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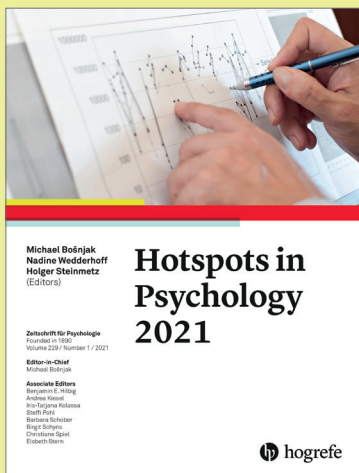
**Special Issue**

Psychology and the Environmental Crisis

**Guest Editors**

Tony W. Wainwright,  
Margarida Gaspar de Matos,  
& Katariina Salmela-Aro

# Meta-analyses and methodological advances in research synthesis methods from the field of psychology



Michael Bošnjak / Nadine Wedderhoff / Holger Steinmetz (Editors)

## Hotspots in Psychology 2021

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This fifth collection of the “Hotspots in Psychology” format is devoted again to systematic reviews and meta-analyses in research-active fields that have generated a considerable number of primary studies. It features methodological advances in the area of research synthesis methods, including an exploration of using Twitter to identify hotspot topics in psychology and to make early predictions about trends as well as the presentation of a publication format facilitating reproducibility and a method of cumulative meta-analytic evidence synthesis called community-augmented meta-analyses (CAMA).

Further meta-analyses explore diverse areas, sometimes with big data samples. These include: the exploration of the factorial structure and measurement invariance between English and translated versions of a well-established psychometric instrument (the Positive and Negative Affect Schedule); an individual-participant meta-analysis of 221 representative samples from the European Social Survey (ESS) looking at what day of the week influences subjective well-being ratings; an exploration of the role of low self-esteem in the development of pathological eating; and the application of the theory of planned behavior to analyze gender differences in the motivation to start a business.

# European Psychologist

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# Editorial

## Psychology and the Environmental Crisis

Tony W. Wainwright<sup>1</sup>, Margarida Gaspar de Matos<sup>2</sup>, and Katariina Salmela-Aro<sup>3</sup>

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This special issue was planned in what seems like a different world. There was ongoing global action on the climate and environmental emergency and in November 2019 the community of psychology joined together at the “International Summit on Psychology and Global Health: A leader in climate action” to issue the Lisbon Declaration which stated (<https://www.psychologyandglobalhealth.org>):

“We, representatives of national and international psychological organizations in attendance at the Lisbon Inaugural International Summit on Psychology’s Contributions to Global Health, are committed to ongoing collaboration in the application of psychological science to jointly advance progress on critical global issues, including the United Nations Sustainable Development Goals (<https://sdgs.un.org/goals>).

Our commitment of professional, scientific, educational, cultural, and applied resources will be directed to advancing those issues and Goals for which psychology offers the greatest contribution.

Our initial efforts will be focused on Sustainable Development Goal 13: Take urgent action to combat climate change and its impacts.”

Since then, the Global Psychology Alliance has been set up that has the Climate and Environmental crisis as one of its key policy objectives (<https://www.apa.org/international/networks/global-psychology-alliance#>).

Many other statements have echoed this concern and calls to action. For example, the medical journal *The Lancet*’s position is that climate change is the biggest global health threat of the 21st century (Watts et al., 2021; <https://www.lancetcountdown.org>). UNICEF says much the same: “climate change is the most significant intergenerational challenge facing the world today” (<https://www.unicef.org.uk/what-we-do/children-and-climate-change/>).

Failure to take substantive action would be an act of injustice to all children according to the American Academy

of Pediatrics (<https://pediatrics.aappublications.org/content/136/5/992>).

The Paris Agreement also is clear “Climate change represents an urgent and potentially irreversible threat to human societies and the planet” (<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>) and there are many others too numerous to mention.

Climate change will impact all of us, but children and young people are more vulnerable due to their immaturity, dependency, and exposure to interacting risk factors resulting in possible impacts on multiple aspects of psychosocial development (Evans, 2019; Sanson et al., 2019).

The idea of a special issue caught the mood of the times among psychologists who were increasingly engaged with the Intergovernmental Panel on Climate Change (IPCC) and the UN Climate Change Conference (COP26) process (<https://ukcop26.org>). The publication of the Special Report on Global Warming of 1.5 °C (<https://www.ipcc.ch/sr15/>), that included psychologists and social science experts among its lead authors, outlined the need for a far-reaching transformation of how we live so that we have a global pathway to limit warming to levels not considered dangerous. This report, considered cautious by some, was rejected by some major oil-producing nations and showed how far we have to go to reach a global consensus on necessary action.

And then the Pandemic arrived and quite reasonably everyone’s attention became focussed on how to prevent the spread of the virus and how to mitigate the consequences. There are many lessons to be learned here. One striking one concerns the relationship between technical preparedness and effectiveness. The Global Health Security Index 2019 (<https://www.ghsindex.org>) ranked the USA (1st) and the UK (2nd) out of 195 countries. However, neither country has done well, and both experienced high levels of fatalities associated with COVID-19. Why have they done less well than expected? Many commentators attribute it to politics and the psychology of how the population relates to the state. In a very powerful lecture about

our experience of the Pandemic to the British Psychological Society Annual Conference 2020, social psychologist Stephen Reicher said (<https://www.youtube.com/watch?v=vCAvIv2x7Ys>):

“What is happening leads us to reconceptualise one of the basic questions in psychology: the relationship between the collective and the individual and between the individual and the State.”

This is at the heart of how we need to think about the future in our relationship with the natural world as there is no getting away from the fact that we are all in this together. Unless we come together and foster global collaboration and tackle the public health and ecosystem challenges there is no doubt about the consequences: they will be very severe indeed. It is in this light that we have organized the nine papers of this special issue on the climate and environmental crisis around three themes:

- Leadership and social change.
- Health impacts destabilizing our climate and ecosystems.
- Learning from the COVID-19 pandemic.

## Leadership and Social Change

Three papers focus on leadership and social change, building on group-based processes grounded in the dynamics of social identity theories.

The first paper by Jolanda and colleagues (2021), “Responding to Climate Change Disaster: The case of the 2019/2020 bushfires in Australia” sets the scene for the whole special issue by developing this theme, as Australia witnessed record-breaking wildfires that had major impacts on people and ecosystems. They examine how psychological ideas can help us better understand the leadership we need as we will increasingly face global public health challenges. Their conclusions firmly locate an understanding of social identity and leadership as key ingredients in building trust between the authorities and the population which is necessary for effectively addressing the climate and environmental crisis.

This is followed by two papers from Germany. Maxie Schulte’s contribution (2021) entitled “We, the change: Outlining research lines of how psychology can contribute to the understanding of societal transition processes” where she makes the case that we need to focus on the psychology of social change and that the social identity model of collective action is a helpful framework.

Hannah Wallis and co-authors (2021) follow this up with their paper “Empowering people to act for a better life of

all: Psychology’s contributions to a social science for sustainability” giving a broad account of how social science needs to bring its evidence and research effort to the task of helping people realize how they need to act, and how, as noted above, we either all float together or we all sink together. They suggest the concept “solidarity-based quality of life” as an appropriate umbrella term for the positive implications of acting towards transformation to sustainable development. The paper demonstrates that psychological research can contribute to the mitigation of the socio-ecological crisis and give insights into how this can be fruitful for further developing psychology as a society-relevant discipline.

## Health Impacts and Interventions

Four papers then focus on the health impacts and possible interventions in the context of climate change.

Harriet Thompson from the UK (2021) takes on the important issue of assessing the health impacts, both physical and psychological, of climate and ecological disruption in her paper “Climate ‘psychopathology’: The intersection of mental and physical health in the climate emergency.” From the literature, we know some things already about the impact so far. These include a relationship between increasing temperatures, and the suicide rate. People who have existing mental health problems are particularly vulnerable when hit by extreme weather events, and the provision of care generally can be profoundly affected as we have seen from the COVID-19 Pandemic. Finally, we are seeing some evidence of increasing levels of distress among young people, associated with concerns about their future when seeing media reports of the impending climate and environmental changes.<sup>1</sup> This paper focuses on the direct, indirect, and psychosocial impacts that are outlined above. The conclusions from the research literature, are that these impacts are very substantial, particularly in those areas directly affected by climate change-related extreme weather events, and show every indication of becoming worse.

It is in this context that Niels Peter Rygaard from Denmark writes about the inspiring work he and his colleagues have been undertaking to help children who live with caregivers who are not their parents. In his paper (2021), “Climate Change, Migration, Urbanization, and the Mental Health of Children at Risk in the European Union – A Discussion of the Need for Large Scale Interventions” he shows the links between the environmental changes we have been witnessing, the number of families on the move because of conflicts, often about resources, and the needs of children and young people.

<sup>1</sup><https://www.bps.org.uk/news-and-policy/bps-responds-new-report-climate-crisis-and-impact-mental-health>



The next two papers develop a conceptual model of how such interventions as described in Niels Peter Rygaard's paper, can fit with a global perspective and how the various domains of practice in psychology can benefit from interdisciplinary practice when tackling global health challenges.

In Osvaldo Santos and colleagues (2021; including one of the co-editors) paper from Portugal "Health behaviors and planetary health: a multi-level environmental health approach," they show how among the various domains of psychology practice, there are two, in particular, Environmental Psychology and Health Psychology that have been on convergent tracks and should now work much more closely together to tackle the systemic, global health effects.

Jennifer Inauen from Switzerland and her colleagues (2021) continue "Environmental issues are health issues: Making a case and setting agenda for environmental health psychology" close this section with a paper complementary to Osvaldo Santos' taking the perspective of Public Health and Environmental Health. They review the literature on how psychology more broadly than Health Psychology can contribute to the development of a new domain of practice they call "Environmental Health Psychology."

These climate and health papers, lead us to the last topic, addressing what we can learn from the Pandemic.

## Learning From the COVID-19 Pandemic

Thalia Maglioglou and Sharon Coen from the UK (2021) take us on an intellectually challenging journey about how we make sense of our world. In "The construction of a hegemonic social representation: Climate crisis and the role of COVID-19 In defining survival," they propose that social representation theory be revisited, with insights from political philosophy and social theory that can provide a heuristically helpful framework to understand the tensions arising from the global threats of climate change and the COVID-19 pandemic. While it is difficult to summarise this complex area, essentially the framework explores how meaning is constructed – what is true and what is false, what unquestioned assumptions underly policy decisions, and how these frames of meaning can be changed during times of extreme social upheaval – as we are living through with COVID-19. In their paper they discuss in particular how people view the meaning of survival during the Pandemic – is it about them and us, or is it about everyone in this together and the implications of such widely held views.

Finally, Stuart Whomsley (2021), also from the UK, discusses five areas where psychologists have roles in addressing climate change and its effects on the planet and the lives of people. His title, "Five roles for psychologists in addressing climate change, and how they are informed by responses to the COVID-19 outbreak" provides a guide to

some of the key parallels from which we can build in planning future engagement with public health challenges that we are inevitably going to face. The COVID-19 outbreak gave a stark warning of how ecosystems connect, and that we humans can no longer pretend that we are somehow separate.

The five roles are:

(1) Changing human behaviors that are causing climate change (2) Increasing human connection with nature in positive ways to heal both the planet and humans (3) Advising and assisting on what leadership and good governance to protect the planet. (4) Providing support and psychological interventions for those affected by climate change. (5) Preparing for bad outcomes and helping adaptation and survival if this occurs.

## Conclusion

As mentioned above, this special issue is published shortly before COP26, the major United Nations conference which is being held in Glasgow, Scotland in November 2021, that agrees on the undertakings that governments agree for the coming years to address climate change. The aim is to limit the heating effect of human activity to 1.5 °C or less below pre-industrial levels. Psychologists played an important role in setting out the roadmap that is needed to achieve this, which will involve major social change. The papers in this special issue we hope will be a contribution to developing this work and in a small way support the global effort to mitigate and adapt to the climate and environmental crisis.

## References

- Evans, G. W. (2019). Projected behavioral impacts of global climate change. *Annual Review of Psychology*, 70(70), 449–474. <https://doi.org/10.1146/annurev-psych-010418-103023>
- Inauen, J., Contzen, N., Frick, V., Kadel, P., Keller, J., Kollmann, J., Mata, J., & van Valkengoed, A. M. (2021). Environmental issues are health issues: Making a case and setting agenda for environmental health psychology. *European Psychologist*, 26(3), 219–229. <https://doi.org/10.1027/1016-9040/a000438>
- Jetten, J., Fielding, K., Crimston, C., Mols, F., & Haslam, S. A. (2021). Responding to climate change disaster: The case of the 2019/2020 bushfires in Australia. *European Psychologist*, 26(3), 161–171. <https://doi.org/10.1027/1016-9040/a000432>
- Maglioglou, T., & Coen, S. (2021). The construction of a hegemonic social representation: Climate crisis and the role of COVID-19 In defining survival. *European Psychologist*, 26(3), 230–240. <https://doi.org/10.1027/1016-9040/a000442>
- Rygaard, N. P. (2021). Climate change, migration, urbanization, and the mental health of children at risk in the European Union. A discussion of the need for large scale interventions. *European Psychologist*, 26(3), 204–211. <https://doi.org/10.1027/1016-9040/a000441>

- Sanson, A. V., Wachs, T. D., Koller, S. H., & Salmela-Aro, K. (2019). Young people and climate change: The role of developmental science. In S. Verma & A. C. Petersen (Eds.), *Sustainable development goals for children: Using developmental science to improve young lives globally* (pp. 115–137). Springer.
- Santos, O., Virgolino, A., Vaz Carneiro, A., & Gaspar de Matos, M. (2021). Health behaviors and planetary health: A multi-level environmental health approach. *European Psychologist*, 26(3), 212–218. <https://doi.org/10.1027/1016-9040/a000437>
- Schulte, M., Bamberg, S., & Rees, J. (2021) We, the change: Outlining research lines of how psychology can contribute to the understanding of societal transition processes. *European Psychologist* 26(3), 172–183. <https://doi.org/10.1027/1016-9040/a000445>
- Thompson, H. (2021). Climate “psychopathology”: The intersection of mental and physical health in the climate emergency. *European Psychologist*, 26(3), 195–203. <https://doi.org/10.1027/1016-9040/a000433>
- Wallis, H., Bamberg, S., Schulte, M., & Matthies, E. (2021). Empowering people to act for a better life of all: Psychology's contributions to a social science for sustainability. *European Psychologist*, 26(3), 184–194. <https://doi.org/10.1027/1016-9040/a000436>
- Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Beagley, J., Belesova, K., Boykoff, M., Byass, P., Cai, W., Campbell-Lendrum, D., Capstick, S., Chambers, J., Coleman, S., Dalin, C., Daly, M., Dasandi, N., Dasgupta, S., Davies, M., Di Napoli, C., ... Costello, A. (2021). The 2020 report of The Lancet Countdown on health and climate change: Responding to converging crises. *The Lancet*, 397(10269), 129–170. [https://doi.org/10.1016/S0140-6736\(20\)32290-X](https://doi.org/10.1016/S0140-6736(20)32290-X)
- Whomsley, S. (2021). Five roles for psychologists in addressing climate change, and how they are informed by responses to the COVID-19 outbreak. *European Psychologist*, 26(3), 241–248. <https://doi.org/10.1027/1016-9040/a000435>

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# Editorial

## Introduction to “Psychology and the Environmental Crisis”

### A Collection of Previously Published Papers

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Over the years, *European Psychologist* has published papers on environmental psychology and topics related to climate change and psychology. In recent times this topic has risen up the agenda and is now center stage in political and professional arenas. The European Federation of Psychologists' Associations (EFPA) is planning to have psychology and climate change as on to their fields of action for their 2021–2023 mandate.<sup>1</sup> The special issue of *European Psychologist* published at the same time as this Compendium was prompted by this upsurge in interest and urgency.

The first paper related to environmental concerns in the *European Psychologist*, that was published over 20 years ago, Levy-Leboyer et al. (1996), explored the way people in different countries across Europe related to the environment, recognizing that the nature of the environmental challenges is global, so approaches in one country or community would not be effective everywhere, echoing the recent work of the psychologist George Marshall.<sup>2</sup> An important point they made at the time, is that attitudes toward risk vary and that these attitudes can be important determinants of pro-environmental action.

Five papers that include Florian Kaiser as the author (Brugger et al., 2011; Kaiser, 2014; Kaiser et al., 1999, 2008; Otto et al., 2014) again span the past 20 years and develop the themes of an engagement or lack of engagement with climate and environmental action, linking this to psychological science in a variety of ways. The papers cover both conservation efforts addressing biodiversity loss, as well as other aspects of environmental action. Kaiser (2014) introduces a special section of the *European Psychologist* from which some of these papers are drawn,

and summarizes lessons learned over the previous decades and the importance of interdisciplinary work in this area.

Finally, an appeal from 2003 is a call for action and is as relevant today as it was then (Schmuck & Vlek, 2003). Entitling the article “Psychologists can do much to support sustainable development,” the authors encourage their colleagues with the following words:

“Psychologists can help analyze and mitigate the biggest sustainability problems: population growth, resource-intensive consumption, and harmful technologies – if their research is well-tuned to other environmental sciences, if the incentive structure for this work is improved, and if more attention is paid to the collective side of human behavior.” (p. 66)

We welcome this compendium to go alongside the special issue, providing as it does, a context for the current work and the way the discipline has tackled these issues over the years. All contributions listed below are freely available at <https://econtent.com> for a period of 2 years, starting with the online publication of this special issue.

## References

- Brugger, A., Kaiser, F. G., & Roczen, N. (2011). One for all? Connectedness to nature, inclusion of nature, environmental identity, and implicit association with nature. *European Psychologist*, 16(4), 324–333. <https://doi.org/10.1027/1016-9040/a000032>

<sup>1</sup>[https://efpa.magzmaker.com/may\\_2021/european\\_psychology\\_and\\_climate\\_change](https://efpa.magzmaker.com/may_2021/european_psychology_and_climate_change)

<sup>2</sup><https://climateoutreach.org/about-us/meet-the-team/>

Kaiser, F. G. (2014). Using cutting-edge psychology to advance environmental conservation. *European Psychologist*, 19(2), 81–83. <https://doi.org/10.1027/1016-9040/a000180>

Kaiser, F. G., Ranney, M., Hartig, T., & Bowler, P. A. (1999). Ecological behavior, environmental attitude, and feelings of responsibility for the environment. *European Psychologist*, 4(2), 59–74. <https://doi.org/10.1027/1016-9040.4.2.59>

Kaiser, F. G., Schultz, P. W., Berenguer, J., Corral-Verdugo, V., & Tankha, G. (2008). Extending planned environmentalism: Anticipated guilt and embarrassment across cultures. *European Psychologist*, 13(4), 288–297. <https://doi.org/10.1027/1016-9040.13.4.288>

Levy-Leboyer, C., Bonnes, M., Chase, J., Ferreira-Marques, J., & Pawlik, K. (1996). Determinants of pro-environmental behaviors: A five-countries comparison. *European Psychologist*, 1(2), 123–129. <https://doi.org/10.1027/1016-9040.1.2.123>

Otto, S., Kaiser, F. G., Arnold, O., & Kaiser, F. G. (2014). The critical challenge of climate change for psychology: Preventing rebound and promoting more individual irrationality. *European Psychologist*, 19(2), 96–106. <https://doi.org/10.1027/1016-9040/a000182>

Schmuck, P., & Vlek, C. (2003). Psychologists can do much to support sustainable development. *European Psychologist*, 8(2), 66–76. <https://doi.org/10.1027/1016-9040.8.2.66>

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# Responding to Climate Change Disaster

## The Case of the 2019/2020 Bushfires in Australia

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**Abstract:** Climate change-induced disasters (e.g., bushfires, droughts, and flooding) occur more frequently and with greater intensity than in previous decades. Disasters can at times fuel social change but that is not guaranteed. To understand whether disasters lead to status quo maintenance or social change, we propose a model (Social Identity Model of Post-Disaster Action; SIMPDA) which focuses on the role of leadership in the aftermath of a disaster. Looking specifically at climate change-related disasters, we propose that intragroup and intergroup dynamics in both the pre-disaster as well as the post-disaster context affect whether leadership (a) has the potential to mobilize social identity resources to enable social change, or else (b) fails to capitalize on emerging social identity resources in ways that ultimately maintain the status quo. Given the importance of urgent climate change action, we predict that status quo maintenance is associated with post-disaster paralysis. In contrast, social change that is set in train by capitalizing on social identity-based resources holds the promise of greater post-disaster learning and enhanced disaster preparedness when it is focused on addressing the challenges brought about by climate change. We apply this model to understand responses to the 2019/2020 bushfires in Australia. Our analysis suggests that while an emerging sense of shared identity centered on acting to tackle climate change provides a window of opportunity for securing increased disaster preparedness, this opportunity risks being missed due to, among other things, the absence of leaders able and willing to engage in constructive identity-based leadership.

**Keywords:** climate change, disaster preparedness, social identity approach, leadership

At the time of writing, Australia is at the end of the worst bushfire season on record and, understandably, emotions are running high. This is not just because the nation is experiencing exhaustion from battling unprecedented fires across many states, and sadness and despair about the destruction of the environment, natural habitat, family homes, communities and livelihoods, and the loss of many animals. There is also widespread anger and frustration about what is being perceived as a lack of political will to address the key factor that has caused such a fierce bushfire season: climate change. While it is clear that the future-proofing of Australia against the catastrophic impact of bushfires requires urgent policy change on a large scale, commentators are concerned that the Australian Federal Government will only embark on incremental policy change or, worse, none at all (Delaney, 2020; Wallace, 2020). This begs the question of what it is that leads disasters to either (a) become a trigger for social change (e.g., ambitious climate change policy targets) or else, (b) to become a missed opportunity that ultimately serves to maintain the status quo. Given the importance of urgent action to tackle climate change, and, given the cost of not

taking action (Irwin, 2019), answers to this question are more pressing than ever before.

We start this article by introducing a Social Identity Model of Post-Disaster Action (SIMPDA) which theorizes about when and why leaders' behavior can promote greater post-disaster preparedness or, alternatively, lead to post-disaster paralysis. Here we follow public policy scholarship and argue that in the aftermath of a disaster, there is a critical window of opportunity for change. We describe the factors that determine whether the post-disaster response leads to status quo maintenance or social change. We will argue that one key reason why disasters serve as turning points or critical junctures is that the experience of disaster unites the public and is associated with the rapid emergence of shared identity around the need to prevent future disasters. We highlight the critical role of leaders in then determining whether this shared identity is mobilized or squandered. While we developed SIMPDA to explain responses to a wide range of disasters, here we focus in particular on environmental disaster responses. Specifically, we apply SIMPDA to understand responses to the 2019/2020 bushfires in Australia and we focus on the type of

leadership that is required to capitalize on the potential for change in the aftermath of climate change-induced disasters.<sup>1</sup>

Before outlining our model, we need to articulate some of the assumptions that underpin it. First, we emphasize the need to explore responses to environmental disasters not at the individual level but at the collective level. That is, given that environmental disasters typically affect collectives such as communities, and given that people's appraisal of the disaster and responses to it are shaped by collective-level responses, we need to develop theorizing that helps us to understand the collective dimension of such appraisals and responses (see also Fritzsche et al., 2018). In this regard, we see the *Social Identity Approach* – SIA, comprised of *social identity theory* (SIT; Tajfel & Turner, 1979) and *self-categorization theory* (SCT; Turner et al., 1987) – as the ideal theoretical framework to allow for an integrated analysis of the collective-level dynamics that shape such collective appraisals and responses. This is because the SIA provides explicit theorizing about how individual-level psychological processes are affected and informed by the broader socio-structural context (e.g., economic and political factors affecting status relations between groups). More specifically, the SIA provides a powerful framework for exploring the relationships between individual and group behavior – including behavior related to environmental crises and challenges (e.g., Fielding & Hornsey, 2016; Hornsey & Fielding, 2020; Seyranian, 2014; Seyranian et al., 2015; see also the Social Identity Model of Pro-Environmental Action, SIMPEA, Fritzsche et al., 2018). The novelty of this thinking is apparent when comparing the social identity approach to current approaches to disaster response. To date, research into such responses has been informed largely by models that focus on the abilities and capacities of individuals *as individuals* to cope with and respond to disasters (for a similar critique, see Becker & Reusser, 2016). However, while these analyses may explain some aspects of people's responses to disasters, they are limited by the fact that they offer individualistic analyses of what, we argue, are primarily *group*-based processes grounded in the dynamics of social identity.

Second, and related to the first assumption, because people's sense of self is in important ways defined by the communities, regions, and nations they belong to (providing them with social identities; Tajfel & Turner, 1979), environmental disasters entail not only changes to personal identities, but also social identity change. So while disasters clearly disrupt and destroy individuals' lives, they are also disturbing and disruptive at a collective level because they

precipitate a change in the shared sense of “who we are now” and “who we will be in the future.” Furthermore, in addition to individual-level concerns about material damage and safety, those who are affected are likely to be equally concerned about the impact on their community (e.g., on its future and, potentially, its very existence).

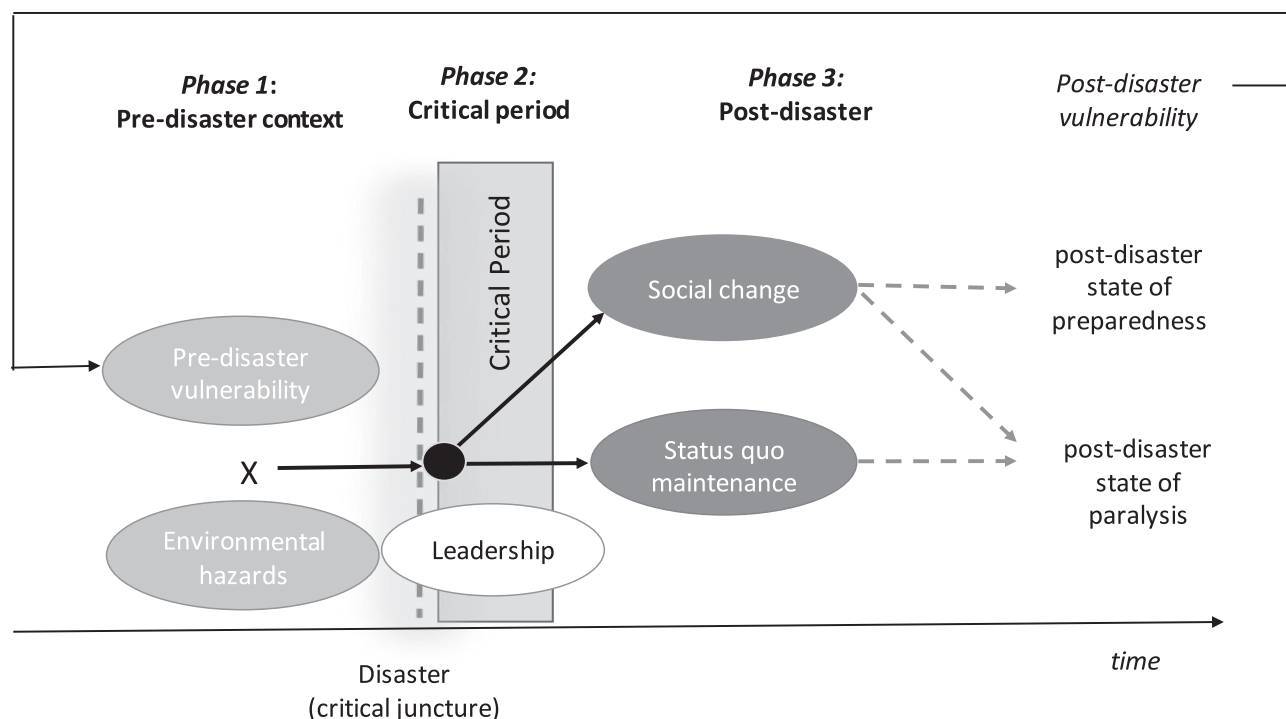
Moreover, at this collective level, there are important intragroup and intergroup dynamics at play that shape the way disasters are appraised and hence responded to. Indeed, as we outline below, emerging intergroup dynamics following disasters have the capacity to create political tensions, and these in turn have the potential to undermine societal cohesion. For example, there can be competing explanations of the causes of the disaster (e.g., as the result of climate change or natural causes) and therefore of how to reduce the risk of future disasters. At other times, disasters bring people from different political persuasions together in ways that override and dampen previous intergroup tensions. Against this backdrop, leaders typically have a critical role to play. In particular, as we will outline below, to the extent that they can read the changing intergroup and intragroup dynamics accurately and are able and motivated to position themselves as an effective channel for the mobilization of collective-level identity resources, they can play an important role in preventing intergroup tensions and unifying different groups in ways that facilitate action that enhances future disaster preparedness.

In sum, our theorizing builds on the understanding of disasters as initiating collective-level social identity change that a leader may (choose to) harness or forfeit to promote effective social change. Leaders may either fail or succeed in enhancing disaster preparedness depending on whether they amplify intergroup divisions or whether they build on an emerging sense of shared identity and unity, forging positive change to reduce the likelihood of future disasters. The model we present below outlines processes that are likely to be key in predicting post-disaster vulnerability.

## Social Identity Model of Post-Disaster Action (SIMPDA)

History shows that some disasters paved the way for structural social change while others reinforced the status quo. For example, the 1930s Great Depression paved the way for large-scale banking reforms and Roosevelt's “New Deal”, but the 2008 bank bailouts and subsequent quantitative easing enabled investment banks to continue with

<sup>1</sup> The United Nations (2004) defines disasters as: “[a] serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources”.



**Figure 1.** A Social Identity Model of Post-Disaster Action (SIMPDA).

business as usual. To understand whether crises and disasters lead to social change or to status quo maintenance, we propose a model that identifies the multiple ways in which leaders can mobilize public sentiment in the aftermath of a disaster. These processes are captured in the Social Identity Model of Post-Disaster Action (SIMPDA) presented in Figure 1. SIMPDA proposes that there are three key phases that help predict whether environmental disasters lead to an enhanced post-disaster state of preparedness or a post-disaster state of paralysis: (a) the pre-disaster context, (b) the critical period immediately following an environmental disaster, and (c) the post-disaster context. We will discuss processes in these phases in turn. We will then use the model to understand and explain responses to the Australian bushfire context in 2019/2020.

### Phase 1: The Pre-Disaster Context

Building on work by Becker and Reusser (2016), we propose that two features, in particular, are important in the pre-disaster context: *pre-disaster vulnerability* and *environmental hazards*. Pre-disaster vulnerability is a key predictor of whether there will be a disaster in the first place (Becker & Reusser, 2016). For example, an earthquake has the potential to cause widespread material damage and loss of life, but it is less likely to precipitate a disaster if the affected region has effectively reduced its vulnerability

through legislation and action to earthquake-proof buildings.

In the Australian context, there are at least three interconnected, partly sequential, reasons to conclude that Australia was poorly prepared for the 2019/2020 bushfires. Specifically, (a) the highly politicized context fuelled unhelpful “us” versus “them” dynamics which allowed for (b) climate change inaction on the part of the Australian Federal Government, and which in turn led to (c) disaster response unpreparedness. We will unpack these processes in turn.

First, while there is broad political consensus about the need for swift political action to address climate change impacts by many North European politicians (ensuring bi-partisan support for climate change action), a similar political consensus has not been reached in Australia. Arguably as a result of Australia’s vested interest in the coal and fossil fuel industry, here the issue of climate change is highly politicized in ways that give rise to clashes between those politicians who prioritize economic growth and those who demand urgent climate change action (Hornsey & Fielding, 2020). As a result, toxic “us” versus “them” dynamics are a prevailing feature of climate-related public discourse.

Second, this “us” versus “them” dynamic has provided fertile ground for inaction on climate change by the Federal Government. The Liberal-National Coalition (an alliance between center-right and right-wing political parties) has been in government since 2013 and has been led by Prime

Minister Scott Morrison (leader of the Liberal Party) since 2018. Even though there are only a handful of individuals in the government who question the existence of climate change outright, it has been argued that the Federal Government's stance can at best be described as not seeing climate change as a central issue (Grattan, 2019). In this regard, it has been suggested that the main reasons for climate change inaction are economic: Australia is the world's third-largest exporter of fossil fuels and the largest coal exporter (Kilvert, 2019). As a result, limited resources have been made available either to reduce emissions, or to move to clean energy production, or to understand the impending impacts of climate change on Australian society. Indeed, in a recent report by the Australian Climate Council, the Federal Government's inaction was summarized as follows:

"The period 2013–2019 is characterized by slashing climate science funding, cutting effective climate change programs, rejecting the expert advice of national and international bodies, senior ministers publicly making misleading claims, a lack of credible climate policy, and consistently covering up poor performance." (Climate Council, 2019)

Third, as a result of the Federal Government's climate change inaction, Australia was largely underprepared for the extreme 2019/2020 fire season. However, this was not because the Federal Government was unaware of impending problems. Indeed, in April 2019, a group of former Australian fire services chiefs had warned the Federal Government that Australia was not ready for the upcoming fire season. However, their overtures were met with political inertia and inaction (Grattan, 2019), and this in turn severely reduced the fire-fighters' capacity to effectively combat and control the extensive bushfires when these eventuated.

The second pre-disaster factor, environmental hazards, relates to the extent to which it is likely that natural disasters will occur in a particular area. In the context of bushfires in Australia, historically, these have posed a serious environmental hazard in large parts of the country. The ferocity and number of bushfires in the fire season are determined by the physical environment relating to dryness, temperature, and amount of fuel (i.e., combustible material) on the ground. Even though Australia is one of the most fire-prone countries in the world, there is now widespread agreement that climate change has worsened bushfire conditions by causing prolonged and more regular droughts and record high temperatures (Delaney, 2020). Together, these conditions have increased the length of the fire season across large parts of the country, further limiting opportunities to engage safely in back-burning (i.e., burning to reduce the amount of fuel for a potential fire).

In combination, pre-disaster vulnerability and environmental hazards determine not only the likelihood that a disaster will occur but also the extent to which a disaster will have widespread destructive consequences. In addition, the pre-disaster context needs to be evaluated and appraised in the context of the post-disaster response. Ideally, the pre-disaster preparedness should facilitate an adaptive post-disaster response.

Applying this analysis to the bushfire preparedness of Australia, it is noteworthy that the Productivity Commission in Australia warned the Federal Government as early as 2014 that bushfire prevention was not only largely overlooked but also severely under-resourced (Stanley, 2019). In their report, the commission stated that the Federal Government's natural disaster funding arrangements were "prone to cost-shifting, ad-hoc responses, and short-term political opportunism." More particularly, the commission noted that the government tended to "overinvest in post-disaster reconstruction and underinvest in mitigation that would limit the impact of natural disasters in the first place." This statement issued 5 years before the 2019/2020 catastrophic Australian bushfires, leads us to conclude that poor pre-disaster preparedness significantly affected post-disaster vulnerability in this instance.

## Phase 2: The Critical Period Following a Disaster

Following a disaster, there is typically a window of time when the status quo might be changed. Such periods have also been called "critical junctures" which are typically relatively short periods of time during which "there is a substantially heightened probability that agent's choices will affect the choices of interest" (Capoccia & Kelemen, 2007, p. 348). That is, constraints that normally restrict political action are pushed to the background and this has at least two consequences: first, "agents face a broader than the typical range of feasible options" and, second, "their choices from among these options are likely to have a significant impact on subsequent outcomes" (Capoccia & Kelemen, 2007, p. 348).

The 2019/2020 bushfires can be seen to have presented just such a critical juncture for Australia and the Federal Government. At this point, under-preparedness for bushfires and the force and scale of the bushfire season in 2019/2020 created the conditions for disaster on an unprecedented scale. By mid-January 2020, according to the Australian Department of Home Affairs, its toll was estimated at 12.6 million hectares burnt (Werner & Lyons, 2020). Furthermore, according to the Center for Disaster Philanthropy, at least 3,500 homes and thousands of other buildings were lost, 34 people were killed, an estimated



1 billion animals killed and several endangered species were driven to extinction (see <https://disasterphilanthropy.org/disaster/2019-australian-wildfires>). In addition, air quality was at hazardous levels for prolonged periods of time for a large part of the East Coast of Australia (Borchers-Arriagada et al., 2020; Yu et al., 2020). According to the Copernicus Atmosphere Monitoring Service, an estimated 434 million tonnes of CO<sub>2</sub> was emitted into the atmosphere (see Werner & Lyons, 2020).

The idea of crises of this scale providing a “window of opportunity” for governments to engage in significant policy change is of course not new and has been discussed extensively in the public policy literature. A well-known strand within public policy analysis is Historical Institutionalism, which argues that significant policy change is unlikely under normal conditions, because ideas, norms, and practices become subject to “path-dependency” and become “institutionalized” (Pierson & Skocpol, 2002; Thelen, 1999). According to this analysis, the scope for policy change is greater during critical junctures as here leaders and policy-makers are presented with a temporary window of opportunity in which to introduce more radical change.

Downs (1972) argued that windows of opportunity are often rather short because public attention rarely remains focused on a particular domestic policy issue for very long. Nevertheless, Kingdon (1995) argued that in this very short window of opportunity there will be scope for significant policy change when three “streams” coincide, namely (a) the “problem stream” (issue salience), (b) the “policy stream” (available policy options), and (c) the “political stream” (public mood). According to Kingdon, it is only when these streams align that policy entrepreneurs have an opportunity to “pounce” and propose radical policy changes. The unprecedented bushfires in Australia appear to be a close fit to these conditions being met: there was a pressing issue (large-scale bushfires), there were policy options (e.g., a tax on carbon, cold burning by Indigenous bushrangers, an emissions trading scheme), and, more importantly, the public mood shifted toward favoring climate change action over inaction.

Indeed, the ferocity and scale of the bushfires led to a context where the discussion in media started to focus on the relationship between climate change and bushfires. Admittedly, explicit support for climate change action among the public was always relatively high in Australia. Before the bushfires, 78% of Australians supported reducing fossil fuel use and 64% supported raising taxes to achieve that goal (Jackman et al., 2019). Moreover, there did not appear to be much disagreement in the Australian electorate on the importance of climate change action as a function of political preference. That is, while 98% of Greens voters supported reductions in fossil fuels and 88% supported taxes to achieve this, enthusiasm was nearly

as high in center-left Labour voters (88% and 79%, respectively) and still quite high among center-right Liberal-National voters (62% and 48%, respectively; Jackman et al., 2019). Yet despite the widespread support for climate change action among the public, this consensus was not mirrored in the will of Australia’s political leaders. Here disagreement closely followed political party lines: while the agenda of the Greens was to support ambitious climate change action, the governing Liberal-National Coalition was (and remains) unwilling to support initiatives that move Australia from an economy that is fossil fuel-dependent to one that develops its renewable energy potential (see Fielding et al., 2012, for evidence of political polarisation on climate change among politicians in Australia). Indicative of this, in December 2019, Australia was ranked worst in terms of climate change policy, and sixth-worst overall, out of 57 countries assessed on the Climate Change Performance Index (Delaney, 2020).

Arguably, the 2019/2020 bushfires substantially shifted public opinion to even further support for the importance of swift and strong action. Indeed, the tide seems to be turning with public opinion becoming more concerned about bushfires *and* climate change. A post-disaster poll in January 2020 (Biddle et al., 2020) showed that a vast majority of Australians (nearly 80%) felt touched in some way by the fires and 53.6% were anxious or worried about the fires. In terms of climate change attitudes, compared to 2008 polling, there was a significant increase in concern for the loss of native vegetation, animal species, or biodiversity (up 13 percentage points), and drought and drying (up 9 percentage points). This poll also showed that after the bushfire disaster, there was a large increase in the proportion of people who believe global warming or climate change will impact their lives. Nearly three-quarters (72.3%) of respondents said global warming was a very serious or fairly serious threat (an increase from 56% in 2008). Moreover, support for new coal mines had declined sharply post-disaster (from 71.8% in June 2019 to 57.5% in January 2020). It was also clear from this poll that confidence in the Federal Government declined over the disaster period. Confidence had dropped by 10.9 percentage points from 38.2% in October 2019 (pre-disaster) to 27.3% by January 2020 (post-disaster). This might indicate that while, at present, the *political forces* (and its leadership) may promote status quo maintenance at the expense of social change (Wallace, 2020), the demands of an ever-growing concerned and anxious *general public* might shift the balance of power on this issue in the near future.

