that is, they exclude the possibility of abuse in such circumstances. When it comes to monetary donations, they are seen as the most expedient, but according to the results of conducted research in the world, people are the least inclined to donate money for fear of its misuse. The situation in the Republic of Serbia regarding the donation of money to help disaster victims is such that as many as 87.6% of persons included in the sample point out that they would opt for providing this type of assistance to victims, while 12.4% of respondents state that they would not. When asked "How much money would you donate (in RSD)?", 26% of respondents stated that the amount is over 2000, 16.8% stated up to 1000 dinars, 13.6% of respondents answered up to 200 dinars, 13.2% of respondents answered over 1000, while 8.8% of respondents claim that they would donate up to 500 dinars to help the endangered. The next step was to identify the factors that play a decisive role in terms of donating money to disaster victims, and the majority of respondents (65.2%) state assistance as a crucial factor. Also, a certain percentage (15.2%) of respondents expressed pity and a sense of concern (13.2%), while several respondents claimed that the main factors in deciding to donate money to disaster victims were personal gain and a sense of power and prestige (Table 4).

Table 4. Factors that help to decide to donate money to disaster victims.

	F	N
Assistance	163	65.2
Concern	33	13.2
Pity	38	15.2
Power and prestige	5	2.0
Personal gain	9	3.6
All of the above	2	.8

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Total	250	100.0

Given that disasters often find people unprepared since many natural disasters are impossible to predict and people's reactions are unpredictable and spontaneous, when asked how they would behave if they found themselves in disaster conditions, the largest number of respondents (62.8%) stated that they would behave rationally. In contrast, 30.4% of respondents believe that panic would prevail, and 4% of respondents cited apathetic behavior in response. While the respondents saw their behavior in the conditions of disasters as rational, ergo socially acceptable, they saw the behavior of others in the conditions of disasters as socially unacceptable, i.e. panic. These attitudes about the normal behavior of people in disaster conditions differ from those in the previous question, which examines how respondents would behave should they find themselves in disaster conditions. Namely, the largest number (62.4%) of the respondents stated that panic behavior is common. In addition, 22.8% of respondents stated rational, 10% criminal, while 4.8% stated apathetic behavior as dominant in disaster conditions.

Table 5. The behavior of people when they find themselves in disaster conditions.

	N	%
Rational	57	22.8
Panicking	156	62.4
Criminal	25	10.0
Apathetic	12	4.8
Total	250	100.0

As we determined by the analysis of foreign professional literature that morality is not a changeable category and that it doesn't change in the conditions of catastrophes, we were interested in whether the respondents of the Republic of Serbia believe in the stated claim, and when asked whether people behave morally in the conditions of catastrophes, 59.2% of respondents answered in the affirmative, while 40.8% of respondents gave a negative answer. The questionnaire also asked questions related to the behavior of victims during terrorist attacks that had the characteristics of a catastrophe, to find out whether the respondents believe that the behavior of the victims was different in relation to the behavior during natural disasters.

When asked how people who were on the train behaved during the terrorist attack on the underground station in London in 2005, 36.4% of respondents believe that they reacted with panicking, 24.4% of respondents believe that they listened carefully to the instructions of terrorists, while 8% of respondents stated that people stood still during the attack. Also, 31.2% thought that the behavior was different from all the above. Respondents were also reminded of the case of the terrorist attack on New York in 2001, not for the reason of revealing the behavior of the victims of the catastrophe, but for revealing the behavior of ordinary people,

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services and organs. During the mentioned terrorist attack, a large number of people volunteered to help the services in charge of reacting in emergencies, and in accordance with that, the question was asked whether they would also engage as volunteers in the conditions of disasters. The largest number of respondents, i.e. 68%, point out that they would be engaged, while 32% of respondents state that they would not.

Table 6. Overview of opinions on how people behaved during the terrorist attack on the London Underground station in 2005.

