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THE PSYCHOLOGICAL PERSPECTIVE OF CLIMATE CHANGES

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Abstract

Global climate changes have and will have different outcomes which will impact the human population, such as natural disasters, or human-induced, environmental degradation. Solutions to a large number of environmental problems lie in human behavior, and behavior is, by its definition, the subject of the study of psychology. Therefore, in addition to natural changes (such as solar radiation or sea currents), the human factor becomes the object of two-sides study - on the one hand, as a cause of climate changes, and on the other, as the one on which the same changes have their impact (on physical and mental health). Such studies require a complex methodology, interdisciplinarity and, often, significant financial resources. It should be kept in mind that global climate change and its impact cannot be directly perceived, but only through certain indicators, such as, for example, circadian, seasonal or regional temperature variations and their impact on the psycho-physical status of individuals.

Research on the effects of climate change has shown that certain types of individuals may develop different types of mental dysfunctions, as a consequence of those climate changes, like the reduction of emotional balance, anxiety, depression, generalized or specific stress conditions, etc. Although it is not possible to feel the climate change directly, thanks to the previous knowledge it is possible to prepare to those changes, to the extent that the adaptability of the human organism allows it, and to respond adequately to them. These preparations involve knowledge regarding those changes and management of the interaction of man and his environment, whether it is natural or artificial, made by people themselves.

Key words: climate changes, environmental psychology, globalization, sustainable development.

ПСИХОЛОШКЕ ПЕРСПЕКТИВЕ КЛИМАТСКИХ ПРОМЕНА

Апстракт

Глобалне климатске промене имају и имаће различите утицаје који погађају људску популацију, попут природних катастрофа или, људским фактором изазва-

них, деградација животне средине. Решења за велики број проблема у вези са животном средином леже у човековом понашању, а понашање је, по дефиницији, предмет проучавања психологије. Стога људски фактор, поред природних промена (као што су Сунчева зрачења или морске струје), постаје предметом двоструког проучавања – са једне стране, као узрочник климатских промена, а са друге стране, као онај на који те исте промене делују (на његово физичко и психичко здравље). Оваква проучавања захтевају сложену методологију, интердисциплинарност и, често, значајна финансијска средства. Овде треба имати у виду да се глобалне промене климе и њен утицај не могу директно перципирати, већ само преко одређених индикатора, као што су, на пример, циркадијална, сезонска или регионална температурна варирања и њихов утицај на психофизички статус људи.

Истраживања која су се бавила последицама климатских промена показала су да се код одређених категорија особа могу развити различите врсте психичких дисфункција: смањење емоционалне равнотеже, анксиозност, депресија, генерализована или специфична стресна стања итд. Иако није могуће непосредно осетити промену климе, захваљујући досадашњим знањима, могуће је припремити се, у мери у којој то адаптибилност људског организма дозвољава, и адекватно реаговати на исту. Те припреме подразумевају добро познавање и управљање интеракцијом човека и његове околине, било да је она природна или вештачка, односно, људских руку дело.

Кључне речи: климатске промене, психологија животне средине, глобализација, одрживи развој.

INTRODUCTION

From ancient times, man has been changing the environment in which he lives in order to make that environment more convenient for him and his needs and to make it more useful for everyday life. However, while the environment becames more and more useful and more comfortable, at the same time, it became increasingly unpleasant for life. Industrialization and overpopulation threatened, in different ways, the environment upon which human survival depends entirely. Many factors connected with urbanization and industrialization have had, and still have, detrimental effects on the environment. These are, for example, the effects of a number of biologically active substances that humans artificially produce and are exposed to. During his evolution, the man had no experience with such substances, and therefore, as a consequence, his organism failed to develop adequate defense mechanisms against them.

On the other hand, the cumulative action of these factors is also reflected upon the Earth’s ecosystems, complex environmental systems, and global climate change, upon which the overall human existence depends. The specific consequences of such actions are those that directly threaten and impair human health. The polluting substances reach us through the air we breathe, the water we drink and the food we are taking.