Other opinion poll data show that climate change action (and the current inaction) is rapidly becoming a major concern among the Australian electorate (<https://www.roymorgan.com>). Specifically, among a representative sample of 1,054 Australians, environmental concern was

spontaneously mentioned by 41% as the most important issue in October 2019 (at the start of the disastrous bushfire season and when the prolonged negative impact of the drought was making headline news), up by 17 percentage points since June 2019. In October 2019, only 22% cited economic issues as the most important problem facing Australia today, down 12% compared to June 2019. This was the first time since February 2011 (when the Australian state of Queensland was hit by widespread and severe flooding) that environmental issues were seen as more important than economic problems.

In the context of public opinion shifting toward a preference for action over inaction on climate change, there was, therefore, a window of opportunity whereby a political push for climate change action would be widely supported. This was a critical juncture at which departure from the previous policy not only became possible but was widely supported – and in some quarters demanded – by the general public. In the remainder of this paper, we focus on identifying ways in which leaders can react to such opportunities, and how these reactions may facilitate or constrain policy change and future disaster preparedness. We focus in particular on political leadership and define leadership as the process of influencing people in a way that motivates them to contribute to the achievement of group goals (Haslam et al., 2015). In this context, the paramount goal is to protect communities and society at large from disasters such as bushfires.

### Phase 3: The Post-Disaster Context

The critical juncture of a disaster offers a greater latitude for leaders to push for particular agendas. In particular, there is good evidence that in the aftermath of a disaster, political leaders are given a greater mandate than before to implement policy to enhance post-disaster preparedness and future-proof an affected region or country against similar future threats (Demiroz & Kapucu, 2012). This is especially likely to be the case when the disaster brings into sharp focus the pre-disaster vulnerability of a region and the extent to which the severity of environmental hazards had previously been underestimated.

This appetite for change flows from the fact that disasters demand attention (Downs, 1972), are associated with media attention, and open up a public discussion on whether maintenance of the status quo in terms of policy helps to prevent future disasters. As a result, after a disaster, the constraints that normally determine policy and political decision-making are typically relaxed because the public is asking questions about what went wrong and how similar disasters might be averted, or minimized, in the future. It has been suggested that disasters are therefore often a great opportunity for leaders to push for dramatic policy

reform because the public is more accepting of the need for a radical departure from current ways of thinking to enhance post-disaster preparedness. For instance, the former Prime Minister of Australia, John Howard, capitalized on the public outcry following the 1996 Port Arthur massacre to legislate for tighter gun control. Likewise, after the Japanese attack on Pearl Harbor in 1941 Roosevelt was able to move swiftly to mobilize public support for America's entry into World War II. Yet, despite the fact that critical periods provide important opportunities for leaders to change course and to drastically break with past policies, it is also clear that this is not the norm. One does not have to look far to find examples where disasters (natural or otherwise) either led to incremental change or to no change at all (e.g., the 2012 Sandy Hook school shooting in Connecticut, USA; Daley & Millane, 2020).

Aside from a willingness to act, what determines whether leaders are able to push for social change to enhance the post-disaster state of preparedness? The public policy literature on crises and windows of opportunities is helpful insofar as it identifies the conditions under which policy entrepreneurs are most likely to succeed. This literature also provides a wealth of knowledge about factors that may deter potential policy entrepreneurs from seizing the moment (e.g., over-dependence on industry partners and party donors). However, what is less well understood is why certain leaders decide to take risks and strive for policy change, while others prefer to “muddle through” and avoid risky policy implementation. It may be tempting to attribute an action or lack thereof to the idiosyncratic attributes of the leader in question and certainly much previous research has focused on the individual-level skills possessed by competent leaders in the aftermath of a disaster (e.g., decisiveness, flexibility, strategic planning ability; see Demiroz & Kapucu, 2012). Here, though, we take a different approach.

In line with the reasoning that disasters affect collectives and that emerging intra- and intergroup collective-level processes need to be understood to predict the post-disaster response, we focus on the role of capitalizing on these collective processes (see Figure 1). Perhaps most important for effective policy entrepreneurship is the extent to which leaders have a capacity to instill and harness a shared sense of belonging and shared fate (Haslam et al., 2011). Most particularly, we propose that leadership involves managing emerging *social identities* (i.e., the shared sense of “we” and “us” within members of a given group or community). Leaders that effectively implement social change are not only those that are able to read the emerging identity dynamics accurately but are also those who are able to mobilize and effectively channel these post-disaster group dynamics in ways that align policy changes with the wishes of the general public. Often, these wishes are not clearly developed and a leader's role lies in constructing a

compelling identity narrative that people can rally around and which brings them together. More specifically, this entails leaders being *entrepreneurs of identity* who develop and shape a particular sense of “us-ness” (Haslam et al., 2011; Reicher et al., 2005; Steffens et al., 2014). In this sense, leaders have an important role to play in defining what Tajfel referred to as *cognitive alternatives* to the status quo (Tajfel, 1978). These not only identify new possibilities for the future but also provide followers with an appreciation of how they might be achieved. Together, then, identity entrepreneurship and a sense of cognitive alternatives provide groups with a sense of new goals for which they can collectively strive (e.g., being better prepared for future environmental hazards).

To be able to do this, though, a number of preconditions need to be met. Above all else, it has been argued that for leaders to mobilize followers’ support they need to be perceived as “one of us” (identity prototypicality; Haslam et al., 2011; Hogg, 2001; Jetten et al., 2002; Reicher et al., 2005; Steffens et al., 2014; Turner & Haslam, 2001). In line with this point, leaders generally prove better able to mobilize support for change that builds upon emergent consensus when they can forge and then be seen to represent, superordinate identities that bridge intergroup divides (Mols, 2012; Platow et al., 2009). For example, after the Port Arthur massacre in which 35 people died at the hands of a lone gunman, former Australian Prime Minister John Howard was able to turn the politically divisive debate about gun control into one that focused on the shared public outcry in ways that united all political parties (including political parties on the right). This also led to legislation imposing strict national licensing requirements for gun owners and the banning of semi-automatic rifles and shotguns in Australia.

However, positioning oneself as the prototypical leader of an inclusive ingroup is only one of the preconditions for being able to implement policy change (Duck & Fielding, 2003; Ellemers et al., 2004; Haslam et al., 2011; Reicher et al., 2005). As Prime Minister John Howard noted in the aftermath of the Port Arthur massacre: “Heavens above, what’s the point of having a huge majority if you can’t do something with it” (cited in Blenkin, 2019). Leadership is thus also very much associated with action. In particular, it involves mobilizing public support that emerges from perceptions of a shared identity in the aftermath of a disaster to lock groups into *material changes* that help to realize their goal of enhancing the post-disaster state of preparedness. In this context, leaders’ actions need not only “craft a sense of us” (identity entrepreneurship) but also need to be understood as “doing it for us” (identity advancement) and “embedding a sense of us” (identity impresarioship; Steffens et al., 2014). So as well as marshaling an emergent sense of shared social identity, leaders

need to leverage this as a platform for structural change (e.g., in policy and practice) that turns collective aspirations into group members’ lived reality. In this way, social identity theorizing suggests that effective post-disaster leadership (like all other forms of leadership) is a multi-dimensional process that centers on leaders’ capacity to create, advance, represent, and embed a shared sense of social identity for group members (Haslam et al., 2011; Reicher et al., 2005; Steffens et al., 2014; Van Dick et al., 2018).

## The Post-Disaster Context of the 2019/2020 Australian Bushfires

Applying this reasoning to the post-disaster Australian bushfires context, we can ask whether the Federal Government’s leadership in the critical period after the fires led to social change or maintenance of the status quo. Although it is too early to provide a definitive answer to that question, commentators and policy experts (e.g., Delaney, 2020; Wallace, 2020) suggest that the government appears more likely to maintain the status quo than to seize the moment of national unity on the importance of acting on climate change. Rather than go down the social change pathway that has the potential to enhance the post-disaster state of preparedness, it thus seems more likely to go down the path of a post-disaster state of paralysis.

An inspection of media commentary also suggests that leadership, and in particular, the leadership of the Federal Government and its Prime Minister Scott Morrison is pivotal to understanding the post-disaster response. In line with social identity theorizing, there are a number of developments that suggest that the Prime Minister (either intentionally or by choice) has not been able to position himself as prototypical of emerging public opinion in the aftermath of the bushfire disaster. This has been consequential. While Scott Morrison enjoyed popularity as a Prime Minister in the months leading up to the bushfires (and was elected with a majority to continue as a Prime Minister in May 2019), his popularity dropped drastically during and after the bushfires. Specifically, on a scale from 1 to 10, his rating declined from 5.25 in June 2019 to 3.92 in January 2020 (Biddle et al., 2020).

There are a few factors that contributed to the Prime Minister no longer being seen as representative or prototypical of the Australian general public. First, at a personal level, he came to be regarded as lacking empathy and as being unable to connect emotionally with bushfire victims in ways that suggested he was not “one of us.” Reasons for this included a poorly timed overseas holiday (at the peak of the devastation caused by the bushfires) and clumsy interactions with bushfire victims (which made him seem out of touch and uncaring; Williamson, 2020).

Second, during and in the immediate aftermath of the bushfire disaster, the government's loyalty seemed to continue to lie with the fossil fuel industry rather than with the victims of the bushfires (Grattan, 2019). This further enhanced the perception that the government's priorities were not aligned with those of the general public. This created a new "us" (the concerned public) versus "them" (the Australian government) dynamic which in turn undermined the Prime Minister's capacity for influence (in ways predicted by social identity theorizing; Turner, 1991).

Third, the government defended its inaction on climate change by pointing out that responsibility for fire-fighting lay with the Australian States, rather than with the Federal Government. Not only did this effectively remove the government from a leadership role in shaping the disaster response, but it also seemed inappropriate given the unprecedented scale of the bushfires across the country as a whole (affecting the states of Queensland, New South Wales, Victoria, South Australia, Tasmania, and Western Australia, as well as the Australian Capital Territory). As a result, the government was criticized for failing to take on the leadership role that was clearly expected of it. That is, there was little evidence of the government "doing it for us" (identity advancement) or "embedding a sense of us" (identity impresarioship) in ways that might convince the public of its leadership credentials (Haslam et al., 2011; Steffens et al., 2014).

Given the difficulty or unwillingness (Grattan, 2019) of positioning himself as a prototypical leader of a new emerging shared identity (i.e., an Australia in which inaction on climate change was no longer acceptable), the Prime Minister was not able to craft, advance, and embed a sense of shared social identity among followers. As a result, attempts by the government to deal with the disaster on the ground (e.g., by bringing in the army to fight fires and committing more financial resources to fire-fighting operations) were met with little enthusiasm but rather seen as "too little, too late" (Daley & Millane, 2020). Furthermore, proposed policy changes by the Federal Government were also criticized because they were not seen as stemming from an ingroup. For example, its proposal that future bushfire threats might be effectively tackled through hazard reduction (e.g., back burning to reduce the amount of 'fuel' in the environment) were rejected out of hand by the Rural Fire Service Commissioner Shane Fitzsimmons as inadequate to reduce pre-disaster vulnerability in any significant way (Wallace, 2020).

In the wake of the disaster, the main action by the government involved setting up a Royal Commission to examine the States and Territories' preparedness and the Federal Government's response to the disaster. The idea was that this should then lead to policy recommendations aimed at enhancing the post-disaster state of preparedness. However,

this initiative was criticized on the grounds that since 1939 there have already been around 140 formal reviews and inquiries into bushfires and fire management and most of the recommendations of these earlier inquiries have not been implemented (Tolhurst, 2020). As one expert noted: "[this] raises serious questions about whether another Royal Commission will offer anything new or compelling" (Tolhurst, 2020). Although it cannot be said with certainty, it seems plausible that this initiative might have been received more warmly (and with less mistrust) if the general public had more confidence that the Prime Minister and his colleagues were coming from a place of wanting to swiftly improve bushfire preparedness in the post-disaster context.

In sum, appraising these events through the lens of SIMPDA (as set out in Figure 1), it appears that there is widespread agreement among commentators that the post-disaster bushfire context is one in which the status quo has, at least for now, been largely maintained. This is evident, for example, from the limited action on climate change and the limited implementation of policy changes to enhance the post-disaster state of preparedness. Furthermore, what social change has been implemented has been described as more cosmetic than real (e.g., the Royal Commission). While some of this can be explained by COVID-19, the next collective-level disaster that urgently demanded leaders' attention, when it comes to the bushfire response, it is probably fair to say that Australia now finds itself – or, more accurately, *has been led into* – a state of post-disaster paralysis which is unlikely to improve pre-disaster vulnerability in the years to come. Thus, despite the magnitude of the disaster, this is a context where "the forces of inertia are powerful" (Wallace, 2020).

We hope that this forecast will not unfold in this way though and it is, therefore, important to develop a stronger knowledge base of leadership in the immediate aftermath of a disaster. Even though we presented empirical evidence that supports parts of the model (e.g., Australia's preparedness in the pre-disaster phase, attitudes toward leadership during the disaster), whether the processes identified in SIMPDA contributed in the predicted way to Australia's post-disaster preparedness will only become evident in the years to come. Both qualitative and quantitative research will be important to shed light on whether and how the post-disaster context (contributing to preparedness or paralysis) feeds back into the preparedness for future bushfire seasons. While it is important to study these processes at a national level, there might also be value in locally-based case studies comparing contexts where local leadership failed or succeeded in better preparing the community for future disasters. By focusing on both successful as well as failed leadership we should be better placed to draw conclusions about how to futureproof Australia for future bushfire seasons.

## Conclusion

In an attempt to understand whether disasters lead to status quo maintenance or social change, we proposed the Social Identity Model of Post-Disaster Action (SIMPDA) which focuses on the role of leadership in the aftermath of a disaster. We proposed that in the post-disaster context, leaders are more likely to be influential in determining the post-disaster agenda to the extent that they are (or want to be) representative or prototypical of an emerging sense of shared identity among the public. Being successful in bringing about change requires leaders to position themselves as prototypical of a more inclusive emerging ingroup identity (i.e., as representative of all those who are directly or indirectly affected by the disaster) so that they are able to capitalize on, and marshal, new-found appetite within the community for change to enhance post-disaster preparedness. However, this window of opportunity is small, and if leaders prove unable or unwilling to climb through it by performing the requisite acts of identity leadership, the opportunity will quickly pass.

While we applied this model to the 2019/2020 bushfires in Australia, we suggest that it might also provide a useful conceptual framework to understand post-disaster responses when communities and nations are confronted with other types of disasters. Indeed, we would argue that the model is potentially applicable to events such as the ongoing COVID-19 epidemic. In particular, there is evidence of the relevance of social identity processes to our understanding of dynamics witnessed during the pre-disaster phases, in the critical period, as well in the post-disaster period – where identity leadership would seem to be a critical feature of response trajectories (for a discussion, see Jetten et al., 2020). Accordingly, we welcome further research to test not only the specifics of SIMPDA but also its broad utility as a framework for understanding society-level responses to disaster.

## References

- Becker, S. L., & Reusser, D. E. (2016). Disasters as opportunities for social change: Using the multi-level perspective to consider the barriers to disaster-related transitions. *International Journal of Disaster Risk Reduction*, 18, 75–88. <https://doi.org/10.1016/j.ijdrr.2016.05.005>
- Biddle, N., Edwards, B., Herz, D., & Makkai, T. (2020). Exposure and the impact on attitudes of the 2019–20 Australian bushfires. *ANU Centre for Social Research and Methods*. <https://csrcm.cass.anu.edu.au/research/publications/exposure-and-impact-attitudes-2019-20-australian-bushfires-0>
- Blenkin, M. (2019, March 16). How Howard changed Australia's gun laws. *The Canberra Times*. <https://www.canberratimes.com.au/story/5957736/how-howard-changed-australias-gun-laws/>
- Borchers-Arriagada, N., Palmer, A. J., Bowman, D. M. J. S., Morgan, G. G., Jalaludin, B. B., & Johnston, F. H. (2020). Unprecedented smoke-related health burden associated with the 2019–20 bushfires in eastern Australia. *The Medical Journal of Australia*, 213(6), 282–283. <https://doi.org/10.5694/mja2.50545>
- Capoccia, G., & Kelemen, R. D. (2007). The study of critical junctures: Theory, narrative, and counterfactuals in historical institutionalism. *World Politics*, 59, 341–369. <https://doi.org/10.1017/S0043887100020852>
- Center for Disaster Philanthropy. (2019, September 9). *Disaster: 2019–2020 Australian bushfires*. <https://disasterphilanthropy.org/disaster/2019-australian-wildfires/>
- Climate Council. (2019, May). *Climate policies of major Australian political parties*. <https://www.climatecouncil.org.au>
- Daley, J., & Millane, E. (2020, January 16). Might the bushfire crisis be the turning point on climate politics Australia needs? *The Conversation*. <https://theconversation.com/might-the-bushfire-crisis-be-the-turning-point-on-climate-politics-australian-needs-129442>
- Delaney, B. (2020, January 7). This apocalyptic Australian summer is our Sandy Hook moment—if we don't take climate action now we never will. *The Guardian*. <https://www.theguardian.com/commentisfree/2020/jan/07/this-apocalyptic-australian-summer-is-our-sandy-hook-moment-if-we-dont-take-climate-action-now-we-never-will>
- Demiroz, F., & Kapucu, N. (2012). The role of leadership in managing emergencies and disasters. *European Journal of Economic & Political Studies*, 5(1), 91–101.
- Downs, A. (1972). Up and down with ecology: The “Issue-Attention Cycle”. *The Public Interest*, 28, 38–50.
- Duck, J. M., & Fielding, K. S. (2003). Leaders and their treatment of subgroups: Implications for evaluations of the leader and the superordinate group. *European Journal of Social Psychology*, 33(3), 387–401. <https://doi.org/10.1002/ejsp.153>
- Ellemers, N., de Gilder, D., & Haslam, S. A. (2004). Motivating individuals and groups at work: A social identity perspective on leadership and group performance. *Academy of Management Review*, 29(3), 459–478. <https://doi.org/10.5465/amr.2004.13670967>
- Fielding, K. S., Head, B. W., Laffan, W., Western, M., & Hoegh-Guldberg, O. (2012). Australian politicians' beliefs about climate change: The role of political partisanship and political orientation. *Environmental Politics*, 21(5), 712–733. <https://doi.org/10.1080/09644016.2012.698887>
- Fielding, K. S., & Hornsey, M. J. (2016). A social identity analysis of climate change and environmental attitudes and behaviours: Insights and opportunities. *Frontiers in Psychology*, 7, Article 121. <https://doi.org/10.3389/fpsyg.2016.00121>
- Fritzsche, I., Barth, M., Jugert, P., Masson, T., & Reese, G. (2018). A Social Identity Model of Pro-Environmental Action (SIMPEA). *Psychological Review*, 125, 245–269. <https://doi.org/10.1037/rev0000090>
- Grattan, M. (2019, November 15). Grattan on Friday: When the fires call out on climate change, Scott Morrison should listen. *The Conversation*. <https://theconversation.com/grattan-on-friday-when-the-fires-call-him-out-on-climate-change-scott-morrison-should-listen-127049>
- Haslam, S. A., Reicher, S. D., & Platow, M. J. (2011). *The new psychology of leadership: Identity, influence and power*. Psychology Press.
- Haslam, S. A., Reicher, S. D., & Platow, M. J. (2015). Leadership. In J. D. Wright (Ed.), *International encyclopedia of the social and behavioral sciences* (2nd ed., pp. 648–654). Elsevier.
- Hogg, M. A. (2001). A social identity theory of leadership. *Personality and Social Psychology Review*, 5(3), 184–200. <https://doi.org/10.1207/S15327957PSPR0503>
- Hornsey, M. J., & Fielding, K. S. (2020). Understanding (and reducing) inaction on climate change. *Social Issues and Policy Review*, 14, 3–35. <https://doi.org/10.1111/sipr.12058>

- Irwin, N. (2019, January 17). Climate change's giant impact on the economy: Four key issues. *The New York Times*. <https://www.nytimes.com/2019/01/17/upshot/how-to-think-about-the-costs-of-climate-change.html>
- Jackman, S., Ratcliff, S., Meers, Z., Monschein, J., & Brennan, E. (2019). *Public opinion in the age of Trump: The United States and Australia compared*. United States Studies Centre.
- Jetten, J., Duck, J., Terry, D. J., & O'Brien, A. (2002). Being attuned to intergroup differences in mergers: The role of aligned leaders for low-status groups. *Personality and Social Psychology Bulletin*, 28(9), 1194–1201. <https://doi.org/10.1177/01461672022812005>
- Jetten, J., Reicher, S. D., Haslam, S. A., & Cruwys, T. (2020). *Together apart: The psychology of COVID-19*. Sage.
- Kilvert, N. (2019, August 20). Australia is the world's third-largest exporter of CO2 in fossil fuels, report finds. *ABC News*. <https://www.abc.net.au/news/science/2019-08-19/australia-co2-exports-third-highest-worldwide/11420654>
- Kingdon, J. W. (1995). *Agendas, alternatives and public policies*. Harper Collins.
- Mols, F. (2012). What makes a frame persuasive? Lessons from social identity theory. *Evidence & Policy: A Journal of Research, Debate and Practice*, 8(3), 329–345. <https://doi.org/10.1332/174426412X654059>
- Pierson, P., & Skocpol, T. (2002). Historical institutionalism in contemporary political science. In I. Katznelson & H. Milner (Eds.), *Political science: The state of the discipline* (pp. 693–721). W. W. Norton.
- Platow, M. J., Reicher, S. D., & Haslam, S. A. (2009). On the social psychology of intergroup leadership: The importance of social identity and self-categorization processes. In T. Pittinsky (Ed.), *Crossing the divide: Intergroup leadership in a world of difference* (pp. 31–42). Harvard Business School Press.
- Reicher, S. D., Haslam, S. A., & Hopkins, N. (2005). Social identity and the dynamics of leadership: Leaders and followers as collaborative agents in the transformation of social reality. *The Leadership Quarterly*, 16(4), 547–568. <https://doi.org/10.1016/j.leaqua.2005.06.007>
- Seyranian, V. (2014). Social identity framing communication strategies for mobilizing social change. *The Leadership Quarterly*, 25, 468–486. <https://doi.org/10.1016/j.leaqua.2013.10.013>
- Seyranian, V., Sinatra, G. M., & Polikoff, M. S. (2015). Comparing communication strategies for reducing residential water consumption. *Journal of Environmental Psychology*, 41, 81–90. <https://doi.org/10.1016/j.jenvp.2014.11.009>
- Stanley, J. (2019, November 12). Mr Morrison, I lost my home to bushfires. Your thoughts and prayers are not enough. *The Conversation*. <https://theconversation.com/mr-morrison-i-lost-my-home-to-bushfire-your-thoughts-and-prayers-are-not-enough-126754>
- Steffens, N. K., Haslam, S. A., Reicher, S. D., Platow, M. J., Fransen, K., Yang, J., Ryan, M. K., Jetten, J., Peters, K. O., & Boen, F. (2014). Leadership as social identity management: Introducing the Identity Leadership Inventory (ILI) to assess and validate a four-dimensional model. *The Leadership Quarterly*, 25, 1001–1024. <https://doi.org/10.1016/j.leaqua.2014.05.002>
- Tajfel, H. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. Academic Press.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–48). Brooks/Cole.
- Thelen, K. (1999). Historical institutionalism in comparative politics. *Annual Review of Political Science*, 2(1), 369–404. <https://doi.org/10.1146/annurev.polisci.2.1.369>
- Tolhurst, K. (2020, January 16). We have already had countless bushfire inquiries. What good will it do to have another? *The Conversation*. <https://theconversation.com/we-have-already-had-countless-bushfire-inquiries-what-good-will-it-do-to-have-another-129896>
- Turner, J. C. (1991). *Social influence*. Open University Press.
- Turner, J. C., & Haslam, S. A. (2001). Social identity, organizations, and leadership. In M. E. Turner (Ed.), *Groups at work: Theory and research* (pp. 25–65). Erlbaum.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. (1987). *Rediscovering the social group: A self-categorization theory*. Blackwell.
- United Nations. (2004). *Living with risk: A global review of disaster risk reduction initiatives*. (2004 Version–Volume II Annexes) United Nations ISDR.
- Van Dick, R., Lemoine, J. E., Steffens, N. K., Kerschreiter, R., Akfirat, S. A., Avanzi, L., Dumont, K., Epitropaki, O., Fransen, K., Giessner, S., Gonzalez, R., Kark, R., Lipponen, J., Markovits, Y., Monzani, L., Orosz, G., Pandey, D., Roland-Levy, C., ... Haslam, S. A. (2018). Identity Leadership going global: Validation of the Identity Leadership Inventory (ILI) across 20 countries. *Journal of Occupational and Organizational Psychology*, 91, 697–728. <https://doi.org/10.1111/joop.12223>
- Wallace, C. (2020, January 13). Bushfires won't change climate policy overnight. But Morrison can shift the coalition without losing face. *The Conversation*. <https://theconversation.com/bushfires-wont-change-climate-policy-overnight-but-morrison-can-shift-the-coalition-without-losing-face-129354>
- Werner, J., & Lyons, S. (2020, March 5). The size of Australia's bushfire crisis captured in five big numbers. *ABC Science*. <https://www.abc.net.au/news/science/2020-03-05/bushfire-crisis-five-big-numbers/12007716>
- Williamson, R. (2020, January 9). How should leaders respond to disasters? Be visible, offer real comfort – and don't force handshakes. *The Conversation*. <https://theconversation.com/how-should-leaders-respond-to-disasters-be-visible-offer-real-comfort-and-dont-force-handshakes-129444>
- Yu, P., Abramson, M. J., Li, S., & Guo, Y. (2020). Bushfires in Australia: A serious health emergency under climate change. *The Lancet Planetary Health*, 4(1), e7–e8. [https://doi.org/10.1016/S2542-5196\(19\)30267-0](https://doi.org/10.1016/S2542-5196(19)30267-0)

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# We, the Change

## Outlining Research Lines of How Psychology Can Contribute to the Understanding of Societal Transition Processes

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**Abstract:** In the last years within sustainability research, the agreement seems to have changed about the appropriate strategies to solve the intensifying socio-ecological crisis. While the focus used to be on “greening” individual lifestyles, it has recently shifted to the fundamental transition of central societal production and consumption systems. This raises the question of what psychology with its traditional focus on the individual can contribute to a better understanding and successful design of such societal transition processes. The present paper aims to offer an outline of how such psychological research lines might look like. We use the social identity concept as a starting point and motivate it as central for understanding the transformation of an individual into a group member who voluntarily collaborates with others to create more sustainable socio-technical solutions for central societal needs. The three parts of our paper deliver compact descriptions of thought-provoking research lines which developed in the last years. These research lines contribute to a better understanding of how social identities as collective pro-environmental activists are “crafted,” through which processes such as activist identities influence the participation in collective pro-environmental action and, ultimately, collective change. In sum, an important psychological contribution to the debate about the “Great Transformation” could be to provide a better understanding of what motivates individuals to actively participate in transition-oriented initiatives and how this motivation can be strengthened.

**Keywords:** collective pro-environmental action, social identity, social identity model of collective action, multilevel perspective

In the last decades, research in environmental psychology has mainly focussed on psychological factors that underlie individuals’ decisions to behave in a more or less “green” way. Implicitly, this approach assumes that the current socio-ecological crisis reflects the sum of billions of wrong individual behavioral decisions. It consequently views the solution to the crisis in scientifically-based information campaigns and individual behavior change programs (e.g., Corner & Randall, 2011; Kaiser et al., 1999). The limited success of such programs and the ongoing intensification of the socio-ecological crisis, despite peoples’ growing environmental awareness, have challenged the faith in the effectiveness of this individualistic approach (e.g., Corner & Randall, 2011; Shove, 2010). It has been argued that the current line of thought – that the socio-ecological crisis is mainly a problem of individual behavior – is too narrow and leaves out relevant influence factors to mitigate the crisis. One solution to broaden the focus of environmental psychological research and to overcome its blind spots is

to delve more into the field of interdisciplinary sustainability research on the origin and solution of the socio-ecological crisis (e.g., Fischhoff, 2020).

Interdisciplinary sustainability research (e.g., Loorbach et al., 2017; Ockwell et al., 2009; Uzzell & Rätzzel, 2009) encourages to take into account the multiple levels that are necessary to cope with the task of mitigating the socio-ecological crisis. Not only individuals but national and global politics, cultural patterns, and macroeconomics all influence the production and consumption systems that determine our daily life. Thus, the socio-ecological crisis is a societal problem that results from the nature of unsustainable production and consumption systems and not simply from isolated individual decisions. According to this understanding, people’s intention and behavioral efforts are a product of the unsustainable systems around them (Schmitt et al. 2019; Uzzell & Rätzzel, 2009). Thus, addressing the socio-ecological crisis requires a fundamental transition of these central systems, for example, in the domains of



mobility, energy, and food production (Loorbach et al., 2017). Overcoming unsustainable production and consumption systems, in other words, is a societal task, not an individualistic one.

As a consequence of changing the conceptual focus from the individual decision to production and consumption systems as a whole, environmental psychology is challenged to redefine its contribution to this discourse (Wallis et al., 2021). To integrate future research, this reflection needs a theoretical framework with an explicit focus on societal transformations. The next sections, therefore, present the multilevel perspective put forward by Geels (2002, 2012, 2018) as a theoretical approach to societal transformation.

## The Multilevel Perspective on Societal Transformation as Theoretical Framework

The multilevel perspective (MLP; Geels, 2002, 2012, 2018) argues that social change happens through the transformation of production and consumption systems or socio-technical systems. With this term, Geels (2002) describes the intricate relation between technology, production capacities, supply networks, infrastructure, maintenance networks, legal regulation, cultural meaning, user practices, and markets. The MLP analyses transformations of socio-technical systems on three levels on which these processes interact. First, the landscape level (macro-level) characterizes exogenous developments such as changes in deeply rooted cultural patterns, macro politics, or natural disasters. Climate change, economic crises, political upheaval, or natural disasters (e.g., floods or droughts) can all be conceptualized as exogenous developments. Second, the regime level (meso-level) describes the present production and consumption systems with their inherent rules, institutions, and technologies. The regime is dynamically stable along a predictable trajectory resulting in resistance against potentially system-changing technological and social innovations, for example, toward sustainability. Third, the niche level (micro-level) is the “locus for radical innovations” (Geels, 2005, p. 684). The niche with its influence on markets and regulations can promote innovations that are radically different from the prevailing regime.

Transformation, according to the MLP, emerges from “co-evolving” processes on the three levels (Geels, 2002): First, niche innovations build up momentum through learning processes, price and performance improvements, and support from influential groups. This facilitates developments at the landscape level. Second, these developments

at the landscape level exert pressure at the regime level and open windows of opportunities for change. Third, the destabilized regime then creates windows of opportunities for the niche innovation to breakthrough. When processes at the three levels align, niche innovations can have a breakthrough in the mainstream market and start to compete with existing solutions.

Seyfang and Longhurst (2016) transferred the concept of innovations at the niche level to the context of civil society: Networks of activists and organizations that form grassroots movements can create radical innovations, too. According to Seyfang and Longhurst (2016), grassroots initiatives have the potential for sustainable innovations powerful enough for radical sustainable transformation of societal systems. These bottom-up innovations sustainably and efficiently meet the demand for needs, for instance for energy production (Ockwell et al., 2009; Rouser-Renouf et al., 2014). The German *Energiewende* (energy transition) as one prominent case in point started with niche actors that advanced innovative technology for solar and wind power. The development of efficient, large-scale technology (niche level) and the socio-ecological crisis (landscape level) exerted pressure on the current energy supplies (regime level). As a consequence, new institutions were founded and regulations that supported the transformation toward sustainable energy production were put in place.

## Connecting the Niche Level of the MLP With Environmental Psychological Research

From a psychological perspective, participation in innovative grassroots initiatives is a prototypical example of collective action as “[...] action undertaken by individuals as psychological group members to achieve group goals in a political context” (Van Zomeren, 2016, p. 89). Psychological research on collective action (e.g., Schulte et al. 2020; Van Zomeren et al., 2008) reliably established a set of predictors for becoming a pro-environmental activist or, in MLP terms, for actively working toward a sustainable transformation of socio-technical systems. This research highlighted social identity as a key concept for understanding collective pro-environmental action. Social identity is defined as the “part of an individual’s self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership” (Tajfel, 1978, p. 63). As a result, group members think of themselves in relation to other group members. For highly identified group

members, the “We” (social identity) guides motives and actions more than the “I” (personal identity). Of course, group members still make individual decisions but based on motives and actions that are influenced by their group membership.

### Three Proposed Research Lines

Integrating social identity into the niche level of the MLP allows us to embed environmental psychological research into a greater societal perspective on the transformation of socio-technical systems (Schulte et al., 2020). Thus, understanding the motives leading individuals to identify with and join grassroots initiatives may provide unique research lines for transition-oriented environmental psychology.

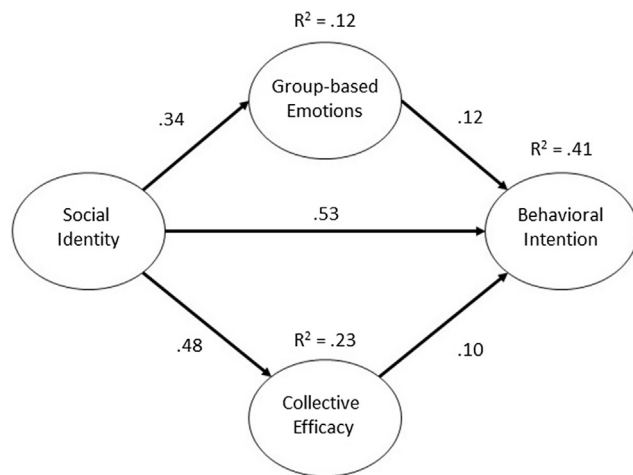
We, therefore, decided to focus our work on innovative grassroots initiatives theoretically connecting environmental psychological research with the psychological research on group processes and social identity on the one hand (e.g., Stürmer & Simon, 2009; Tajfel & Turner, 1979) and social-scientific research on social movements on the other (e.g., Klandermans, 1997). The next section investigates if and how an integrative model from the social movement and collective protest domains can also be applied to the domain of collective pro-environmental action. More specifically, we focus on the processes underlying the interactive “crafting” of activist identities through group processes. For this purpose, we outline a theoretical model to understand the dynamic relationships between key concepts within interactive group processes. Based on recent empirical findings, we discuss how group-based communication and negotiation processes may lead to the creation of group norms on prototypical emotions that pro-environmental activists should experience, which beliefs they should endorse, and how they should behave. We examine the process of joining and being involved in collective action in grassroots initiatives and describe how research on social identification has changed our understanding of the dynamic nature of these processes and the mechanisms through which identification may influence collective action. We show that social identity is a strong predictor of the intention to collaborate in the organization of a citizen-initiated cycling referendum and also find empirical evidence that the development of such an identity is based on outrage caused by the perceived violation of moral principles. The last part of the paper presents our conclusions from the proposed research lines also summarising how they could hopefully inspire innovative future research in environmental psychology.

### Research Line 1: The Social Identity Model of Collective Action as an Integrative Framework for Collective Pro-Environmental Action

#### Theoretical Perspective

Research Line 1 draws on social movement and collective action research and transfers an integrative model to collective pro-environmental action. Collective pro-environmental action can be defined as behaviors of individuals as members of pro-environmental action groups facilitating the public engagement for the sustainable transition of socio-technical systems (Rees & Bamberg, 2014). The question is why people should join such collective pro-environmental action, for example, an innovative grassroots initiative. Social movement and collective action research have identified three constructs that reliably predict the intention for collective action. The first and most influential predictor for collective action is social identification. There is strong empirical evidence that the identification with a certain group is linked with the intention for or actual participation in collective action on behalf of that group (Bamberg et al., 2018; McGarty et al., 2009; Stürmer & Simon, 2004; Van Zomeren et al., 2008). The second predictor for collective action intention is group-based moral emotions, especially outrage, reflecting a group-based appraisal of a given situation (Stürmer & Simon, 2004; Van Zomeren et al., 2004, 2008). For example, when a group perceives a situation as unjust, group-based emotions like anger or outrage can motivate the group to confront this injustice. The third predictor for participation in collective action is collective efficacy perceptions. They can be defined as the individual's expectation about what the group can achieve with joint efforts (Bandura, 1997; Mummendey et al., 1999). In other words, when I cannot change a given societal situation myself, together, we may be more likely to achieve the change than one person alone.

The Social Identity Model of Collective Action (SIMCA; Van Zomeren et al., 2008 for a review; Van Zomeren et al., 2011) integrates the three constructs of social identity, group-based emotions, and collective efficacy into one framework and simultaneously clarifies the relationships among them (see Figure 1). The SIMCA proposes a central role for social identification as a key predictor for collective action and the other two constructs. In this way, social identification can be seen to motivate action directly as well as indirectly via the experience of emotions and efficacy. Within the domain of social movement and collective action research, the meta-analysis by Van Zomeren and colleagues (2008) provides evidence that correlational data fit the structure postulated by the SIMCA. However, for the domain of collective pro-environmental action the



**Figure 1.** Results of a MASEM testing the relationships postulated by the SIMCA.

respective evidence is still scarce (e.g., Bamberg et al., 2015; Rees & Bamberg, 2014).

### Empirical Evidence

For a multivariate test of the SIMCA in the context of collective pro-environmental action, we generated a meta-analytically pooled correlation matrix of the four SIMCA constructs presented in Table 1. The pooled correlations were calculated based on the primary correlations of the SIMCA variables for nine studies (see Schulte et al., 2020, Table 1). Furthermore, we included data from two additional papers (Bongiorno et al., 2016; Van Zomeren et al., 2019) that also reported primary correlations of SIMCA variables for six samples (see Table A1 in Appendix for all means, standard deviations, and primary correlations). Inclusion criteria were that firstly, social identity was assessed based on an opinion-group via the categories “environmental movement” or “pro-environmental activists” and secondly, the dependent variable was the intention to participate or actual participation in collective pro-environmental action. We then used the meta-analytically pooled correlation matrix of the four SIMCA constructs presented in Table 1 as input for a meta-analytic structural equation model (MASEM; Bamberg & Möser, 2007;

Becker, 2000; Viswesvaran & Ones, 1995). This method allows to specify and to test multivariate path models based on meta-analytically pooled correlation matrices.

Figure 1 presents the results of a path model estimating the five structural relations between the four constructs social identity, group-based emotions, collective efficacy, and behavioral intention postulated by the SIMCA. The fit of the specified model was very good ( $\chi^2 = 0.08$ ;  $df = 1$ ;  $p = .78$ , RMSEA < .001, CFI = 1.00).

As postulated by the SIMCA, social identity was a significant predictor of group-based emotions, and collective efficacy: Social identity explained 12% of the variance in group-based emotions and 23% of the variance in collective efficacy. With a path coefficient of  $\beta = .53$ , social identity was also the most powerful predictor of behavioral intention. Together with social identity, group-based emotions, and collective efficacy explained 41% of the variance in behavioral intention.

The MASEM results support the crucial role of social identity in predicting the intention to participate in collective pro-environmental action: Besides its strong direct association with participation intention, social identity was also indirectly associated with participation intention via its association with group-based emotions ( $\beta = .34$ ) and collective efficacy ( $\beta = .48$ ).