	N	%
Panicking	91	36.4
Standing still	20	8.0
Listening to the instructions	61	24.4
Other	78	31.2
Total	250	100.0

In the conditions of catastrophes, the competent services and government bodies must go out on the field as soon as possible and help the affected population, so without the engagement of certain services, such as the police, it's impossible to efficiently manage disasters. The police appear as an efficient mechanism for protecting people and their homes in the event of disasters, and we were interested in whether respondents expect that their homes could become the target of burglars after the disaster; 72.4% of respondents gave an affirmative answer. A significantly smaller number, i.e. 27.6% of respondents, believe that this wouldn't happen. To the question, "Do you expect the police to protect your homes from burglars if you have to evacuate?", 64.4% of respondents answered in the negative, while 35.6% of respondents expect police assistance in protecting their homes in evacuation conditions. With the assumption that people are hesitant to evacuate after a disaster because of the fear that their homes could be looted, 72.4% of respondents agree, while 27.6% disagree.

Taking into account the depressive and angry behavior of people after disasters (which is referred to as "disaster syndrome" in the literature), respondents were asked which of the following factors may be the main cause of such behavior. The largest number of respondents stated the loss of a family member as the cause (38.4%). Also, 9.2% of respondents stated the loss of home in response, 5.2% the loss of a friend, while one respondent highlighted the animal stock loss factor as the most important. Also, a large number of respondents (37.6%) pointed out all the above factors as equally significant as the cause of depressive behavior of people after the effects of a disaster (Table 7).

Table 7. Overview of opinions of factors that are the cause of depressive behavior in people.

	N	**%**

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Loss of a family member	96	38.4
Loss of a friend	13	5.2
Loss of home	23	9.2
Animal stock loss	1	.4
All of the above	94	37.6
Other	23	9.2
Total	250	100.0

In the report "Financial aspects of natural disasters", the estimated damage to the housing stock in the Republic of Serbia after the May floods in 2014 amounted to 231 million Euros, and the reconstruction was mainly realized by payments of various private foundations, but there was also abuse of a social and economic position of rich and influential people to obtain more money to rebuild their homes. With the claim that people of higher economic and social status used their influence and position in society to secure more funds for the reconstruction of homes from the state budget, as evidenced by the number of entries registered by the Public Investment Office, the largest number of respondents (81.6%) agrees, while 18.4% of respondents disagree.

Natural disasters are often believed they can lead to an epidemic of infectious diseases, although in disasters people usually die from various injuries such as falls, suffocation, electric shocks, the effects of strangulation or injuries to vital organs. This myth still exists in emergency medical services. With the claim that natural disasters that lead to large human casualties, such as the floods in Indonesia in 2004 (when 200,000 people lost their lives), can be the cause of epidemics of infectious diseases, respondents in the largest percentage (77.6%) agree, while 22.4% of respondents disagree. As the practice of previous services in some countries (for example Indonesia) has shown that many people, due to fears of an epidemic of infectious diseases, are buried without their prior identification so that their families never found out where their graves are, respondents were asked whether they believed that such a thing was possible in the future. As many as 60.8% of respondents believe that such a scenario is possible, while 39.2% of respondents believe that it isn't. When asked about how it's possible to carry out an effective fight against such behavior of the competent services, 33.6% of respondents point out the education of the population and competent services as the best way, 26.4% of respondents state effective strategies for managing remains, while 20.8% of the respondent prefer the efficient response of the competent services. Also, some respondents (19.2%) believe that all these strategies are of equal importance in conducting an effective fight against bad behavior of competent services.

Table 8. Overview of the opinion that the effective fight against bad behavior of competent services can be implemented in different ways.

	N	%
Efficient strategies for managing remains	66	26.4
Education of population and competent services	84	33.6
Efficient response of competent services	52	20.8
All of the above	48	19.2
Total	250	100.0

As people can also be victims of technological disasters, such as major traffic accidents, respondents were asked to imagine a situation in which they are driving on the highway and find out on the radio the news of a major car accident that occurred a few kilometers ahead and injured a large number of people, therefore they ask all passers-by who can help in rescuing the injured, and, accordingly, answer what kind of help is most necessary to the injured. The largest number of respondents believe that it's necessary to provide transporting of the injured (32%) and that it's necessary to provide first aid (31.3%). In addition, 17.6% of respondents cited blood donation in response, 12% of respondents preferred drug donation, while 5.6% of respondents point out that all these types of assistance are necessary in such a situation.