The ecological consequences can only be understood if the routes of today's ecological problems are known. One of the most prominent environmental problems is climate change, which begins to be of interest to psychologists in the early '70s (Sax, 75; Lee, 57). Namely, until this period,

the field of psychology reminded of a quite divergent mosaic painting, when it comes to some of its basic concepts. In an attempt to unify them through categories “personality”, “learning” or “development”, only one level of generalization occurred, which had, to a great extent, a lack of interaction with the environment. This deficiency was overcome by the proposition of the next level of generalization, namely, by the proposition of implementing "reality" in those generalizations, as the context of the existence of man in the world, in the environment that he adapts to himself. The main motive for this was to determine the optimal scope of man's engagement in the process of changing the natural environment, because all disorders in ecosystems, both on the macro and on the micro plane, have arisen as a result of man's appropriation of nature for his own needs. That is as a consequence of man's behavior in the broadest sense of the word. All the global climate changes happening in the natural environment nowadays have and will have different impacts on the human population, such as natural disasters or environmental degradation. Solutions to a large number of environmental problems lie in human behavior, and behavior is, by definition, the subject of the study of psychology.

Environmental Psychology

Globalization and sustainable development are, at this point, two key concepts that prevail in the discussions concerning current and future changes in society. Globalization refers to a wide range of phenomena, including the worldwide interdependence of economic, information and communication systems, as well as the global interdependence of environmental problems.

The “sustainable development” paradigm should disclose mutual relationships between the ecological, economic, and sociocultural dimensions of the system of supporting the life activity of the individual and the entire humanity. Research in recent years in the field of environmental psychology and psychology of sustainable development demonstrates the justification of the given task.

Environmental psychology can give its contribution to solving the problems of sustainable development, since it concentrates attention on the problems of interaction between man and the environment, on living conditions, activities and behaviors, taking the individual and the group (social community) as subjects that are in the center of change. The contents of globalization and sustainable development cannot be dealt with only from the standpoint of the areas of political strategies, social sciences, and management, but also in the field of environmental psychology (Kruse, 2006), within which a subfield called psychology of “sustainable development” is being developed (Shultz, 2002). Turning psychology towards the problems of sustainable development can also be seen as a shift from the completely local problems, such as the perception of the environment, knowledge, and assessment regarding that environment,

concrete behavior in the specific environment, towards the problems of a "broader perspective". Such problems being the preservation of resources and energy, reducing consumption, and work on increment of recycling, the problems of global scale, such as resolving social dilemmas in limited resource management situations, addressing overpopulation and poverty, disturbing changes in the landscapes, reducement of the drinking water resources, solving global conflicts in the environment, etc. According to Kruse (2006), psychology adopted the concept of sustainable development as the ethical imperative of managing the natural and anthropogenic system. Research in the field mentioned above traditionally remains interdisciplinary in its basis, and the aspects of their mutual relationship with the related fields of applied psychology are constantly spreading. The empirical research regarding this field is being widened all the time, namely, the research that includes problems of values and relation of ecological awareness, attitudes of pro-environmental behavior, and consumer behavior that go beyond the concept of sustainable development, problems of quality of life and its correlation with the concept of sustainable development, studying various aspects of the mutual relation of man (community) and the environment, etc.

What are climate changes?

There are various definitions of climate changes, and most of them indicate that these are changes of the climate attributed to various activities that change the composition of the atmosphere and which are recorded over a longer period of time. The term "climate change" can be used to describe climate changes that occur due to natural and human factors.