### Lessons Learned and Implications for Potential Interventions for Promoting Participation in Collective Pro-Environmental Action

From our point of view, empirically supported integrative models like the SIMCA are important for developing research on the psychological determinants of collective pro-environmental action. The results of the meta-analysis show that the SIMCA can provide such an integrative model for collective pro-environmental action and confirm that social identity, collective efficacy, and group-based emotions are relevant predictors for the domain of collective pro-environmental action as well. Thus, all three predictors should be addressed in future research on collective pro-environmental action. Equally, interventions aiming to promote participation in such actions should address these variables. However, the present meta-analysis of the

**Table 1.** Pooled correlations matrix ( $r$  back-converted correlation) under the random-effects assumption ( $n = 15$  independent samples)

	1	2	3	4
1. Social identity	–			
2. Group based emotion	.34** $N = 2,642$	–		
3. Collective efficacy	.48** $N = 2,756$	.18* $N = 2,642$	–	
4. Behavioral intention	.60** $N = 2,756$	.36** $N = 2,642$	.38** $N = 2,756$	–

Note. \* $p < .01$ ; \*\* $p < .001$ .

correlational data is a snapshot of the presumably dynamic process of becoming a pro-environmental activist. Thus, Research Line 2 proposes to investigate the role of the SIMCA predictors in the process of becoming an activist.

## Research Line 2: The SIMCA Constructs – Independent Determinants or Dynamic Relationship System?

### Theoretical Perspective

Our meta-analytical summary of SIMCA studies indicates a substantive association between the constructs group-based emotions, collective efficacy, social identification, and participation intention for collective pro-environmental action. What, however, is the theoretical meaning and practical significance of these correlational associations? Graphical representations of the SIMCA (see Figure 1) seem to suggest that these associations are separate, independent causal relations. From an applied perspective, such an interpretation would suggest social identity, emotions, and collective efficacy as separate and additive pathways to collective pro-environmental action. This would have an important practical implication: Researchers would have to focus on developing interventions independently targeting the three constructs.

For Thomas et al. (2009), however, viewing social identity, emotions, and collective efficacy as independent, separate determinants of collective action is too simple and static. For them, such a view does not take into account the dynamic relationship between the constructs. With their normative alignment model, Thomas et al. (2009) aim to provide a more realistic understanding of these dynamic relationships. The normative alignment model is based on the idea “that the solution to creating long-term commitment to social and political action lies in crafting an identity with a relevant pattern of norms for emotion, efficacy, and action” (p. 202). The model assumes that experiencing, for example, moral outrage motivates a person to search social contexts which offer the opportunity to socially validate the correctness of this emotion. Thomas et al. (2009) further assume that through processes of communication, negotiation, and consensualization, people develop norms defining “who we are and how we think, feel and act” that are defining an activist identity. Importantly, for the normative alignment to produce a long-term commitment to collective action, the emotions and beliefs not only need to be congruent with the emergent social identity but also the content elements themselves need to be congruent with each other. This leads to a conceptualization of normative alignment as a dynamic system of interrelations in the context of a salient social identity. Thus, this view implies that a shift in one of the elements is likely to cause a reorientation in

the others, too. Put differently, to the extent to which individuals perceive outrage, collective efficacy, and collective action to be norms of a group with which they identify, they should simultaneously experience those emotions, endorse those beliefs, and commit to those behaviors.

Accepting the view that a sustainable long-term commitment to collective action is based on a pattern of congruent normative alignments, leads to the question of how these alignments are created. Postmes and colleagues’ interactive model of identity formation (Postmes, Haslam, et al., 2005; Postmes, Spears, et al., 2005) suggests that social identities are created via the interplay of two psychological routes: (1) A deductive route, whereby the identity and associated norms are deduced from various social-structural information about what the group and its broader social function are; (2) an inductive route, whereby the members of the group develop norms through a process of communication, negotiation, and consensualization about what it means to be an ingroup member. It follows that group norms emerge through ingroup communication from which the group derives and accommodates with a group prototype (Postmes, Haslam, et al., 2005).

### Empirical Evidence

We tested two hypotheses derived from the normative alignment model:

*Hypothesis 1 (H1):* The successful “crafting” of a new social identity through communication processes should be reflected in quantitative shifts of the mean levels of the constructs group-based outrage, collective efficacy, social identification, and participation intention.

*Hypothesis 2 (H2):* The crafting of a new social identity is characterized by a stronger alignment of the identity elements.

Empirically, the latter should be reflected in stronger empirical intercorrelations among the elements. One member of our group (Küting, 2020) collected data during information meetings of an activist group for recruiting new activists organizing a local citizen-initiated cycling referendum. The cycling referendum aimed to put political pressure on the local government to redistribute communal resources from car-oriented infrastructure measures to measures improving the local cycling infrastructure. Thus, the decision to collaborate actively in such a group represents not only a prototypical example of a transformative political engagement but also the psychological phenomenon we are interested in: The crafting of a social identity as an activist.

The three information meetings organized by the activist group lasted about 2 hr and had a similar structure: They

**Table 2.** Means (*M*), standard deviations (*SD*), and intercorrelations of the SIMCA constructs

	<i>M</i> ( <i>SD</i> )	Post <i>M</i> ( <i>SD</i> )	1	2	3	4
1. Social identification	3.92 (0.86)	3.99 (0.95) <sup>ns</sup>		.58**	.14	.62**
2. Collective efficacy	3.9 (0.75)	4.09 (0.77)*	.65**		.12	.47**
3. Outrage	3.54 (0.99)	3.47 (1.03) <sup>ns</sup>	.38**	.3*		.25
4. Intention	3.68 (0.92)	3.98 (0.93)**	.73**	.45**	.3*	

Note. Intercorrelations for pre-data are above the diagonal, intercorrelations for post-data are below the diagonal. Scales ranged from 1 = *completely disagree* to 5 = *completely agree*. *ns* = Not significant; \**p* < .05; \*\**p* < .01.

began with a video clip presenting the attractive cycling infrastructure in the Dutch city of Groningen as a visionary goal. Then the idea, aims, and organizational state of the planned local cycling referendum were presented. Examples of missing or bad local cycling infrastructure were used to illustrate the necessity of the local cycling referendum. For increasing participants' collective efficacy beliefs, two successful popular bike votes (Berlin and Bamberg) were reported in detail. Next, participants discussed the presented information within groups of up to six persons and reported their reflections in the plenum. The meeting ended with a presentation of working groups that were needed for successfully organizing the local popular vote on cycling. Participants were asked to commit themselves to collaborate actively in one of these working groups.

Before and after the information meeting *N* = 56 participants completed a short questionnaire assessing the following SIMCA constructs: Emotional outrage (e.g., "When I think about what the local politicians are doing to make the city's transportation system more people- and environment-friendly, I am outraged"), collective efficacy (e.g., "By acting together, we citizens can achieve the goal of organizing a local citizen-initiated popular vote for cycling"), social identification (e.g., "I identify with people who organize the local citizen-initiated popular vote for cycling"), and participation intention (e.g., "I intend to be actively involved in a group organizing a local citizen-initiated popular vote for cycling").

After the information meetings, participants reported significantly stronger participation intention corresponding with a statistically significant increase in reported collective efficacy beliefs (see Table 2). Both findings support Hypothesis 1. We also observed a small increase in mean social identification and a small decrease in outrage that did not reach conventional levels of statistical significance. After the information meetings, we also found stronger intercorrelations of outrage and collective efficacy with social identification as well as between social identification and participation intention. Regression analyses of the pre and post-data indicated that only social identification was a significant predictor of participation intention (see Küting, 2020). However, for the post-data, this association was stronger ( $\beta = .64$ ,  $p < .001$ ) than for the pre-data ( $\beta = .45$ ,  $p < .05$ ), a finding providing empirical

support for Hypothesis 2. Detailed mediation analyses (see Küting, 2020) indicated that the impact of collective efficacy on participation intention was fully mediated by social identification.

### Lessons Learned and Implications for Potential Interventions for Promoting Participation in Collective Pro-Environmental Action

The results from this study support our hypotheses derived from the normative alignment model. The group discussion during the information meetings may have activated the inductive route of identity formation: The intensive communication, negotiation, and consensualization processes during the information meetings may have led to the creation of a group norm that prescribes what emotions a prototypical group member should experience, which beliefs they should endorse, and to what kind of behaviors they should commit. The commonly crafted activist identity around the cycling referendum may have been the reason, why participants, who strongly identified with the group, reported higher collective efficacy beliefs and a stronger participation intention. The finding that the identity components were intercorrelated more strongly after the meetings may reflect the normative alignment process that occurred during the meetings.

Our interpretation of the study results remains speculative because we did not directly assess the postulated processes of group norm formation and normative alignment which future work may find fruitful to address. However, our results provide preliminary evidence that the normative alignment model represents an important theoretical perspective to understand how social identities support a long-term commitment to collective pro-environmental action. As discussed above, this theoretical perspective also has implications for interventions: Instead of independently fostering group-based emotions, collective efficacy, and social identification, interventions should aim to establish interactive situations that facilitate the creation of group norms for collective pro-environmental action. Future research, thus, could study the opinion-based group interaction method by Thomas et al. (2009) that provides one promising example of such an intervention type.

The SIMCA theorizes that social identity is the core predictor for participation in collective pro-environmental

action. Therefore, we propose to further investigate precursors and content of as well as changes within pro-environmental activist identities. Thus, the next research line focuses on the social identity of pro-environmental activists.

### Research Line 3: Changes in the Understanding of Identification Processes: From Group Identity to Politicized Identity to Moralized Identity

#### Theoretical Perspective

As opposed to the psychological processes that lead to the formation of actual social identity, there is a rich body of literature on the role of an already formed social identity. The current understanding of social identification in collective action is developed in three phases. The focus of the first phase was on identifying with a group as a predictor of collective action. This idea originated in social identity theory (Tajfel, 1978; Tajfel & Turner, 1979), arguing that individuals can perceive themselves as psychological group members and feel and act accordingly – instead of only having their individual, single perspective. The question of why people participated in collective action was mainly explained with the notion that people wanted to improve the (negative) status of their group. In a second phase, Simon and Klandermans (2001) specified that shared grievances can politicize social identities. Shared grievances can have different forms, for example perceiving illegitimate inequality, suddenly imposed grievances (e.g., accidents with major impact on the environment), or violated principles (Klandermans, 1997). Simon and Klandermans (2001) argued that group members' realization of their shared grievances encourages politicisation. When an out-group is blamed for the grievances, a power struggle may begin. The members then collectively act on behalf of their (politicized) group and may seek the support of powerful third parties or the broader public. In sum, during the last years research has better understood how social identities emerge and how they motivate political actions.

In the meantime, research focused on how the emotionalization of shared grievances may come about: Moral convictions were introduced as an amplifier for collective action (Van Zomeren, 2016). Evidence showed that perceived violations of core values predicted identification (Kutluca et al., 2019), and activists and non-activists were also motivated for future activism by perceived rights violation (Mazzoni et al., 2015). Thus, a moral dimension is also a motivator for collective action (Skitka & Bauman, 2008; Skitka et al., 2015; Van Zomeren et al., 2012) and leads to the understanding of politicized identity as moralized identity (Van Zomeren et al., 2018).

**Table 3.** Means (*M*), standard deviations (*SD*), and intercorrelations of politicized pro-environmental identity, perceived moral violations, and participation intention

	<i>M</i> ( <i>SD</i> )	1	2	3
1. Perceived moral violations	3.45 (0.73)		.72*	.71*
2. Politicized identity	3.12 (0.82)			.77*
3. Intention	3.05 (0.94)			

Note. Scales ranged from 1 = *does not apply at all* to 4 = *fully applies*.

\* $p < .01$

#### Empirical Evidence

We tested the hypotheses that (1) politicized pro-environmental identity correlates positively with the intention to participate in collective pro-environmental action and that (2) perceived moral violations correlate positively with politicized pro-environmental identity. An online survey was completed by 48 activists, who belonged to groups organizing local citizen-initiated cycling referendums and 24 participants who were infrequently active, for example with signing petitions for cycling referendums. Additionally, 34 participants were not actively involved in collective pro-environmental action. The questionnaire contained measures assessing the constructs of politicized identity (e.g., "I identify with people who support a cycling referendum in my city"), perceived moral violations (e.g., "The strongly car-oriented traffic policy violates my or my family's right to safety, health and an intact environment"), and participation intention (e.g., "I intend to get actively involved in a group to prepare a cycling referendum").

As expected, politicized pro-environmental identity correlated positively to participate in future collective actions and equally strongly with perceived moral violations (Table 3). These findings provide first empirical support that politicized and moralized identities are also important in the domain of collective pro-environmental action (Hypotheses 1 and 2).

#### Lessons Learned and Implications for Potential Interventions for Promoting Participation in Collective Pro-Environmental Action

We presented empirical evidence that perceived moral violations are linked with politicized identities as well as with intentions to participate in collective pro-environmental action. The investigation of perceived moral violations, therefore, promises insights into the process of the formation of pro-environmental activist's identities. If supported by future research, this theoretical perspective may have important implications for future interventions. First, future interventions could point out the moral implications of the socio-ecological crisis to promote participation in collective pro-environmental action. More specifically, framing participation in collective pro-environmental action as a moral obligation could promote this behavior and in turn attract

more people to join (e.g., Sabucedo et al., 2018). Second, grassroots initiatives could strategically target moral aspects to win the support of the broader public. Communicating that a powerful outgroup (e.g., the government) is violating moral principles might motivate non-activists to identify with the initiative more strongly. If people share the same moral principles, they might adapt their appraisal of the situation or begin “crafting” a new activist social identity. Such a motivating effect of the gap between the situation as it is and the situation as it should be would be in line with the normative alignment model (Thomas et al. 2009). Finally, grassroots initiatives could frame joining them as an opportunity to fight and convince powerful outgroups to respect moral principles. At the same time, potential participants would have the opportunity to behave morally. Such a framing may invite others to behave concordantly with their moral principles and offers them to display their morality (e.g., Van der Lee et al., 2016).

## Conclusion and Future Research

Addressing the socio-ecological crisis requires a fundamental transition of current unsustainable production and consumption systems and challenges environmental psychology to outline what it can contribute to this societal process. The MLP (Geels, 2002, 2012, 2018) offers a theoretical framework to integrate such input in environmental psychology. Following the MLP, grassroots initiatives in innovative niches have the potential to set in motion a sustainable transformation. Thus, the goal of our paper was to systematically explore the first ideas for theoretically as well as practically attractive research lines focussing on grassroots initiatives. What is the central message of the research presented above?

We are convinced that social identity is a key concept for understanding the transformation of “I” into “we” – the self-categorization as a group member who collaborates with others to create a more sustainable world. From our perspective, this is a central psychological resource on which successful societal transition processes are based. Understanding and promoting the “crafting” of such a social identity defines one central task of psychology in the context of sustainability research. Reviewing the research presented thus far, we see substantial progress in understanding these psychological processes: Our starting point was the SIMCA that conceptualizes social identity as a powerful predictor of collective action. The evidence for the first research line demonstrated that the SIMCA can be successfully applied to collective pro-environmental action and should be used and extended further in this context. We believe that environmental psychology can

use SIMCA to contribute to the discourse on why people work together for a sustainable transition of consumption and production systems. However, some other integrative frameworks and approaches can complement the SIMCA (e.g., the Social Identity Model of Pro-Environmental Behaviour; Fritzsche et al., 2018). More research is needed to systematically test and compare these frameworks for the domain of collective pro-environmental action.

The second research line proposes to investigate the “crafting” of collective pro-environmental identities. It aims to answer the question of how people from politicized pro-environmental activist identities. As described, the normative alignment model by Thomas et al. (2009) provides potential answers. The evidence we presented provides support for the notion that participating in social exchange processes, for example in a group discussion, may lead participants to develop collective norms that define their collective activist identities and actions. The field study showed that participation in an event including group discussions by a grassroots initiative significantly increased participants’ collective efficacy beliefs and participation intention and the SIMCA constructs’ intercorrelations. This research line could enable environmental psychology to develop systematic studies to test different discussion and negotiation contexts and how these affect identities. However, the presented evidence leaves the questions about what happened during the discussion process unanswered. Qualitative studies, for example, stakeholder interviews and news media accounts, could provide more insight into the process of collective pro-environmental identity construction (e.g., Becker et al., 2021).

The third research line suggests focussing on the causes that trigger the formation of a politicized identity, namely perceived moral violations. We showed that perceived moral violation was strongly connected with collective pro-environmental identity and participation intention. Future research could systematically examine which moral violations influence the development of politicized pro-environmental identities and participation intention. With this focus on social identity, Research Line 3 used the core predictor of the SIMCA. However, collective efficacy and group-based emotions were significant predictors of collective pro-environmental action intention, too. Thus, future research that systematically investigates these two predictors promises valuable contributions for understanding collective pro-environmental action. For instance, Hamann and Reese (2020) systematically demonstrated that efficacy beliefs influence pro-environmental behavior and highlight potential research in disentangling the many dimensions that might be involved.

The niche concept of the MLP provides an interesting framework to locate the role of individual and group-based psychological processes within societal transition research.

With this, it is our impression, environmental psychology can reach beyond disciplinary models and theories and integrate its valuable contribution into social sustainability science, for example on how to conceptualize the agency component of transformative societal processes (Rauschmayer et al., 2015).

Much of the theoretical ideas and empirical results presented above are preliminary. However, the present paper aimed to point out theoretically attractive and practically relevant psychological research on transformative societal processes. We hope that our impulse motivates others to develop and conduct research that transfers the presented ideas into more precise questions and answers.

## References

- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14–25. <https://doi.org/10.1016/j.jenvp.2006.12.002>
- Bamberg, S., Rees, J. H., & Schulte, M. (2018). Environmental protection through societal change: What psychology knows about collective climate action – and what it needs to find out. In S. Clayton & C. Manning (Eds.), *Psychology and climate change* (pp. 185–213). Academic Press. <https://doi.org/10.1016/B978-0-12-813130-5.00008-4>
- Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives. *Journal of Environmental Psychology*, 43, 155–165. <https://doi.org/10.1016/j.jenvp.2015.06.006>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Becker, B. J. (2000). Multivariate meta-analysis. In H. E. A. Tinsley & D. Brown (Eds.), *Handbook of applied multivariate statistics and mathematical modelling* (pp. 499–525). Academic Press.
- Becker, S., Bögel, P., & Upham, P. (2021). The role of social identity in institutional work for sociotechnical transitions: The case of transport infrastructure in Berlin. *Technological Forecasting and Social Change*, 162, Article 120385. <https://doi.org/10.1016/j.techfore.2020.120385>
- Bongiorno, R., McGarty, C., Kurz, T., Haslam, S. A., & Sibley, C. G. (2016). Mobilizing cause supporters through group-based interaction. *Journal of Applied Social Psychology*, 46(4), 203–215. <https://doi.org/10.1111/jasp.12337>
- Corner, A., & Randall, A. (2011). Selling climate change? The limitations of social marketing as a strategy for climate change public engagement. *Global environmental change*, 21(3), 1005–1014. <https://doi.org/10.1016/j.gloenvcha.2011.05.002>
- Fischhoff, B. (2020). Making behavioral science integral to climate science and action. *Behavioural Public Policy*, 1–15. <https://doi.org/10.1017/bpp.2020.38>
- Fritzsche, I., Barth, M., Jugert, P., Masson, T., & Reese, G. (2018). A social identity model of pro-environmental action (SIMPEA). *Psychological Review*, 125(2), 245–269. <https://doi.org/10.1037/rev0000090>
- Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case study. *Research Policy*, 31(8–9), 1257–1274. [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8)
- Geels, F. W. (2005). *Technological transitions and system innovations: A co-evolutionary and socio-technical analysis*. Edward Elgar Publishing.
- Geels, F. W. (2012). A socio-technical analysis of low-carbon transitions: Introducing the multi-level perspective into transport studies. *Journal of Transport Geography*, 24, 471–482. <https://doi.org/10.1016/j.jtrangeo.2012.01.021>
- Geels, F. W. (2018). Disruption and low-carbon system transformation: Progress and new challenges in socio-technical transitions research and the multi-level perspective. *Energy Research & Social Science*, 37, 224–231. <https://doi.org/10.1016/j.erss.2017.10.010>
- Hamann, K. R., & Reese, G. (2020). My influence on the world (of others): Goal efficacy beliefs and efficacy affect predict private, public, and activist pro-environmental behavior. *Journal of Social Issues*, 76(1), 35–53. <https://doi.org/10.1111/josi.12369>
- Kaiser, F. G., Ranney, M., Hartig, T., & Bowler, P. A. (1999). Ecological behavior, environmental attitude, and feelings of responsibility for the environment. *European Psychologist*, 4(1), 59–74. <https://doi.org/10.1027/1016-9040.4.2.59>
- Klandermans, B. (1997). *The social psychology of protest*. Blackwell.
- Küting, A. (2020). Soziale Identitäten, Wirksamkeitsüberzeugung und Empörung fördern Engagement in sozialen Bewegungen [Social identities, collective efficacy and outrage promote commitment in collective actions]. *Umweltpsychologie*, 24(1), 200–209.
- Kutlaca, M., Van Zomeren, M., & Epstude, K. (2019). Our right to a steady ground: Perceived rights violations motivate collective action against human-caused earthquakes. *Environment and Behavior*, 51(3), 315–344. <https://doi.org/10.1177/0013916517747658>
- Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability transitions research: transforming science and practice for societal change. *Annual Review of Environment and Resources*, 42, 599–626. <https://doi.org/10.1146/annurev-environ-102014-021340>
- Mazzoni, D., Van Zomeren, M., & Cicognani, E. (2015). The motivating role of perceived right violation and efficacy beliefs in identification with the Italian Water Movement. *Political Psychology*, 36, 315–330. <https://doi.org/10.1111/pops.12101>
- McGarty, C., Bliuc, A. M., Thomas, E. F., & Bongiorno, R. (2009). Collective action as the material expression of opinion-based group membership. *Journal of Social Issues*, 65, 839–857. <https://doi.org/10.1111/j.1540-4560.2009.01627.x>
- Mummendey, A., Kessler, T., Klink, A., & Mielke, R. (1999). Strategies to cope with negative social identity: Predictions by social identity theory and relative deprivation theory. *Journal of Personality and Social Psychology*, 76, 229–245.
- Ockwell, D., Whitmarsh, L., & O'Neill, S. (2009). Reorienting climate change communication for effective mitigation: Forcing people to be green or fostering grass-roots engagement? *Science Communication*, 30(3), 305–327. <https://doi.org/10.1177/1075547008328969>
- Postmes, T., Haslam, S. A., & Swaab, R. (2005). Social influence in small groups: An interactive model of social identity formation. *European Review of Social Psychology*, 16, 1–42. <https://doi.org/10.1037/0022-3514.89.5.747>
- Postmes, T., Spears, R., Lee, A. T., & Novak, R. J. (2005). Individuality and social influence in groups: Inductive and deductive routes to group identity. *Journal of Personality and Social Psychology*, 89, 747–763. <https://doi.org/10.1037/0022-3514.89.5.747>
- Rauschmayer, F., Bauler, T., & Schäpke, N. (2015). Towards a thick understanding of sustainability transitions – Linking transition management, capabilities and social practices. *Ecological Economics*, 109(January), 211–221. <https://doi.org/10.1016/j.ecolecon.2014.11.018>
- Rees, J. H., & Bamberg, S. (2014). Climate protection needs societal change: Determinants of intention to participate in collective climate action. *European Journal of Social Psychology*, 44(5), 466–473. <https://doi.org/10.1002/ejsp.2032>



- Rouser-Renouf, C., Maibach, E. W., Leiserowitz, A., & Zhao, X. (2014). The genesis of climate change activism: From key beliefs to political action. *Climatic Change*, 125(2), 163–178. <https://doi.org/10.1007/s10584-014-1173-5>
- Sabucedo, J. M., Dono, M., Alzate, M., & Seoane, G. (2018). The importance of protesters' morals: Moral obligation as a key variable to understand collective action. *Frontiers in Psychology*, 9, Article 418. <https://doi.org/10.3389/fpsyg.2018.00418>
- Schmitt, M. T., Mackay, C. M., Droogendyk, L. M., & Payne, D. (2019). What predicts environmental activism? The roles of identification with nature and politicized environmental identity. *Journal of Environmental Psychology*, 61, 20–29. <https://doi.org/10.1016/j.jenvp.2018.11.003>
- Schulte, M., Bamberg, S., Rees, J., & Rollin, P. (2020). Social identity as a key concept for connecting transformative societal change with individual environmental activism. *Journal of Environmental Psychology*, 72, 101525. <https://doi.org/10.1016/j.jenvp.2020.101525>
- Seyfang, G., & Longhurst, N. (2016). What influences the diffusion of grassroots innovations for sustainability? Investigating community currency niches. *Technology Analysis & Strategic Management*, 28(1), 1–23. <https://doi.org/10.1080/09537325.2015.1063603>
- Shove, E. (2010). Beyond the ABC: Climate change policy and theories of social change. *Environment and Planning A*, 42(6), 1273–1285. <https://doi.org/10.1068/a42282>
- Simon, B., & Klandermans, B. (2001). Politicized collective identity: A social psychological analysis. *American Psychologist*, 56(4), 319–331.
- Skitka, L. J., & Bauman, C. W. (2008). Moral conviction and political engagement. *Political Psychology*, 29, 29–54. <https://doi.org/10.1111/j.1467-9221.2007.00611.x>
- Skitka, L. J., Washburn, A. N., & Carsel, T. S. (2015). The psychological foundations and consequences of moral conviction. *Current Opinion in Psychology*, 6, 41–44. <https://doi.org/10.1016/j.copsyc.2015.03.025>
- Stürmer, S., & Simon, B. (2004). Collective action: Towards a dual-pathway model. *European Review of Social Psychology*, 15, 59–99. <https://doi.org/10.1080/10463280340000117>
- Stürmer, S., & Simon, B. (2009). Pathways to collective protest: Calculation, identification, or emotion? A critical analysis of the role of group-based anger in social movement participation. *Journal of Social Issues*, 65(4), 681–705. <https://doi.org/10.1111/j.1540-4560.2009.01620.x>
- Tajfel, H. (1978). The achievement of inter-group differentiation. In H. Tajfel (Ed.), *Differentiation between social groups* (pp. 77–100). Academic Press.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of inter-group conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of inter-group relations* (pp. 33–47). Brooks/Cole.
- Thomas, E. F., McGarty, C., & Mavor, K. I. (2009). Aligning identities, emotions, and beliefs to create commitment to sustainable social and political action. *Personality and Social Psychology Review*, 13(3), 194–218. <https://doi.org/10.1177/1088868309341563>
- Uzzell, D., & Räthzel, N. (2009). Transforming environmental psychology. *Journal of Environmental Psychology*, 29(3), 340–350. <https://doi.org/10.1016/j.jenvp.2008.11.005>
- Van der Lee, R., Ellemers, N., & Scheepers, D. (2016). Mastering moral misery: Emotional and coping responses to intragroup morality (vs. competence) evaluations. *Cognition and Emotion*, 30(1), 51–65. <https://doi.org/10.1080/02699931.2015.1050357>
- Van Zomeren, M. (2016). Building a tower of Babel? Integrating core motivations and features of the social structure in the political psychology of political action. *Advances in Political Psychology*, 37, 1–28. <https://doi.org/10.1111/pops.12322>
- Van Zomeren, M., Kutlaca, M., & Turner-Zwinkels, F. (2018). Integrating who “we” are with what “we”(will not) stand for: A further extension of the social identity model of collective action. *European Review of Social Psychology*, 29(1), 122–160. <https://doi.org/10.1080/10463283.2018.1479347>
- Van Zomeren, M., Pauls, I. L., & Cohen-Chen, S. (2019). Is hope good for motivating collective action in the context of climate change? Differentiating hope's emotion-and problem-focused coping functions. *Global Environmental Change*, 58, Article 101915. <https://doi.org/10.1016/j.gloenvcha.2019.04.003>
- Van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin*, 134, 504–535. <https://doi.org/10.1037/0033-2909.134.4.504>
- Van Zomeren, M., Postmes, T., & Spears, R. (2012). On conviction's collective consequences: Integrating moral conviction with a social identity model of collective action. *British Journal of Social Psychology*, 51, 52–71. <https://doi.org/10.1111/j.2044-8309.2010.02000.x>
- Van Zomeren, M., Postmes, T., Spears, R., & Bettache, K. (2011). Can moral convictions motivate the advantaged to challenge social inequality? Extending the social identity model of collective action. *Group Processes and Intergroup Relations*, 14, 735–754. <https://doi.org/10.1177/1368430210395637>
- Van Zomeren, M., Spears, R., Fischer, A. H., & Leach, C. W. (2004). Put your money where your mouth is! Explaining collective action tendencies through group-based anger and group efficacy. *Journal of Personality and Social Psychology*, 87, 649–664. <https://doi.org/10.1037/0022-3514.87.5.649>
- Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, 48(4), 865–885. <https://doi.org/10.1111/j.1744-6570.1995.tb01784.x>
- Wallis, H., Bamberg, S., Schulte, M., & Matthies, E. (2021). Empowering people to act for a better life for all psychology's contributions to a social science for sustainability. *European Psychologist*, 26(3), 184–194. <https://doi.org/10.1027/1016-9040/a000436>

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Appendix

Table A1. Correlations of the SIMCA constructs found in 15 studies

Nr	Study	n	SI M (SD)	EM M (SD)	CE M (SD)	INT M (SD)	SI × EM	SI × CE	SI × INT	EM × INT	CE × INT	EM × CE
1	Bamberg et al. (2015), Study 2	71	3.48 (0.92)	2.12 (0.91)	3.91 (0.75)	4.01 (0.61)	.11	.50	.51	.20	.29	.06
2	Bamberg et al. (2015), Study 3	88	4.05 (0.64)	3.37 (0.87)	3.10 (0.89)	3.87 (0.84)	.42	.25	.52	.28	.30	-.06
3	Schulte et al. (2020), Unpublished Study 3	62	3.94 (0.86)	3.56 (0.99)	3.93 (0.75)	3.3 (1.13)	.18	.61	.49	.34	.41	.15
4	Schulte et al. (2020), Unpublished Study 4	322	2.43 (0.87)	2.42 (0.94)	3.9 (0.89)	2.45 (0.83)	.34	.34	.65	.26	.38	.12
5	Schulte et al. (2020), Unpublished Study 5	101	2.16 (1.02)	2.19 (0.92)	3.38 (0.94)	2.06 (1.03)	.18	.38	.50	.28	.21	.13
6	Bamberg et al. (2015), Study 1	652	2.78 (0.98)	3.20 (0.93)	3.90 (0.86)	2.73 (1.01.)	.45	.42	.74	.37	.45	.23
7	Schulte et al. (2020), Unpublished Study 7	176	2.26 (0.90)	2.29 (0.96)	3.56 (0.88)	2.11 (0.80)	.21	.25	.62	.3	.26	-.01
8	Schulte et al. (2020), Unpublished Study 8	66	3.18 (1.01)	2.95 (1.07)	3.96 (0.86)	2.67 (1.15)	.34	.38	.70	.34	.40	-.06
9	Schulte et al. (2020), Unpublished Study 9	84	2.6 (1.09)	2.79 (0.87)	3.54 (0.85)	2.28 (0.99)	.39	.56	.76	.32	.65	.18
10	Bongiorno et al. (2016), Study 1	40	6.3 (1.36)	-	7.88 (1.16)	6.64 (1.55)	-	.49	.73	-	.45	-
11	Bongiorno et al. (2016), Study 2	40	6.74 (1.27)	-	8.36 (0.83)	7.06 (1.56)	-	.45	.58	-	.51	-
12	Bongiorno et al. (2016), Study 3	34	6.23 (1.19)	-	7.63 (1.32)	6.86 (1.4)	-	.53	.67	-	.53	-
13	Van Zomeren et al. (2019), Study 1	288	4.32 (1.37)	3.33 (1.47)	4.13 (0.95)	2.63 (1.47)	.25	.66	.45	.48	.30	.25
14	Van Zomeren et al. (2019), Study 2	238	4.78 (1.51)	4.32 (1.87)	5.29 (1.21)	3.1 (1.73)	.59	.70	.49	.47	.31	.54
15	Van Zomeren et al. (2019), Study 3	494	4.72 (1.44)	4.49 (1.72)	5.21 (1.12)	3.24 (1.59)	.38	.50	.39	.50	.27	.40

Note. SI = social identity; EM = group-based emotions; CE = collective efficacy; INT = intention.



# Empowering People to Act for a Better Life for All

## Psychology's Contributions to a Social Science for Sustainability

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**Abstract:** The ongoing intensification of the socio-ecological crisis requires a “Great Transformation” (WBGU, 2011) of central societal systems involving aspects such as mobility, energy production, and nutrition. Thus, from a scientific point of view, the Great Transformation is a highly normative topic with a strong focus on societal and political processes of change. We are convinced that psychology can play a fruitful role in creating the social science for sustainability transformation that is needed for this purpose. However, for this to happen, psychology needs a shift toward a more impact-oriented research perspective, focusing on how people can effectively influence their ecological footprint and/or foster societal change as consumers, producers, or active citizens and community members. As starting points for developing such transformation-oriented psychological research perspectives, the present paper shows how a multilevel perspective on societal transformation processes can be combined with the vision of a solidarity-based lifestyle. Against this theoretical backdrop, we see an important role for psychology in studying how people cope with an ecological crisis by inventing new environmental lifestyles and identities, despite being locked into the currently unsustainable socio-technical systems.

**Keywords:** pro-environmental behavior, collective action, well-being, empowerment, theory of change

The need for a Great Transformation toward sustainability (German Advisory Council on Global Change [WBGU], 2011, 2016) was recognized worldwide in the 2030 Agenda for Sustainable Development and the agreement on binding targets in Paris 2015 (United Nations Framework Convention in Climate Change [UNFCCC], 2015). One major target is the transformation of central, currently fossil-fuel-based socio-technical systems (e.g., mobility, energy production, housing, and nutrition) into fossil-free ones without endangering but rather promoting equality, inclusion, diversity, well-being, and quality of life for current and future generations (WBGU, 2019). In interdisciplinary sustainability research (e.g., Loorbach et al., 2017; Ockwell et al., 2009; Uzzell & Rätzsch, 2009; Wittmayer et al., 2016), there is a consensus that this challenge requires transformations on multiple levels: from individuals to national and global politics, to cultural patterns and macroeconomics. However, a failure to address these socio-ecological challenges in a quick and effective way will result in further overstretching or even in the destruction of critical “global boundaries” (Rockström et al., 2009) with the consequence of hunger, poverty, flight, or even death

for a growing number of people, especially in the Global South.

Against this backdrop, it is positive that the current, resource-depleting lifestyles are no longer seen as acceptable and that lifestyle change is urgently needed, particularly in the Global North (e.g., WBGU, 2011). However, some political and economic actors have a tendency to view such lifestyle changes as primarily the responsibility of the single individual – that is, some define these changes as mainly a problem of individual change in consumption behavior (e.g., buying green products, reducing the use of electricity). To correct this problematic approach, in recent years, a growing number of psychologists (e.g., Batel et al., 2016; Becker et al., 2020; Fritzsche et al., 2018; Nielsen et al., 2021; Schulte et al., 2020; Upham et al., 2019) have stressed that individual changes in consumption behavior are necessary but not sufficient for solving the socio-ecological crisis. To make a substantive contribution to solving the socio-ecological crisis, psychology has to further develop its problem-solving potential. For this reason, the present paper focuses on discussing the following three, in this respect, promising research domains: (a) identifying

the activities and the socio-psychological determinants that have the strongest impact on individuals' ecological footprints (e.g., Moser & Kleinhüchelkotten, 2018; Nielsen et al., 2021; Stern, 2000), (b) understanding how windows of opportunity arise for transforming the current, unsustainable, resistant socio-technical systems (e.g., mobility, energy production; Geels, 2002, 2012, 2018), and (c) how people – despite being “locked-in” to unsustainable socio-technical systems – invent new social identities (Bamberg et al., 2018; Schulte et al., 2020) and sustainable lifestyles in order to create a solidarity-based quality of life that is not only aimed at protecting the natural environment but also stresses societal justice and cooperation (Isham et al., 2019; WBGU, 2016, p. 133). These suggestions are not extensive but demonstrate that psychological research can contribute to the mitigation of the socio-ecological crisis and give insights into how this can be fruitful for further developing psychology as a society-relevant discipline.

## Why a Stronger Focus on Behaviors With a Substantial Influence on the Ecological Footprint and Transformational Actions is Needed

For nearly 30 years, environmental psychology has focused on explaining pro-environmental intentions (intent) and behaviors (e.g., Bamberg & Möser, 2007; Gifford & Nilsson, 2014; Klöckner, 2013; Osbaldiston & Schott, 2012). This research tradition has applied and further developed theories on individual behavior change, values, and norms (Ajzen, 1991; Schwartz & Howard, 1981) to address socio-ecological challenges (Bamberg, 2013; Klöckner, 2013), resulting in growing knowledge about contextual factors that are relevant for behavior change and recommendations for developing interventions and policies to foster individual pro-environmental behavior in the private sphere (e.g., recycling, energy saving, organic food consumption, see, e.g., Klöckner, 2015). However, this approach has been criticized for years for being too narrow (Nielsen et al., 2021; Stern, 2000). It neglects not only behaviors that have a substantial impact on a person's ecological footprint (e.g., investing in renewable energy) but also actions that drive the socio-ecological transformation (e.g., environmental citizenship and activism). There has been some psychological research on investments in renewable energy technologies, see, for example, the work by Wolske et al. (2017) and Kastner and Matthies (2016) or the work by Liu et al. (2019), on the acceptability of renewable energy projects. Recently, research on transformational behaviors in the public sphere has also been growing, such as the work by Bamberg et al. (2018), Wallis and Loy (2021), or Hamann and Reese (2020) on environmental activism.

Despite these studies, in the overall context, psychological research on behaviors that have a substantial impact on mitigating the socio-ecological crisis is still rare.

The majority of psychological studies have focused on people's motivation and intent, for instance, in the form of asking people about the extent to which they see themselves as a person whose actions are environmentally friendly (the environmental self-identity; Van der Werff et al., 2013, 2014). Meta-analyses and review studies have shown that measures of intent predict self-reported pro-environmental behavior in daily life (e.g., Bamberg & Möser, 2007; Geiger et al., 2019; Klöckner, 2013) and are correlated with the ecological footprint (impact) of people to varying degrees (Moser & Kleinhüchelkotten, 2018). However, the predictive influence of intent (e.g., environmental self-identity) differs and is higher for behaviors with a lower impact, such as purchasing (more) organic foods, than for behaviors with a higher impact, such as predicting (lower) meat consumption or (fewer) car trips (Moser & Kleinhüchelkotten, 2018). This shows that investigations of intentions to act pro-environmentally cannot be put on the same level by assuming that these people also have the scope of action for substantially influencing and reducing their CO<sub>2</sub> emissions.

People with the same high pro-environmental intent can have very different scopes of action that will influence, for example, their CO<sub>2</sub> emissions, depending on age, income, and other circumstances (Moser & Kleinhüchelkotten, 2018). A higher income, for instance, strongly predicts a larger living space (which is correlated with a larger ecological footprint) but also investments in energy-efficient devices (which are correlated with a smaller ecological footprint). People in rural areas and older people use cars more often than people in cities (correlated with a larger ecological footprint), and older people tend to own a larger living space than younger people (Moser & Kleinhüchelkotten, 2018). This raises the question of how to deal with these differences and how to empower people to more effectively bring their actions in line with their intent.

Sometimes very limited impact of people's intentions and behavioral efforts on their ecological footprints indicates the strong restrictive effects the societal system has on individual behavior. This should remind us as psychologists that individual behaviors develop and exist within societal structures, and thus, behaviors both shape and are shaped by these societal structures (Schmitt et al., 2019; Uzzell & Räthzel, 2009).