During the May floods of 2014, the entire protection and rescue system showed its dark side, because it couldn't cope with the consequences of the floods. In such circumstances, the city of Obrenovac suffered the greatest damage. Having in mind that Obrenovac suffered the greatest damage during the May floods, we examined the agreement with the claim that the cause was an inefficient system of protection and rescue of RS. The results unequivocally show that 68.4% of respondents point out that this is the reason for the damage caused during the May floods. Then, we examined the agreement with the following statement, "As a good example of regional cooperation, we can mention the assistance that the armies of Slovenia, Macedonia and Montenegro sent to Serbia, within a reasonable period since the beginning of the May floods. A total of 113 members of the foreign armed forces were engaged in rescue activities and delivery of humanitarian aid." The obtained results show that 70% of the respondents agree with the statement, while 30% don't. During the May floods, the media reported almost sensationally on the victims of the disaster, material damage and environmental problems, and we were interested in the perception of the respondents regarding the attitude of the tabloid media and their reporting on disasters. The obtained results show that 55.2% of respondents point out they are interested, while 44.8% deny it. Then, it was examined whether the media largely spread untrue information about the number of dead, injured and material damage. The obtained results show that 55% of respondents believe exactly that, while 44% deny the mentioned statement. In further work, we wanted to examine the perception of the respondents regarding the following statement: "The media largely spread untrue information about the number of dead, injured and material damage during the May floods. The cause of such behavior of the media is an increase in the number of newspapers sold, views on internet portals and television shows, that is, an increase in earnings from the sale

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of information on disasters." The obtained results show that 66% of respondents confirm this statement, while 34% deny it.

In further work, we examined whether there is a gender impact on the opinion of whether it's possible to make a timely prediction of disasters. The obtained results of the Chi-square test show that there is a statistically significant correlation between the observed variables (p = .043). Further analyzes show that men (20.8%) are more likely than women (12%) to point out that it's possible to predict and warn of the consequences of disasters promptly. It can be assumed that men emphasize this more than women due to the lack of knowledge in the field of disaster. In addition to the above-mentioned results, we also examined the influence of gender on the opinion of whether food donations are necessary during natural disasters because the people affected were left without their crops. The obtained results of the Chi-square test show that there is a statistically significant correlation between gender and opinion on donations (p = .011). Judging by further analyzes, it was found that women (94.4%) to a greater extent than men (84.8%) point out that food donations are necessary during natural disasters because the affected people were left without their crops. About the age of the respondents, no statistically significant correlation was found with the technology for predicting disasters (p = .818) and with food donations to people who were left without their crops (p = .261). On the other hand, a statistically significant correlation was found with age (p = .045). In further analyzes, it was found that respondents aged 18 to 30 (22.4%) mostly point out that it's possible to timely predict the occurrence of a catastrophe in relation to respondents over the age of 50 (8%) (Table 9).

Table 9. Chi-square test results between gender, age, education, employment and public perception of myths regarding the possibility of timely disaster prediction and assistance in the form of donations.

		Value	df	Asymp. Sig. (2-sided)	Phi
Gender	Timely disaster prediction	3.530	1	.060	.11
	Assistance in donation form	6.181	1	.013	-.15
Age	Timely disaster prediction	7.181	2	.045	.15
	Assistance in donation form	2.78	2	.750	.12
Education	Timely disaster prediction	.458	1	.245	-.59
	Assistance in donation form	.563	1	.384	-.34
Employment	Timely disaster prediction	.362	1	.547	-.03
	Assistance in donation form	.278	1	.655	-.02

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In relation to the age of the respondents, a statistically significant correlation was determined with the variable of disaster prediction (p = .045), while it wasn't determined with the attitudes about assisting in the form of donations (p = .750). Further analyzes found that respondents aged 18 to 30 (22.4%) mostly point out that it's possible to predict all disasters in relation to respondents aged over 50 (8%) (Table 9). We then examined the impact of education on the mentioned variables and found that there was no statistically significant correlation between forecasting (p = .245) and attitudes about providing donations (p = .384). About the employment status of the respondents, no statistically significant correlation was found with the attitudes about assisting in the form of donations (p = .655) and attitudes about disaster forecasting (p = .547). When it comes to employment status, no statistically significant correlation was found with variables such as attitudes about disaster forecasting (p = .547) and attitudes about assisting in the form of donations (p = .655) (Table 9).