There is still a polarization in the scientific world in terms of climate change, but it is certain that the 4th report of the Intergovernmental Panel on Climate Change carries special weight when it comes to the reduction of this polarization (Pachauri & Reisinger, 2007). In this report a group of scientists and experts on climate change stated the following: "The climate is changing, and these climate changes are mainly due to human activity". Among the basic conclusions of this report, it is highly assured and argued that the greenhouse effect exists, and that greenhouse gas emissions from human activities significantly cause the increased warming of the atmosphere, which furthermore, causes extreme weather conditions, such as drought or abundant precipitation, which occur much more frequently in the last few decades (Milutinović, 2018). Therefore, the consideration of different ways of reducing this human impact on climate has been increasing. Besides that, the subject of consideration of experts are the ways of adaptation to the changes that are already occurring, as these processes affect both our planet and all its inhabitants, especially human beings.

Perception of Climate Changes

Global climate change cannot be perceived directly, in comparison to perception, for example, of the changes in temperature at a circadian, seasonal, or regional level (systematic or accidental). It is not possible to directly feel climate change and react to it, but it is possible to prepare for the effects of those changes. Such a reaction can be expressed only indirectly, through a cognitive understanding of the problem and professional and social communication. In line with this, the conclusion has been drawn that the human reaction to global climate change is not the result of human reaction at the psychophysical level, but rather the result of social communication, whereby usually the result of any activity or behavior is expressed directly (immediately). By contrast, the time interval between human activity and its noticeable impact on environmental changes can be measured over years and decades, often going beyond the limits of one generation.

We can start at the example of a man who incorporates a low-level exhaust system into his car, who then needs to get used to saving energy and reducing energy needs when his warming up his apartment or office, who does not agree to destroy untouched forests by burning them, etc. For all these examples of behavior, there is a small contribution to the environment from an individual point of view. It should also be stated that a person who at the individual level contributes to the preservation of the environment has no material benefit, like tax relief or other type of rewards for his behavior, unless he is a resident of some of the more developed countries of Europe or North America, where the state subsidized the ecologically responsible behavior of his citizens for several years now.

In a study conducted by Kahneman and Krueger (2006), respondents underestimated the relative incidence of adverse climatic events, which can be the consequence of the functioning of the cognitive mechanism in man when "calculating" the subjective probability that the event will occur. Even though the absolute frequency of random natural disasters, such as hurricanes and floods, is rising (due to global climate change), their relative frequency will, nevertheless, be underestimated at the subjective level of an individual. Here, a psychological problem arises: cognitive mechanisms that are at the basis of processing information regarding negative events with low frequency (probability) are mainly related to the formation of attitudes and behaviors that follow the same attitudes.

In situations of global climate changes in the environment, there is often a wide distance between the causes of those changes and their consequences. The distance can be both spatial and temporal. A behavior (activity) of an individual A can affect the quality of the environment of an individual B, living spatially distant from the individual A or living in a different period of time. A catastrophe caused by industrial waste can affect people living at a significant distance from the immediate location of a disaster. Consequently, the direct mechanisms of concluding do not function

here because the objective and subjective, spatial and temporal distances between causes and consequences are beyond the boundaries which make it impossible to identify the causes with the consequences. This distance between the activities and their consequences is another feature of global change, such as climate change. Psychologists were also interested in and examined the role of communication and mass media in human behavior, at large spatial and temporal distances.

A large number of studies have come to the conclusion that people have the custom to understand the impact of climate changes by thinking that they instantly affect other people, especially those living elsewhere in the world (Stamm, Clark, & Eblacas, 2000), while a certain number of individuals from the population believe that climate changes will have significant negative effects also on them, in the near future. Also, some studies from the end of the last century have shown that people believe that climate changes have a serious and direct impact on health (Bostrom, 1994). Weber (2006), however, concluded that a large number of people believe that the problem of global climate change will be greater and bigger in the future.

The beliefs and attitudes about climate change are shaped by our direct experiences with climatic phenomena, as well as by our indirect experiences about this problem, for example, through social interaction and media coverage. As Weber (2006) and others noticed, our direct experiences are somewhat limited because global climate change is a statistical phenomenon that consists of many different events spanning in time and space (Sterman & Booth Sweeny, 2002). The beliefs regarding global climate change are also shaped under the strong influence of indirect experiences, in particular in interaction with close people and through exposure to the media, which in recent times very often transmits news about various manifestations of these changes, most often in the form of floods and fires, but also about activation of huge landslides or the discharge of large glaciers from the ice masses on the poles of our planet.