In this context, it would be unfair to criticize psychology as being completely insensitive to the importance of contextual and social-system-related variables for understanding human behavior. Psychological action theories such as the theory of planned behavior (Ajzen, 1991) try to deal with this challenge by including concepts such as perceived

behavioral control (Ajzen, 1991), which plays the theoretical role of reflecting the constraining or facilitating impact of contextual factors. Perceived behavioral control is based on a person's perception and validation of contextual factors. It determines the effort and resources necessary for performing a specific behavior and is assumed to be an important direct as well as indirect – via intention – predictor of actual behavior (e.g., Armitage & Conner, 2001). However, when used alone, the concept of behavioral control is too narrow and abstract to adequately represent the impact of important objective societal framing conditions on individual behavioral intentions and behavior.

### Roles for Researchers in Two Dimensions Ranging From Knowledge-First to Process-Oriented Sustainability Science

Despite psychologists' efforts to consider contextual factors, most tend to refrain from integrating their behavior change research explicitly into a broader context of political and societal transformations. One reason for this might be the debate on the roles that researchers play in the context of socio-ecological transformations toward sustainability (Wittmayer & Schöpke, 2014). Most researchers studying socio-ecological challenges are confronted with (explicitly or implicitly) classifying their research as belonging to one of two dimensions: First, there is value-neutral science, which primarily provides knowledge and analyses. In the extreme, such a “knowledge-first scientist” (Wittmayer & Schöpke, 2014) refrains from making any evaluative statements or trying to attain social goals. The second dimension is transformative science, in which scientists take a self-reflexive perspective (e.g., Stirling, 2006) and express normative beliefs that can also change over a period of time. From our perspective, in a situation in which the question is how to deal with the socio-ecological crisis, the deficit of not explicitly embedding and reflecting the normative perspective and aims of research in a societal context becomes obvious: For example, the role attributed to psychology as the “behavior changer” has been rightly criticized by sustainability transitions research (Köhler et al., 2019; Shove, 2010). In the worst case scenario, a focus on behavior change in consumption that is not embedded in a larger transformational framework evokes the idea that structural changes and environmental regulations might be superfluous if only people would start buying green products, eating less meat, and driving and flying less. This view of people as merely consumers undermines the transformative power they can exert in roles as active members of communities, as citizens, and as activists. As a consequence, we believe that psychology has to deal more systematically with societal transformation processes and

especially the roles that psychological factors play within these processes. Against the backdrop of more general social science theories of social transformation processes, psychological proposals on how individuals can contribute while playing the roles of consumers, investors, citizens, and activists may become more realistic. For this reason, the next sections present the multilevel perspective developed by Geels (2002, 2012, 2018) as a currently discussed theoretical framework from which to analyze the societal level of transformation processes. We use the presentation of the multilevel perspective as a starting point for a more systematic reflection of the place and contribution of psychological research within such a macro-theoretical framework.

### The Multilevel Perspective as a Theoretical Framework of Societal Transformations

The multilevel perspective (MLP; Geels, 2005, 2012, 2018) views societal change as occurring through the transformation of so-called *socio-technical systems*. The term socio-technical indicates the complexity of such systems: They include technology, production capacities, supply networks, infrastructure, maintenance networks, legal regulation, cultural meaning, as well as user practices and markets (Geels, 2002). As the name implies, the MLP posits three analytical and heuristic levels on which processes interact and align to result in socio-technical system transformations:

- (1) *The landscape (macro-level)* describes exogenous developments such as the development of deep-seated cultural patterns, macro-politics, and economics or natural disasters. An example is climate change, but also economic crises, political upheaval, and other natural disasters (e.g., floods, droughts).
- (2) *Regimes (meso-level)* represent the current structures such as dominant rules, institutions, and technologies that are self-reinforcing. The socio-technical regime is dynamically stable along a predictable trajectory. Many products and industries are currently based on fossil fuels, and rules and institutions were developed for these industries. This makes the regime “locked-in” and resistant to both technological and social innovations toward sustainability.
- (3) *Niches (micro-level)* are the locus for radical innovations. Incubated from market and regulation influences, the niche fosters innovations that differ fundamentally from the prevailing regime and usually require landscape developments that open windows of opportunity on the regime level. Examples in the context of the climate crisis are people who pioneer

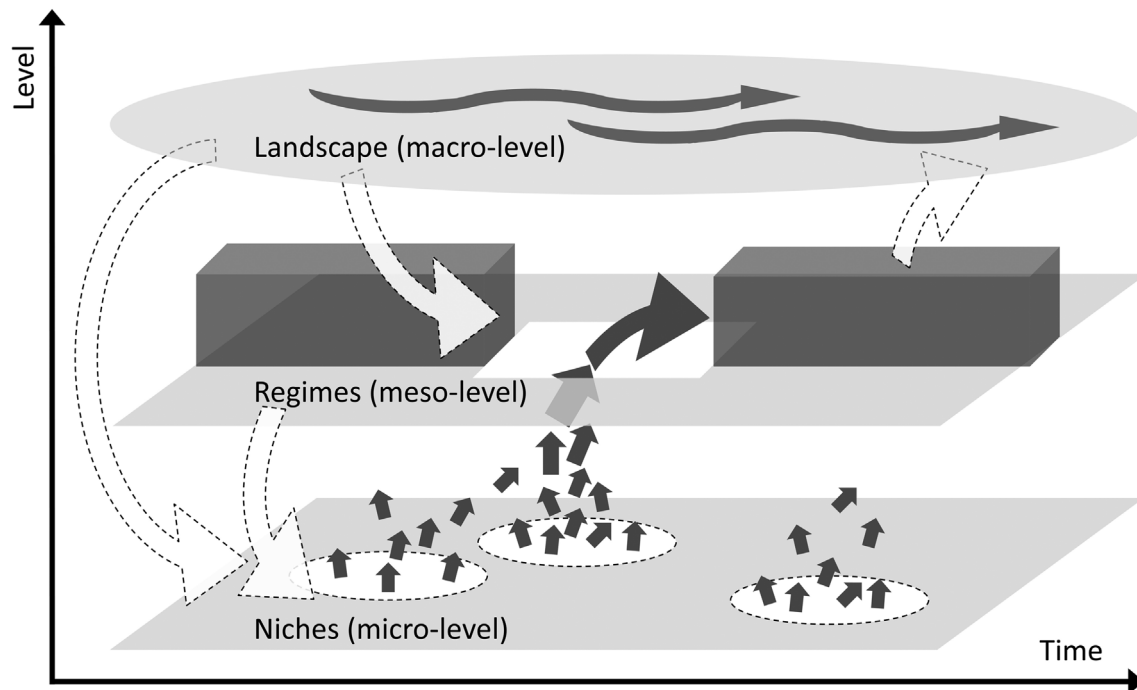


Figure 1. Multi-level perspective on transitions (adapted from Geels, 2002, p. 1263).

innovations as producers and investors (e.g., alternatives to fossil fuels) and citizens and activists who call for new regulations and lifestyles.

The multilevel perspective argues that transformations of socio-technical systems come about through interactions between processes at these three levels: (a) niche innovations build up an internal momentum, through learning processes, price/performance improvements, and support from powerful groups, (b) changes at the landscape level create pressure on the regime, and (c) destabilization of the regime creates windows of opportunity for niche innovations. The alignment of these processes enables the breakthrough of novelties in mainstream markets where they compete with the existing regime. Figure 1 has become a somewhat standardized picture of this dynamic. An example of the application of the MLP is the German *Energiewende* (energy transition): Over decades, niche actors have developed innovations for pioneering activities in solar or wind power. The further development of this innovative technological approach into efficient large-scale technologies and the intensifying socio-ecological crises (at the landscape level) are putting pressure on the dominant socio-technical regimes (the traditional energy supplies) to establish new institutions and rules that support a transformation toward more sustainability. The intensifying socio-ecological crises have received attention from actors at the landscape level (an example is the Intergovernmental Panel on Climate Change [IPCC], 2018) but has been

ignored by many others, pointing out the many interactions between and within the levels.

### The Niche Concept as One Connecting Point of the MLP and Psychological Research

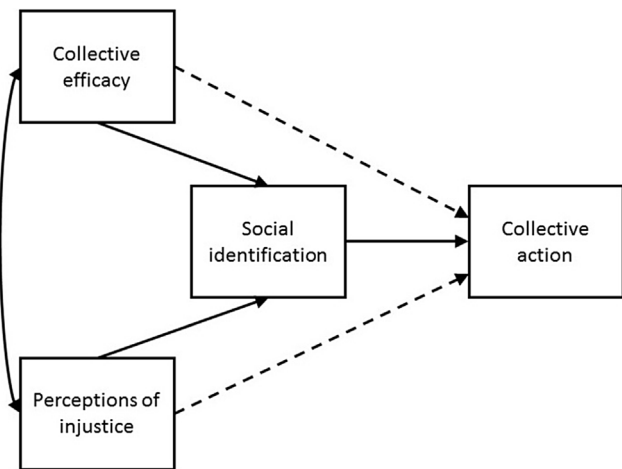
How can a psychological research program be located within the macro-theoretical MLP frame? As described above, one focus of the MLP is on niches as the loci of promising (but marginal) socio-technical innovations. However, the MLP itself has primarily addressed market-based innovations in technological systems. By extending niche innovation analyses into civil society contexts, Seyfang and Longhurst (2016) argued that grassroots innovation is a promising but neglected site of systems-changing innovation for sustainability. Seyfang and Smith (2007, p. 585) defined grassroots innovations as “innovative networks of activists and organizations that lead to bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved.” Seyfang and Longhurst (2016) viewed grassroots innovations as central driving forces for the needed radical transformation of societal systems. This judgment is shared by other scientists who also concluded that grassroots organizations and citizen activism are “... the most efficient method of achieving emission reductions” (Rouser-Renouf et al., 2014, p. 163). Consequently,

a better understanding of what leads people to become an active part of such initiatives and how to promote this kind of motivation may provide one innovative focus of an explicitly transformation-oriented research program for psychology.

## Formation of a New Social Identity as an Environmental Activist – Contours of a Transition-Oriented Psychological Research Program

From a psychological point of view, the participation in grassroots innovation groups represents a prototypical example of collective action as “... any action undertaken by individuals as psychological group members to achieve group goals in a political context” (Van Zomeren, 2016, p. 89). Thus, the psychological research on collective action (e.g., Schulte et al., 2020; Van Zomeren et al., 2008) provides a starting point from which to understand the psychosocial factors underlying the decision to contribute more actively to the transformation of the current unsustainable socio-technical systems (i.e., becoming an environmental activist). Social identity has become the key concept for understanding collective action (Schulte et al., 2020) and is defined as the “part of an individual’s self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership” (Tajfel, 1974, p. 69). Against this theoretical backdrop, it becomes crucial to understand how a new social identity (e.g., as an environmental activist) is formed. In their interactive model of social identity formation, Postmes et al. (2005, p. 747) assumed that their “inductive bottom-up route of identity formation” can explain this process. In essence, this approach postulates that in an intragroup context, a new social identity can be constructed through communication. With the encapsulated model of social identity in collective action (EMSICA; Figure 2), Thomas et al. (2009) developed a more formal model of the social identity formation process. The EMSICA anticipates that people will engage in collective actions when they experience motivating emotional reactions to injustice (anger or outrage) and simultaneously believe that group efforts can be successful (group efficacy; Bandura, 1997).

The inductive bottom-up route of identity formation and the related EMSICA also provide the theoretical basis for an intervention approach developed by McGarty and colleagues (Thomas & McGarty, 2009) to promote the formation of a new social identity. Inspired by Lewin’s (1947) famous early work on group decisions and food preferences, a group discussion forms the core of this intervention (see also Lewin, 1999). Our discussion of the social identity



**Figure 2.** The encapsulation model of social identity in collective action (Thomas et al., 2009).

approach and the research programs stimulated by this approach should demonstrate the following: The concept of niches, introduced by the MLP, can stimulate the development of attractive transformation-oriented psychological research programs. Such research programs would simultaneously build a bridge between ambitious social psychological research and the general social science debate on a more adequate conceptualization and understanding of socio-technological systems that are moving in a carbon-free sustainable direction. Furthermore, such a research program has a strong practical impact: As discussed above, actively collaborating in the development of alternative societal structures is assumed to have a stronger transformative impact than buying green products.

## The Concept of Solidarity-Based Lifestyles and Quality of Life as a Positive Vision for Transformation Processes

In adopting the MLP, whereas we have taken a systemic view that transcends psychology’s disciplinary boundaries, we now invite the reader to take a closer look at individuals and their well-being within the transformation process. System transformation in the sense of Geels (2002) includes phases of conflict between the old and the new regimes. Without question, the Great Transformation comes along with challenges for the individual that can be conceived of as threats and constraints on well-being (e.g., changes in natural and built environments, social changes, and new technologies). The consumption styles, in particular, of people in the Global North, are under



pressure. Moral costs for many activities (e.g., leisure car use, flight travel) and monetary costs (e.g., for transport and energy) are increasing; upcoming regulations (e.g., for building new houses, insulating houses, or buying new cars) may be experienced as threatening. These changes have already led to conflicts in our societies (e.g., the gilets jaunes in France in 2019), which can be interpreted as results of a “locked-in” regime (Geels, 2002). From an MLP perspective, this resistance arises through rules, institutions, lobby groups, and conservative politics that were developed to support a system based on the use of fossil fuels. For years, psychologists such as Clayton et al. (2014) have pointed out the possible negative implications of this resistance on mental health, physical health, and community health. However, apart from researching the challenges to our lifestyles that come with the Great Transformation, psychology can also offer positive perspectives for change, and research may focus on resources that may help individuals cope with the challenges identified for their different roles (Nielsen et al., 2021). Thus, in collectively accepting our planet’s boundaries and limits of consumption, we see a chance of enhancing the quality of life of individuals (e.g., Jaeger-Erben & Matthies, 2014; WBGU, 2016).

## The Great Transformation Offers More Than Curtailment – Why Not Focus on the Positive Aspects of Global Solidarity?

For years, positive psychology, health psychology, and community psychology have been empirically investigating the conditions that result in life satisfaction and well-being (Diener, 1984; Diener & Seligman, 2002; Gilster, 2012; Martela & Ryan, 2015; Reis et al., 2000; Ryan & Deci, 2000). A prominent finding has been that material resources are not the most important factor that influences life satisfaction (Aknin et al., 2009; Isham et al., 2019) and that spending money on other people results in greater happiness for the giver (Dunn et al., 2008). Autonomy, competence, and relatedness have been identified as further conditions for well-being (see Reis et al., 2000). We know from stress psychology that the experience of collectively acting and helping each other can be a resource for coping with loss and critical life events (Fletcher & Sarkar, 2013). These findings are a good starting point for the closer investigation of the possible positive effects of the many forms of engaging in sustainability-relevant behaviors.

Identifying with the aim of sustainable development and acting to reach the goal of a more sustainable society also implies taking action for general fairness and better living conditions for all people (World Commission on Environment and Development [WCED], 1987). Thus, these actions as such could have a positive effect on the generation of life

satisfaction, considering, for instance, that social equality promotes life satisfaction. Also, the acceptance of limitations is potentially influenced by a social value orientation. We suggest the concept of *solidarity-based quality of life* as an appropriate umbrella term for the positive implications of acting as supporters of the Great Transformation in the role of consumers as well as citizens. Solidarity stresses the overarching aim of sustainable development, which is justice and not only environmental protection. *Solidarity-based quality of life* refers to the resources and positive implications that can be expected from such actions and orientations. As the overall aim is global and complex, it also implies that the process has to mature and needs constant evaluation and adjustments. This requires an outcome orientation and a vision that may empower individuals and bridges the gap between intent and impact, such as a psychologically-based vision that revolves around quality of life (Matthies, 2018; WBGU, 2016).

## What Research Questions Does the Psychology of a Solidarity-Based Lifestyle Focus on?

The concept of a solidarity-based quality of life can be related to all types of environmentally significant behaviors described by Stern (2000) and thus also to the different roles people may play as consumers, investors, producers, members of communities, citizens, and activists (Nielsen et al., 2021). Nevertheless, this concept has implications beyond Stern’s (2000) understanding of environmentally significant behaviors. It leads to the consideration of new categories of behavior (e.g., forms of support such as donating or becoming an agent of change) and motivates research into the relation of the several forms of behaviors that are oriented toward the Great Transformation to sustainable development. Finally, it motivates research on the relationship between environmental concern for sustainable development and new kinds of knowledge about the consequences of individual behaviors (e.g., an individual’s carbon footprint), about the efficacy of political measures, and potential effects on quality of life and well-being.

We, therefore, see several implications for research. On a first level, the approach invites the integration of possible positive effects of behaviors that support individual well-being in the several theories of behavior change that have been applied to topics of the Great Transformation. This also calls for research on measuring the possible positive effects (e.g., sense of coherence, developing and enhancing social ties) of broadening an individual’s opportunities to transcend societal challenges and for the development or adoption of psychometric instruments to measure those outcomes.

On a second level, the approach calls for research that will focus on new forms of behavior change (e.g., the previously neglected collective actions, support of niche activities) and more generally the motivation to become interested and involved in a variety of possible ways to change individually or collectively, and in trying out new behaviors. On this level, research into the relations of the various behaviors also becomes more relevant than spillover research has been.

Finally, on a third level, it calls for research into the experience of being effective with respect to the complex aim of social justice. We have to become interested in subjective scopes of action and appropriate ways to offer information about the consequences of individual behavior. This might also touch upon the topic of new forms of knowledge presentation, new forms of learning, and trust in institutions.

For this kind of research on the solidarity-based quality of life, we already see several starting points, for example, research on the spillover between private-sphere behaviors and the acceptance of measures (Steinhorst & Matthies, 2016; Thøgersen & Noblet, 2012) or research on collective efficacy (Hamann & Reese, 2020). The link to the concept of social identification has already been explored in more detail. However, embedded in the concept of a Great Transformation, we might think of more exploratory research approaches that are able to address the multiple new practices that have been developed in recent years, for example, what kinds of new practices (e.g., sharing, collectively trying out radical changes) or interventions (neighborhood energy competitions) have the potential to activate further positive experiences? What does newness offer to individuals (a new style of nutrition, a radical change in diets, in consumption styles)? How can the development of new collective practices be supported, and how can positive aspects (social connectedness, self-efficacy) be measured and negative aspects be addressed?

## Conclusion

For decades, the analysis of the psychological mechanisms underlying unsustainable behaviors as well as their movement in more sustainable directions has been an important topic in applied psychology. This includes behavioral research on factors that influence behaviors that are good for the environment and the climate as well as behaviors that promote health and well-being or more generally attempt to empower people to create a better quality of life for them. However, currently, skepticism is increasing with respect to the question of whether the traditional psychological research strategy for dealing with this issue is still adequate. There is more and more evidence that this research is failing to focus on the relevant, impactful

behaviors. Confronted with the intensifying socio-ecological crisis, a focus on only the factors that motivate people to become “green consumers” is too narrow. The aim of our paper is to contribute to a common process for searching for a more adequate contribution of psychological research to how society can effectively cope with the environmental crisis. As discussed, we are convinced that such a strategy must be characterized by the following two features: It has to be transformation-oriented and truly interdisciplinary. Concerning the first characteristic – transformation-oriented – we see great potential for psychology to explore the kind of visions/utopias that will motivate people to desire transformative societal change or will at least reduce their fear of such change. More precisely, we propose the concept of a solidarity-based quality of life as such a vision/utopia. This concept focuses less on the losses and sacrifices that are always associated with transformative change and more on the transformative change as a source of positive experiences and emotions. For us, it would be a fascinating task for psychology to research which kinds of new practices and lifestyles have the potential to activate positive experiences and emotions. Simultaneously, the focus on well-being and quality of life would bring together a range of currently unconnected psychological research traditions under the umbrella of solving the socio-ecological crisis. A more intensive reception and exchange with positive psychology, health psychology, and community psychology may provide a helpful starting point for developing concrete research programs.

We are also convinced that without a stricter interdisciplinary orientation, there is the danger that psychology will isolate itself with the consequence that other disciplines such as climate science, engineering, sociology, and political science may no longer view psychology as an important part of the scientific enterprise of developing pathways to a more sustainable future for society. From our point of view, being able to make an impactful contribution to this enterprise requires psychology to develop a greater interest in the political and societal processes that are necessary for creating environments that facilitate sustainable behavioral options. Examples of such environments are better infrastructures in cities for cycling, walking, and public transport, intensive support for environmental and democratic activities of citizens, and accompanying measures that support investments in a low-carbon society. The exchange with the more “macro”-oriented disciplines such as sociology, political science, and economics has the potential to widen our horizon and help psychology develop more impactful research programs.

Furthermore, clarifying the role that psychological processes play within such macro-theoretical frameworks has the potential to stimulate new lines of research within psychology. Examples are frameworks that consider the role of

politics and institutions (e.g., Paris agreement) for creating windows of opportunities for niche agents of change (e.g., environmental activists). As demonstrated above, using the MLP as such a macro-theoretical framework centers our interest on the niche concept and the role of grassroots innovations. We showed the kind of fascinating research questions this focus may open. We are convinced that by contributing to the understanding of how people develop a new social identity as an active supporter of the Great Transformation toward sustainability, psychology will simultaneously make a significant contribution toward promoting such societal change.

To summarize, from our point of view, the combination of the two lines of research – exploring the kinds of visions/utopias that motivate people to desire transformative societal change and to understand the processes that underlie the formation of a new “transformative” social identity – has the potential to create fascinating and impactful psychological research that will help society cope with solving the socio-ecological crisis.

## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *British Journal of Social Psychology*, 4(6), 523–527. <https://doi.org/10.1080/17439760903271421>
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471–499. <https://doi.org/10.1348/014466601164939>
- Bamberg, S. (2013). Changing environmentally harmful behaviors: A stage model of self-regulated behavioral change. *Journal of Environmental Psychology*, 34, 151–159. <https://doi.org/10.1016/j.jenvp.2013.01.002>
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14–25. <https://doi.org/10.1016/j.jenvp.2006.12.002>
- Bamberg, S., Rees, J. H., & Schulte, M. (2018). Environmental protection through societal change: What psychology knows about collective climate action – and what it needs to find out. In S. Clayton & C. Manning (Eds.), *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 185–213). Academic Press. <https://doi.org/10.1016/B978-0-12-813130-5.00008-4>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. H. Freeman.
- Batel, S., Castro, P., Devine-Wright, P., & Howarth, C. (2016). Developing a critical agenda to understand pro-environmental actions: contributions from Social Representations and Social Practices Theories. *Wiley Interdisciplinary Reviews: Climate Change*, 7(5), 727–745. <https://doi.org/10.1002/wcc.417>
- Becker, S., Bögel, P., & Upham, P. (2020). The role of social identity in institutional work for sociotechnical transitions: The case of transport infrastructure in Berlin. *Technological Forecasting and Social Change*, 162, Article 120385. <https://doi.org/10.1016/j.techfore.2020.120385>
- Clayton, S., Manning, C. M., & Hodge, C. (2014). *Beyond storms & droughts: The psychological impacts of climate change*. American Psychological Association and ecoAmerica. [https://ecoamerica.org/wp-content/uploads/2014/06/eA\\_Beyond\\_Storms\\_and\\_Droughts\\_Psych\\_Impacts\\_of\\_Climate\\_Change.pdf](https://ecoamerica.org/wp-content/uploads/2014/06/eA_Beyond_Storms_and_Droughts_Psych_Impacts_of_Climate_Change.pdf)
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542–575. <https://doi.org/10.1037/0033-2909.95.3.542>
- Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological Science*, 13(1), 81–84. <https://doi.org/10.1111/1467-9280.00415>
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, 319(5870), 1687–1688. <https://doi.org/10.1126/science.1150952>
- Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, 18(1), 12–23. <https://doi.org/10.1027/1016-9040/a000124>
- Fritzsche, I., Barth, M., Jugert, P., Masson, T., & Reese, G. (2018). A social identity model of pro-environmental action (SIMPEA). *Psychological Review*, 125(2), 245–269. <https://doi.org/10.1037/rev0000090>
- Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case study. *Research Policy*, 31(8–9), 1257–1274. [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8)
- Geels, F. W. (2005). *Technological transitions and system innovations: A co-evolutionary and socio-technical Analysis*. Edward Elgar Publishing.
- Geels, F. W. (2012). A socio-technical analysis of low-carbon transitions: Introducing the multi-level perspective into transport studies. *Journal of Transport Geography*, 24, 471–482. <https://doi.org/10.1016/j.jtrangeo.2012.01.021>
- Geels, F. W. (2018). Disruption and low-carbon system transformation: Progress and new challenges in socio-technical transitions research and the Multi-Level Perspective. *Energy Research & Social Science*, 37, 224–231. <https://doi.org/10.1016/j.erss.2017.10.010>
- Geiger, J. L., Steg, L., van der Werff, E., & Ünal, A. B. (2019). A meta-analysis of factors related to recycling. *Journal of Environmental Psychology*, 64, 78–97.
- German Advisory Council on Global Change. (2011). *World in transition: A social contract for sustainability* [Flagship Report]. WBGU. [https://issuu.com/wbgu/docs/wbgu\\_jg2011\\_en?e=37591641/69400200](https://issuu.com/wbgu/docs/wbgu_jg2011_en?e=37591641/69400200)
- German Advisory Council on Global Change. (2016). *Humanity on the move: Unlocking the transformative power of cities* [Flagship Report]. WBGU. [https://issuu.com/wbgu/docs/hg2016\\_en\\_highres?e=37591641/68733616](https://issuu.com/wbgu/docs/hg2016_en_highres?e=37591641/68733616)
- German Advisory Council on Global Change. (2019). *Towards Our Common Digital Future* [Flagship Report]. WBGU. [https://issuu.com/wbgu/docs/wbgu\\_hg2019\\_en?fr=sM2QyYzU1OTI4OA](https://issuu.com/wbgu/docs/wbgu_hg2019_en?fr=sM2QyYzU1OTI4OA)
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behavior: A review. *International Journal of Psychology*, 49(3), 141–157. <https://doi.org/10.1002/ijop.12034>
- Gilster, M. E. (2012). Comparing neighborhood-focused activism and volunteerism: Psychological well-being and social connectedness. *Journal of Community Psychology*, 40(7), 769–784. <https://doi.org/10.1002/jcop.20528>

- Hamann, K. R., & Reese, G. (2020). My influence on the world (of others): Goal efficacy beliefs and efficacy affect predict private, public, and activist pro-environmental behavior. *Journal of Social Issues*, 76(1), 35–53. <https://doi.org/10.1111/josi.12369>
- Intergovernmental Panel on Climate Change. (2018). *Global warming of 1.5 °C: An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. IPCC. [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_stand\\_alone\\_HR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_stand_alone_HR.pdf)
- Isham, A., Gatersleben, B., & Jackson, T. (2019). Flow activities as a route to living well with less. *Environment and Behavior*, 51(4), 431–461. <https://doi.org/10.1177/0013916518799826>
- Jaeger-Erben, M., & Matthies, E. (2014). Urbanisierung und Nachhaltigkeit: Umweltpsychologische Perspektiven auf Ansatzpunkte, Potentiale und Herausforderungen für eine nachhaltige Stadtentwicklung [Urbanization and sustainability: A perspective of environmental psychology for approaches, potentials and challenges of a city's sustained transformation]. *Umweltpsychologie*, 18(2), 10–30. [https://www.umweltbundesamt.de/sites/default/files/medien/371/dokumente/umps\\_urbanisierung\\_nachhaltigkeit\\_14\\_02\\_10-30.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/371/dokumente/umps_urbanisierung_nachhaltigkeit_14_02_10-30.pdf)
- Kastner, I., & Matthies, E. (2016). Investments in renewable energies by German households: A matter of economics, social influences and ecological concern? *Energy Research & Social Science*, 17, 1–9. <https://doi.org/10.1016/j.erss.2016.03.006>
- Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour: A meta-analysis. *Global Environmental Change*, 23(5), 1028–1038. <https://doi.org/10.1016/j.gloenvcha.2013.05.014>
- Klöckner, C. A. (2015). *The psychology of pro-environmental communication: Beyond standard information strategies*. Palgrave Macmillan. <https://doi.org/10.1057/9781137348326>
- Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., Alkemade, F., Avelino, F., Bergek, A., Boons, F., Fünfschilling, L., Hess, D., Holtz, G., Hyysalo, S., Jenkins, K., Kivimaa, P., Martiskainen, M., McMeekin, A., Mühlemeier, M., ... Wells, P. (2019). An agenda for sustainability transitions research: State of the art and future directions. *Environmental Innovation and Societal Transitions*, 31, 1–32. <https://doi.org/10.1016/j.eist.2019.01.004>
- Lewin, K. (1999). Group decision and social change. In M. Gold (Ed.), *The complete social scientist: A Kurt Lewin reader* (pp. 265–284). American Psychological Association. (Reprinted from *Readings in Social Psychology*, pp. 330–341, by T. M. Newcomb & E. L. Hartley, Eds., 1947, Henry Holt). <https://doi.org/10.1037/10319-010>
- Lewin, K. (1947). *Group decision and social change*. Holt, Rinehart & Winston.
- Liu, L., Bouman, T., Perlaviciute, G., & Steg, L. (2019). Effects of trust and public participation on acceptability of renewable energy projects in the Netherlands and China. *Energy Research & Social Science*, 53, 137–144. <https://doi.org/10.1016/j.erss.2019.03.006>
- Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability transitions research: transforming science and practice for societal change. *Annual Review of Environment and Resources*, 42, 599–626.
- Martela, F., & Ryan, R. M. (2015). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of personality*, 84(6), 750–764. <https://doi.org/10.1111/jopy.12215>
- Matthies, E. (2018). Wenn 80% ihren Lebensstil ändern, ist dann die Große Transformation gelungen? Überlegungen zur transformativen Rolle der Umweltpsychologie [If 80% changed their lifestyle would the great transformation be succeeded? Deliberations on the transformative role of the environmental psychology]. *Umweltpsychologie*, 22(1), 131–138.
- Moser, S., & Kleinhückelkotten, S. (2018). Good intents, but low impacts: Diverging importance of motivational and socioeconomic determinants explaining pro-environmental behavior, energy use, and carbon footprint. *Environment and Behavior*, 50(6), 626–656. <https://doi.org/10.1177/0013916517710685>
- Nielsen, K. S., Clayton, S., Stern, P. C., Dietz, T., Capstick, S., & Whitmarsh, L. (2021). How psychology can help limit climate change. *American Psychologist*, 76(1), 130–144. <https://doi.org/10.1037/amp0000624>
- Ockwell, D., Whitmarsh, L., & O'Neill, S. (2009). Reorienting climate change communication for effective mitigation: forcing people to be green or fostering grass-roots engagement? *Science Communication*, 30(3), 305–327. <https://doi.org/10.1177/1075547008328969>
- Osbaldiston, R., & Schott, J. P. (2012). Environmental sustainability and behavioral science: Meta-analysis of proenvironmental behavior experiments. *Environment and Behavior*, 44(2), 257–299. <https://doi.org/10.1177/0013916511402673>
- Postmes, T., Spears, R., Lee, A. T., & Novak, R. J. (2005). Individuality and social influence in groups: Inductive and deductive routes to group identity. *Journal of Personality and Social Psychology*, 89(5), 747–763. <https://doi.org/10.1037/0022-3514.89.5.747>
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, 26(4), 419–435. <https://doi.org/10.1177/0146167200266002>
- Rockström, J., Steffen, W., Noone, K., Persson, A., Chapin, F. S. 3rd, Lambin, E. F., Lenton, T. M., Scheffer, M., Folke, C., Schellnhuber, H. J., Nykvist, B., de Wit, C. A., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P. K., Svedin, U., Falkenmark, M., Karlberg, L., ... Foley, J. A. (2009). A safe operating space for humanity. *Nature*, 461, 472–475. <https://doi.org/10.1038/461472a>
- Rouser-Renouf, C., Maibach, E. W., Leiserowitz, A., & Zhao, X. (2014). The genesis of climate change activism: From key beliefs to political action. *Climatic Change*, 125(2), 163–178. <https://doi.org/10.1007/s10584-014-1173-5>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/110003-066X.55.1.68>
- Schmitt, M. T., Mackay, C. M., Droogendyk, L. M., & Payne, D. (2019). What predicts environmental activism? The roles of identification with nature and politicized environmental identity. *Journal of Environmental Psychology*, 61, 20–29. <https://doi.org/10.1016/j.jenvp.2018.11.003>
- Schulte, M., Bamberg, S., Rees, J., & Rollin, P. (2020). Social identity as a key concept for connecting transformative societal change with individual environmental activism. *Journal of Environmental Psychology*, 72, Article 101525. <https://doi.org/10.1016/j.jenvp.2020.101525>
- Schwartz, S. H., & Howard, J. A. (1981). A normative decision-making model of altruism. In J. P. Rushton & R. M. Sorrentino (Eds.), *Altruism and helping behavior* (pp. 189–211). Erlbaum.
- Seyfang, G., & Longhurst, N. (2016). What influences the diffusion of grassroots innovations for sustainability? Investigating community currency niches. *Technology Analysis & Strategic Management*, 28(1), 1–23. <https://doi.org/10.1080/09537325.2015.1063603>
- Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, 16(4), 584–603. <https://doi.org/10.1080/09644010701419121>

- Shove, E. (2010). Beyond the ABC: Climate change policy and theories of social change. *Environment and Planning A: Economy and Space*, 42(6), 1273–1285. <https://doi.org/10.1068/a42282>
- Steinhorst, J., & Matthies, E. (2016). Monetary or environmental appeals for saving electricity? Potentials for spillover on low carbon policy acceptability. *Energy Policy*, 93, 335–344. <https://doi.org/10.1016/j.enpol.2016.03.020>
- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424. <https://doi.org/10.1111/0022-4537.00175>
- Stirling, A. (2006). Precaution, foresight and sustainability: Reflection and reflexivity in the governance of science and technology. In J. P. Voss, D. Bauknecht, & R. Kemp (Eds.), *Reflexive governance for sustainable development* (pp. 225–272). Edward Elgar.
- Tajfel, H. (1974). Social identity and intergroup behaviour. *Social Science Information*, 13(2), 65–93. <https://doi.org/10.1177/053901847401300204>
- Thøgersen, J., & Noblet, C. (2012). Does green consumerism increase the acceptance of wind power? *Energy Policy*, 51, 854–862. <https://doi.org/10.1016/j.enpol.2012.09.044>
- Thomas, E. F., & McGarty, C. A. (2009). The role of efficacy and moral outrage norms in creating the potential for international development activism through group-based interaction. *British Journal of Social Psychology*, 48(1), 115–134. <https://doi.org/10.1348/014466608X313774>
- Thomas, E. F., McGarty, C., & Mavor, K. I. (2009). Aligning identities, emotions, and beliefs to create commitment to sustainable social and political action. *Personality and Social Psychology Review*, 13(3), 194–218. <https://doi.org/10.1177/1088868309341563>
- United Nations Framework Convention in Climate Change. (2015, November 30–December 11). *Adoption of the Paris agreement*. [Conference Session]. Conference of the Parties, Paris, France. <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>
- Upham, P., Bögel, P., & Johansen, K. (2019). *Energy transitions and social psychology: A sociotechnical perspective*. Routledge.
- Uzzell, D., & Rätzl, N. (2009). Transforming environmental psychology. *Journal of Environmental Psychology*, 29(3), 340–350. <https://doi.org/10.1016/j.jenvp.2008.11.005>
- Van der Werff, E., Steg, L., & Keizer, K. (2013). The value of environmental self-identity: The relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology*, 34, 55–63. <https://doi.org/10.1016/j.jenvp.2012.12.006>
- Van der Werff, E., Steg, L., & Keizer, K. (2014). I am what I am, by looking past the present: The influence of biospheric values and past behavior on environmental self-identity. *Environment and Behavior*, 46(5), 626–657. <https://doi.org/10.1177/0013916512475209>
- Van Zomeren, M. (2016). Building a Tower of Babel? Integrating core motivations and features of social structure into the political psychology of political action. *Political Psychology*, 37, 87–114. <https://doi.org/10.1111/pops.12322>
- Van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin*, 134, 504–535. <https://doi.org/10.1037/0033-2909.134.4.504>
- Wallis, H., & Loy, L. S. (2021). What drives pro-environmental activism of young people? A survey study on the Fridays for future movement. *Journal of Environmental Psychology*. <https://doi.org/10.1016/j.jenvp.2021.101581>
- Wittmayer, J. M., & Schäpke, N. (2014). Action, research and participation: roles of researchers in sustainability transitions. *Sustainability Science*, 9(4), 483–496. <https://doi.org/10.1007/s11625-014-0258-4>
- Wittmayer, J. M., van Steenberg, F., Rok, A., & Roorda, C. (2016). Governing sustainability: A dialogue between local agenda 21 and transition management. *Local Environment*, 21(8), 939–955. <https://doi.org/10.1080/13549839.2015.1050658>
- World Commission on Environment and Development. (1987). *Report of the World Commission on Environment and Development: Our common future*. UN. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Wolske, K., Stern, P. C., & Dietz, T. (2017). Explaining interest in adopting residential solar photovoltaic systems in the United States: Toward an integration of behavioral theories. *Energy Research & Social Science*, 25, 134–151. <https://doi.org/10.1016/j.erss.2016.12.023>

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# Climate “Psychopathology”

## The Intersection of Mental and Physical Health in the Climate Emergency

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**Abstract:** Climate change is now widely recognized as the greatest threat faced by humanity for thousands of years and is known to affect the social and environmental determinants of health; including access to clean air, safe drinking water, sufficient food, and secure shelter (WHO, 2018). Anthropogenic climate change has already resulted in warming and precipitation trends that claim 150,000 lives annually, and a recent report from the WHO forecasts that between 2030 and 2050 climate change will cause an additional 250,000 additional deaths per year (WHO, 2018). The interaction between climate change, mental health, and physical health is not yet well understood. This review addresses the question of how climate change is affecting mental health and will demonstrate that climate psychopathologies really matter in the face of the climate emergency.

**Keywords:** Climate change, climate psychology, eco-anxiety, mental health, neuropsychology

### Overview of the Impacts of Climate Change

Climate change is now widely recognized as the greatest threat faced by humanity for thousands of years. It is the defining issue of our time, and we find ourselves at a pivotal moment (United Nations, n.d.). Human-induced environmental changes include global warming due to changes in the composition of the atmosphere, primarily due to emissions of greenhouse gases (particularly carbon dioxide and methane) (Ruddiman, 2013); species extinctions some 100 to 1,000 times higher than background levels due to land-use conversion as well as targeted hunting and harvesting (Lewis & Maslin, 2015); land surface transformation (human mining activities alone move more sediment than all the world's rivers combined) (Monatersky, 2015); deforestation; rising sea levels; erosion of the ozone layer; acidification of lakes, streams, rivers, and the oceans; as well as unprecedented new evolutionary pressures (due to the development of new products like antibiotics, pesticides, novel genetically engineered organisms, the transportation of species to new habitats, intensive harvesting, as well as through the selective pressure of higher air temperatures as a result of greenhouse gas emissions) (Lewis & Maslin, 2015; Ruddiman, 2013).

Human effects on the environment have reached levels severe enough that Earth may now be in a new geological epoch, “The Anthropocene” (Crutzen & Stoermer, 2000;

Lewis & Maslin, 2015; Ruddiman, 2013). Scholars have suggested that plastic pollution – which is already being deposited into the fossil record, forming “technofossils” – may be used to mark the start of this new era; leading some to suggest that this period in Earth's geological history may become known as “the plastic age” (Thompson et al., 2009; Zalasiewicz et al., 2016). This new era is defined by the fact that human activity is said to be the dominant influence on the environment, the climate, and on Earth's ecology (Lewis & Maslin, 2015; Ruddiman, 2013).

Human beings are thus grappling with a new norm, where we find ourselves forced to accept that we live in an increasingly hostile and dangerous environment, irrefutably made so by human activity. We observe – with increasing frequency – climate change-induced natural disasters occurring with ever-increasing severity. Every year sees successive record-breaking temperatures, ice melts, forced displacements, and other frightening harbingers of what is yet to come. How do we respond to this crisis psychologically, and should so-called climate “psychopathology” be a priority in the face of the climate emergency?