Discussion

Examining the factors that influence public perception of human behavior in disaster conditions is a topic that has so far been rarely discussed in scientific circles (Quarantelli, 1972; Heide, 2004; López-Carresi, 2013; Cvetković, 2020; Cvetković et al, 2020; Ocal et al., 2020). Based on the subject of the research, the paper sought to answer whether people behave panicky, morally, depressed or altruistic during disasters, and whether they are willing to donate money, clothes and food to help disaster victims and in what circumstances they think it's necessary to do so. The results of the research indicate that people behave morally in the conditions of disasters, that is, that they consciously want to help those who need help and that they would like to volunteer during disasters. The obtained research results are consistent with the results of previously conducted research (Heide, 2004; Mawson, 2005; Person, Tracy & Galea, 2006). According to the results of the research, Cvetković found that women have more knowledge about natural disasters and take the dangers more seriously than men, and their preparedness for disasters is at a higher level than men (Cvetković, 2017, p. 75).

Also, the results of the research show that the majority of respondents believe that in case they find themselves at the scene of the disaster, they would help ambulance crews; one third would participate in transporting the injured, while one-third of respondents would help provide first aid. Such results should not be surprising if we take into account that the respondents have members in their family that are volunteers; more than half of them stated they know that their family members were voluntarily engaged. The obtained research results are consistent with the results of previously conducted research (Cvetković, Milašinović & Lazić, 2018; Perry, 2004). Additionally, it was determined that a large percentage of respondents would behave mythically, that is, enslaved to the most current myths about the behavior of people during disasters. Starting from the fear that natural disasters

could lead to epidemics of infectious diseases, 77.6% of respondents believe in this claim. In the example of the flood in Indonesia in 2004, a large number of people were buried without prior identification for fear that the dead bodies would be a source of infection. When asked whether the scenario from Indonesia could be repeated in the future, 60.8% believe in the stated statement. However, 33.6% of respondents state that education of the population and competent services can avoid a similar scenario in the future. The medical literature fully agrees that the causes of infectious diseases are not natural disasters, i.e. dead bodies, but viruses and bacteria. And, if there are patients with infectious diseases, hepatitis or tuberculosis among the dead, the survival time of the virus is no longer than 48 hours (Cvetković, 2020, p. 477).

Conclusion

Examining the factors that influence the public perception of mythically-based human behavior in disaster conditions, preconditions have been created for further improvement of the theoretical and empirical fund of scientific knowledge about human behavior in such situations. Myths about human behavior in disaster conditions are a topic that hasn't been sufficiently addressed, and there are several scientific papers in the scientific literature which give an overview of the most current myths about human behavior and reactions of certain services during disasters. Because the consequences of mythically-based human behavior are unfavorable for the entire system of protection and rescue of the people of the Republic of Serbia, it's necessary to pay more attention to this topic starting from its establishment, organization, efficient functioning and training, for the need to organize effective disaster protection, because the fact is, many disasters can't be avoided, but their consequences can be significantly reduced. People's awareness in the field of disasters is at a low level in the Republic of Serbia, so it's necessary to provide continuous education. This time, they must be allies and help educate people to raise their level of awareness of undesirable behaviors during disasters and ways to eradicate them.

In the future, people should acquire basic knowledge in the field of disasters, because it would help them in their daily functioning. If manuals or reminders for dealing with disasters would be in visible places in companies, and if there would be constant education and valorization of employees' knowledge, it's assumed that the level of knowledge about disasters would be satisfactory, therefore people's behavior in disaster conditions would be supported by scientific facts.

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Literature

Alexander, D. E. (2014). Social media in disaster risk reduction and crisis management. *Science and engineering ethics*, *20*(3), 717-733.

Berrebi, C., Karlinsky, A., & Yonah, H. (2020). Individual and community behavioral responses to natural disasters. *Natural Hazards*, 1-29.

Brabazon, T., Quinton, J., & Hunter, N. (2020). Panic learning off (and on) the Covid Campus. Fast Capitalism, 17(2).

Centar za evroatlanske studije - CEAS. (2016). Redovno u vanrednim situacijama - Reforma sistemmaa upravljana krizama i planiranja u vanrednim situacijama u Srbiji u skadu sa Idividualim akcionim lanompartnerstva (IPAP) Srbije i NATO i procesom EU integracija Srbije, Beograd: CEAS.