Influences and Adaptation on the Climate Changes

There are aspects of global climate change that require particular attention due to the complex overlap of their causes and impacts, the time flow and consequences, on the one hand, and multiple solutions with unknown side effects that contribute to insecurity, ambiguity, feelings of threats and unreactiveness, to the feeling of ignoring the problem, on the other hand. The effects of climate changes are sometimes seemingly contradictory, potentially confusing as to what they are and what is evidence of their impact, moreover because their impacts are not limited to a particular region or state, but are rather happening around the world, or more precisely because they are global in character.

A great deal of attention has been paid to the current physical effects of climate change, with particular reference to the effects that man has caused with his activities. Different variations of climate change on Earth

(like increasing temperatures and droughts in some parts of the world, melting icebergs, soil erosion, and increasing rainfall in others) also affect fauna and flora. Animals whose habitat disappears also have to move and are therefore becoming endangered. One other important problem is also the disruption of ecosystems. All ecosystems in the wild are sensitive to the arrival of new plant species in areas where they have not previously been, as well as towards diseases and pests that are disturbing the present state and put the indigenous species in a position of a struggle for survival. Modified physical influences include reduced availability of essential resources, such as food and clean water to endangered species (Randall, 2009; Lin, 2010).

In humans, short-term climate changes (such as storms or floods) can cause moderate and transient stresses that can easily be overcome and have no irreversible consequences, while long-term changes can result in chronic stress, which, if extended, becomes irreversible and can, in the worst case, result in death. Studies that dealt with the effects of stress caused by the short-term climate changes, after major natural disasters, have shown that certain individuals may develop phobias, reduce emotional balance, anxiety, posttraumatic stress disorder and/or depression (Hussain, Veisaeth, & Heir, 2011). A study by Doherty and Clayton (2011) found that chronic stress and its association with climate changes are mainly accompanied by feelings of sadness, guilt, anxiety, worry, despair, and apathy.

The psychological effects of climate changes can be linked to the seriousness and risk they pose (Dohery & Clayton, 2011). For many people living in the northern hemisphere and working in industrial areas, climate change is an abstract problem that does not affect their current life or well-being, and their only contact with the same is through the media or conversations with others. So we have the situation that in such environments, there is commonly a problem of ignoring or not believing that climate problems exist (Feinberg & Willer, 2011).

Although the term “adaptation” is mainly used for technological and physical changes that occur as the response to climatic disasters, it can also be used for psychological studies of the impact of climate changes, for purposes of understanding how and in which way people respond to them. Considering the great adaptation potentials, man has proved to be a very adaptable species, able to respond to physical and social changes by aligning his behavior with new circumstances.

Some forms of adaptations focus on coping with the short-term effects of climate changes caused by natural disasters. Adaptation to climate change can be accelerated if people in distress are provided with assistance which would meet their basic human needs, such as food, clothing, and shelter. Assistance also includes funding, job creation, and migration, if necessary. Short-term stressful effects after surviving natural disaster increase empathy for other people which are, as a consequence, more willing to help others in need (Batson, Duncan, Ackerman, Buckley, &

Birch, 1981). Moreover, the willingness of a person to provide help to others increases if a person is found near a charity or is in a group of people who already help the vulnerable, such as, for example, professional psychological teams for the so-called interventions in crisis (Vlajković, 2005).

These types of adaptations are mainly unrelated to the long-term effects of climate changes. Adaptation to the chronic effects of climate changes is very rare, perhaps because it requires higher funding, rather than one-time donations and minimal support. In that case, it is very difficult to overcome the effects of stress caused by climate changes. Long-term consequences generally do not have enough representation in the media (Figley, 1995). Psychological processes related to the context of helping others in need, such as the tendency toward individuality, the effect of an observer, or diffusion of responsibility, can have a bad influence on the person's tendency to come to the aid of others, because the person can assume that there are other people who can help a man in distress instead of them (Aronson, Wilson and Akert, 2005; Latane, 1981).