### Climate Change, Health, and Mental Health

Climate change is known to affect the social and environmental determinants of health; including access to clean

air, safe drinking water, sufficient food, and secure shelter (WHO, 2018). Anthropogenic climate change has already resulted in warming and precipitation trends that claim 150,000 lives annually, and a recent report from the WHO forecasts that between 2030 and 2050 climate change will cause an additional 250,000 additional deaths per year (WHO, 2018).

A robust evidence base of literature now exists which provides details on the different and interactive ways in which climate change affects physical health (such as through altered vector transmission of infections, emergency situations following freak weather events, and through new and emerging environmental challenges such as altered UV radiation (WHO & WMO, 2012), but little is known about how climate change affects mental health (Hayes et al., 2018).

The available literature exploring the relationships between observed variations in meteorological variables and health is steadily increasing, for example, the association between heatwaves and excess mortality is an area that has received increasing research attention (McMichael et al., 2006; Page et al., 2012). So far, most research in this field has focussed on the effects of thermal stress, extreme weather events, and infectious diseases as well as modeling future food yields and hunger prevalence (McMichael et al., 2006). Climate change is therefore known to contribute to the global burden of disease and toward premature deaths; these effects are projected to progressively increase across all countries, and all regions (Confalonieri et al., 2007). However, the evidence base around the mental health impacts of climate change remains sparse.

## Climate Change and Mental Health

There are many risks to mental health that manifest themselves over the course of an individual's lifetime, some of which are summarized in Figure 1 (Kieling et al., 2011). Figure 1 identifies a large number of hypothesized threats to well-being which could theoretically be related directly to climate impacts (particularly in relation to individual, family, and community settings), namely, poor nutrition, physical ill-health, trauma, debt and poverty, bereavement, job insecurities, and poor housing and living conditions (Kieling et al., 2011).

Climate impacts could therefore be set to act as a universal catalyst for mental illness globally, by increasing the frequency and durability of risks to mental health across every life stage, every social setting, and every scale – from individuals to entire cultures: resulting from the increased likelihood of struggles with poverty, famine, drought, and disaster survival with accompanying bereavement, as well

as chronic stress and anxiety associated with the ever-present threats which climate change brings.

There is strong evidence to suggest that the most robust predictor of mental illness in adulthood is psychiatric symptoms or disorder during childhood and adolescence (Fryers & Brugha, 2013; Reef, Diamantopoulou, et al., 2010; Reef, van Meurs, et al., 2010; Reef et al., 2009, 2011). Indeed, this continuity of psychopathology is observed across the life span, with anxious and depressed problems in childhood being one of the strongest predictors of adult psychopathology (Reef et al., 2009). Not only is there evidence of enduring psychopathology across the lifespan; there is further evidence suggesting that being affected with a mental health disorder increases the risk of developing another, thus comorbidity within psychiatric disorders is high (Plana-Ripoll et al., 2019). A number of systematic reviews have been conducted which address the question of the long-term impacts of disaster events on mental health (Morina et al., 2014; Steinert et al., 2015). Chronic impacts following catastrophic events differ with regard to the specific types of psychopathology (e.g., depression versus post-traumatic stress disorder), but what is generally agreed is that individuals who experience severe trauma related to natural or technological disasters are at risk for adverse psychological outcomes in the years following these events (Cherry et al., 2015). Studies addressing the long-term mental health impacts of other catastrophes – such as war (note that increasing frequencies of violent conflicts are additionally associated with climate change) – consistently demonstrate the persistent negative impact of such events on children and young people into their adulthood, as well as the traumatic and enduring effects for those who are adults at the time of exposure (Gade & Wenger, 2011; McFarlane, 2015; Singhal, 2019).

Climate justice highlights the disproportionate impact which climate change has on those most vulnerable to its effects, who are typically the poorest and most marginalized members of society (as well as being those least culpable for the emissions that cause climate change) (Ingle & Mikulewicz, 2020). There is thus a double inequality where those least resilient and least able to adapt to climate impacts are additionally the most vulnerable to impacts caused by climate breakdown. Those with pre-existing mental health disorders represent one such vulnerable group. For countries within the World Health Organization (WHO) European Region; mental disorders are already the single biggest contributor to the non-fatal disease burden (WHO, 2019), and at present estimates suggest that there are more than 970 million people worldwide living with a mental health or substance use disorder (Ritchie & Roser, 2019). Thus, more than 12% of the global population is at increased risk of the psychological impacts of climate change as a result of a pre-existing



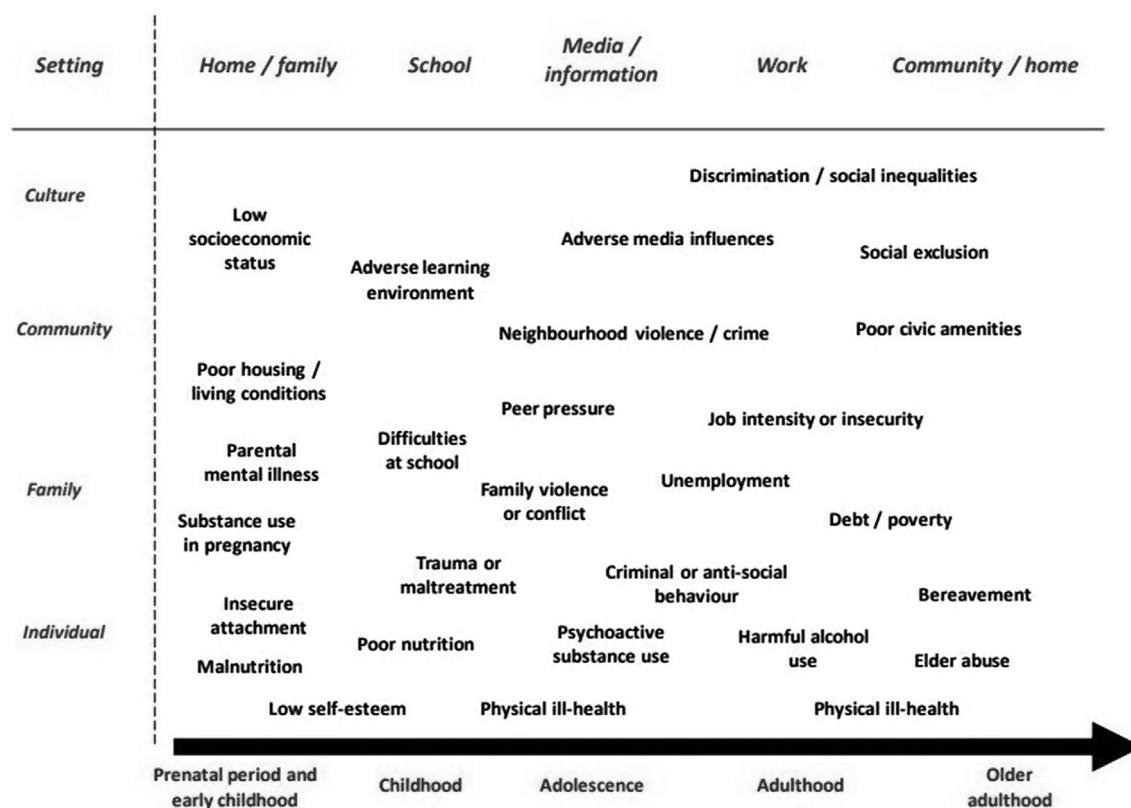


Figure 1. Schematic overview of risks to mental health over the life course (adapted from Kieling et al., 2011).

mental illness – demonstrably linked to an increased vulnerability to the development of subsequent psychiatric disorders. Indeed, it is likely that many more people worldwide will experience mental distress or illness as a result of climate change, due to the ubiquitous and insidious nature of climate effects. However, careful consideration should be given before pathologizing what could represent adaptive responses to living in an increasingly dangerous and threatening world. Little is known about the “new” climate-related mental health experiences, headline-grabbing names of which are appearing with increasing frequency throughout the news and social media. Thus, due diligence should be exercised in seeking an understanding of the nature and structure of these cognitive experiences before dismissing them – and those who are experiencing them – as “disordered.”

At present, published data characterizing the mental health impacts of climate change is sparse. However, despite this paucity of available research, three classes of impact have been identified (Albrecht et al., 2007; Costello et al., 2009; Doherty & Clayton, 2011; Page & Howard, 2010). These include direct impacts, which are mental health injuries as a result of the acute or traumatic effects of emergency events; indirect impacts, which represent

threats to well-being due to the observed impacts of climate change, as well as the effects of living in a state of constant existential threat and uncertainty; and psychosocial impacts, which relate to the community and social impacts of climate change, often the result of lost livelihoods and conflicts over increasingly scarce resources (Albrecht et al., 2007; Costello et al., 2009; Doherty & Clayton, 2011; Page & Howard, 2010).

## Direct, Indirect, and Psychosocial Impacts

### Direct Impacts

Acute and direct impacts of climate change on mental health are those injuries associated with more frequent (and more powerful) weather events, natural disasters, and adjustment to degraded or disrupted physical environments; the extreme wildfires in Australia at the end of 2019 and into this new decade representing one such devastating example (Albrecht et al., 2007; Costello et al., 2009; Doherty & Clayton, 2011; Page & Howard, 2010). In fact,

the severe, chronic drought in Australia over the last 10 years has allowed physicians and researchers there to be pioneers in documenting the relationship between climate change, weather events, and direct impacts on mental health (Bourque & Willox, 2014). They have found that the drought has been associated with chronic psychological distress, generalized anxiety, depression, and an increased incidence of suicide (specifically among farmers in Australia) (Bourque & Willox, 2014). Note that farming is an occupation in which there is already such a high incidence of suicide globally that it is considered a “universal phenomenon” (Behere & Bhise, 2009, p. 242).

Despite cultural variations between countries and individuals, communities show some common patterns of psychosocial responses to disasters (Weiss et al., 2003), the most common being acute post-traumatic stress disorder, as well as a range of other stress-related problems such as complicated grief, depression, anxiety disorders, somatoform disorders, and drug and alcohol abuse (Fritze et al., 2008).

Other extreme weather events like typhoons, floods, hurricanes, and major storms have offered an opportunity to study climate impacts on mental health. For example, following severe flooding in England in 2000: exposed individuals experienced a four-time higher risk of psychological distress, which was – in turn – associated with a significant excess of physical illness among both children and adults affected (Reacher et al., 2004). The link between physical and mental well-being will be addressed later in this review, but note that the reciprocal relationship between these two metrics of health will increase the severity and duration of climate-related impacts on well-being, potentially leading to lifelong impairment in some instances.

Young people exposed to high levels of trauma following Hurricanes Katrina and Gustav experienced post-traumatic stress disorder (PTSD) and depression for up to 3 years after the event (Weems & Banks, 2015), highlighting the often chronic nature of severe mental health impacts associated with climate change. Specifically, a longitudinal study by Abramson et al. found that in 2010 (more than 4 years post-disaster), 40.8% of parents in Louisiana and 49.1 % of parents in Mississippi reported that their children were experiencing emotional and/or behavioral problems that developed after experiencing the disaster (2010). The cumulative prevalence rate of diagnosed mental health conditions (such as anxiety, depression, or behavioral disorder) 4 years post-disaster was high, at more than 37 % (Abramson et al., 2010). Lambert and Lawson (2012) found evidence of post-traumatic outcomes in professional counselors who serviced those affected by Hurricanes Katrina and Rita, as well as “compassion fatigue” in those who had been treating evacuees. Thus, even those not displaced

or harmed directly from the disaster event can find themselves vicariously traumatized as a result of their own experiences in the wake of such an event.

## Indirect Impacts

New terms are emerging rapidly describing some of the indirect psychological effects of climate change; eco-anxiety, ecophobia, solastalgia, eco-paralysis, environmental- or eco-grief, and eco-overwhelm representing some of the most common (Albrecht et al., 2007; Gifford & Gifford, 2016; Kevorkian, 2004; Rabinowitz & Poljak, 2003; Sobel, 1996). This offers a clue to the pervasiveness of these issues, but – as yet – very little is understood about these “disorders”: do they represent contemporary mental illnesses and if so, are they phenotypically distinct or would they fall within the same spectrum of the disorder as existing conditions (like panic disorder or generalized anxiety disorder)?

Eco-anxiety, for example, describes the worry experienced as a result of witnessing the slow and (seemingly) irrevocable manifestation of the impacts of climate change, leading to fear, concern, and despair for the individual’s own future, that of their children, and even for later generations (Albrecht, 2011). Ecophobia, according to Sobel (1996, p. 27), is a fear of ecological problems and the natural world such as fear of oil spills, rainforest destruction, whale hunting, acid rain, and the spread of vector-borne diseases, among other examples (Kelsey & Armstrong, 2011); in contrast, a solastalgia is a form of mental or existential distress caused by environmental change (usually in reference to global climate change) (Albrecht et al., 2007; Pollard, 2007). The term combines the Latin word *solacium* (meaning comfort) and the Greek root *algia* (meaning pain) to describe the homesickness that can be felt while one is still at home, but when the environment is changed irreparably (Kelsey & Armstrong, 2011). Similarly, environmental grief is a term to explain the emotional response to the loss of ecosystems (Kevorkian, 2004).

Eco-anxiety has become something of a buzz-word, used with increasing frequency in news and social media, despite the fact that – as yet – there are no formal diagnostic criteria available to diagnose the condition. Given that so little is currently understood about climate-related mental health disorders – we are a distance away from having validated, reliable measures that can be used to detect these “new” disorders; let alone understanding how best to effectively treat and manage them, or to project the anticipated additional burden which these issues may place on mental health care providers globally. Eco-anxiety may not represent psychopathology at all; indeed, perhaps it is an adaptive response to life in an increasingly volatile environment. Undoubtedly, this increasingly pervasive

psychological experience is one that can affect the quality of life of those experiencing it and certainly requires urgent further research to characterize.

One worrying conclusion which can be drawn, however, is that these indirect mental health impacts are likely to be experienced by the greatest proportion of people around the world, as they relate to the psychological impacts of *observing* the impacts of climate change; the effects of which are undoubtedly increasing in magnitude and severity on an almost daily basis. The potential psychological harm of these effects is perhaps best summarized by this alarming statistic (again, from researchers in Australia), who observed that 25% of children surveyed honestly believe the world will end before they get older (Tucci et al., 2007). Similar results were found in a study with children in Germany (Albert et al., 2010), hinting at a real time-bomb of mental health problems for an entire generation. This will inevitably have wide-reaching, negative repercussions in many metrics beyond simply health and well-being.

Growing up with the ever-present threats posed by climate change has been likened to the experiences of children during the Cold War when nuclear war appeared imminent (through accident or pre-emptive strike): school children reacted with despair and loss of motivation (Tucci et al., 2007). There is a legacy impact on mental health associated with living with the imminent threat of war or nuclear Armageddon: with post-traumatic stress disorder and depression commonly noted outcomes (El-Deeb, 2017; Poikolainen et al., 2004). Parallels to climate change are drawn easily, as both involve a clear and direct existential threat. However, although both climate change and the threat of nuclear war involve an imminent threat not just to the survival of a particular individual, communities, or societies, but to the human species (and perhaps life on the planet as a whole); the significant difference between the threats of nuclear war and climate change is the potentially greater range of ways in which citizens have the capacity to take action individually and collectively against climate change (Tucci et al., 2007).

## Psychosocial Impacts

Mental health outcomes after disaster events like Hurricane Katrina have been related both to exposure to the event, and to subsequent displacement, unstable housing, and lack of access to support services and employment (Larrance et al., 2007), indicating some of the psychosocial impacts on mental health. Further, families are vulnerable to an elevated level of child abuse following a disaster, possibly due to increased parental stress and decreased social support (Keenan et al., 2004). The potential psychosocial impacts of climate change are of complexity beyond the

scope of this review, however, notable examples include the complex inter-relation between heat and increased interpersonal violence, as well as violent suicides (Anderson & DeLisi, 2011; Page et al., 2007; Töro et al., 2009); conflicts over increasingly scarce resources (Reuveny, 2008); mass migrations and dislocations (Agyeman et al., 2009); rising levels of pollution associated with increased incidences of mental health issues including depression (Gladka et al., 2018; Khafaie et al., 2019); and chronic environmental stress, loss of livelihoods, loss of property and even loss of cultural identity (Anderson & DeLisi, 2011; Ford et al., 2014; Fritze et al., 2008; Heyward, 2014; Maldonado et al., 2013).

From what little data is currently available on the mental health impacts of climate change, research clearly suggests that anxiety and mood disorders (at all degrees of severity) are a commonly cited consequence of all three forms of impact (direct, indirect, and psychosocial), along with often chronic post-traumatic symptoms, as well as increased incidences of substance abuse, interpersonal conflict, and suicide. Clearly this matters from a humanitarian point of view, but what relationship does mental health have with physical well-being in these increasingly volatile times?

## The Relationship Between Mental and Physical Health

Apart from the clear humanitarian case for understanding and treating the mental health impacts of climate change: the relationship between mental and physical ill-health provides a concerning picture of the wide-reaching and often permanent health implications that early life trauma and mental illness often pose.

There is a long history of research within the field of neuropsychology demonstrating how detrimental early life traumatic experiences can be on adult brain development (Bazak et al., 2009; McEwen, 2003; Perry et al., 1995). For example, pre-natal trauma (a result of excessive levels of the stress hormone cortisol in the mother), or even chronic trauma or mental illness (such as depression and PTSD) during childhood or adolescence can lead to structural abnormalities in brain regions such as the hippocampus and frontolimbic circuitry, resulting in decreases in memory capacity, deficiencies in emotional functioning, as well as abnormalities in threat processing and an increased vulnerability of recurrence of mental illness (Herrington, 2017; Weir et al., 2013). Early life stress can have a profound and permanent impact on the brain architecture of the individual, with research in animal models demonstrating that stress can have detrimental effects on the development of neuroendocrine, neuroanatomical, and

neurobiological functions in the brain (Gómez-González & Escobar, 2009). Similarly concerning; there is further evidence from animal models that traumatic events in early life can impact adult neurogenesis, resulting in a decreased ability for the brain to form new neurons in adulthood (Lemaire et al., 2006; Rizzi et al., 2007). Comparable results have been observed for human children, where adverse early life experiences are correlated with increased vulnerabilities to the development of psychopathologies, age-related cognitive decline, and permanently reduced adult hippocampal neurogenesis, associated with deficiencies in learning, memory, and stress regulation (Herringa, 2017; Korosi et al., 2012).

Psychiatric disorders have been linked to increased risks of somatic illnesses and even premature death (Månsson et al., 2019). For example, individuals with severe mental illnesses like schizophrenia, bipolar disorder, and major depression (the last of which has been demonstrated to be related to climate impacts) appear to be at a greater risk of cardiovascular disease (Correll et al., 2017): likewise, a relationship between high levels of mental distress and an increased risk of dying from cancer has also been observed (Batty et al., 2017). Serious mental illness can reduce life expectancy by 10–20 years, a loss that is equivalent – or worse – than that for heavy smoking (Chesney et al., 2014). Indeed, mood and anxiety disorders have been associated with telomere attrition; a hallmark of cellular aging (Månsson et al., 2019). Thus, psychiatric illness and early trauma can have a demonstrable, detrimental effect on health and well-being even at a cellular level.

Climate change, particularly the direct impacts of such – including extreme disaster events like floods, forest fires, hurricanes, typhoons, and droughts – is continuously delivering extreme environmental stressors into the lives of many millions, thus is could certainly represent a serious and consistent source of prenatal and early life trauma, likely resulting in negative neuropsychological outcomes for a great proportion of those affected. Similarly, it is clear to see how the climate emergency and the indirect and psychosocial mental distress associated with it will contribute to an increase in both mental health burden on healthcare systems, but also on the physical health needs of many around the world as a result of the reciprocal relationship between mental and physical health.

Climate impacts will be an ongoing issue for many generations to come, particularly in light of the fact of inertia in climate systems leading to a delay between cause and effect, thus impacts are set to get considerably worse before they get better (IPCC, 2001; Meehl et al., 2005). The mental health impacts of climate change are already devastating for many, but existing indications of how mental and physical health intersect suggests that climate change represents the greatest threat to health and well-being in

recorded human history. Thus, the mental health impacts of climate change are an urgent, enduring threat to health, even in the face of the other devastations levied by the climate emergency.

Urgent further research is therefore required in order to characterize the nature of climate-related cognitive experiences like eco-anxiety (are they mental health disorders or adaptive responses?), as well as to explore the potential detrimental impacts which living in a constant state of climate-induced stress may be having on cognitive and neurobiological development, physical health, and mental health for individuals around the world. Healthcare systems will need to adapt to cope with unprecedented new demands brought about by climate impacts; thus, developing an understanding of what the additional burdens will be for health and social care across the lifespan will allow for effective forecasting, mitigation, and adaptation of health and social care systems to cope with increasing demand as the effects of climate breakdown march on.

## References

- Abramson, D. M., Park, Y. S., Stehling-Ariza, T., & Redlener, I. (2010). Children as bellwethers of recovery: Dysfunctional systems and the effects of parents, households, and neighborhoods on serious emotional disturbance in children after Hurricane Katrina. *Disaster Medicine and Public Health Preparedness*, 4(S1), S17–S27. <https://doi.org/10.1001/dmp.2010.7>
- Agyeman, J., Devine-Wright, P., & Prange, J. (2009). Close to the edge, down by the river? Joining up managed retreat and place attachment in a climate changed world. *Environment and Planning A*, 41, 509–513. <https://doi.org/10.1068/a41301>
- Albert, M., Hurrelmann, K., & Quenzel, G. (2010). *Shell Jugendstudie. Jugend 2010* [Youth study]. Shell. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-385922>
- Albrecht, G. (2011). Chronic environmental change: Emerging “psychoterratic” syndromes. In I. Weissbecker (Ed.), *Climate change and human well-being: Global challenges and opportunities* (pp. 43–56). Springer. [https://doi.org/10.1007/978-1-4419-9742-5\\_3](https://doi.org/10.1007/978-1-4419-9742-5_3)
- Albrecht, G., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The distress caused by environmental change. *Australasian Psychiatry*, 15(1), S95–S98. <https://doi.org/10.1080/10398560701701288>
- Anderson, C. A., & DeLisi, M. (2011). Implications of global climate change for violence in developed and developing countries. In J. Forgas, A. Kruglanski, & K. Williams (Eds.), *The psychology of social conflict and aggression* (pp. 249–265). Psychology Press.
- Batty, G. D., Russ, T. C., MacBeath, M., Stamatakis, E., & Kivimäki, M. (2017). Psychological distress in relation to site specific cancer mortality: pooling of unpublished data from 16 prospective cohort studies. *British Medical Journal*, 356, j108. <https://doi.org/10.1136/bmj.j108>
- Bazak, N., Kozlovsky, N., Kaplan, Z., Matar, M., Golan, H., Zohar, J., Richter-Levin, G., & Cohen, H. (2009). Pre-pubertal stress exposure affects adult behavioural response in association with changes in circulating corticosterone and brain-derived neurotrophic factor. *Psychoneuroendocrinology*, 34, 844–858. <https://doi.org/10.1016/j.psyneuen.2008.12.018>

- Behere, P. B., & Bhise, M. C. (2009). Farmers' suicide: Across culture. *Indian Journal of Psychiatry*, 51(4), 242–243. <https://doi.org/10.4103/0019-5545.58286>
- Bourque, F., & Willox, A. C. (2014). Climate change: The next challenge for public mental health? *International Review of Psychiatry*, 26(4), 415–422. <https://doi.org/10.3109/09540261.2014.925851>
- Cherry, K. E., Sampson, L., Nezat, P. F., Cacamo, A., Marks, L. D., & Galea, S. (2015). Long-term psychological outcomes in older adults after disaster: Relationships to religiosity and social support. *Aging & Mental Health*, 19(5), 430–443. <https://doi.org/10.1080/13607863.2014.941325>
- Chesney, E., Goodwin, G. M., & Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: A meta-review. *World Psychiatry*, 13(2), 153–160. <https://doi.org/10.1002/wps.20128>
- Confalonieri, U., Menne, B., Akhtar, R., Ebi, K. L., Hauengue, M., Kovats, R. S., Revich, B., & Woodward, A. (2007). Human health. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, & C. E. Hanson (Eds.), *Contribution of Working Group II to the fourth assessment report of the Intergovernmental Panel on Climate Change, 2007* (pp. 391–431). Cambridge University Press. [https://www.researchgate.net/publication/327395828\\_Human\\_health\\_Climate\\_Change\\_2007\\_Impacts\\_Adaptation\\_and\\_Vulnerability\\_Contribution\\_of\\_Working\\_Group\\_II\\_to\\_the\\_Fourth\\_Assessment\\_Report\\_of\\_the\\_Intergovernmental\\_Panel\\_on\\_Climate\\_Change\\_ML\\_Parry\\_OF\\_Canz](https://www.researchgate.net/publication/327395828_Human_health_Climate_Change_2007_Impacts_Adaptation_and_Vulnerability_Contribution_of_Working_Group_II_to_the_Fourth_Assessment_Report_of_the_Intergovernmental_Panel_on_Climate_Change_ML_Parry_OF_Canz)
- Correll, C. U., Solmi, M., Veronese, N., Bortolato, B., Rosson, S., Santonastaso, P., Thapa-Chhetri, N., Fornaro, M., Gallicchio, D., Collantoni, E., Pigato, G., Favaro, A., Monaco, F., Kohler, C., Vancampfort, D., Ward, P. B., Gaughran, F., Carvalho, A. F., & Stubbs, B. (2017). Prevalence, incidence and mortality from cardiovascular disease in patients with pooled and specific severe mental illness: A large-scale meta-analysis of 3,211,768 patients and 113,383,368 controls. *World Psychiatry*, 16(2), 163–180. <https://doi.org/10.1002/wps.20420>
- Costello, A., Abbas, M., Allen, A., Ball, S., Bellamy, R., Friel, S., Groce, N., Johnson, A., Kett, M., Lee, M., Levy, C., Maslin, M., McCoy, D., McGuire, B., Montgomery, H., Napier, D., Pagel, C., Patel, J., de Oliveira, J. A., ... Paterson, C. (2009). Managing the health effects of climate change; Lancet and University College London Institute for Global Health Commission. *Lancet*, 16(373), 1693–1733. [https://doi.org/10.1016/S0140-6736\(09\)60935-1](https://doi.org/10.1016/S0140-6736(09)60935-1)
- Crutzen, P. J., & Stoermer, E. F. (2000). The anthropocene. *IGCP Newsletter*, 41, 12–14.
- Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, 66(4), 265–276. <http://www.igbp.net/download/18.316f18321323470177580001401/1376383088452/NL41.pdf>
- El-Deeb, T. (2017). *The experience and prevalence of PTSD in Palestinian adults living in the Gaza strip*. Brunel University.
- Ford, J. D., Willox, A. C., Chatwood, S., Furgal, C., Harper, S., Mauro, I., & Pearce, T. (2014). Adapting to the effects of climate change on Inuit health. *American Journal of Public Health*, 104(Supplement 3), e9–e17. <https://doi.org/10.2105/AJPH.2013.301724>
- Fritze, J. G., Blashki, G. A., Burke, S., & Wiseman, J. (2008). Hope, despair and transformation: Climate change and the promotion of mental health and wellbeing. *International Journal of Mental Health Systems*, 2, Article 13. <https://doi.org/10.1186/1752-4458-2-13>
- Fryers, T., & Brugha, T. (2013). Childhood determinants of adult psychiatric disorder. *Clinical Practice & Epidemiology in Mental Health*, 9, 1–50. <https://doi.org/10.2174/1745017901309010001>
- Gade, D. M., & Wenger, J. B. (2011). Combat exposure and mental health: the long-term effects among US Vietnam and Gulf war veterans. *Health Economics*, 20(4), 401–416. <https://doi.org/10.1002/hecl.1594>
- Gifford, E., & Gifford, R. (2016). The largely unacknowledged impact of climate change on mental health. *Bulletin of the Atomic Scientists*, 72(5), 292–297. <https://doi.org/10.1080/00963402.2016.1216505>
- Gladka, A., Rymaszewska, J., & Zatonski, T. (2018). Impact of air pollution on depression and suicide. *International Journal of Occupational Medicine and Environmental Health*, 31(6), 711–721. <https://doi.org/10.13075/ijom.1896.01277>
- Gómez-González, B., & Escobar, A. (2009). Altered functional development of the blood-brain barrier after early life stress in the rat. *Brain Research Bulletin*, 79, 376–387. <https://doi.org/10.1016/j.brainresbull.2009.05.012>
- Hayes, K., Blashki, G., Wiseman, J., Burke, S., & Reifels, L. (2018). Climate change and mental health: Risks, impacts and priority actions. *International Journal of Mental Health Systems*, 12, Article 28. <https://doi.org/10.1186/s13033-018-0210-6>
- Herrington, R. J. (2017). Trauma, PTSD and the developing brain. *Current Psychiatry Reports*, 19(10), Article 69. <https://doi.org/10.1007/s11920-017-0825-3>
- Heyward, C. (2014). Climate change as cultural injustice. In T. Brooks (Ed.), *New waves in global justice. New waves in philosophy*. Palgrave Macmillan. [https://doi.org/10.1057/9781137286406\\_8](https://doi.org/10.1057/9781137286406_8)
- Ingle, H. E., & Mikulewicz, M. (2020). Mental health and climate change: Tackling invisible injustice. *The Lancet Planetary Health*, 4, e128–e130. [https://doi.org/10.1016/S2542-5196\(20\)30081-4](https://doi.org/10.1016/S2542-5196(20)30081-4)
- Intergovernmental Panel on Climate Change (IPCC). (2001). *Climate change 2001: IPCC third assessment report*. IPCC Secretariat: Cambridge University Press.
- Keenan, H. T., Marshall, S. W., Nocera, M. A., & Runyan, D. K. (2004). Increased incidence of inflicted traumatic brain injury in children after a natural disaster. *American Journal of Preventative Medicine*, 26(3), 189–193. <https://doi.org/10.1016/j.amepre.2003.10.023>
- Kelsey, E., & Armstrong, C. (2011). Finding hope in a world of environmental catastrophe. In A. E. J. Wals & P. B. Corcoran (Eds.), *Learning for sustainability in times of accelerating change* (pp. 187–200). Wageningen Academic Publishing. <https://doi.org/10.3920/978-90-8686-757-8>
- Kevorkian, K. (2004). *Environmental grief: Hope and healing* (Doctoral dissertation). Union Institute and University. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.561.289&rep=rep1&type=pdf>
- Khafaie, M. A., Sayyah, M., & Rahim, F. (2019). Extreme pollution, climate change, and depression. *Environmental Science and Pollution Research*, 26(22), 22103–22105. <https://doi.org/10.1007/s11356-019-05727-5>
- Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Omigbodun, O., Rohde, L. A., Srinath, S., Ulkuer, N., & Rahman, A. (2011). Global mental health 2: Child and adolescent mental health worldwide: evidence for action. *The Lancet*, 378(9801), 1515–1525. [https://doi.org/10.1016/S0140-6736\(11\)60827-1](https://doi.org/10.1016/S0140-6736(11)60827-1)
- Korosi, A., Naninck, E. F. G., Oomen, C. A., Schouten, M., Krugers, H., Firzsimons, C., & Lucassen, P. J. (2012). Early-life stress mediated modulation of adult neurogenesis and behaviour. *Behavioural Brain Research*, 227(2), 400–409. <https://doi.org/10.1016/j.bbr.2011.07.037>
- Lambert, S. F., & Lawson, G. (2012). Resilience of professional counselors following hurricanes Katrina and Rita. *Journal of Counselling and Development*, 91(3), 261–268. <https://doi.org/10.1002/j.1556-6676.2013.00094.x>

- Larrance, R., Anastario, M., & Lawry, L. (2007). Health status among internally displaced persons in Louisiana and Mississippi travel trailer parks. *Annals of Emergency Medicine*, 49(5), 590–601. <https://doi.org/10.1016/j.annemergmed.2006.12.004>
- Lemaire, V., Lamarque, S., Le Moal, M., Piazza, P.-V., & Abrous, D. N. (2006). Postnatal stimulation of the pups counteracts prenatal stress-induced deficits in hippocampal neurogenesis. *Biological Psychiatry*, 59, 786–792. <https://doi.org/10.1016/j.biopsych.2005.11.009>
- Lewis, S. L., & Maslin, M. A. (2015). Defining the anthropocene. *Nature*, 519, 171–180. <https://doi.org/10.1038/nature14258>
- Maldonado, J. K., Shearer, C., Bronen, R., Peterson, K., & Lazrus, H. (2013). The impact of climate change on tribal communities in the US: Displacement, relocation, and human rights. *Climatic Change*, 120, 601–614. <https://doi.org/10.1007/s10584-013-0746-z>
- Månsson, K. N. T., Lindqvist, D., Yang, L. L., Svanbord, C., Isung, J., Nilsson, G., Bergman-Nordgren, L., El Aloui, S., Hedman-Lagerlöf, E., Kraepelin, M., Höglström, J., Andersson, G., Boraxbekk, C.-J., Fischer, H., Lavebratt, C., Wolkowitz, O. M., & Furmark, T. (2019). Improvement in indices of cellular protection after psychological treatment for social anxiety disorder. *Translational Psychiatry*, 9(1), Article 340. <https://doi.org/10.1038/s41398-019-0668-2>
- McEwen, B. S. (2003). Early life influences on life-long patterns of behaviour and health. *Mental Retardation and Developmental Disabilities Research Reviews*, 9, 149–154. <https://doi.org/10.1002/mrdd.10074>
- McFarlane, A. (2015). The impact of war on mental health: Lest we forget. *World Psychiatry*, 14(3), 351–353. <https://doi.org/10.1002/wps.20253>
- McMichael, A. J., Woodruff, R. E., & Hales, S. (2006). Climate change and human health: Present and future risks. *The Lancet*, 367, 859–869. [https://doi.org/10.1016/S0140-6736\(06\)68079-3](https://doi.org/10.1016/S0140-6736(06)68079-3)
- Meehl, G. A., Washington, W. M., Collins, W. D., Arblaster, J. M., Hu, A., Buija, L. E., Strand, W. G., & Teng, H. (2005). How much more global warming and sea level rise? *Science*, 307(5716), 1769–1772. <https://doi.org/10.1126/science.1106663>
- Monastersky, R. (2015). Anthropocene: The human age. *Nature News*, 519, 144–147. <https://doi.org/10.1038/519144a>
- Morina, N., Wicherts, J. M., Lobbrecht, J., & Priebe, S. (2014). Remission from post-traumatic stress disorder in adults: A systematic review and meta-analysis of long term outcome studies. *Clinical Psychology Review*, 34(3), 249–255. <https://doi.org/10.1016/j.cpr.2014.03.002>
- Page, L. A., Hajat, S., & Kovats, R. S. (2007). Relationship between daily suicide counts and temperature in England and Wales. *British Journal of Psychiatry*, 191, 106–112. <https://doi.org/10.1192/bjp.bp.106.031948>
- Page, L. A., Hajat, S., Kovats, R. S., & Howard, L. M. (2012). Temperature-related deaths in people with psychosis, dementia and substance misuse. *The British Journal of Psychiatry*, 200(6), 485–490. <https://doi.org/10.1192/bjp.bp.111.100404>
- Page, L. A., & Howard, L. M. (2010). The impact of climate change on mental health (but will mental health be discussed at Copenhagen?). *Psychological Medicine*, 40, 177–180. <https://doi.org/10.1017/s0033291709992169>
- Perry, B. D., Pollard, R. A., Blackley, T. L., Baker, W. L., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and “use-dependent” development of the brain: How “states” become “traits”. *Infant Mental Health Journal*, 16(4), 271–291.
- Plana-Ripoll, O., Pedersen, C. B., Holtz, Y., Benros, M. E., Dalsgaard, S., de Jonge, P., Fan, C. C., Degenhardt, L., Ganna, A., Greve, A. N., Gunn, J., Iburg, K. M., Kessing, L. V., Lee, B. K., Lim, C. C. W., Mors, O., Nordentoft, M., Prior, A., Roest, A. M., ... McGrath, J. J. (2019). Exploring comorbidity within mental disorders among a Danish national population. *JAMA Psychiatry*, 76(3), 259–270. <https://doi.org/10.1001/jamapsychiatry.2018.3658>
- Poikolainen, K., Aalto-Setälä, T., Tuulio-Henriksson, A., Marttunen, M., & Lönnqvist, J. (2004). Fear of nuclear war increases the risk of common mental disorders among young adults: A five-year follow-up study. *BMC Public Health*, 4, Article 42. <https://doi.org/10.1186/1471-2458-4-42>
- Pollard, G. (2007). Solastalgia: The distress caused by environmental change. *Australasian Psychiatry*, 15, S95–S98. <https://doi.org/10.1080/10398560701701288>
- Rabinowitz, P. M., & Poljak, A. (2003). Host – environment medicine: A primary care model for the age of genomics. *Journal of General Internal Medicine*, 18, 222–227. <https://doi.org/10.1046/j.1525-1497.2003.11101.x>
- Reacher, M., McKenzie, K., Lane, C., Nuchols, T., Kedge, I., Iversen, A., Hepple, P., Walter, T., Laxton, C., Simpson, J., & Lewes Flood Action Recovery Team. (2004). Health impacts of flooding in Lewes: A comparison of reported gastrointestinal and other illness and mental health in flooded and non-flooded households. *Communicable Disease and Public Health*, 7(1), 39–46.
- Reef, J., Diamantopoulou, S., van Meurs, I., Verhulst, F. C., & van der Ende, J. (2009). Child to adult continuities of psychopathology: A 24-year follow-up. *Acta Psychiatrica Scandinavica*, 120(3), 230–238. <https://doi.org/10.1111/j.1600-0447.2009.01422.x>
- Reef, J., Diamantopoulou, S., van Meurs, I., Verhulst, F. C., & van der Ende, J. (2010). Predicting adult emotional and behavioral problems from externalizing problem trajectories in a 24-year longitudinal study. *European Child & Adolescent Psychiatry*, 19, 577–585. <https://doi.org/10.1007/s00787-010-0088-6>
- Reef, J., Diamantopoulou, S., van Meurs, I., Verhulst, F. C., & van der Ende, J. (2011). Developmental trajectories of child to adolescent externalizing behavior and adult DSM-IV disorder: Results of a 24-year longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, 46(12), 1233–1241. <https://doi.org/10.1007/s00127-010-0297-9>
- Reef, J., van Meurs, I., Verhulst, F. C., & van der Ende, J. (2010). Children's problems predict adults' DSM-IV disorders across 24 years. *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(11), 1117–1124. <https://doi.org/10.1016/j.jaac.2010.08.002>
- Reuveny, R. (2008). Ecomigration and violent conflict: Case studies and public policy implications. *Human Ecology*, 36, 1–13. <https://doi.org/10.1007/s10745-007-9142-5>
- Ritchie, H., & Roser, M. (2019). *Mental Health*. <https://ourworldindata.org/mental-health>
- Rizzi, S., Bianchi, P., Guidi, S., Ciani, E., & Bartesaghi, R. (2007). Neonatal isolation impairs neurogenesis in the dentate gyrus of the guinea pig. *Hippocampus*, 17, 78–91. <https://doi.org/10.1002/hipo.20247>
- Ruddiman, W. F. (2013). The anthropocene. *Annual Review of Earth and Planetary Sciences*, 41, 45–68. <https://doi.org/10.1146/annurev-earth-050212-123944>
- Singhal, S. (2019). Early life shocks and mental health: The long-term effect of war in Vietnam. *Journal of Development Economics*, 141, Article 102244. <https://doi.org/10.1016/j.jdevco.2018.06.002>
- Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart in nature education*. Orion Society.
- Steinert, C., Hofmann, M., Leichsenring, F., & Kruse, J. (2015). The course of PTSD in naturalistic long-term studies: High variability of outcomes. A systematic review. *Nordic Journal of Psychiatry*, 69(7), 483–496. <https://doi.org/10.3109/08039488.2015.1005023>

- Thompson, R. C., Moore, C. J., vom Saal, F. S., & Swan, S. H. (2009). Plastics, the environment and human health: Current consensus and future trends. *Philosophical Transactions of the Royal Society*, 364, 2153–2166. <https://doi.org/10.1098/rstb.2009.0053>
- Tőro, K., Dunay, G., Bartholy, J., Pongrácz, R., Kis, Z., & Keller, E. (2009). Relationship between suicidal cases and meteorological conditions. *Journal of Forensic and Legal Medicine*, 16(5), 277–279. <https://doi.org/10.1016/j.jflm.2008.12.015>
- Tucci, J., Mitchell, J., & Goddard, C. (2007). *Children's fears, hopes and heroes: Modern childhood in Australia*. Australian Childhood Foundation.
- United Nations. (n.d.). *Global issues: Climate change*. <https://www.un.org/en/sections/issues-depth/climate-change/>
- Weems, C., & Banks, D. (2015). Severe stress and anxiety disorders in adolescence: The long-term effects of disasters. In K. Cherry (Ed.), *Traumatic Stress and long-term recovery* (pp. 177–194). Springer. [https://doi.org/10.1007/978-3-319-18866-9\\_10](https://doi.org/10.1007/978-3-319-18866-9_10)
- Weir, J. M., Zakama, A., & Rao, U. (2013). Developmental risk I: Depression and the developing brain. *Child and Adolescent Psychiatric Clinics of North America*, 21(2), 237–259. <https://doi.org/10.1016/j.chc.2012.01.004>
- Weiss, M. G., Saraceno, B., Saxena, S., & van Ommeren, M. (2003). Mental health in the aftermath of disasters: Consensus and controversy. *The Journal of Nervous and Mental Disease*, 191(9), 611–615. <https://doi.org/10.1097/01.nmd.0000087188.96516.a3>
- World Health Organization. (2018, February). *Climate change and health* (fact sheet). <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>
- World Health Organization. (2019). *Monitoring mental health systems and services in the WHO European Region: Mental Health Atlas, 2017*. WHO. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0009/396765/EMH-Atlas-6.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0009/396765/EMH-Atlas-6.pdf?ua=1)
- World Health Organization. World Meteorological Organization. (2012). *Atlas of health and climate*. WHO Press. <https://www.who.int/globalchange/publications/atlas/en/>
- Zalasiewicz, J., Waters, C. N., Ivar do Sul, J. A., Corcoran, P. L., Barnosky, A. D., Cearreta, A., Edgeworth, M., Gatuska, A., Jeandel, C., Leinfelder, R., McNeill, J. R., Steffen, W., Sumerhayes, C., Waprich, M., Williams, M., Wolfe, A. P., & Yonan, Y. (2016). The geological cycle of plastics and their use as a stratigraphic indicator of the anthropocene. *Anthropocene*, 13, 4–17. <https://doi.org/10.1016/j.ancene.2016.01.002>

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# Climate Change, Migration, Urbanization, and the Mental Health of Children at Risk in the European Union

## A Discussion of the Need for Large Scale Interventions

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**Abstract:** Psychologists face a growing mental health challenge, calling for innovative large-scale interventions. World population growth and industrialization are causing climate change, forcing families to migrate into rapidly expanding cities, and suffer in refugee camps. European in-country migration from rural villages adds to urban growth. This rapid shift in adaptation between uprooted families and their new environments tends to increase the risk of family system disorganization, poor child attachment, and child abandonment. The paper presents demographic data and projections concerning the effects of urban life on childbirth frequency, marital constancy, how early in life children are cared for outside the home, and the placement of children in Alternative Care. European Federation of Psychologist's Association initiatives addresses new questions. How can research recommendations be applied in cross-professional interventions? Can e-learning open new channels for dissemination? The author presents how a European Union Lifelong Learning grant project in 10 member countries later developed into the Fairstart Foundation's partnerships with world NGOs and government agencies. Five hundred twelve partner staff in 26 countries have been educated in 6-month online classrooms and trained the foster parents and group home staff of some 40,000 children in attachment-based care. Lessons learned for interventions are discussed, to inspire further developments.

