

Editorial

Cite this article: Cianconi P, Betrò S, Grillo F, Hanife B, and Janiri L (2021). Climate shift and mental health adjustment. *CNS Spectrums* 26(1), 5–6.

<https://doi.org/10.1017/S1092852920001261>

Received: 13 November 2019

Accepted: 23 March 2020

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As shown in the Groundswell report, climate change is becoming an emergent economic, social, and existential threat to human beings worldwide.

Natural variations in the earth's climate have been accompanying man's environment since his origins, and it is believed that catastrophic climate changes could have played an important role on his evolution.

A climate change can be regarded as a critical shift challenging both complex civilized and developing societies, with paramount effects, such as social disruption and political collapse.¹

The assessment of possible future ecologically critical climate conditions requires the study of current and past climate changes from the specific point of view of human adaptation.² Genetic evolutionary properties and behavioral adaptations allow species to go on living in their ecological and geographical contexts, with genetic mutations, phenotypic plasticity, or epigenetic mechanisms being established in order to avoid negative or catastrophic impacts due to environmental changes. Both genotype and phenotype respond to gradients of climatic properties and can be considered as evolutionary shelters.

Populations are spreading, concentrating, and migrating from one territory to another in an effort to adapt in different geographical areas. Migration may be an attempt at dealing with climate changes: when living beings perceive they are losing fitness and health, they are forced to move to other ecosystems.

Human mind is a highly integrated, coherent, sentient, and proactive information system. Doubtless, it provides an evolutionary advantage in complex and sometimes rapidly shifting environments. The adaptive capacity of individuals, communities, and health systems can manage the increase in frequency and intensity of extreme weather and climate events, and mitigate the burden of climate-sensitive health consequences. This adaptive plasticity and coping ability may function differently or be altered when a drastic environmental change occurs, as if a tipping point were reached.

Vulnerability and resilience to climate changes are broad, flexible, and complex phenomena with internal factors related to environmental, physical, economic, and social aspects. At the group level, there are populations exhibiting a degree of vulnerability due to their geographical position (eg, those on the coasts, those subjected to hurricane activity, those living in areas subjected to heat waves). Other populations can carry out climate-sensitive activities like agriculture, aquaculture, fishing, pasture, or rely on natural resources and ecosystems as their livelihood. Groups linked to vulnerable conditions include demographic subpopulations such as women, children, and elderly, as well as people with pre-existing medical conditions, disabled individuals, migrants and refugees, minorities, occupational groups with direct exposure to climate changes or disasters (eg, field workers, emergency first responders),³ people with mental illness, and the homeless category. Poverty in general is an important aspect of vulnerability, as it is directly associated with limited access to resources. Disadvantaged countries are primarily those bearing and cumulating environmental burdens, pollution, and risks of climate changes with reduced capacity of adaptation. In addition, climate change may also impact on entire communities with limited access to resources and poor adaptive capacity to protect themselves, as these aspects are associated with the risk of negative mental health outcomes.

On the other hand, resilience includes strategies for the management of climate change and disasters, analysis of threats, risk and vulnerability processes, as well as strategies for implementing culture and community awareness, growth and transformation, taking into account types of social structure and personality, resources, power, and agency. At the individual level, resilience depends on inherited biological and psychological factors involving personal history, skills, experiences, active choices, social context, and occurrence of adverse events. Communities show different resilience aspects, as compared with individuals or small groups (eg, families). Climate change manifests itself through natural phenomena and disasters, but such events are likely to be perceived as human-caused events, thus making harder to accept them and move on. This consideration plays a crucial role in perceived responsibility and

accountability and, therefore, in motivation to adaptation. The World Health Organization (WHO) has defined climate change as one of the greatest health threats of the 21st century.⁴ Mental health adjustment to climate change is not just an individual problem, but also a collective issue. So far as it is understood today, the impact of climate change on mental health can arise both directly and indirectly. The direct effects on mental health may occur rapidly, usually from extreme weather events and natural disasters, or gradually appear as slowly progressive, but not necessarily perceived as life-threatening (eg, changing temperature and rising sea levels). Moreover, climate change can have an impact on individuals and communities that are not directly affected by such distress, including emotional and affective responses which can result not from trauma, but rather from the simple observation and ascertainment of climate change effects worldwide.⁵

Mental health effects of climate change range from minimal stress and distress symptoms to clinical disorders. We can identify mental disorders such as acute stress disorders or post-traumatic stress disorders (PTSDs), depression, anxiety, and loss of identity. Many exposed people exhibit increased substance/alcohol abuse and suicidal thoughts.^{6,7} Effects can be delayed and may also persist for several years by affecting whole communities even in broader areas.⁸ Extreme weather events such as wildfires, tornadoes, hurricanes, storms, floods, and droughts can lead to PTSD, depression, anxiety, hostile and violent behaviors, adjustment disorders, paranoia, physiological hyperarousal, chronic dissociation, detachment and cognitive symptoms, poor quality of sleep, general mental health problems, increased domestic violence, alcohol and substance abuse, increase in psychosomatic illnesses, and suicide rate.⁷

In some studies, the association between climatic events and mental disorders has been described through the introduction of new terms like *ecoanxiety*, *ecoguilt*, *ecoparalysis*, *ecological grief*, and *solastalgia*. These concerns about the health state of biosphere (eg, watching the slow and seemingly irrevocable impact of ecological unbalance, feeling frustration due to an inability to cope with climate change, and anxiety concerning the future of later generations) are now experienced more keenly as people are globally immersed in the information and communication about it.⁹ There are no specific references to mental disorders related to climate change in *Diagnostic and Statistical Manual of Mental Disorders-5*¹⁰ and in *International Classification of Diseases (ICD)-10*, and they are not expected in ICD-11.

Conclusions

The pressure of climate change will possibly lead to forms of mental distress, climate-related mental disorders, and to new patterns of adaptation or adjustment disorders. Reactions to extreme weather events are similar to traumas from natural disasters. Long-term changes are more challenging. WHO has already identified vulnerable groups and conditions. A scientific approach is needed to find the adequate tools and technologies to protect mental health from the consequences of climate change.

Funding. The authors received no financial support for the research, authorship, and/or publication of this article.

Disclosure. Paolo Cianconi, Sophia Betrò, Francesco Grillo, Batul Hanife, and Luigi Janiri declare that the research was carried on in the absence of any commercial or financial relationship that could constitute a potential conflict of interest.

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