Clarke, L. (2002). Panic: Myth or reality? C*ontexts*, *1*(3), 21-26.

Cvetković, V. (2017). Metodologija istraživanja katastrofa i rizika: teorije, koncepti i metode. *Beograd: Zadužbina Andrejević*.

Cvetković, V. (2020). Upravljjanje rizicima u vanrednim situacijama. Beograd: Naučno-stručno društvo za upravljjanje rizicima u oblasti vanrednih situacija.

Cvetković, V.M., Milašinović, S., Željko, L. (2018) Examination of citizens' attitudes towards providing support to vulnerable people and volunteering during disasters. Teme, vol. 42, br. 1, str. 35-56.

Öcal, A., Cvetković, V. M., Baytiyeh, H., Tedim, F. M. S., & Zečević, M. (2020). Public reactions to the disaster COVID-19: a comparative study in Italy, Lebanon, Portugal, and Serbia. Geomatics, Natural Hazards and Risk, 11(1), 1864-1885.

Cvetković, V., Nikolić, N., Nenadić, R. U., Ocal, A., & Zečević, M. (2020). Preparedness and Preventive Behaviors for a Pandemic Disaster Caused by COVID-19 in Serbia. *International Journal of Environmental Research and Public Health*, *17*(11), 4124.

Daimon, H., & Atsumi, T. (2020). Constructing a positive circuit of debt among survivors: an action research study of disaster volunteerism in Japan. *Natural Hazards*, 1-20.

De Goyet, C. D. V. (1999). Stop propagating disaster myths. *Prehospital and disaster medicine*, *14*(4), 9-10.

De Goyet, C. D. V. (2007). Myths, the ultimate survivors in disasters. *Prehospital and disaster medicine*, *22*(2), 104-105.

Drury, J., Cocking, C., & Reicher, S. (2009). The nature of collective resilience: Survivor reactions to the 2005 London bombings. *International Journal of Mass Emergencies and Disasters*, *27*(1), 66-95.

Durlević, U., Momčilović, A., Ćurić, V., & Dragojević, M. (2019). Gis application in analysis of erosion intensity in the Vlasina River Basin. *Glasnik Srpskog geografskog drustva*, *99*(2), 17-36.

Dynes, R. R., & Quarantelli, E. L. (1973). The family and community context of individual reactions to disaster.

Frey, B. S., Savage, D. A., & Torgler, B. (2011). Behavior under extreme conditions: The Titanic disaster. *Journal of Economic Perspectives*, *25*(1), 209-22.

Gantt, P., & Gantt, R. (2012). Disaster psychology: Dispelling the myths of panic. *Professional Safety*, *57*(08), 42-49

Garde, P. (2010). Mitovi i riječi. *Godišnjak Bošnjačke zajednice kulture» Preporod «*, (1), 374-385.

Guo, X., & Kapucu, N. (2019). Examining Stakeholder Participation in Social Stability Risk Assessment for Mega Projects using Network Analysis. *International Journal of Disaster Risk Management*, *1*(1), 1-31.

Han, Z., Wang, L., & Cui, K. (2020). Trust in stakeholders and social support: risk perception and preparedness by the Wenchuan earthquake survivors. *Environmental Hazards*, 1-14.

Heide, E. A. (2004). Common misconceptions about disasters: Panic, the disaster syndrome, and looting. *The first 72 hours: A community approach to disaster preparedness*, *337*.

Jacob, B., Mawson, A. R., Marinelle, P., & Guignard, J. C. (2008). Disaster mythology and fact: Hurricane Katrina and social attachment. *Public Health Reports*, *123*(5), 555-566.

Krmpotić, A. (2018). *Mitovi u kojima živimo* (Doctoral dissertation, University of Rijeka. Faculty of Humanities and Social Sciences. Department of Cultural Studies.).

López-Carresi, A. (2013). 10 Common myths and misconceptions in disaster management. Disaster management: International lessons in risk reduction, response and recovery, 142.

Lovari, A., & Bowen, S. A. (2020). Social media in disaster communication: A case study of strategies, barriers, and ethical implications. *Journal of Public Affairs*, *20*(1), e1967.