**Keywords:** climate change, mental health, intervention, child development, blended learning

This text attempts to understand how the mental health of many European families and children is affected by massive migration and urbanization; a relocation caused by industrialization and overpopulation, amplified by the long-term effects of climate change (International Displacement Monitoring Centre [IDMC], 2020). Second, it focuses on family stress in the growing urban environments (United Kingdom Forum for International Education and Training [UKFIET], 2019; United Nations Children's Fund [UNICEF], 2017). In particular, the one million children in Europe who grow up in foster families, orphanages, and refugee camps. Third, the text reflects on how psychological knowledge can be applied by the European Federation of Psychologist's Associations (EFPA) members to reach large audiences. An example of upscaling is presented, based on partnerships with local non-governmental organizations (NGOs) and government agencies, utilizing digital media for dissemination.

### The Scenario: Who Will Be Our Future Target Groups?

Identifying future target groups for mental health interventions requires an idea about where European populations experience high levels of stress now and in the future. The general contour of mental health challenges can be summed up by statistical data and their projections, showing us where we are, and who will need our services. These data suggest a Europe with a precious minority of children, a massive weight of long-living elderly, and a flowing stream of inter-continental migration – all gathering in major cities.

The amazing ability of human beings to adapt to new environments has caused us to populate the Earth, to the point where our minds are no longer shaped by the need for survival under the shifting forces of nature. Today, the material world is shaped by us, and dangerously so, perhaps to the point of extinction already seen in many other



species. The tidal wave of populating and transforming the most remote corners of the world is now receding: According to World Bank (2020), global and European Union (EU) birth rates are plummeting (except in a few developing countries), and most populations are only upheld due to prolonged lifespan and migration.

Around 2050, this wave is expected to flatten, leaving nations with a major group of the elderly, and only a small minority of today's children and youth to drive society (United Nations Department of Economic Affairs [DESA], 2020). In the wake of overpopulation, we already experience intercontinental migration caused by an unstable climate, poverty, and economic inequality; and wars and conflicts over still more scarce natural resources such as water, forests, and arable land. Furthermore, the industrialization of agricultural labor has caused in-country migration from thousands of villages, creating another global trend: that of urbanization. Again by 2050, two-thirds of the European population will live in a major city, compared to only half in 1950, and a mere 5% in 1840 (Statistical Office of the European Communities [Eurostat], 2020). Human mobility and densely populated cities create an ideal habitat for recurrent airborne viruses, further stressing social networks and the economy at all levels (Aguilar et al., 2020).

In Europe – as in other parts of the world – the combined effect of these waves has formed millions of refugees, immigrants, and former farmer families, struggling to adapt to the new multicultural environment in densely populated cities, and in refugee camps at the borders of the EU. Under the pressure of this sudden change, the very political coherence of the union tends to divide between nationalist agendas and populist policies, opposed by efforts to uphold international conventions, legal and human rights, and democratic institutions. The present EU standstill will most likely define the operational space also for the European Federation of Psychologist's Associations (EFPA) work, including options for cross-national intervention programs.

## Why Is Mental Health at the Top of Our Agenda?

The abovementioned developments point unanimously to the importance of promoting the mental health of Europe's growing number of urban families; to promote education and care systems for the still smaller population of children and youth. Like nations rewarded childbirths after the 1st World War's extinction of millions of father soldiers, governments are slowly beginning to realize and respond to a future lack of workforce. For example, Hungary's 2019 Family Protection Action Plan offers lifelong income, tax-exempt, and other incentives for families with four or more

children (Europe Economy, 2019). The country's need for childbirths is intensified by an immigration ban, as part of this government's nationalist agenda. In other countries, immigration compensates for reduced fertility rates. Several governments are concerned about the combination of fewer children and rising economic inequality. For example, increasing concern in Denmark spurred a € 134,000,000 government investment in "The first 1000 days" intervention, focusing on care in low-income families (Boerne-og Undervisningsministeriet [BUM], 2020).

In particular, interventions must target Europe's one million children (1% of the child population) living in orphanages and foster homes, and immigrant children (Eurochild, 2009). The risk of placement in alternative care increases with economic inequality. Lockdowns created by the COVID-19 pandemic will most likely cause even more parents to give up parenting due to poverty. For one example, the CEO of a Nepalese NGO reported incidents to the author, that several street-vendor mothers who lost income have killed their children and committed suicide after lockdowns (Online conversation with CEO Ghimire, B., September 24th, 2020).

As a member of Eurochild's task force group for children in alternative care, the author also sees a growing concern in the area. The Eurochild organization represents hundreds of care organizations and now lobby to make European Parliament invest in eradicating child family poverty. Similar concerns are raised by the author's colleagues in the EFPA's task force group for Promotion and Prevention. These priorities offer a window of opportunity for the EFPA member association's mental health initiatives.

## Why Is Urbanization a Risk for Family and Child Mental Health?

The research presents a paradox regarding urban health. While the physical health of urban populations tends to improve in many ways – expressed by prolonged lifespan, reduced child mortality, and other progressions – they also tend to destabilize the mental health and well-being of families, children, and youth. Several impacts add up to weaken the foundations of family care systems and their social cohesion. They threaten the continuity of child/parent (or caregiver) relations, a vital prerequisite for child attachment, mental health, and learning capacity later in life.

One stressor for former village families and migrants is the shock produced by the sudden shift to the urban or suburban environment, making traditional family mindsets and care practices obsolete. For thousands of years, care was embedded in small agricultural villages. Organized in the extended family clan and protecting each other, members were united by lifelong joint cooperation for crop production. In this period, children were not separated from

parents and peers before starting school. Ensuring survival by having many children was paramount, given the high infant mortality rates of the day. The continuity of child care was ensured by extended family mindsets, religion, and social norms. For example, the African Kefala tradition obliges any relative to take in the children if parents die or are unable to care, but this system is deteriorating due to urbanization. Levine et al. (1962) coined the breakdown of the extended family following urbanization as “social disorganization,” and documented the subsequent lack of educational success for migrant children.

In urban society, the long-term development of attachment in children is at risk due to still earlier separations in the daytime, as both parents are away for education and work. In Denmark, 9 out of 10 infants age 1–3 are in daycare or kindergarten for 30 hr a week, and the average job length of pedagogues and teachers has fallen dramatically. From an attachment point of view, children experience still earlier separations and short-term relations, a risk for their ability to form deep social and emotional bonds. For Danish immigrants, daycare and kindergarten attendance are now mandatory, and immigrant mothers who traditionally would be at home with 3–6 children are forced to work and join education at the risk of losing subsidies. While this policy intends quick integration, the sudden shift from extended family mindsets and role distribution will likely induce a traumatizing effect on many. For example, the author interviewed a 40-year old illiterate immigrant mother from the Anatolian High Plains in Turkey. When asked about her son’s age (she had 10 children), she paused for a long while, and then replied “he was born in the year of the great drought.” She was devastated by the law-enforced practice that she now had to separate from her children in the daytime and leave home every day to learn Danish.

Also, continuity in attachment is affected by the circumstance that EU parents neither live nor stay together as long as before. Global and EU divorce rates increase and happen still earlier in marriage, especially in low-income families. Also, more parents live alone (1/3 in Denmark), or are unmarried. From 1965 to 2016, the EU marriage rate declined to half while the divorce rate doubled, most frequent in Northern Europe (Eurostat, 2019). Parental divorce demonstrates a negative effect on children’s life-long educational achievements. A Danish longitudinal study of 52,000 children born in 1980 finds that rich and middle-class parents divorce later and much less frequently than low-income parents. For both groups, the child’s educational level at age 32 was doubled if parents stayed together (Holm, 2014). One study survey indicates children of divorced parents to be more exposed to parental conflicts, the absence of one parent, and traumatic experiences of broken attachments and peer relations (Anderson, 2014).

The high COVID-19 frequency in urban settings caused by the increasing population density also increases household conflicts, with many secondary negative effects on children’s development (Behar-Zusman et al., 2020).

Summing up mental health risk factors, climate change, and subsequent urban living seems to weaken protective family networks and cause elevated parental stress. Children tend to be separated from parents in the daytime from an early age during their formative first years and experience more conflicts and interruptions in their attachments with parents and other important caregivers. How is their long-term mental health affected?

## Child and Youth Mental Health in Europe

The rapid alterations in extended family continuity, mutual protection, and coherence probably account much for the growing number of children and youth with unstable mental health. The amplifying effect of lockdowns is summed up in the Eurochild Report “Growing up in Lockdown – Europe’s Children in the Age of COVID-19” (Eurochild, 2020). EU children in alternative care display children’s general mental health problems in extremis, when all negative impacts mentioned coincide to expel them from their families: poverty, severe parental stress, and mental disorders, and reduced contacts with peers, caregivers, and teachers.

### How Can We Understand the Mental Stress of Children and Youth in Alternative Care?

In the author’s view, the emotional, behavioral, and learning problems of children in care can – to a large extent – be interpreted as natural responses to traumatic separations, disturbed attachments, and the lack of a secure and long-term childhood base.

Summing up demographic EU projections, a strategic goal for EFPA Associations could be to contribute to answers: how can we inspire politicians and communities to support parents, and form small social units where children can grow up with stable, long-term relations and quality care? And, how can we prevent child abandonment, promote family reunions, and advise the best care for the 1% group in alternative care, whose future mental health depends on public and private alternative care? These reflections generate the next question: how to organize large-scale interventions to improve child mental health? It also raises the question of whether our traditional settings for therapy and methods for the application must be reconsidered to meet the challenge.

## Designing a European Intervention

The author first debated future risk factors for child attachment caused by demographic change in a handbook for attachment disorder therapy (Rygaard, 2006). Due to many language versions of the book, lectures and studies of alternative care systems on all continents ensued, creating a network of researchers in the process. The ongoing analysis in dialogs with this network became the author's basis for a project to design a low-cost large-scale intervention. Inspired by these discussions, the author suggested cooperation with the Danish School of Health Care in Aarhus. In two EU Lifelong Learning projects 2008–2013, NGOs and government agencies were invited.

Based on recommendations from the network of researchers, two 6-month instructor staff educational courses were developed, for the foster family and group home staff training, respectively. For students, 15 group training sessions were designed and made free online, covering attachment practices from infancy to leaving care. These sessions were used by students during their education to train either local groups of foster families or group home staff in attachment-based daily care practices. Program versions were developed in English, German, and partner languages: Danish, Latvian, Polish, Russian, Romanian, Bulgarian, Turkish, Spanish, Catalan, Greek, and Italian. Two pre- and post-training questionnaires were designed to assess caregiver workplace satisfaction, learning and cooperation, and child development. These and the feedback process showed positive outcomes. Based on the project, the European Commission requested a report recommending future EU standards for education and training in the field of alternative care. Further demands from countries later caused the author to co-found the Fairstart Foundation ([www.fairstartfoundation.com](http://www.fairstartfoundation.com)) in 2016, to act as a transformational bridge of knowledge and experience between researchers, care organizations, and the daily caregivers of placed children.

## The Organization of Interventions – The Legacy of Robert Roe

The Fairstart Foundation's mission was much inspired by late EFPA president Robert Roe's 2011 visions for our profession in his address to the British Psychological Society (BPS, 2011):

I see two major ways to better meeting the needs of Europe in the future. One is to develop new and comprehensive solutions for societal problems, based on collaboration among psychologists and with other professions. A key example is the case of mental

health, where psychotherapy alone will never be able to meet the huge and growing demand for prevention and intervention. The second is to share the knowledge of psychology with others in order for them to create solutions. In a digital world where knowledge can no longer be bounded and protected, and where borders between disciplines become increasingly blurred (e.g., health science, cognitive science), knowledge must be given away (as G. Miller said in 1969), or it will simply be taken away. (p. 1)

At the 2011 Congress in Istanbul, Roe further elaborated his vision for the organization's future in his keynote "Does Europe need Psychologists?" (Roe, 2011). Roe kindly recommended the Fairstart project as an example in this line of thinking:

Some have provided examples of what could be achieved by taking this direction. An inspiring example is the "Fairstart project," initiated by Danish psychologist Niels Peter Rygaard and funded by the European Union, which is dedicated to the training of orphans' caregivers. (p. 253)

Roe's vision suggested a new role for psychologists, acting as intermediates between cross-professional groups of researchers, organizations, and daily caregivers and teachers in need of practices, to improve attachment and mental health. In the author's experience, building this professional identity is a complex one. Without belonging to any of the three groups, this position requires competence in balancing the very different success criteria and norms between academic circles, the agendas and financial considerations of care organizations, and the down-to-earth learning needs of users – foster parents, teachers, caregivers, and so forth. Also, knowledge of advances in e-learning systems for dissemination is required.

## Example of an Intermediary Psychologist Innovation

At the same conference, an ingenious example of this intermediary position was given in a conversation with Turkish Psychologist Association member Nedret Öztan, Department of Psychology, Bilkent University. In the aftermath of a major earthquake counting 17,000 deaths, she partnered with Red Cross and founded a cross-professional tent camp in the middle of the devastation. From this base, psychologists supported school teachers as key agents in recovery for parents and children, due to their intimate knowledge of all local families. She received many requests from colleagues to volunteer for individual therapy and accepted this on the condition that they started by working

for 3 months in the camp. Not being a medical doctor, she had to establish her position, and discuss approaches with psychiatrists. This intervention resulted in several handbooks in disaster management, and the design of an internationally used intervention (Öztan & Gözden, 2009). A further inspiration in how to manage cross-professional cooperations.

## How Can Best Care Practices Be Extracted From Research?

For the global Fairstart program contents, researchers from Europe, the US, Latin America, and Asia were invited, to ensure cultural diversity in care recommendations. In a database, their contributions were categorized in infant brain growth stimulation, caregiver-child attachment and relations work, caregiver group dynamics, and organizational studies. Recommended care practices from each category were derived, and a meta-analysis was performed for cross-disciplinary coherence between recommended care practices. For example, this enabled the importance of infant physical stimulation for brain activity to be positively linked to secure caregiver behavior, as described in attachment and relational research (Whetten et al., 2003). Or, individual caregiver ability to build secure child and youth relations was shown to depend much on workplace satisfaction, and the quality of caregiver group dynamics (The St. Petersburg-USA Orphanage Research Team [SRDC], 2008). This knowledge was transformed into blended learning educations and group training programs (Rygaard, 2014).

## A Tool for Dissemination: Blended Learning Online Classrooms

With assistance from IT experts at Aarhus University in Denmark, a 6-month online classroom was developed on the edX educational platform, designed by Harvard University and Massachusetts Institute of Technology for university educations (HarvardX, 2020). Eight four-hour modules contain texts and video tutorials cover attachment-, learning-, and group development theory, and a summary of the research of the topic in question. In each module, a student prepares the training of a local group of caregivers in eight 3-hour sessions, using a portable program flash drive. After each session, students perform peer feedback online, reflect on questions and feedback from caregivers, guided by daily feedback and online support from Fairstart. Pre- and post-program questionnaires for caregiver well-being and each child's development are scored and registered electronically, for follow-up and research purposes.

## Designing the Interface Between Research and Local Care Cultures

Local acceptance of interventions depends on respect for and integration with the culture in question (McCall et al., 2014; Rygaard, 2016). For this reason, each educational curriculum is founded on an initial research travel with the partner organization. Local key stakeholders, caregivers, and children are interviewed and video-recorded to align programs with local cultural traditions, needs, and cultural care strengths. Daily care situations are videoed, and all materials become part of the program, once the partner has translated all sessions into the local language(s). At a 3-day local seminar, 20–25 partner staff are introduced to theory and practice in their ensuing 6-month online class curriculum. Once graduated, instructors can train any number of groups and combine sessions on additional care topics, according to needs. All language versions of the sessions are free at Fairstart's site.

## Examples of Long-Term Partnerships

Each partnership generates new training topics and target groups. In cooperation with the NGO React Indonesia, students from secular, Muslim, and Christian orphanages were educated to train caregiver staff groups with Bahasa language sessions. Psychiatry professor Kamikado Kazuhiro of Nagano University visited Denmark and translated two versions in Japanese. With SOS Children's Villages (SOSCV), 50 staff in Zanzibar, Tanzania, Kenya, and Rwanda were educated and trained the foster and kinship families of so far 5,000 children with versions in English, Swahili, and Kinyarwanda.

Electronic registration of pre- and post questionnaires for 380 East African foster children demonstrated 20% increase in child mental health, as reported by foster parents, assisted by instructors (Fairstart Foundation, 2019). Variables were: the child's general emotional state, tendency to have or seek peer friendships, frequency of exploration behavior, tendency to seek comfort, advice, and protection from the caregiver, and frustration tolerance in challenging tasks. At present, an external effect study of outcomes and questionnaire validity is planned with European and East African researchers. Rwandan government now requested SOSCV to apply Fairstart for government staff across this country, as the COVID-19 lockdown has tripled the number of street children.

At the request of the Greenland government, a cross-professional education for school teachers, the group- and school-home staff has been implemented, as well as a foster family instructor education, in Danish and Inuit versions. A project in Spain and Latin America for Spanish versions is being planned with an NGO in Navarra, Spain.

In total, 512 partner staff in 26 countries have graduated and trained the caregiver groups of some 40,000 children and youth for 6 months each. Partners report an 80% cost reduction, saving expenses for traditional seminars and travels. Due to the lockdown, Fairstart now designs and applies virtual start-up seminars.

## Strategic Project Management in Small IT-Based Organization

The daily integration of project tasks and territories in this intervention is complex, multicultural, and further challenged by the modest size of e-learning based organizations. This type of organization can have considerable outreach and influence but does not necessarily require a large staff – in the case of Fairstart, four staff and a volunteer board manage a multitude of tasks and relations with partners who contribute to, upscale and implement the designs. Two organizational theories have been useful for project management: Jacques' and Cason's Organizational Strata Model (Jacques, 1998), and Ralph Stacey's Emergent Organizational approach (Stacey, 2003).

In short, Jacques' model assumes that regardless of its formal levels, a global organization must have a hierarchy of five operational levels (strata), defined by two variables: the typical time perspective and the complexity/predictability of the task at hand. At the top of the strata hierarchy, 5-year perspectives and rapid adjustment to shifts in international policies and trends are important. At the level of say, a daily leader of an orphanage or a Fairstart instructor-student, a one-year planning perspective is relevant, and tasks are more guided by instructions, routines, handbooks, etc. At the level of a caregiver in a group home or a Polish foster mother with 10 children, daily routines are even more predictable and require a shorter time span overview. The Strata model is extremely useful in creating a clear awareness in the Fairstart team, setting agendas, and role distribution for the various tasks in question.

Stacey's concept of emergence defines the organization – not by its formal statements and written plans – but as constantly unfolding at the moment by dialogs between those involved:

“It is useful to think of an organization as a pattern of conversation, and organization and managing as responsive processes of relation in conversation. How people talk, what pattern that talk displays, is the primary importance to what the organization is and what happens to it.”

In this understanding, the efficiency and development of an organization depend on the quality of conversations and dialogues. This concept pervades and creates Fairstart –

whether it concerns the dialog between an instructor and a caregiver group about how to practice secure care or handle teenagers, brainstorm with a partner organization, or ongoing communications with researchers and professionals. In the process, many basic professional assumptions call for reconsideration.

## How Do Large Scale Projects Challenge Our Basic Concepts?

EFPA's development – from local to international theories and research, cross-professional cooperations and interventions – is not only an adventure into unknown territory. This journey also creates repercussions from recipients that inspire us to revise our own mindsets and theoretical assumptions, illustrated in these examples:

Bowlby's attachment theory was formed in the post-war period, where mother-child attachment was predominant. While preserving the invaluable concepts of attachment theory, the mother/child setting required expansion in order to train groups of non-parental caregivers. As a social-psychological addition, the concept of the “Secure Caregiver Group” was formed. Instructors are educated to enhance a group dynamic state, where instructors and participants can freely share experiences of separations and coping strategies from their own childhood. This process aims to enhance a common cultural understanding of how to cope with attachment and loss. This concept has proved particularly important in indigenous cultures. For example, in Rwanda in the light of the former massacre. Or, in the Greenland Inuit groups where the breakdown of the hunter-gatherer culture has caused massive trauma and child abuse, and 7% of the child population are in alternative care. These repeated dialogs in caregiver groups often produce a transgression from individual trauma, toward a common awareness and development of improved coping strategies to overcome the loss. Also, toward a more empathic stance and understanding of the problematic behavior of the children in their care, promoting a shift in caregivers to see themselves as emotional attachment figures. Moreover, research indicates a connection between mentalizing dialogs and such narratives, enhancing resolved caregiver attachment style (McCabe, 2011; Dallos, 2004).

Second, psychiatric illness in children is recognized in the program but is not in focus, as psychiatric services are often unavailable, and diagnostic categories are unknown in many countries (Braddick et al., 2009). New causality models of mental problems are emerging, interpreting individual personality function as adaptations to adverse environmental experiences. For example, a group of

colleagues in the British Psychological Society are developing an alternative to the much-debated ICD and DSM diagnostic systems. The agenda of their Power Threat Meaning Framework is to work “towards the identification of patterns in emotional distress, unusual experiences, and troubled or troubling behavior, as an alternative to functional psychiatric diagnosis” (Johnstone et al., 2018). Funded by the Rights, Equality and Citizenship (REC) Programme of the European Union, SOS Children’s Villages now implement trauma-informed therapy for children in care worldwide, as do other organizations in collaboration with universities (SOS Children’s Villages, 2020). These are examples of how the interplay between theory and practices creates innovations. Other examples are a host of online-based programs, caused by the COVID-19 lockdowns.

## Lessons Learned for Future EFPA Inspirations

European society’s accelerating demographic change appears to inspire new family care systems, but also to happen at a speed causing elevated levels of stress and trauma. Looking back, the overall effect of Fairstart intervention continues the classic function of psychology: to mediate the relation between the individual and the ever-changing environment. In this case, helping caregivers restructure and adapt their parenting mindsets and care practices to live in the new urban environments. In many countries, traditional care practices fail, and valuable traditional elements are lost because of difficulties in bridging the gap between past and present – such as how to find new ways of exercising authority. One feedback from an African foster mother captures the essence of sharing caregiver challenges: “Before, when my teenagers were disobedient, I used to slap them with a bamboo stick, and they would run away. Now I have learned in the training that it is much better to be calm and sit down and talk with them. We are like one big family now. I am a better mother.”

For EFPA, Roe’s remarks – that we should share information with other professions and organizations freely – remain as current as ever. This agenda is now universally formalized in UN Millennium goals as “Global partnerships for development,” and to “Ensure environmental sustainability.” These are two sides of the same coin, united in our efforts to improve the mental health of the next generation. Child mental health is perhaps the most important prerequisite for our future, expressed also in Fairstart’s motto: “Help Children Save the World.”

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## References

- Aguilar, J., Bassolas, A., Ghoshal, G., Hazarie, S., Kirkley, A., Mazzoli, M., Meloni, S., Mimar, S., Nicosia, V., Ramasco, J. J., & Sadilek, A. (2020). *Impact of urban structure on COVID-19 spread*. Preprint. [https://www.researchgate.net/publication/343334055\\_Impact\\_of\\_urban\\_structure\\_on\\_COVID-19\\_spread](https://www.researchgate.net/publication/343334055_Impact_of_urban_structure_on_COVID-19_spread)
- Anderson, J. (2014). The impact of family structure on the health of children: Effects of divorce. *Linacre Quarterly*, 81(4), 378–387. <https://doi.org/10.1179/0024363914Z.00000000087>
- Behar-Zusman, V., Chavez, J. V., & Gattamorta, K. (2020). Developing a measure of the impact of COVID-19 social distancing on household conflict and cohesion. *Family Process Special Issue*, 3, 1045–1059. <https://doi.org/10.1111/famp.12579>
- Braddick, F., Carral, V., Jenkins, R., & Jané-Llopis, E. (2009). *Child and adolescent mental health in Europe: Infrastructures, policy and programmes*. European Communities. [https://ec.europa.eu/health/ph\\_determinants/life\\_style/mental/docs/camhee\\_infrastructures.pdf](https://ec.europa.eu/health/ph_determinants/life_style/mental/docs/camhee_infrastructures.pdf)
- British Psychological Society. (2011). *Guest president’s column: Robert Roe* (8th ed.). BPS. <https://thepsychologist.bps.org.uk/volume-24/edition-8/society>
- Boerne-og-Undervisningsministeriet (Child, Education Ministry Denmark). (2020). *1000 dage programmet – en bedre start på livet* [The 1000 Days Programme – a better start in life]. BUM. <https://www.regeringen.dk/media/5563/fakta-1000dage.pdf>
- Dallos, R. (2004). Attachment narrative therapy: Integrating ideas from narrative and attachment theory in systemic family therapy with eating disorders. *Journal of Family Therapy*, 26, 40–65. <https://doi.org/10.1111/j.1467-6427.2004.00266.x>
- Eurochild. (2009). *National surveys on children in alternative care. Executive summary*. [https://www.eurochild.org/fileadmin/public/05\\_Library/Thematic\\_priorities/06\\_Children\\_in\\_Alternative\\_Care/Eurochild/FINAL\\_EXEC\\_SUMMARY.pdf](https://www.eurochild.org/fileadmin/public/05_Library/Thematic_priorities/06_Children_in_Alternative_Care/Eurochild/FINAL_EXEC_SUMMARY.pdf)
- Eurochild. (2020). *The impact of the pandemic on children in alternative care. IN growing up in lockdown: Europe’s children in the age of COVID-19*. <https://eurochild.org/uploads/2020/11/2020-Eurochild-Semester-Report.pdf>
- Europe Economy. (2019). *Have four or more babies in Hungary and you’ll pay no income tax for life, Prime Minister says*. <https://www.cnbc.com/2019/02/11/have-four-or-more-babies-in-hungary-and-youll-pay-no-income-tax-for-life.html>
- Eurostat. (2019). *Marriage and divorce statistics*. [https://ec.europa.eu/eurostat/statistics-explained/index.php/Marriage\\_and\\_divorce\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Marriage_and_divorce_statistics)
- Eurostat. (2020). *Urban Europe – statistics on cities, towns and suburbs – executive summary*. [https://ec.europa.eu/eurostat/statistics-explained/index.php/Urban\\_Europe\\_-\\_statistics\\_on\\_cities\\_towns\\_and\\_suburbs\\_-\\_executive\\_summary](https://ec.europa.eu/eurostat/statistics-explained/index.php/Urban_Europe_-_statistics_on_cities_towns_and_suburbs_-_executive_summary)
- Fairstart Foundation. (2019). *The Fairstart theory of change by partnerships and blended learning*. [http://fairstartfoundation.com/wp-content/uploads/2018/02/Fairstart\\_Learning\\_Theory\\_Final.pdf](http://fairstartfoundation.com/wp-content/uploads/2018/02/Fairstart_Learning_Theory_Final.pdf)
- HarvardX. (2020). *HarvardX – Free Online Courses from Harvard University*. <https://www.edx.org/school/harvardx>

- Holm, H. H. (2014). *Brudte Familier Fordobler Risiko for Uuddannede Boern* [Broken families double the risk for uneducated children]. Danmarks Statistik.
- International Displacement Monitoring Centre [IDMC]. (2020). Table 3: Disaster-related new Displacements by event in 2019. <https://www.internal-displacement.org/database/displacement-data>
- Jacques, E. (1998). *Requisite organization: A total system for effective managerial organization and managerial leadership for the 21st century* (rev. 2nd ed.). Cason Hall.
- Johnstone, L., Boyle, M., Cromby, J., Dillon, J., Harper, D., Kinderman, P., Longden, E., Pilgrim, D., & Read, J. (2018). *The Power Threat Meaning Framework: Towards the identification of patterns in emotional distress, unusual experiences and troubled or troubling behaviour, as an alternative to functional psychiatric diagnosis*. British Psychological Society.
- Levine, R. V., Miyake, K., & Lee, M. (1962). *Autobiography of a Mexican family*. Penguin Books in Association with Secker and Warburg.
- McCabe, A. (2011). Predictors of adult narrative elaboration: Emotion, attachment, and gender. *Imagination, Cognition and Personality*, 31(4), 327–344. <https://doi.org/10.2190/IC.31.4.f>
- McCall, R., Groark, C., & Rygaard, N. P. (Eds.). (2014). Special issue: Global research, practice, and policy issues in the care of infants and young children at risk. *Journal of Infant Mental Health*, 35(2), 87–191. <https://doi.org/10.1002/imhj.21441>
- Özcan, N., & Gözden, M. (2009). *Working with children after traumatic events: A handbook of activities*. Turkish Red Crescent.
- Roe, R. (2011). Does Europe need Psychologists? EFPA president's lecture delivered at the European Congress of Psychology, Istanbul, Turkey, July 4, 2011. *European Psychologist*, 16(3), 247–253. <https://doi.org/10.1027/1016-9040/a000104>
- Rygaard, N. P. (2006). *Severe attachment disorder in childhood – a guide to practical therapy*. Springer.
- Rygaard, N. P. (2014). *The Fairstart theory of change by partnerships and blended learning*. Fairstart Foundation. [http://fairstartfoundation.com/wp-content/uploads/2018/02/Fairstart\\_Learning\\_Theory\\_Final.pdf](http://fairstartfoundation.com/wp-content/uploads/2018/02/Fairstart_Learning_Theory_Final.pdf)
- Rygaard, N. P. (2016). *How can aid organisations merge effectively with local culture?* Fairstart Foundation. [https://www.academia.edu/38217752/How\\_can\\_aid\\_organisations\\_merge\\_effectively\\_with\\_local\\_culture\\_doc](https://www.academia.edu/38217752/How_can_aid_organisations_merge_effectively_with_local_culture_doc)
- The St. Petersburg-USA Orphanage Research Team (SRDC). (2008). The effects of early social-emotional and relationship experience on the development of young orphanage children. In L. S. Lyben (Ed.), *Monographs of the Society for the Research in Child Development* (Vol. 73(3), pp. 1–297). <https://doi.org/10.1111/j.1540-5834.2008.00483.x>
- SOS Children's Villages. (2020). *Safe places, thriving children*. <https://www.sos-childrensvillages.org/trauma-informed-practices>
- Stacey, R. D. (2003). *Strategic management and organizational dynamics* (4th ed.). Prentice Hall.
- United Kingdom Forum for International Education and Training. (2019). *Climate migration and education: Are we making our education systems future-proof?* UKFIET. <https://www.ukfiет.org/2019/climate-migration-and-education-are-we-making-our-education-systems-future-proof/>
- United Nations Children's Fund. (2017). *Refugee and migrant children stranded in European transit countries face uncertain future*. UN. <https://www.unicef.org.uk/press-releases/refugee-migrant-children-stranded-european-transit-countries-su>
- United Nations Department of Economic Affairs (DESA). (2020). *Growing at a slower pace, world population is expected to reach 9.7 billion in 2050 and could peak at nearly 11 billion around 2100*. UN. <https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html>
- Whetten, K., Ostermann, J., Pence, B. W., Whetten, R., Messer, L. C., Ariely, S., O'Donnell, K., Zeanah, C. H., Nelson, C. A., Fox, N. A., Smyke, A. T., Marshall, P., Parker, S. W., & Koga, S. (2003). Designing research to study the effects of institutionalization on brain and behavioral development. The Bucharest Early Intervention Project. *Development and Psychopathology*, 15(2003), 885–907.
- World Bank & DESA. (2020). *Fertility rate, total (births per woman) – European Union*. <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=EU>

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# Health Behavior and Planetary Health

## A Multi-Level Environmental Health Approach

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**Abstract:** Health and environmental psychology have long been walking side by side. These two disciplines of psychology have imported and applied common psychological frameworks and each of them developed specific theories and methodologies. At a time when humankind faces tremendous challenges ahead (climate change, global warming, ocean sickness, the reemergence of infections pandemics), environmental health is more and more a crucial domain of research. Both environmental psychology and health psychology need to be engaged in environmental health issues in order to enhance planetary health. Environmental psychology traditional fields of research provide understanding about how natural or constructed environments impact human identity, attitudes, and behaviors (more recently, environmental psychology is also investing in determinants of pro-environmental behaviors). On the other hand, health psychology has an extensive comprehensive framework about how to promote healthy habits (i.e., automatically activated behaviors). We live in a global and extremely complex and interconnected world, which promotes syndemic phenomena (several interactive epidemics sharing common etiological factors), also resulting in accelerated depletion of natural resources. This current scenario might justify the development of an Environmental Health Psychology discipline, joining together tools from both environmental psychology and health psychology in a synergic and strategic way.

**Keywords:** health psychology, environmental health, planetary health, narrative review

At the moment of writing these lines, most part of the world faces an unexpected pause in normative daily-living activities. This generalized social containment (and quarantine or isolation, for some), together with effective COVID-19 screening systems, seems to be the unique solution to fight against coronavirus, at least, presumably, until vaccination or other pharmaceutical interventions prove to be effective to control the pandemic. What seems to be a solution to go back to the world's typical epidemiological curve trends, also provides a forecast of what may be required, in a relatively short period of time, to face environmental challenges, including climatic changes.

This sudden disruption of worldwide social and economic activities has tremendous impacts, such as fear of contamination, loneliness, boredom, physical activity and food behavior changes, financial loss, among others. All these social containment related stressors, although being

adaptative reactions to a pandemic, may act as determinants of post-traumatic stress, anxiety disorders, or depression (Brooks et al., 2020), burnout (Barello et al., 2020), marital conflicts (Zhang, 2020), unbalanced food behavior and reduced physical activities (Ammar et al., 2020), among other mal-adaptive responses. Paradoxically, this tremendous deceleration of regular human life also correlates with notorious improvement in several environmental indicators, such as air pollution (The Guardian, 2020) or (most probably) traffic-related noise, among others. This is an outstanding illustration of how human behavior and lifestyles can act as main determinants of a multiplicity of outcomes related to human health and the natural environment. And surely illustrates the intertwined relationships between gains in human longevity and well-being, and natural systems health, expressed in the current definition of planetary health (Whitmee et al., 2015a).



## Health Psychology and Environmental Psychology: Two Worlds Apart?

Health psychology and environmental psychology have roughly the same age, as specific and independent applied psychological disciplines (Matarazzo, 1980; Richards, 2000). Over these last 50 years (a little bit more for environmental health), these two disciplines made their path with much fewer moments of dialogue than it would be expectable. Indeed, up till recently, research objects and problems from each of these two areas of psychological knowledge were mostly from different arenas: health psychology has been dedicated to the study of health and disease-related behaviors (Shumaker et al., 2009), whereas environmental psychology has been mostly concerned with how the environment can promote higher levels of well-being and life satisfaction (Gärling, 2014). It is not too risky to say that a good share of the history of environmental psychology was dedicated to the understanding of how natural or constructed environments (e.g., cities, gardens, housing) impacted human identity, attitudes or behaviors, whereas health psychology has been focused on how to stop unhealthy behaviors and how to form healthy habits (e.g., regular physical activity, treatment adherence). It is, therefore, natural that research questions and methods tend to differ also between these two areas: integration of analytic methods from architecture, planning, design, or sociology with psychology, for environmental health (Gärling, 2014); theories of behavior and behavioral change or maintenance, economic behavior, for health psychology (O’Cathain et al., 2019; Shumaker et al., 2009). Only more recently the focus of environmental health started to shift also to human behavior as a source of environmental problems (Gärling, 2014).

We believe that the history of these two disciplines of psychological thought needs to converge so that psychological science can assume a more active and efficient role in fighting against syndemic phenomena (Singer, 2009), namely syndemics involving environmental changes. A good example of a problem that requires health and environmental psychology to put efforts together is what Swinburn et al. (2019) called the global syndemic of obesity, undernutrition, and climate change. Each one of these global problems interacts with the other two and all of them have an underlying common determinant: human behavior. Likewise, and as will be discussed later, changing human behavior for the greater good (i.e., individual long-term health and environmental protection), and for coping effectively with syndemics, requires a different level of action, including both intra-individual and environmental modifications. Therefore, both health psychology and environmental psychology are active ingredients in this debate.