Psychological methods that can help those who have suffered from the chronic effects of climate changes include changing their cognitive and affective responses, such as emotions of worry, hope, guilt or shame (Homburg, Stolberg, & Wagner, 2007).

Another important type of psychological adaptation is the proactive adaptation, in which individuals prepare for a shaky event before it happens, in order to minimize its negative effects (Aspinwall & Taylor, 1997). Proactive adaptation involves preparing for expected accidents and stress after those accidents. The greater the experience of people with similar or the same catastrophic events, the power of the proactive adjustment is larger. To help people affected by disaster struggling with stress, it is useful to include education on following: effects of stress on mental health, emotion management, methods of overcoming stress and on the change in the standpoint from which the threat and negative consequences of the event are seen (Morrissey & Reser, 2007). Sims and Baumann (1972) have shown that the increase of the sense of control leads to better preparation for natural disasters. Proactive adaptation can be an effective way to reduce moderate levels of stress; however, many factors of chronic stress, caused by climate changes, are considered to be unsuitable for proactive adaptation. These factors may include, for example, uncertainty regarding weather influences are directly related to climate changes, lack of personal control over many of the climate changes impacts, and for many people, a lack of direct experience when it comes to climate changes impacts.

Behavior consistent with the motto “green and in harmony with nature” can help reduce the negative effects of climate change and to create a sense of value or a positive identity associated with ecological activism (Brook, 2011). This type of identification can lead to an increase in pro-ecological or humanitarian behavior (Piliavin & Callero, 1991). Pro-ecological behaviors can be defined as meaningful and effective actions

that suit the needs of the society or individual in order to result in environmental protection (Corral-Verdugo et al., 2015). Psychology plays a crucial role in determining the individual factors which lead to pro-behavioral behavior, in order to develop effective strategies for modifying or changing maladaptive anti-ecological forms of behavior into more sustainable behaviors. Nordlund and Garvill (2003) have identified which cognitive (such as values, beliefs, norms and perceptions), motivational and affective (emotional) factors, as well as what mental abilities (such as skills, knowledge and competencies) are the main determinants that influence or facilitate person towards behaving in an environmentally sustainable way. Therefore, it is the task of psychology to distinguish which of the individual actions can be considered important for the preservation of the environment.

Impact of Attitudes and Beliefs on the Confrontation with Climate Changes

A large number of studies came to the conclusion that people have the custom to comprehend the impact of climate changes as simultaneous, namely, when they think of climate changes they consider them to be the effects on the several groups of people, occurring at the same time, and especially to those who live in different parts of the world (Stamm, Clark, & Eblacas, 2000). Also, a certain number of the population believes that climate changes, although wider, will have significant negative effects on them in the near future. Some studies have shown that people believe that climate changes have a serious and direct impact on their psychophysical health (Bostrom, 1994). Further, Weber (2006) has concluded that a large number of people believe that the problem of global climate change will be more and more increased in the future. The above-stated beliefs and attitudes about climate change were shaped, both by our direct experiences with the same and by our indirect knowledge of this problem, obtained through social interaction and the media. As Weber (2006) and others noticed, our direct experiences are limited because global climate change is a statistical phenomenon that consists of many different events spread out both temporally and spatially, unlike unlimited but indirect, coverage of planet's TV signals, the internet, and social networks. All this leads to the rapid spreading of the attitudes and beliefs about the effects of climate change, shaping the awareness of large populations at relatively short intervals of time (Sterman & Booth Sweeny, 2002).

An important factor in the action against the negative effects of climate changes is vulnerability, or the ability of an individual or groups to cope with the disadvantages caused by climate changes. Keim (2008) described vulnerability as a response to natural disasters which consists of two parts, the degree of risk of exposure to disasters, and the ability to adapt to their consequences - which he designed as resistance.