Mano, R., Kirshcenbaum, A., & Rapaport, C. (2019). Earthquake preparedness: A Social Media Fit perspective to accessing and disseminating earthquake information. *International Journal of Disaster Risk Management*, *1*(2), 19-31.

Mavrodieva, A., Budiarti, D., Yu, Z., Pasha, F., & Shaw, R. (2019). Governmental Incentivization for SMEs' Engagement in Disaster Resilience in Southeast Asia. *International Journal of Disaster Risk Management*, *1*(1), 32-50.

Mawson, A. R. (2005). Understanding mass panic and other collective responses to threat and disaster. *Psychiatry: Interpersonal and biological processes*, *68*(2), 95-113.

Milojković, B., & Jovanović, J. (2018). Method of topographic inventarization and GPS technology in geospatial modeling. *Glasnik Srpskog geografskog drustva*, *98*(2), 59-82.

Morgan, O., & De Goyet, V. (2005). Dispelling disaster myths about dead bodies and disease: the role of scientific evidence and the media. *Revista Panamericana de Salud Pública*, *18*, 33-36.

Nedeljković, S. (2006). Mit, religija i nacionalni identitet: Mitologizacija u Srbiji u periodu nacionalne krize. *Етнпооаанптгроопроолоошккui пррообблеемтui*, *1*(1), 155-180.

Nikolić, N., Cvetković, V., & Zečević, M. (2020). Human Resource Management in Environmental Protection in Serbia. *Bulletin of the Serbian geographical society*, *100*(1), 51-72.

Nogami, T. (2018). What behaviors we think we do when a disaster strikes. Misconceptions and realities of human disaster behavior. In *Integrating Disaster Science and Management* (pp. 343-362). Elsevier.

Pantelić, G. (2016). Černobiljj: 30 godina posle. Institut za nuklearne nauke „Vinča", Laboratorija za zaštitu od zračenja i zaštitu životne sredine „Zaštita"

Pantelić, M., Stojanović, V., Dolinaj, D., Savić, S., Pavić, D., & Milošević, D. (2017). Local residents' attitudes regarding ecological condition and pollution effects on human health and environment-case study of Veliki Bački Canal, Vojvodina, Serbia. *Glasnik Srpskog geografskog drustva*, *97*(2), 1-18.

Perry, R. W. (2004). Disaster exercise outcomes for professional emergency personnel and citizen volunteers. *Journal of contingencies and crisis management*, *12*(2), 64-75.

Person, C., Tracy, M., & Galea, S. (2006). Risk factors for depression after a disaster. *The Journal of nervous and mental disease*, *194*(9), 659-666.

Ranisavljević, M., & Vudragović, Z. (2017). Storage and distribution of food in eemergencies. *Vojno delo*, *69*(7), 338-357.

Rico, G. (2019). School-Community Collaboration: Disaster Preparedness towards Building Resilient Communities. *International Journal of Disaster Risk Management*, *1*(2), 45-61.

Štrkalj Despot, K. (2020). Kako koronavirus mijenja jezik kojim govorimo (i mislimo)?. *Hrvatski jezik: znanstveno-popularni časopis za kulturu hrvatskoga jezika*, *7*(2), 1-7.

Sun, L. G. (2012). Disaster mythology and availability cascades. *Duke Envtl. L. & Pol'y F.*, *23*, 73.

Sutton, J., & Kaufmann, R. (2018). That's a Myth! Teaching about Disaster Myths through Experiential Learning. *International Journal of Mass Emergencies & Disasters*, *36*(3).

Tierney, K., Bevc, C., & Kuligowski, E. (2006). Metaphors matter: Disaster myths, media frames, and their consequences in Hurricane Katrina. *The annals of the American academy of political and social science*, *604*(1), 57-81.

Veljković, D. (n.d). Transfuzija krvi. Preuzeto sa: http://www.nurdor.org/InfoDetalji.aspx?url=transfuzija-krvi&kid=1 (21.07.2020.)

 doi:10.20944/prepr

Webb, G. R. (2007). The popular culture of disaster: Exploring a new dimension of disaster research. In *Handbook of disaster research* (pp. 430-440). Springer, New York, NY.

Zavar, E., & Nelan, M. (2020). Disaster drills as experiential learning opportunities for geographic education. *Journal of Geography in Higher Education*, 1-8.