## A Third Scientific Actor in the Discussion of Human’s and Nature’s Health: Environmental Health Research

When thinking about the relationship between the environment and human health, it is impossible to forget the scientific field of environmental health. It is interesting to note that this is an area of research where only recently psychologists started to be involved. Environmental health has been (and still is) dominated by the so-called hard sciences (e.g., chemistry, physics) and biomedical research. Because of this, researchers working in this area of study tend to be (mainly) epidemiologists, chemists and biochemists, biologists, climatologists, sanitary engineers, geographers, urbanists, and architects. Psychologists are much less frequently involved in this type of scientific activity as they should be. Enough to say that human (overt and covert) behavior is at the center of concerns regarding human biomonitoring, among other areas of environmental health. Beliefs and attitudes regarding exposure to environmental contaminants, human biomonitoring health communication, community-based biomonitoring screening programs (Uhl et al., 2021), are just a few examples of areas of research and/or applied knowledge requiring the intervention of psychology thought.

To better understand the development and current convergence of health and environmental psychological fields, it is worthwhile to think about the history of environmental health. The main goals of environmental health research usually tackle the fields of “disease prevention,” “protection against environmental hazards,” or “health and well-being promotion”. It is a field of research mainly dedicated to the study of the effects on human health of the short- or long-term exposure to chemical, biological or physical factors in soil, water and air. These efforts are typically oriented by the definition of recommendations on how to reduce human exposure to pathogenic environmental factors. It is not surprising that the main approach within environmental health has been the one of human biomonitoring, which constitutes an area of huge investment (see, e.g., HBM4EU, 2020). More vulnerable subgroups of the population, such as children, pregnant women, and the elderly, are important populational target of environmental health research and intervention programs.

Although exposure-related behaviors are taken into account in environmental health studies, the fact is that researchers who are working in this area typically follow (a) a rather unidirectional perspective, from the environment to human health, not from human behavior to environment, and (b) a narrow perspective of what is the

environment (mainly considered in its physical, chemical and biological facets). Santos et al. (2019) proposed a much broader perspective of environmental health, in which other environmental dimensions need to be considered, such as psychosocial environments (including schools, workplaces, communities, cultures, etc.), economic and political environments, and constructed environments, namely urban contexts and digital worlds. All these environmental “layers” have relevant interactive implications for both human health and sustainability of natural resources. According to this perspective, environmental health needs to complement the most traditional environmental focus on toxic-related factors with psychosocial, economic, political, and digital (mainly, Internet-based) factors, in order to explain the effects of the environment on human health as well as the effects of human longevity and well-being gains on the environment.

Environmental health is also an interesting multidisciplinary field in terms of its object of study and areas of intervention; it clearly assumes a biomedical perspective of health, mostly centered on toxic agents with corresponding human physiological dysfunctions. However, environmental health needs to endorse a biopsychosocial paradigm, considering social and psychological (cognitive, emotional, behavioral) pathogenic agents and parameters (Engel, 1977; Santos et al., 2019). This is an open debate because human health conditions and diseases are mostly determined by human behavior, also accounting for a big share of mortality, mainly in the developed world (Davis et al., 2015). Ultimately, this biopsychosocial-based endeavor of environmental health is paramount to ensure a planetary health view (Whitmee et al., 2015b), acknowledging the complex links between human health and the health of the Earth. This planetary health perspective has theoretical roots in both epidemiological methods and public health theories, focusing on emerging threats to natural and human-made systems that support humanity, within a long-term and sustainable perspective. There is, however, a lack of an integrated reflection on how psychological science can make a relevant contribution within this paradigm of planetary health. Again, health psychology and environmental psychology can assume a relevant role, at this level. Mainly, if combining efforts.

A clear example of environmental health and environmental psychology interconnection is the one of Ocean Health. Blue health expresses the bidirectional association of human activities and health, and the health of oceans. Fleming et al. (2019) highlight the fact that the health of the Global Ocean (including all ecosystems involved) is being seriously damaged by human activity. The massive use of non-renewable and renewable marine resources, associated with continuous discharge of waste materials, including industrial and agricultural chemicals, plastics,

and pharmaceutical products, have a tremendously deleterious effect on oceans’ health. So, a lot needs to be done in terms of environmental behavior so that this global resource keeps being sustainable. This implies the building up of individual and community habits oriented for long-term gains; a difficult task for human beings (Hall & Fong, 2007; Hofmann et al., 2008), especially considering that this (environmental-related) long-term goes much beyond human life scale. Looking the other way around, and equally aligned with the interests of environmental psychology, is the concept of Blue Gym. As summarized by Fleming et al. (2019), human direct interactions with seas and oceans can lead to increased physical activity and improved mental well-being. Spending more time outdoors, ensuring (adequate) exposure to the sun, engaging in high-energy water sports, and/or in moderate walks are among possible mechanisms of action for this blue-gym positive effects on human health. Different studies showed that living near the ocean and having a view of it is associated with a lower risk of mental health problems (even after adjusting for socioeconomic factors; Dempsey et al., 2018; Garrett et al., 2019). This is a perfect arena of interest for environmental psychologists, eventually endorsing a “Global Ocean and Human Health and Well-being” research and intervention collaborative initiative, as proposed by Fleming et al. (2019).

In line with the abovementioned concept of Blue Health lies the one of Green Exercise, in which also natural environments (forests, gardens, mountains, etc.) stand in the midst of the relationship between health and the individual. The evidence shows that the proximity to a park or the riverside creates the opportunity for exercising on a regular basis in contact with nature, also facilitating social interactions with other users of these spaces (Loureiro & Veloso, 2017), thus reducing stress, mental fatigue and symptoms of depression, improving self-esteem (Mitchell, 2013; White et al., 2016) and enhancing mood (Barton et al., 2009; Kerr et al., 2012; Wells & Rollings, 2012). Exercising in contact with nature is an excellent opportunity for promoting health gains in a bidirectional fashion, also at the ecosystems’ level. Indeed, it is possible to contribute to environmental sustainability while exercising and reducing sedentary behaviors as a few programs have shown (World Health Organization, 2018).

Another area of concern for psychologists in general but where both health psychology and environmental psychology have major roles is, obviously, the psychological impact of environmental changes (most particularly, of climate change and global warming). These effects are pervasive, though not always obvious, and can lead to significant disturbance both at the individual (shock, sense of helplessness, posttraumatic stress, and increased levels of aggression, anxiety, depression, or substance abuse) and at the

social (relationships are put under pressure) levels (Sawitri et al., 2015). Also, evidence shows that air pollution (namely due to particulate matter; PM<sub>2.5</sub>) is associated with a higher risk of depression, and potentially, with anxiety (Braithwaite et al., 2019).

The relevance of the contribution of psychology for mitigation, adaptation, and activism actions regarding climatic change was fully acknowledged in the 2019 international summit on psychology and global health, organized by the Ordem dos Psicólogos Portugueses (i.e., the Portuguese Psychological Association) and by the American Psychological Association, resulting on a resolution text that was signed by more than 40 psychological associations, positioning psychology science as an “a leader in climate action” (PsyGlobalHealth, 2019).

## Health and Environmental-Friendly Behaviors: Common Grounds for an Environmental Health Psychology Discipline

There is a main challenge common to health psychologists, environmental psychologists, and those involved in the overarching field of environmental health: how to promote the adoption of adequate habits? When looking for creating positive impacts on human health (both physical and psychological), as well as on planetary health, individuals need to activate and, more importantly, to maintain behaviors that are considered to be effective for health promotion and well-being; ultimately, for life sustainability and longevity. Unfortunately, such behaviors (e.g., physical activity, eating healthy and adequate amounts of food, recycling, commuting by foot or with bikes, etc.) compete against alternative behaviors that are more intrinsically rewarding (eating fat and sweet food, driving a sportive car, etc.).

Planning in the long-term is not an easy task for humankind. We can think about humans as “immediate gratification-prompted animals”. The seminal work of Hall and Fong provided inspiring evidence about the effect of the relative moment of onset of obstacles and gains associated with health behaviors (Hall & Fong, 2007). These authors showed that because aversive factors associated with physical activity (e.g., body pain) are expected to emerge much before the gains of physical activity (e.g., reducing weight or feeling athletic), there is much fewer chances to engage and maintain this behavior; changing the focus of attention to immediate gains and delayed discomfort may be a good way to overcome this effect (Hall & Fong, 2007). The field of economic behavior science also mapped different cognitive intertemporal choices phenomena, such

as hyperbolic time discounting (Ainslie, 1975) and intertemporal distribution of costs and benefits (Akerlof, 2016), all of them supporting the daily empirical evidence that human motivation tends to be more oriented to behaviors associated with perceived immediate gains. This is obvious for intrinsic motivation in which the behavior itself is rewarding (e.g., eating a chocolate mousse); but it is also true for extrinsic motivations in which the reward is obtained in time-contingency, the main factor of all learning theories (Deci & Ryan, 1987; Skinner, 1965). Environmental psychologists have done extensive work around the construal-level theory of psychological distance (Trope & Liberman, 2010; Wu et al., 2014). According to this construct, the more distant is the object of thought from direct experience, the more abstract and distant is the representation of the object and the less relevant it becomes from a phenomenological perspective of the person. This is completely in line with the empirical observation that the concept of chronic disease in older ages has few impacts on health behavior related decisions for adolescents, and it may also explain why thinking about far away climatic changes (in both time and space) is a weak prompt for environmental protective behavior. Denial and several other cognitive biases have been suggested as mediators of the decision making when psychological distance or intertemporal choices push the individual in the direction of the non-health, non-pro-environmental choice (Kahneman, 2011). This low effect of distant gains tends to favor a low perception of the efficacy of the (rather objectively) adequate behavior (e.g., recycling).

On the other hand, perception of effective behaviors is a key determinant of decision making in social learning theory (Bandura & Walters, 1977): if someone believes that a specific behavior leads to the desired outcome, the possibility to engage in such behavior will increase. Another key mediating variable for the decision making is individuals' self-efficacy (Bandura, 1982): individuals with higher perceived self-efficacy tend to be more easily activated for the behavior, namely also on climate-related behaviors (Sawitri et al., 2015). Interesting to note that whereas psychological distance is a concept more easily found in environmental psychology research, delayed versus immediate rewards are more frequently used as explanatory variables in the area of health psychology. There is, again, a large avenue for studying the combined interpretative value of these constructs.

Another interesting line of research to pursue would be the study of adequate communication (promoting environmental health literacy) of behaviors that have a synergic effect: being positive for human health and for planetary health. Good examples of such behaviors are (Cunsolo et al., 2018): reducing red meat consumption, adopting active commuting, public transportation, investing in

creating and/or visiting green spaces, investing in clean energy. These behaviors are environmental-friendly and have positive psychological effects on stress, anxiety, and other mental illnesses; moreover, as stated by Cunsolo et al. (2018) they contribute to fighting against the decline of social identity that comes from climate damage (a major topic in environmental health research, in itself).

## Final Remarks

*Homo sapiens* is far from being an old species; we are very far even from being the longest living species among our homo genus “relatives” (*homo erectus* lived for almost two million years; Harari, 2014). The impact of the human worldwide community on natural ecosystems is clearly associated with current serious threats to our existence. Recently, a large group of scientists published a well-founded paper to highlight the responsibility of mankind on climate change and alerting for the imperative of taking concrete and critical actions in order to avoid imminent disruptions of ecosystems current balance, supporting human life (Venhoeven et al., 2016). Ultimately, values, motivations, beliefs, attitudes, decision makings, behaviors, and habits, at individual, familial, and community (at local, national, and international) levels, will play the fundamental role of promoting planetary health and, within it, human health. Psychological science has a long and rich evidence-based descriptive and explanatory set of theories about human behavior (Armitage & Conner, 2000; Davis et al., 2015; Kwasnicka et al., 2016; O’Cathain et al., 2019). However, we are still far from having robust predictive models for maintained health and pro-environmental behaviors (at individual and at group levels). More than ever, we need to integrate cross-disciplinary knowledge and efforts in this direction. Health psychology and environmental psychology are natural candidates for the overall effort of understanding and improving environmental health. An integrated environmental health psychology discipline seems a logical step forward. This is especially relevant when we realize that so many health behaviors are synergic with pro-environmental behaviors (Bains & Turnbull, 2019; Cunsolo et al., 2018; Swinburn et al., 2019). It also makes sense when thinking about the footprint of healthcare units and activities (Sherman et al., 2019). Both examples (among many others) demand a joint theoretical and methodological action from health and environmental disciplines.

In 2007, Cheng et al. (2007) alerted to the possibility of re-emergence of severe acute respiratory syndrome (SARS) coronavirus – or a mutation of that virus; at that moment, the authors considered this as a near inevitability. In their own words, “The presence of a large reservoir of

SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb” (Cheng et al., 2007, p. 683). First climate models with good capacity to provide accurate forecasts of subsequently verified global surface warming date from 1970 (Kay, 2020). These facts make it very clear that data and information are not enough to activate individual nor communities to modify habits and lifestyles. We need better and sound models for the promotion of long-during salutogenic habits. We believe that this can only be achieved, in long-term, if social norms and individual values are oriented to the activation of adequate (i.e., healthy, for individuals and planet) behavioral choices. Such values, together with capability assets (De Matos et al., 2019), will inform autonomous motivation for *enkratic* choices and behaviors: choices that may lead humanity to a brighter future.

## References

- Ainslie, G. (1975). Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychological Bulletin*, 82(4), 463–496. <https://doi.org/10.1037/h0076860>
- Akerlof, G. (2016). Procrastination and obedience. *The American Economic Review*, 81(2), 1–19.
- Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., Bouaziz, B., Bentlage, E., How, D., Ahmed, M., Müller, P., Müller, N., Aloui, A., Hammouda, O., Paineiras-Domingos, L., Braakman-Jansen, A., Wrede, C., Bastoni, S., Pernambuco, C., ... Hoekelmann, A. (2020). Effects of COVID-19 home confinement on eating behavior and physical activity: Results of the ECLB-COVID19 international online survey. *Nutrients*, 12, 1583–1596. <https://doi.org/10.3390/nu12061583>
- Armitage, C. J., & Conner, M. (2000). Social cognition models and health behavior: A structured review. *Psychology and Health*, 15(2), 173–189. <https://doi.org/10.1080/08870440008400299>
- Bains, K. K., & Turnbull, T. (2019). Improving health outcomes and serving wider society: The potential role of understanding and cultivating prosocial purpose within health psychology research and practice to address climate change and social isolation and loneliness. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.01787>
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122–147.
- Bandura, A., & Walters, R. H. (1977). *Social learning theory*. Prentice-Hall.
- Barello, S., Palamenghi, L., & Graffigna, G. (2020). Burnout and somatic symptoms among frontline healthcare professionals at the peak of the Italian COVID-19 pandemic. *Psychiatry Research*, 290, 1–4. <https://doi.org/10.1016/j.psychres.2020.113129>
- Barton, J., Hine, R., & Pretty, J. (2009). The health benefits of walking in greenspaces of high natural and heritage value. *Journal of Integrative Environmental Sciences*, 6(4), 261–278. <https://doi.org/10.1080/19438150903378425>
- Braithwaite, I., Zhang, S., Kirkbride, J. B., Osborn, D. P. J., & Hayes, J. F. (2019). Air pollution (Particulate matter) exposure and associations with depression, anxiety, bipolar, psychosis and suicide risk: A systematic review and meta-analysis. *Environmental Health Perspectives*, 127(12), Article 126002. <https://doi.org/10.1289/EHP4595>

- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*, 395(10227), 912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Cheng, V. C. C., Lau, S. K. P., Woo, P. C. Y., & Kwok, Y. Y. (2007). Severe acute respiratory syndrome coronavirus as an agent of emerging and reemerging infection. *Clinical Microbiology Reviews*, 20(4), 660–694. <https://doi.org/10.1128/CMR.00023-07>
- Cunsolo, A., Derr, V., Doherty, T., Kotcher, J., Silka, L., & Mitchell, G. J. (2018, March 13–28). Mental health and our changing climate. *American Academy of Pediatrics*. <https://www.apa.org/news/press/releases/2017/03/mental-health-climate.pdf>
- Davis, R., Campbell, R., Hildon, Z., Hobbs, L., & Michie, S. (2015). Theories of behavior and behavior change across the social and behavioral sciences: A scoping review. *Health Psychology Review*, 9(3), 323–344. <https://doi.org/10.1080/17437199.2014.941722>
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53(6), 1024–1037. <https://doi.org/10.1037/0022-3514.53.6.1024>
- De Matos, M. G., Wainwright, T., Brebels, L., Craciun, B., Gabrhelík, R., Schjodt, B. H., Plantade-gipch, A., Po, V., Stojadinovic, I., & Richards, J. (2019). Looking ahead: Challenges and opportunities for applied psychology in prevention and promotion. *European Psychologist*, 24(4), 337–348. <https://doi.org/10.1027/1016-9040/a000362>
- Dempsey, S., Devine, M. T., Gillespie, T., Lyons, S., & Nolan, A. (2018). Coastal blue space and depression in older adults. *Health & Place*, 54, 110–117. <https://doi.org/10.1016/j.healthplace.2018.09.002>
- Engel, G. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129–196. <https://doi.org/10.1126/science.847460>
- Fleming, L. E., Maycock, B., White, M. P., & Depledge, M. H. (2019). Fostering human health through ocean sustainability in the 21st century. *People and Nature*, 1(3), 276–283. <https://doi.org/10.1002/pan3.10038>
- Gärling, T. (2014). Past and present environmental psychology. *European Psychologist*, 19(2), 127–131. <https://doi.org/10.1027/1016-9040/a000184>
- Garrett, J. K., White, M. P., Huang, J., Ng, S., Hui, Z., Leung, C., Tse, L. A., Fung, F., Elliott, L. R., Depledge, M. H., & Wong, M. C. S. (2019). Urban blue space and health and wellbeing in Hong Kong: Results from a survey of older adults. *Health and Place*, 55, 100–110. <https://doi.org/10.1016/j.healthplace.2018.11.003>
- Hall, P. A., & Fong, G. T. (2007). Temporal self-regulation theory: A model for individual health behavior. *Health Psychology Review*, 1(1), 6–52. <https://doi.org/10.1080/17437190701492437>
- Harari, Y. N. (2014). *Sapiens: A brief history of humankind*. Harper.
- HBM4EU. (2020). *Coordinating and advancing human biomonitoring in Europe to provide evidence for chemical policy making*. <https://www.hbm4eu.eu/>
- Hofmann, W., Friese, M., & Wiers, R. W. (2008). Impulsive versus reflective influences on health behavior: A theoretical framework and empirical review. *Health Psychology Review*, 2(2), 111–137. <https://doi.org/10.1080/17437190802617668>
- Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.
- Kay, J. (2020). Early models successfully predicted global warming. *Nature*, 578, 45–46. <https://doi.org/10.1029/E0051005p00476>
- Kerr, J., Sallis, J. F., Saelens, B. E., Cain, K. L., Conway, T. L., Frank, L. D., & King, A. C. (2012). Outdoor physical activity and self rated health in older adults living in two regions of the US. *The International Journal of Behavioral Nutrition and Physical Activity*, 9(1), Article 89. <https://doi.org/10.1186/1479-5868-9-89>
- Kwasnicka, D., Dombrowski, S. U., White, M., & Sniehotta, F. (2016). Theoretical explanations for maintenance of behavior change: A systematic review of behavior theories. *Health Psychology Review*, 10(3), 277–296. <https://doi.org/10.1080/17437199.2016.1151372>
- Loureiro, A., & Veloso, S. (2017). Green exercise, health and well-being. In G. Fleury-Bahi, E. Pol, & O. Navarro (Eds.), *Handbook of environmental psychology and quality of life research* (pp. 149–169). Springer. [https://doi.org/10.1007/978-3-319-31416-7\\_8](https://doi.org/10.1007/978-3-319-31416-7_8)
- Matarazzo, J. D. (1980). Behavioral health and behavioral medicine: Frontiers for a new health psychology. *American Psychologist*, 35(9), 807–817. <https://doi.org/10.1037/0003-066X.35.9.807>
- Mitchell, R. (2013). Is physical activity in natural environments better for mental health than physical activity in other environments? *Social Science and Medicine*, 91, 130–134. <https://doi.org/10.1016/j.socscimed.2012.04.012>
- O’Cathain, A., Croot, L., Sworn, K., Duncan, E., Rousseau, N., Turner, K., Yardley, L., & Hoddinott, P. (2019). Taxonomy of approaches to developing interventions to improve health: A systematic methods overview. *Pilot and Feasibility Studies*, 5(1), 1–27. <https://doi.org/10.1186/s40814-019-0425-6>
- PsyGlobalHealth. (2019, November). *International summit on psychology and global health: A leader in climate action, Lisbon*. <https://www.psychologyandglobalhealth.org/>
- Richards, J. (2000). A history of Division 34: the Division of population and environmental psychology. In D. Dewsbury (Ed.), *Unification through division. Histories of the divisions of the American Psychological Association*. (Vol. V, pp. 113–136). American Psychological Association. <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2000-03628-004&site=ehost-live&scope=site>
- Santos, O., Virgolino, A., Santos, R. R., Costa, J., Rodrigues, A., & Vaz-Carneiro, A. (2019). Environmental health: An overview on the evolution of the concept and its definitions. *Encyclopedia of Environmental Health*, 2, 466–474. <https://doi.org/10.1016/B978-0-12-409548-9.11815-9>
- Sawitri, D., Hadiyanto, H., & Hadi, S. P. (2015). Pro-environmental behavior from a socialcognitive theory perspective. *Procedia Environmental Sciences*, 23, 27–33. <https://doi.org/10.1016/j.proenv.2015.01.005>
- Sherman, J. D., MacNeill, A., & Thiel, C. (2019). Reducing pollution from the health care industry. *Journal of the American Medical Association*, 322(11), 1043–1044. <https://doi.org/10.1001/jama.2019.10823>
- Shumaker, S., Ockene, J., & Riekert, K. (Eds.). (2009). *The health behavior change book* (3rd ed.). Springer.
- Singer, M. (2009). *Introduction to syndemics: A critical systems approach to public and community health*. Jossey-Bass.
- Skinner, B. F. (1965). *Science and human behavior*. Simon and Schuster.
- Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R. A., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P. S., Howden, M., ... Dietz, W. H. (2019). The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. *The Lancet*, 393(10173), 791–846. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8)
- The Guardian. (2020). *Coronavirus UK lockdown causes big drop in air pollution | Environment*. <https://www.theguardian.com/environment/2020/mar/27/coronavirus-uk-lockdown-big-drop-air-pollution>
- Trope, Y., & Liberman, N. (2010). Construal theory. *Psychological Review*, 117(2), 440–463. <https://doi.org/10.1037/a0018963>
- Construal-Level

- Uhl, M., Santos, R. R., Costa, J., Santos, O., Virgolino, A., Evans, D. S., Murray, C., Mulcahy, M., Ubong, D., Sepai, O., Lobo Vicente, J., Leitner, M., Benda-Kahri, S., & Zanini-Freitag, D. (2021). Chemical exposure: European citizens' perspectives, trust, and concerns on human biomonitoring initiatives, information needs, and scientific results. *International Journal of Environmental Research and Public Health*, 18, Article 1532. <https://doi.org/10.3390/ijerph18041532>
- Venhoeven, L. A., Bolderdijk, J. W., & Steg, L. (2016). Why acting environmentally-friendly feels good: Exploring the role of self-image. *Frontiers in Psychology*, 7, Article 1846. <https://doi.org/10.3389/fpsyg.2016.01846>
- Wells, N. M., & Rollings, K. A. (2012). The natural environment in residential settings: Influences on human health and function. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 1–27). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199733026.013.0027>
- White, M. P., Elliott, L. R., Taylor, T., Wheeler, B. W., Spencer, A., Bone, A., Depledge, M. H., & Fleming, L. E. (2016). Recreational physical activity in natural environments and implications for health: A population based cross-sectional study in England. *Preventive Medicine*, 91, 383–388. <https://doi.org/10.1016/j.ypmed.2016.08.023>
- Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., De Souza Dias, B. F., Ezech, A., Frumkin, H., Gong, P., Head, P., Horton, R., Mace, G. M., Marten, R., Myers, S. S., Nishtar, S., Osofsky, S. A., Pattanayak, S. K., Pongsiri, M. J., Romanelli, C., ... Yach, D. (2015a). Safeguarding human health in the Anthropocene epoch: Report of the Rockefeller Foundation-Lancet Commission on planetary health. *The Lancet*, 386 (10007), 1973–2028. [https://doi.org/10.1016/S0140-6736\(15\)60901-1](https://doi.org/10.1016/S0140-6736(15)60901-1)
- Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., De Souza Dias, B. F., Ezech, A., Frumkin, H., Gong, P., Head, P., Horton, R., Mace, G. M., Marten, R., Myers, S. S., Nishtar, S., Osofsky, S. A., Pattanayak, S. K., Pongsiri, M. J., Romanelli, C., ... Yach, D. (2015b). Safeguarding human health in the Anthropocene epoch: Report of the Rockefeller Foundation-Lancet Commission on planetary health. *The Lancet*, 386(10007), 1973–2028. [https://doi.org/10.1016/S0140-6736\(15\)60901-1](https://doi.org/10.1016/S0140-6736(15)60901-1)
- World Health Organization. (2018). *Global action plan on physical activity 2018–2030: More active people for a healthier world: At-a-glance*. WHO. <https://apps.who.int/iris/handle/10665/272721?locale-attribute=pt&>
- Wu, P., Xia, B., Pienaar, J., & Zhao, X. (2014). The past, present and future of carbon labelling for construction materials – a review. *Building and Environment*, 77, 160–168. <https://doi.org/10.1016/j.buildenv.2014.03.023>
- Zhang, H.. The influence of the ongoing COVID-19 pandemic on family violence in China. *Journal of Family Violence*. Advance online publication. <https://doi.org/10.1007/s10896-020-00196-8>

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The authors have no conflicts of interest to declare.

## Authorship

Oswaldo Santos was responsible for the conceptualization of this narrative review and writing of the first draft of the paper. Ana Virgolino, António Vaz Carneiro, and Margarida Gaspar de Matos

integrated substantial information and details, developed specific parts of the text, edited and revised its content, making significant intellectual contributions. All authors agreed and are responsible for the content of the work.

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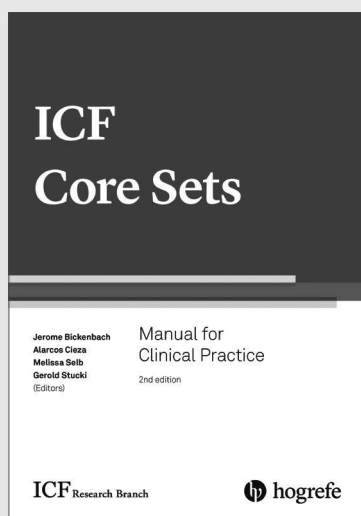


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# Environmental Issues Are Health Issues

## Making a Case and Setting an Agenda for Environmental Health Psychology

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**Abstract:** Increasing demands on ecosystems, decreasing biodiversity, and climate change are among the most pressing environmental issues of our time. As changing weather conditions are leading to increased vector-borne diseases and heat- and flood-related deaths, it is entering collective consciousness: environmental issues are human health issues. In public health, the field addressing these issues is known as environmental health. This field addresses both the effects people have on their environment as well as the effects of the environment on people. Psychology, as a discipline concerned with explaining, predicting, and changing behavior has much to contribute to these issues because human behavior is key in promoting environmental health. To date, however, an integrative view of environmental health in psychology is lacking, hampering urgently needed progress. In this paper, we review how the environment and human health are intertwined, and that much can be gained through a systemic view of environmental health in psychology. Based on a review of the literature, we suggest that psychologists unite efforts to promote an integrative science and practice of environmental health psychology, and jointly address environmental-health related behavior. The research agenda for this field will include integrating behavior change theory and intervention approaches. Thereby, psychology can potentially make an important contribution to sustained environmental health for generations to come.

**Keywords:** environmental health, science of behavior change, health psychology, environmental psychology, intervention

Temperatures are rising, extreme weather is increasing, and water and other natural resources are declining amidst increasing demand by the human population (IPCC, 2014). These and further environmental issues are threatening human life on the planet (Steffen et al., 2015). The magnitude of these environmental issues is now markedly entering the collective consciousness as the voices reminding us of the impact of today's decisions on future generations grow louder (e.g., Thunberg, 2019). Individuals and households contribute significantly to environmental issues (Clayton et al., 2015). For example, 26% of the total energy consumed in the European Union in 2018 were directly consumed by households, for example, for heating or cooking, and half of that energy originated from fossil fuels, especially gas (eurostat, 2020). In turn, environmental

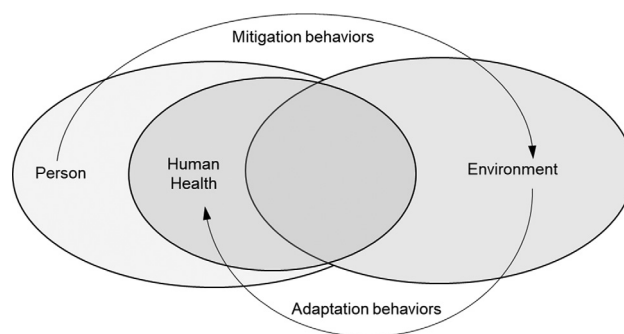
issues affect human health and well-being (G. W. Evans, 2019), which can in part be reduced by people's adaptation to environmental issues (van Valkengoed & Steg, 2019). Psychology, a discipline concerned with explaining, predicting, and changing behavior, therefore, has much to offer to the mitigation of environmental issues and the promotion of environmental health (Clayton et al., 2015; Otto et al., 2014; Stern, 2011; sometimes also described as planetary health; Swinburn et al., 2019).

Environmental health, "[i]n its broadest sense, ... is the segment of public health that is concerned with assessing, understanding, and controlling the impacts of people on their environment and the impacts of the environment on them" (Moeller, 2011, p. 3). It includes environmental issues such as air pollution, climate change, water, and

sanitation. Whereas environmental health is an established segment of public health, psychological research on this topic is scattered, hampering urgently needed progress. In particular, two sub-disciplines of psychology are each partially concerned with environmental health: environmental psychology and health psychology. Contributing to the understanding of people's impact on their environment, in the past decades, environmental psychologists have researched the drivers and barriers of pro-environmental behavior and developed effective interventions to promote behavior change, for example, for energy conservation (Abrahamse et al., 2005; Andor & Fels, 2018), travel mode choice (Lind et al., 2015), and recycling (Varotto & Spagnolli, 2017). Environmental psychology is further concerned with the impact of the environment on people, especially on their well-being (e.g., favorable impacts of green spaces; Houlden et al., 2018). However, the impact of environmental issues on people's physical health has received comparatively less attention from psychologists and has only recently emerged as a topic of interest in our field (van Valkengoed & Steg, 2019). This, even though it has been highlighted that environmental issues are ultimately health issues as both are inherently interconnected (EASAC, 2019; Raworth, 2017; Swinburn et al., 2019).

Health psychology, a sub-discipline of psychology dedicated to preventing disease and promoting health and well-being (Matarazzo, 1980) may offer key insights to understanding and promoting environmental health, thereby complementing environmental psychology. However, health psychology has arguably paid less attention to environmental factors, traditionally focusing on the individual's role in health (Matarazzo, 1980), that is, self-regulation to prevent chronic disease (e.g., Schwarzer et al., 2011). Researchers have previously suggested synergies between environmental and health psychology (e.g., Bernard, 2019). Nisbet and Gick (2008), for example, convincingly argued that health psychology may enhance our understanding of pro-environmental behavior. Yet, although some applications of health behavior change models to explain pro-environmental behavior exist (Bamberg, 2013), cross-pollination between health and environmental psychology is still rare.

In this paper, we aim to show that much can be gained from an integrated view of environmental health in psychological science and practice. Environmental and health psychology each contribute unique theoretical and methodological approaches and insights to understanding and promoting environmental health. Health psychology can add to our understanding and promotion of behaviors that can mitigate people's impact on the environment (Bernard, 2019), which have traditionally been the focus of environmental psychology. We will henceforth refer to these as "mitigation behaviors" (Bernard, 2019) to avoid precluding



**Figure 1.** Environmental health psychology: Addressing mitigation and adaptation behaviors related to environmental health.

the motives that drive these behaviors (e.g., pro-environmental or health motives). Further, integration of environmental and health psychology will expand our understanding of behaviors that aim to prevent the adverse impact of environmental issues on human health (henceforth referred to as "adaptation behaviors"; Bernard, 2019). Adaptation behaviors may be conceptualized as health behaviors, but they may also relate back to the environment (e.g., by fostering pro-environmental motives). In summary, our paper makes the case that conceptualizing and addressing environmental health in an integrated manner in psychology (i.e., as environmental health psychology) should significantly enhance understanding and promotion of environmental health. Environmental health psychology will address both mitigation and adaptation behaviors related to environmental health (see Figure 1). The aim is that this integration will enable efficient progress in this field, which is urgently needed considering the pressing nature of environmental issues.

## Environmental Health and the Role of Human Behavior

Major planetary processes such as climate and biodiversity are key to keeping the earth in a Holocene-like state conducive to human life (Raworth, 2017). However, human activities, such as agriculture, industry, and mineral extraction, are altering these processes at a large scale (IPCC, 2018), putting the planet at increased risk of destabilization (Raworth, 2017; Steffen et al., 2015). Already, environmental issues are causing adverse effects on human health. The pollution of drinking water, for example, caused by insufficient sanitation, can lead to the outbreak of waterborne diseases such as typhoid fever and cholera (Schwarzenbach et al., 2010). Chemical pollution of water and soil (e.g., by pesticides) has multiple health effects that are likely

underestimated (Landrigan et al., 2018). Further, burning fossil fuels leads to widespread air pollution, causing diseases such as asthma and bronchitis (Künzli et al., 2000), and relates to 4.2 million premature deaths annually (WHO, 2019). Importantly, burning fossil fuels is the main source of CO<sub>2</sub> emissions, a greenhouse gas that contributes to climate change (Watts et al., 2015).

Climate change is a key environmental issue that poses several direct and indirect health risks (Watts et al., 2015) that will likely be of increasing importance as climate change accelerates. The direct effects of climate change include increases in the frequency and severity of hydro-meteorological hazards, such as wildfires, droughts, and flooding (Sauerborn & Ebi, 2012), which can lead to physical injury and death. Moreover, experiencing such hazards can cause psychological illness such as post-traumatic stress disorder and anxiety (Clayton et al., 2017; Goldmann & Galea, 2014). Indirectly, climate change adversely affects human health by enabling the spread of vector-borne diseases (e.g., malaria, dengue fever) through fostering favorable conditions for vectors (Campbell-Lendrum et al., 2015). Other examples include food insecurity (climate change increases crop failure, loss of livestock, and agricultural plagues; FAO, 2008), and the possibility of increased armed conflict (Adams et al., 2018; Mach et al., 2019). In addition, psychological consequences are expected, such as psychological distress (G. W. Evans, 2019), and “eco-anxiety” (Clayton et al., 2017).

People’s behavior is key to promoting environmental health. On the one hand, people can mitigate their adverse impact on the environment by changing their behaviors. Mitigation behaviors thus aim to alleviate the human impact on the environment. On the other hand, people can avoid or reduce adverse health effects of the environment by adapting to environmental issues. We discuss the two environmental-health related behavioral domains (mitigation and adaptation behaviors) in more detail in the following.

## Mitigating Adverse Impact of Humans on the Environment: Mitigation Behaviors

Through lifestyle changes, individuals and households can mitigate adverse human impact on the environment (IPCC, 2018). For example, people can walk instead of taking the car. They can engage in recycling, or using safe sanitation. They can avoid behaviors such as air travel, consuming meat, using pesticides, and they can adopt sustainable innovations, such as new technologies (e.g., solar power) or new products (e.g., insect-based foods).

Mitigation behaviors have been traditionally addressed in environmental psychology, for example, in the context of

pursuing pro-environmental goals (Kaiser & Wilson, 2004). However, mitigation behaviors can also be relevant from a health perspective when they have co-benefits (Bain et al., 2016). Co-beneficial behaviors reduce people’s impact on the environment and simultaneously and directly promote personal health as well. Hence, integrating environmental and health psychology perspectives when addressing mitigation behaviors could valuably extend previous research in this field.

Mitigation behaviors with co-benefits include, for example, meat-reduced diets and active mobility. Compared to other foods, meat production accounts for a substantial amount of greenhouse gas emissions, land use, use of natural resources (e.g., water), and pollution (Clark et al., 2019). Lowering meat consumption or switching to a vegetarian diet could reduce up to 50% of greenhouse gas emissions and land demand of the current diet (Hallström et al., 2015) while also reducing the risk of coronary heart disease, cancer, type 2 diabetes, and overall mortality (Godfray et al., 2018). Similarly, commuting to work by bicycle or walking instead of taking the car may lower greenhouse gas emissions and fossil fuel consumption, while at the same time increasing air quality, and levels of physical activity (Barnett et al., 2019). This, in turn, will promote better health and well-being (Kelley et al., 2018; Lee et al., 2012; Mata et al., 2012). In addition, mitigation behaviors with co-benefits for well-being and the environment have also been identified. For example, engaging in environmental activism has been shown to relate to greater well-being and health (Klar & Kasser, 2009).

## Reducing Adverse Impacts of the Environment on Human Health: Adaptation Behaviors

People can take multiple actions to prevent or reduce environmental impacts on human health and well-being (van Valkengoed & Steg, 2019). These behaviors may or may not be motivated by health concerns, wherefore we advocate an integrated view of psychological science on these behaviors. Adaptation behaviors can be categorized as information seeking, preparative actions, and protective actions (van Valkengoed & Steg, 2019). Information seeking means acquiring information about a person’s risk of an environmental hazard and potential behavioral responses to certain hazards, for example, checking government brochures and monitoring air pollution (e.g., Lewis & Edwards, 2016). Preparative actions are structural measures that are taken before the onset of an environmental hazard, aimed at reducing the probability of being affected. Examples include flood proofing the home, or buying facemask respirators to protect against air pollution (e.g.,

Hansstein & Echegaray, 2018). Protective actions are behaviors taken in response to an ongoing hazard, aimed at reducing the impacts of that hazard, for instance, taking prophylactic medicine for vector-borne diseases, or wearing a face mask respirator in an air-polluted area (e.g., Zhou et al., 2016).

Adaptation behaviors affect human health at different timescales. There are behaviors with immediate health effects, such as avoiding overexertion during heatwaves (Akompab et al., 2013). Behaviors could also have intermediate-term effects, such as taking structural measures to ensure indoor temperatures are regulated during a heatwave (Murtagh et al., 2019). There are also behaviors with long-term health effects such as migrating away from affected areas (Zander et al., 2019). Furthermore, most people are facing multiple environmental hazards simultaneously. A broad repertoire of adaptation behaviors will therefore be required in the future, wherefore this is an important emerging field in psychology.

## Understanding and Promoting Environmental Health: The Role of Psychology

As elaborated above, human behavior plays a pivotal role in environmental health, even though psychologists have rarely systemically tackled this. A key contribution of psychology as a discipline, and environmental and health psychology, in particular, is the development of theories about the determinants of behavior change, and the development of behavior change interventions based on these theories. In the following, we provide a brief integrative review of the determinants of mitigation and adaptation behaviors from both environmental and health psychology.

### Determinants of Mitigation and Adaptation Behaviors

Both environmental and health psychology are concerned with explaining mitigation and adaptation behaviors, and their theories show large overlap. Risk perception, a construct from protection motivation theory (Rogers, 1975), for example, plays a role in explaining health behaviors, such as vaccination uptake (Brewer et al., 2007), but can also be used to explain pro-environmental behaviors (Brügger et al., 2015). In addition, people are assumed more likely to engage in behavior change if they expect positive outcomes of the behavior (outcome expectations). While health behaviors are usually motivated by positive *personal* outcomes, such as promoting personal health, pro-

environmental behaviors are usually encouraged by positive *collective* outcomes, such as improved environmental quality or public health. Accordingly, self-transcendence values (i.e. biospheric and altruistic values) that elicit a moral obligation (personal norm) to act have been identified as key motivators of pro-environmental behaviors (Stern et al., 1999). Further, perceiving oneself as capable of performing a behavior (self-efficacy; Bandura, 1997), as well as social norms, have been theorized as key correlates of behavior change (Ajzen, 1991). Most theories assume that a key step to behavior change is forming a behavioral intention, (Ajzen, 1991; Schwarzer, 2008).