Due to geophysical impacts of climate change, people living in less developed parts of the planet are more susceptible to drastic changes in the natural environment, such as floods, droughts, malaria, soil erosion, etc. Unfortunately, many of these parts do not have enough available resources for survival (Roberts & Parks, 2007). A research conducted by Tang (2009) has shown that, in addition to human resources, some of the most important resources for adaptation to the impact of climate changes is the availability of financial capital, which allows easier access to means of satisfying the basic life needs, such as need for food, water, and shelter.

CONCLUSION

Climate changes are changing our world, and therefore also lead to the changes in our society, and can endanger its well-being. People feel a lot of the effects of a change in the global climate, and these effects will only be more pronounced by time. In order to prepare for the effects of climate changes, we need to understand better and determine different ways in which climate changes will affect human communities as a whole, as well as how those communities will respond to the emerging demands of the environment. When considering the projected and expected impacts of climate changes on people and the biosphere, it is most important to include the population in the adaptation and the preparation to deal with the possible consequences of changes. Considerations of variations in the vulnerability of different individuals and the resistance towards seeing global climate changes must be taken into account when strategies for climate change adaptation and mitigation are being developed, and those affected by these changes must be allowed to talk about their needs, concerns, and expectations. There are many ways in which psychology as a science can research this problem, and psychologists, as practitioners, provide help on the ground. Much work needs to be done to effectively change human behavior, both for causing and for dealing with the consequences of climate changes. Psychological means to change behavior will be some of the key factors in achieving such a goal, assuming there is a consensus among the wider communities on the main issues which climate changes put before the human species.

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ПСИХОЛОШКЕ ПЕРСПЕКТИВЕ КЛИМАТСКИХ ПРОМЕНА

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Резиме

Човек је од давнина мењао окружење у којем живи како би то окружење учинио погоднијим за себе и своје потребе и учинио га кориснијим за свакодневни живот. Међутим, док је окружење постајало све корисније и удобније, оно је истовремено постајало све непријатније за живот. Специфичне последице таквих акција јесу оне које директно угрожавају и нарушавају људско здравље, углавном кроз климатске промене. Загађујуће материје стижу до нас кроз ваздух који удишемо, воду коју пијемо и храну коју узимамо.

Глобалне климатске промене имају и имаће различите утицаје који погађају људску популацију, попут природних катастрофа, или људским фактором изазваних, деградација животне средине. Решења за велики број проблема у вези са животном средином леже у човековом понашању, а понашање је, по дефиницији, предмет проучавања психологије. Стога људски фактор, поред природних промена (као што су Сунчева зрачења или морске струје), постаје предметом двоструког проучавања – са једне стране, као узрочник климатских промена, а са друге стране, као онај на који те исте промене делују (на његово физичко и психичко здравље). Оваква проучавања захтевају сложену методологију, интердисциплинарност и, често, значајна финансијска средства. Овде треба имати у виду да се глобалне промене климе и њен утицај не могу директно перципирати, већ само преко одређених индикатора, као што су, на пример, циркадијална, сезонска или регионална температурна варирања и њихов утицај на психофизички статус људи.

Истраживања која су се бавила последицама климатских промена показала су да се код одређених категорија особа могу развити различите врсте психичких дисфункција: смањење емоционалне равнотеже, анксиозност, депресија, генерали-

зована или специфична стресна стања итд. Иако није могуће непосредно осетити промену климе, захваљујући досадашњим знањима, могуће је припремити се, у мери у којој то адаптибилност људског организма дозвољава, и адекватно реаговати на исту. Те припреме подразумевају добро познавање и управљање интеракцијом човека и његове околине, било да је она природна или вештачка, односно, људских руку дело. Јасно је да треба урадити много тога како би се ефективно променило људско понашање – како за изазивање тако и за суочавање са последицама климатских промена.