Despite good intentions, many people fail to translate their intentions into action (intention-behavior gap; Orbell & Sheeran, 1998). Behavior change frameworks such as the health action process approach (HAPA; Schwarzer, 2008; Zhang et al., 2019) focus on volitional behavioral determinants beyond people's intentions. Volitional strategies such as action planning (a detailed plan, where, when, and how to perform a behavior; Leventhal et al., 1965) and action control (Sniehotta et al., 2005; e.g., monitor whether one is wearing facemask respirators in air polluted areas; Zhou et al., 2016) can be further important behavioral determinants. These are often studied in health psychology. Further, automatic processes, such as habits (cue-behavior associations with a history of repetition; Fleetwood, 2019) are gaining renewed attention as predictors of behavior. Finally, contextual factors, referring to environmental and structural aspects that might enable or hinder behavior can be important (Steg & Vlek, 2009). For example, simply the availability of public transport, recycling facilities, and environmental alternatives in the supermarket are necessary for relevant behaviors to take place (Steg & Vlek, 2009).

Overall, behavior change theories in environmental and health psychology share many overlaps in the key determinants of behavior change as they play a role in both mitigation and adaptation behaviors. Surprisingly, the exchange between the two sub-disciplines has been limited, despite the strong links between environmental and health issues highlighted previously (Bernard, 2019; Nisbet & Gick, 2008).

### Interventions to Promote Behavior Change

Based on behavior change theory, interventions can be derived to promote mitigation and adaptation behaviors. An important achievement of psychologists in this field to date has been to make this process systematic. We now have a taxonomy of behavior change techniques (BCTs), that is, the smallest units of interventions that can bring about change, which makes intervention reporting more transparent (Michie et al., 2013). The latest work has also linked BCTs with behavioral determinants, facilitating the

selection of behavior change techniques for specific behavioral determinants (Carey et al., 2019; Connell et al., 2019). While this work has recently strongly been driven by health psychology, these procedures and tools are readily applicable to the broader environmental health context. Yet, this has rarely been done.

Different theories suggest different ways for promoting behavior change. According to stage models (Bamberg, 2013; Schwarzer, 2008), interventions can be tailored to two general mindsets. For individuals not yet motivated to change (i.e., non-intenders), motivational intervention techniques can aim to create behavioral intentions (“I want to cycle to work, instead of using the car”). For individuals motivated to change, but not performing the behavior (i.e., intenders), volitional intervention techniques could target behavioral adoption and long-term maintenance.

To motivate non-intenders to adopt environmental-health behaviors, research has focused on behavioral determinants such as social norms (e.g., Schultz et al., 2016), perceived costs and benefits, or self-efficacy (Steg & Vlek, 2009). These interventions may address collective goals (e.g., improve quality of nature or public health) or individual goals (e.g., improve the personal financial situation or improve personal health; De Dominicis et al., 2017), and should be matched to recipients’ values (van den Broek et al., 2017). For example, pro-environmental framing has been shown to motivate some persons, whereas others are better motivated by monetary framing (Steinhorst et al., 2015), health framing (Carfora et al., 2019), or social justice (Kals, 1996). Herein also lies the potential of promoting behaviors that have co-benefits for health and the environment. The psychological distance of adverse effects of climate change has been found to be a barrier to mitigation behaviors (Jones et al., 2017). Health behavioral consequences, in turn, might be perceived as more proximal. Depending on the mindset of the target population, interventions may thus either emphasize the health benefits of, for example, active mobility or meat-reduced diets, or their benefits for the environment (Bain et al., 2016). Emphasizing the more proximal health consequences could be promising to motivate those for whom the environmental consequences seem distal. For others (e.g., younger age groups), the health consequences of their behaviors might seem distal, whereas their concern about climate change can be higher than in older age groups (Corner et al., 2015). Research on this promising pathway to promoting mitigation behaviors should take into consideration spillover effects (i.e., beneficial effects on non-targeted mitigation behaviors) as some self-interest motives (e.g., monetary) have been shown to limit spillover (L. Evans et al., 2013).

People who are motivated, but do not act accordingly exhibit the intention-behavior gap (i.e., monitoring goal

progress and investing self-regulatory effort in goal pursuit; Sniehotta et al., 2005; Bamberg, 2013; Inauen et al., 2016; Orbell & Sheeran, 1998). These persons benefit from volitional interventions, including planning, action control, or habit formation (Hagger & Luszczynska, 2014; Verplanken et al., 2018). For instance, individuals can form individual plans on when, where, and how to perform environmental health-related behaviors (Bamberg, 2002), which can be followed up by means of action control (i.e., self-monitoring goal progress and exerting self-regulatory effort in goal pursuit; Sniehotta et al., 2005).

## Accelerating Progress: An Agenda for Environmental Health Psychology

As shown in this paper, there is a substantial need and scope for psychology to contribute to promoting environmental health as behavior change is a key factor. In line with a systemic view of environmental health (Swinburn et al., 2019), and given the considerable overlap and potential synergies between environmental and health psychology, it seems fruitful that both sub-disciplines join forces as environmental health psychology, dedicated to accelerating psychological research and practice related to environmental health. Further psychology sub-disciplines may also contribute, such as clinical psychology (environmental issues also have important effects on mental health; Clayton et al., 2017), or positive psychology (mitigation behaviors can promote well-being; Hunecke, 2013). Below, we outline a research agenda for environmental health psychology, delineating theoretical and applied research questions that should be addressed by psychologists aiming to tackle environmental health.

## Toward an Integrative Understanding of Environmental Health in Psychology

As shown, environmental and health psychology offer synergistic perspectives to enhance our understanding of environmental health. By tackling both the impacts of humans on the environment as well as environmental impacts on human health, environmental health psychology has the potential to lead to a holistic understanding of human behavior related to environmental health. Environmental psychology has already made great progress in understanding mitigation behaviors that help preserve the environment. This line of research may be further enhanced by systematically integrating insights from health psychology,

for example, by including volitional factors from health behavior theories, such as action control (Sniehotta et al., 2005). Good examples of such theoretical integration exist (Bamberg, 2013; Mosler, 2012). However, this research should be expanded further. We hope that our conceptualization of environmental health psychology, and mitigation and adaptation behaviors specifically, will promote such integrative efforts beyond traditional sub-disciplinary boundaries in psychology. For example, a fruitful avenue for this integrative research may be addressing mitigation behaviors that are beneficial to both the environment and human health.

In terms of adaptation behaviors, an important agenda item for environmental health psychology is to intensify psychological science on behaviors that help humans adapt to environmental risks and reduce their effects on human health. These include, for example, using mosquito nets to prevent vector-borne diseases, using face-mask respirators to prevent respiratory diseases from air pollution, or avoiding the impacts of flooding and wildfires. There is research in psychology that has tackled adaptation to environmental risks, especially regarding climate-related hazards (reviewed in van Valkengoed & Steg, 2019), but also regarding pollution of drinking water (e.g., Contzen & Marks, 2018; Inauen et al., 2013), and other pollutants (e.g., Landes et al., 2019; Weinstein et al., 1998). This research should be expanded in light of the pressing environmental issues (e.g., climate change; IPCC, 2014). Further, mental health outcomes are also an important but often overlooked consequence of environmental issues that require psychologists increased attention. Overall, our understanding of human adaptation to environmental issues will benefit from being addressed systemically and jointly by the related psychology sub-disciplines.

## Strengthening Intervention Approaches

An integrative sub-discipline of environmental health psychology should also strengthen behavior change intervention approaches to promote environmental health. Both health and environmental psychology have developed systematic behavior change intervention approaches, such as the behavior change wheel (Michie et al., 2014) or the RANAS approach (risk, attitudes, norms, ability, self-regulation; Mosler, 2012). However, due to low exchange between the sub-disciplines, frameworks have been developed in parallel, hampering cumulative scientific progress. To accelerate research on environmental health promotion, the stronger exchange between environmental and health psychologists concerned with promoting environmental health is therefore highly recommended. This may be achieved, for example, by organizing joint symposia at respective sub-disciplinary conferences.

Combining approaches from environmental and health psychology further provides a chance to promote mitigation behaviors in different ways. For example, motivating people by emphasizing the environmental benefits of their behavior and not only focusing on health benefits could be particularly useful for target groups who are more sensitive to environmental issues than health, such as younger people.

Finally, another important avenue for future research on environmental health promotion is the field of behavior change using digital technology. Social media, for example, are gaining momentum in the context of environmental health (e.g., Frick & Santarius, 2019; Gosling & Mason, 2015). Further, smartphone applications allow monitoring of and providing immediate feedback regarding one's behaviors over long periods of time and sharing these with the community (Mata & Baumann, 2017), thereby promoting social norms. Another promising avenue is just-in-time adaptive interventions (Hardeman et al., 2019; Nahum-Shani et al., 2018) that are used to deliver interventions in critical situations when persons are most susceptible to behavioral changes.

## Recommendations for Practice

Besides research, there are also key recommendations for practice resulting from integrated environmental health psychology. A campaign integrating a holistic environmental health perspective founded in rigorous psychological theory and methods should likely be more effective to promote environmental-health related behavior. First, psychologists apply systematic, theory- and evidence-based approaches that likely tackle key behavioral determinants for the target population, link them with specific behavior change techniques, and evaluate their effectiveness with the required methodological rigor. Thereby, psychologists facilitate progress and learning. Guidelines for systematic behavior change are readily available and include, for example, the behavior change wheel (Michie et al., 2014), intervention mapping (Kok et al., 2004), and the RANAS approach (Mosler, 2012).

Second, a holistic perspective of environmental health should help to tackle people with different motives (e.g., health or pro-environmental motives). As stated above, one essential barrier for engaging in environmental health-related behaviors is the high psychological distance of the negative effects of environmental issues such as climate change (Jones et al., 2017). In an effort to reduce psychological distance, and making environmental issues feel urgent and personal (Stoknes, 2014), highlighting personal health benefits or losses may be helpful. To promote mitigation behaviors, environmental health co-benefits may be

emphasized. Further, highlighting the direct health consequences of climate change may promote adaptation. Overall, intervention strategies should be selected depending on people's personal values to increase their effectiveness (Steg et al., 2014). For the promotion of behaviors that have benefits for both, human health and the environment, such as meat-reduced diets and active mobility, it seems sensible to tailor the communication strategy to the audience. While for some persons, the environmental benefits might seem distal, health consequences of the respective behavior can be a more proximal motivator for change. For others, the environmental benefits might be closely related to their norms and values and even more important than the health benefits. Which benefits to emphasize should thus depend on the target group of the intervention.

## Conclusions

Environmental and health issues are inherently intertwined. Much can therefore be gained by addressing environmental health systemically. Psychology has much to offer the understanding and promotion of environmental health as human behavior is a central aspect here. Environmental and health psychology both offer behavior change theory as well as systematic intervention approaches to enhance our understanding and promotion of mitigation and adaptation behaviors. As an integrated sub-discipline, environmental health psychology can capitalize on the advances and contributions of different psychology sub-disciplines to accelerate our understanding and effective mitigation of environmental issues. Thereby, psychology has the opportunity to contribute to promoting environmental health for all.

## References

- Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005). A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25(3), 273–291. <https://doi.org/10.1016/j.jenvp.2005.08.002>
- Adams, C., Ide, T., Barnett, J., & Detges, A. (2018). Sampling bias in climate – conflict research. *Nature Climate Change*, 8(3), 200–203. <https://doi.org/10.1038/s41558-018-0068-2>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akompab, D., Bi, P., Williams, S., Grant, J., Walker, I., & Augoustinos, M. (2013). Heat waves and climate change: Applying the health belief model to identify predictors of risk perception and adaptive behaviours in Adelaide, Australia. *International Journal of Environmental Research and Public Health*, 10(6), 2164–2184. <https://doi.org/10.3390/ijerph10062164>
- Andor, M. A., & Fels, K. M. (2018). Behavioral economics and energy conservation – a systematic review of non-price interventions and their causal effects. *Ecological Economics*, 148, 178–210. <https://doi.org/10.1016/j.ecolecon.2018.01.018>
- Bain, P. G., Milfont, T. L., Kashima, Y., Bilewicz, M., Doron, G., Garðarsdóttir, R. B., Gouveia, V. V., Guan, Y., Johansson, L.-O., Pasquali, C., Corral-Verdugo, V., Aragones, J. I., Utsugi, A., Demarque, C., Otto, S., Park, J., Soland, M., Steg, L., González, R., ... Saviolidis, N. M. (2016). Co-benefits of addressing climate change can motivate action around the world. *Nature Climate Change*, 6(2), 154–157. <https://doi.org/10.1038/nclimate2814>
- Bamberg, S. (2002). Effects of implementation intentions on the actual performance of new environmentally friendly behaviours – results of two field experiments. *Journal of Environmental Psychology*, 22(4), 399–411. <https://doi.org/10.1006/jevp.2002.0278>
- Bamberg, S. (2013). Changing environmentally harmful behaviors: A stage model of self-regulated behavioral change. *Journal of Environmental Psychology*, 34, 151–159. <https://doi.org/10.1016/j.jenvp.2013.01.002>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- Barnett, A., Akram, M., Sit, C. H.-P., Mellecker, R., Carver, A., & Cerin, E. (2019). Predictors of healthier and more sustainable school travel mode profiles among Hong Kong adolescents. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1), Article 48. <https://doi.org/10.1186/s12966-019-0807-4>
- Bernard, P. (2019). Health psychology at the age of Anthropocene. *Health Psychology and Behavioral Medicine*, 7(1), 193–201. <https://doi.org/10.1080/21642850.2019.1617150>
- Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., McCaul, K. D., & Weinstein, N. D. (2007). Meta-analysis of the relationship between risk perception and health behavior: The example of vaccination. *Health Psychology*, 26(2), 136–145. <https://doi.org/10.1037/0278-6133.26.2.136>
- Brügger, A., Morton, T. A., & Dessai, S. (2015). Hand in hand: Public endorsement of climate change mitigation and adaptation. *PLoS One*, 10(4), e0124843. <https://doi.org/10.1371/journal.pone.0124843>
- Campbell-Lendrum, D., Manga, L., Bagayoko, M., & Sommerfeld, J. (2015). Climate change and vector-borne diseases: What are the implications for public health research and policy? *Philosophical Transactions of the Royal Society B: Biological Sciences*, 370(1665), Article 20130552. <https://doi.org/10.1098/rstb.2013.0552>
- Carey, R. N., Connell, L. E., Johnston, M., Rothman, A. J., de Bruin, M., Kelly, M. P., & Michie, S. (2019). Behavior change techniques and their mechanisms of action: A synthesis of links described in published intervention literature. *Annals of Behavioral Medicine*, 53(8), 693–707. <https://doi.org/10.1093/abm/kay078>
- Carfora, V., Catellani, P., Caso, D., & Conner, M. (2019). How to reduce red and processed meat consumption by daily text messages targeting environment or health benefits. *Journal of Environmental Psychology*, 65, Article 101319. <https://doi.org/10.1016/j.jenvp.2019.101319>
- Clark, M. A., Springmann, M., Hill, J., & Tilman, D. (2019). Multiple health and environmental impacts of foods. *Proceedings of the National Academy of Sciences*, 116(46), 23357–23362. <https://doi.org/10.1073/pnas.1906908116>
- Clayton, S., Devine-Wright, P., Stern, P. C., Whitmarsh, L., Carrico, A., Steg, L., Swim, J., & Bonnes, M. (2015). Psychological research and global climate change. *Nature Climate Change*, 5(7), 640–646. <https://doi.org/10.1038/nclimate2622>
- Clayton, S., Manning, C., Krygsman, K., Speiser, M., Speiser, M., Cunsolo, A., Derr, V., Doherty, T., Fery, P., Haase, E., Kotcher, J.,

- Silka, L., & Tabola, J. (2017). *Mental health and our changing climate: Impacts, implications, and guidance*. American Psychological Association.
- Connell, L. E., Carey, R. N., de Bruin, M., Rothman, A. J., Johnston, M., Kelly, M. P., & Michie, S. (2019). Links between behavior change techniques and mechanisms of action: An expert consensus study. *Annals of Behavioral Medicine*, 53(8), 708–720. <https://doi.org/10.1093/abm/kay082>
- Contzen, N., & Marks, S. J. (2018). Increasing the regular use of safe water kiosk through collective psychological ownership: A mediation analysis. *Journal of Environmental Psychology*, 57, 45–52. <https://doi.org/10.1016/j.jenvp.2018.06.008>
- Corner, A., Roberts, O., Chiari, S., Völler, S., Mayrhuber, E. S., Mandl, S., & Monson, K. (2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators: Engaging young people with climate change. *Wiley Interdisciplinary Reviews: Climate Change*, 6(5), 523–534. <https://doi.org/10.1002/wcc.353>
- De Dominicis, S., Schultz, P. W., & Bonaiuto, M. (2017). Protecting the environment for self-interested reasons: Altruism is not the only pathway to sustainability. *Frontiers in Psychology*, 8, Article 1065. <https://doi.org/10.3389/fpsyg.2017.01065>
- EASAC. (2019). *The imperative of climate action to protect human health in Europe* (EAWAC policy report 38). EASAC.
- eurostat. (2020). *Energy consumption in households*. Eurostat Statistics Explained. <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20200626-1>
- Evans, G. W. (2019). Projected behavioral impacts of global climate change. *Annual Review of Psychology*, 70(1), 449–474. <https://doi.org/10.1146/annurev-psych-010418-103023>
- Evans, L., Maio, G. R., Corner, A., Hodgetts, C. J., Ahmed, S., & Hahn, U. (2013). Self-interest and pro-environmental behaviour. *Nature Climate Change*, 3(2), 122–125. <https://doi.org/10.1038/nclimate1662>
- FAO. (2008). *Climate change and food security: A framework document*. Food and agriculture organization of the United Nations. <http://www.fao.org/3/au035e/au035e.pdf>
- Fleetwood, S. (2019). A definition of habit for socio-economics. *Review of Social Economy*, 1–35. <https://doi.org/10.1080/00346764.2019.1630668>
- Frick, V., & Santarius, T. (2019). Smarte Konsumwende? Chancen und Grenzen der Digitalisierung für den nachhaltigen Konsum [Smart consumption turnaround? Opportunities and limitations of digitalization for sustainable consumption]. In R. Huebner & B. Schmon (Eds.), *Das Transformative Potenzial von Konsum* [The transformative potential of consumption between sustainability and digitalization] (pp. 37–57). Springer.
- Godfray, H. C. J., Aveyard, P., Garnett, T., Hall, J. W., Key, T. J., Lorimer, J., Pierrehumbert, R. T., Scarborough, P., Springmann, M., & Jebb, S. A. (2018). Meat consumption, health, and the environment. *Science*, 361(6399), eaam5324. <https://doi.org/10.1126/science.aam5324>
- Goldmann, E., & Galea, S. (2014). Mental health consequences of disasters. *Annual Review of Public Health*, 35(1), 169–183. <https://doi.org/10.1146/annurev-publhealth-032013-182435>
- Gosling, S. D., & Mason, W. (2015). Internet research in psychology. *Annual Review of Psychology*, 66(1), 877–902. <https://doi.org/10.1146/annurev-psych-010814-015321>
- Hagger, M. S., & Luszczynska, A. (2014). Implementation intention and action planning interventions in health contexts: State of the research and proposals for the way forward. *Applied Psychology: Health and Well-Being*, 6(1), 1–47.
- Hallström, E., Carlsson-Kanyama, A., & Börjesson, P. (2015). Environmental impact of dietary change: A systematic review. *Journal of Cleaner Production*, 91, 1–11. <https://doi.org/10.1016/j.jclepro.2014.12.008>
- Hansstein, F. V., & Echegaray, F. (2018). Exploring motivations behind pollution-mask use in a sample of young adults in urban China. *Global Health*, 14(1), Article 122. <https://doi.org/10.1186/s12992-018-0441-y>
- Hardeman, W., Houghton, J., Lane, K., Jones, A., & Naughton, F. (2019). A systematic review of just-in-time adaptive interventions (JITAIs) to promote physical activity. *The International Journal of Behavioral Nutrition and Physical Activity*, 16(1), Article 31. <https://doi.org/10.1186/s12966-019-0792-7>
- Houlden, V., Weich, S., de Albuquerque, J. P., Jarvis, S., & Rees, K. (2018). The relationship between greenspace and the mental wellbeing of adults: A systematic review. *PLoS One*, 13(9), e0203000. <https://doi.org/10.1371/journal.pone.0203000>
- Hunecke, M. (2013). *Psychologie der Nachhaltigkeit* [Psychology and sustainability]. Oekom. <https://opus.bsz-bw.de/fhdo/frontdoor/index/index/docId/1301>
- Inauen, J., Shrout, P. E., Bolger, N., Stadler, G., & Scholz, U. (2016). Mind the gap? An intensive longitudinal study of between-person and within-person intention-behavior relations. *Annals of Behavioral Medicine*, 50(4), 516–522. <https://doi.org/10.1007/s12160-016-9776-x>
- Inauen, J., Tobias, R., & Mosler, H.-J. (2013). Predicting water-consumption habits for seven arsenic-safe water options in Bangladesh. *BMC Public Health*, 13, 1–10. <https://doi.org/10.1186/1471-2458-13-417>
- IPCC. (2014). *Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and sectoral Aspects. Contribution of working group II to the fifth assessment report of the intergovernmental panel on climate change* [C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, K. L. Ebi, Y. O. Estrada, R. C. Genova, B. Girma, E. S. Kissel, A. N. Levy, S. MacCracken, P. R. Mastrandrea, and L. L. White (Eds.)]. Intergovernmental Panel on Climate Change.
- IPCC. (2018). *Global Warming of 1.5 °C. An IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Intergovernmental Panel on Climate Change. <https://www.ipcc.ch/sr15/>
- Jones, C., Hine, D. W., & Marks, A. D. G. (2017). The future is now: Reducing psychological distance to increase public engagement with climate change. *Risk Analysis*, 37(2), 331–341. <https://doi.org/10.1111/risa.12601>
- Kaiser, F. G., & Wilson, M. (2004). Goal-directed conservation behavior: The specific composition of a general performance. *Personality and Individual Differences*, 36(7), 1531–1544. <https://doi.org/10.1016/j.paid.2003.06.003>
- Kals, E. (1996). Are proenvironmental commitments motivated by health concerns or by perceived justice? In L. Montada & M. J. Lerner (Eds.), *Current societal concerns about justice* (pp. 231–258). Springer. [https://doi.org/10.1007/978-1-4757-9927-9\\_13](https://doi.org/10.1007/978-1-4757-9927-9_13)
- Kelley, G. A., Kelley, K. S., & Callahan, L. F. (2018). Community-deliverable exercise and anxiety in adults with arthritis and other rheumatic diseases: A systematic review with meta-analysis of randomised controlled trials. *BMJ Open*, 8(2), e019138. <https://doi.org/10.1136/bmjopen-2017-019138>
- Klar, M., & Kasser, T. (2009). Some benefits of being an activist: Measuring activism and its role in psychological well-being. *Political Psychology*, 30(5), 755–777.
- Kok, G., Schaalma, H., Ruiter, R. A. C., van Empelen, P., & Brug, J. (2004). Intervention mapping: Protocol for applying health psychology theory to prevention programmes. *Journal of Health Psychology*, 9(1), 85–98. <https://doi.org/10.1177/1359105304038379>



- Künzli, N., Kaiser, R., Medina, S., Studnicka, M., Chanel, O., Filliger, P., Herry, M., Horak, F., Puybonnieux-Textier, V., Quénel, P., Schneider, J., Seethaler, R., Vergnaud, J. C., & Sommer, H. (2000). Public-health impact of outdoor and traffic-related air pollution: A European assessment. *Lancet*, 356(9232), 795–801. [https://doi.org/10.1016/S0140-6736\(00\)02653-2](https://doi.org/10.1016/S0140-6736(00)02653-2)
- Landes, F. C., Inauen, J., Ponce-Canchihuamán, J., Markowski, K., Ellis, T. K., Geen, A., & van., (2019). Does involving parents in soil sampling identify causes of child exposure to lead? A case study of community engagement in mining-impacted towns in Peru. *GeoHealth*, 3(8), 218–236. <https://doi.org/10.1029/2019GH000200>
- Landrigan, P. J., Fuller, R., Acosta, N. J. R., Adeyi, O., Arnold, R., Basu, N. (Nil), Baldé, A. B., Bertollini, R., Bose-O'Reilly, S., Boufford, J. I., Breyse, P. N., Chiles, T., Mahidol, C., Coll-Seck, A. M., Cropper, M. L., Fobil, J., Fuster, V., Greenstone, M., Haines, A., & Zhong, M. (2018). The Lancet Commission on pollution and health. *The Lancet*, 391(10119), 462–512. [https://doi.org/10.1016/S0140-6736\(17\)32345-0](https://doi.org/10.1016/S0140-6736(17)32345-0)
- Lee, I.-M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *The Lancet*, 380(9838), 219–229. [https://doi.org/10.1016/S0140-6736\(12\)61031-9](https://doi.org/10.1016/S0140-6736(12)61031-9)
- Leventhal, H., Singer, R., & Jones, S. (1965). Effects of fear and specificity of recommendation upon attitudes and behavior. *Journal of Personality and Social Psychology*, 2(1), 20–29. <https://doi.org/10.1037/h0022089>
- Lewis, A., & Edwards, P. (2016). Validate personal air-pollution sensors. *Nature*, 535(7610), 29–31. <https://doi.org/10.1038/535029a>
- Lind, H. B., Nordfjærn, T., Jørgensen, S. H., & Rundmo, T. (2015). The value-belief-norm theory, personal norms and sustainable travel mode choice in urban areas. *Journal of Environmental Psychology*, 44, 119–125. <https://doi.org/10.1016/j.jenvp.2015.06.001>
- Mach, K. J., Kraan, C. M., Adger, W. N., Buhaug, H., Burke, M., Fearon, J. D., Field, C. B., Hendrix, C. S., Maystadt, J.-F., O'Loughlin, J., Roessler, P., Scheffran, J., Schultz, K. A., & von Uexkull, N. (2019). Climate as a risk factor for armed conflict. *Nature*, 571(7764), 193–197. <https://doi.org/10.1038/s41586-019-1300-6>
- Mata, J., & Baumann, E. (2017). The dose makes the poison: Theoretical considerations and challenges of health-related POPC. In P. Vorderer, D. Hefner, L. Reinecke, & C. Klimmt (Eds.), *Permanently online, permanently connected: Living and communicating in a POPC world* (pp. 254–264). Routledge, Taylor & Francis Group. <https://doi.org/10.4324/9781315276472-24>
- Mata, J., Thompson, R. J., Jaeggi, S. M., Buschkuhl, M., Jonides, J., & Gotlib, I. H. (2012). Walk on the bright side: Physical activity and affect in major depressive disorder. *Journal of Abnormal Psychology*, 121(2), 297–308. <https://doi.org/10.1037/a0023533>
- Matarazzo, J. D. (1980). Behavioral health and behavioral medicine: Frontiers for a new health psychology. *American Psychologist*, 35(9), 807–817. <https://doi.org/10.1037/0003-066X.35.9.807>
- Michie, S., Atkins, L., & West, R. (2014). *The behavior change wheel: A guide to designing interventions*. Silverback Publishing.
- Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M. P., Cane, J., & Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, 46(1), 81–95. <https://doi.org/10.1007/s12160-013-9486-6>
- Moeller, D. W. (2011). *Environmental health* (4th ed.). Harvard University Press.
- Mosler, H.-J. (2012). A systematic approach to behavior change interventions for the water and sanitation sector in developing countries: A conceptual model, a review, and a guideline. *International Journal of Environmental Health Research*, 22(5), 431–449. <https://doi.org/10.1080/09603123.2011.650156>
- Murtagh, N., Gatersleben, B., & Fife-Schaw, C. (2019). Occupants' motivation to protect residential building stock from climate-related overheating: A study in southern England. *Journal of Cleaner Production*, 226, 186–194. <https://doi.org/10.1016/j.jclepro.2019.04.080>
- Nahum-Shani, I., Smith, S. N., Spring, B. J., Collins, L. M., Witkiewitz, K., Tewari, A., & Murphy, S. A. (2018). Just-in-time adaptive interventions (JITAs) in mobile health: Key components and design principles for ongoing health behavior support. *Annals of Behavioral Medicine*, 52(6), 446–462. <https://doi.org/10.1007/s12160-016-9830-8>
- Nisbet, E. K., & Glick, M. L. (2008). Can health psychology help the planet? Applying theory and models of health behaviour to environmental actions. *Canadian Psychology/Psychologie Canadienne*, 49(4), 296–303. <https://doi.org/10.1037/a0013277>
- Orbell, S., & Sheeran, P. (1998). "Inclined abstainers": A problem for predicting health-related behaviour. *British Journal of Social Psychology*, 37(2), 151–165. <https://doi.org/10.1111/j.2044-8309.1998.tb01162.x>
- Otto, S., Kaiser, F. G., & Arnold, O. (2014). The critical challenge of climate change for psychology: Preventing rebound and promoting more individual irrationality. *European Psychologist*, 19(2), 96–106. <https://doi.org/10.1027/1016-9040/a000182>
- Raworth, K. (2017). A doughnut for the anthropocene: Humanity's compass in the 21st century. *The Lancet Planetary Health*, 1(2), e48–e49. [https://doi.org/10.1016/S2542-5196\(17\)30028-1](https://doi.org/10.1016/S2542-5196(17)30028-1)
- Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91(1), 93–114. <https://doi.org/10.1080/00223980.1975.9915803>
- Sauerborn, R., & Ebi, K. (2012). Climate change and natural disasters – integrating science and practice to protect health. *Global Health Action*, 5(1), Article 19295. <https://doi.org/10.3402/gha.v5i0.19295>
- Schultz, P. W., Messina, A., Tronu, G., Limas, E. F., Gupta, R., & Estrada, M. (2016). Personalized normative feedback and the moderating role of personal norms: A field experiment to reduce residential water consumption. *Environment and Behavior*, 48(5), 686–710. <https://doi.org/10.1177/0013916514553835>
- Schwarzenbach, R. P., Egli, T., Hofstetter, T. B., von Gunten, U., & Wehrli, B. (2010). Global water pollution and human health. *Annual Review of Environment and Resources*, 35(1), 109–136. <https://doi.org/10.1146/annurev-environ-100809-125342>
- Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology*, 57(1), 1–29. <https://doi.org/10.1111/j.1464-0597.2007.00325.x>
- Schwarzer, R., Lippke, S., & Luszczynska, A. (2011). Mechanisms of health behavior change in persons with chronic illness or disability: The Health Action Process Approach (HAPA). *Rehabilitation Psychology*, 56(3), 161–170. <https://doi.org/10.1037/a0024509>
- Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention-behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, 20(2), 143–160. <https://doi.org/10.1080/08870440512331317670>
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., de Vries, W., de Wit,

- C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Meyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1–11. <https://doi.org/10.1126/science.1259855>
- Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38, 104–115. <https://doi.org/10.1016/j.jenvp.2014.01.002>
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309–317. <https://doi.org/10.1016/j.jenvp.2008.10.004>
- Steinhorst, J., Klöckner, C. A., & Matthies, E. (2015). Saving electricity – for the money or the environment? Risks of limiting pro-environmental spillover when using monetary framing. *Journal of Environmental Psychology*, 43, 125–135. <https://doi.org/10.1016/j.jenvp.2015.05.012>
- Stern, P. C. (2011). Contributions of psychology to limiting climate change. *American Psychologist*, 66(4), 303–314. <https://doi.org/10.1037/a0023235>
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81–97.
- Stoknes, P. E. (2014). Rethinking climate communications and the “psychological climate paradox”. *Energy Research & Social Science*, 1, 161–170. <https://doi.org/10.1016/j.erss.2014.03.007>
- Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R. A., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P. S., Howden, M., & Dietz, W. H. (2019). The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. *The Lancet*, 393(10173), 791–846. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8)
- Thunberg, G. (2019). *No one is too small to make a difference*. Penguin.
- van den Broek, K., Bolderdijk, J. W., & Steg, L. (2017). Individual differences in values determine the relative persuasiveness of biospheric, economic and combined appeals. *Journal of Environmental Psychology*, 53, 145–156. <https://doi.org/10.1016/j.jenvp.2017.07.009>
- van Valkengoed, A., & Steg, L. (2019). *The psychology of climate change adaptation* (1st ed.). Cambridge University Press. <https://doi.org/10.1017/9781108595438>
- Varotto, A., & Spagnolli, A. (2017). Psychological strategies to promote household recycling. A systematic review with meta-analysis of validated field interventions. *Journal of Environmental Psychology*, 51, 168–188. <https://doi.org/10.1016/j.jenvp.2017.03.011>
- Verplanken, B., Roy, D., & Whitmarsh, L. (2018). Cracks in the wall: Habit discontinuities as vehicles for behaviour change. In B. Verplanken (Ed.), *The psychology of habit: Theory, mechanisms, change, and contexts* (pp. 189–205). Springer International Publishing. [https://doi.org/10.1007/978-3-319-97529-0\\_11](https://doi.org/10.1007/978-3-319-97529-0_11)
- Watts, N., Adger, W. N., Agnolucci, P., Blackstock, J., Byass, P., Cai, W., Chaytor, S., Colbourn, T., Collins, M., Cooper, A., Cox, P. M., Depledge, J., Drummond, P., Ekins, P., Galaz, V., Grace, D., Graham, H., Grubb, M., Haines, A., ... Costello, A. (2015). Health and climate change: Policy responses to protect public health. *The Lancet*, 386(10006), 1861–1914. [https://doi.org/10.1016/S0140-6736\(15\)60854-6](https://doi.org/10.1016/S0140-6736(15)60854-6)
- Weinstein, N. D., Lyon, J. E., Sandman, P. M., & Cuite, C. L. (1998). Experimental evidence for stages of health behavior change: The precaution adoption process model applied to home radon testing. *Health Psychology*, 17(5), 445–453. <https://doi.org/10.1037/0278-6133.17.5.445>
- WHO. (2019). *Ambient air pollution: Health impacts*. <https://www.who.int/airpollution/ambient/health-impacts/en/>
- Zander, K. K., Richerzhagen, C., & Garnett, S. T. (2019). Human mobility intentions in response to heat in urban South East Asia. *Global Environmental Change*, 56, 18–28. <https://doi.org/10.1016/j.gloenvcha.2019.03.004>
- Zhang, Q. C., Schwarzer, R., & Hagger, M. (2019). A meta-analysis of the health action process approach. *Health Psychology*, 38(7), 623–637. <https://doi.org/10.1037/hea0000728>
- Zhou, G., Gan, Y., Ke, Q., Knoll, N., Lonsdale, C., & Schwarzer, R. (2016). Avoiding exposure to air pollution by using filtering facemask respirators: An application of the health action process approach. *Health Psychology*, 35(2), 141–147. <https://doi.org/10.1037/hea0000264>

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# The Construction of a Hegemonic Social Representation

## Climate Crisis and the Role of COVID-19 in Defining Survival

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**Abstract:** The present paper discusses how climate change and the COVID-19 pandemic can be read as two facets of a Hegemonic Social Representation (HSR) under construction, the representation of survival, reshaping other hegemonic, socially shared representations in the Western culture such as Science, Politics/Democracy, and Nature, on an unprecedented scale. A HSR is proposed in this paper as a useful tool to conceptualize major changes in social thinking, at the interface of individual and collective dynamics. A HSR is defined as the crystallization of a meaning-complex on what is valuable and vital for a community, generating competing for social identities, practices, and social policies. The paper revisits the concept initiated by Moscovici and focuses on the role of competing groups, generating opposing perspectives. We argue that at this crucial point, close attention to the way in which meaning is negotiated across a series of key elements of the HSR of survival will help better informing communication and action concerning climate change.

**Keywords:** climate change, COVID-19, social representations, environment, psychology

In January 2020, COVID-19 (a novel coronavirus) was declared a public health emergency by the World Health Organization, 2 months later it was confirmed as a pandemic (Cucinotta & Vanelli, 2020). The COVID-19 pandemic has shaken world governments and health systems in their attempts to deal with the emergency. It has taken a heavy toll, in terms of individual lives and livelihoods. Additionally, “lockdown” measures put in place by many countries as an attempt to control the spread of COVID-19 infections, have impacted individual freedoms, having an unprecedented impact on lives and how we live in the 21st century. Citizens have found themselves “becoming the news” and the new “geographical borders” are the walls of their homes. Lockdowns have also reduced economic activity. For example, the forced reduction in tourism due to the cancellations of flights and the closure of holiday hotels has impacted tourism and the way in which people in the industry think about future developments for the sector (Prideaux et al., 2020). It is therefore not surprising that the COVID-19 pandemic is often referred to as a “crisis.”

The overall social, political, and psychological impacts of the pandemic are still to be ascertained. In their book, *Together Apart: The Psychology of COVID-19*, Jetten et al. (2020) present a series of key issues faced by societies in the wake of the crisis, arguing that a psychological perspec-

tive can not only account for some of these issues but also give useful insights on how to deal with the pandemic. They argue that the COVID-19 “crisis” has led to a realization of a common “destiny.” Nevertheless, a collective social identity that would support coordinated action to tackle the pandemic has yet to be constructed (Jetten et al., 2020). Jaspal and Nerlich (2020) suggest that a *social representations* perspective can help enhance our understanding of the way in which people talk about, feel, and act in response to the perceived threat of the pandemic. Similarly, we argue that a social representations perspective can highlight how multiple divisions and power differences at the global, national, and community levels result in a “battle of signification,” where opposing groups fight to determine labeling and action. Importantly, for the argument presented in this paper, Jaspal and Nerlich (2020) refer to their work in the area of climate change (CC) as a similar instance in which the application of a social representation (SR) perspective – combined with identity process theory – can give useful insights on the processes involved in the sense-making and reaction to an existential threat (e.g., Jaspal et al., 2014). There is little doubt that CC is also a global phenomenon that is posing an existential threat to humanity (IPCC; see [https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc\\_wg3\\_ar5\\_summary-for-policymakers.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policymakers.pdf)). However, environmental activists have struggled to present

CC as an emergency (e.g., Thunberg, 2018). We argue that a SR perspective can help us better understand this difference, and identify a more efficient way to think about the important dimensions of the battle of signification.

Despite their importance, SR can go unacknowledged, Moscovici (1988, p. 220) writes about the impact of unacknowledged SRs and how a major event or change be revealing. Drawing on the story of Sinbad the Sailor he explains:

“Travellers land on an island and marvel at the pure spring water and the abundance of fruit in the orchards. Some drink their fill, others bathe. Others again light a fire and prepare their meal. They do not realize that this island is a huge fish that has been asleep for so long in the ocean that trees have grown on its back. Feeling the sting of the fire lit by the travelers, it suddenly rises and dives down, pulling down everyone with it towards the abyss. Here we have a powerful image suggesting representations that have been objectified for so long that we no longer notice them. But that does not prevent their being almost ubiquitously the substratum of everything that we conceive as materially independent and given in social life. Under the impetus of some event or change, these representations resurface. And as everything today is in flux, they make themselves felt even before crystallizing in a specific action or reality.”

In this paper, we argue that the current global pandemic and the CC debate have both reinvented – and helped resurface – the hegemonic social representation (HSR) of survival, by reshaping other HSRs such as science, politics/democracy, and nature.

## The Role of Hegemonic Social Representations

In this paper, we propose that social representation theory revisited, with insights from political philosophy and social theory (Arruda, 2014; Castoriadis, 1998; Magioglou, 2014; Magioglou & Obadia, in press; Thompson, 1982) can provide an important framework to understand the tensions arising from the global threats of CC and the COVID-19 pandemic. More precisely, we use Hegemonic Social Representations (HSR). The HSR concept which was introduced by Moscovici (1988, 2007), is combined with the theory of central imaginary notions (Castoriadis, 1998), and Gramsci's work on hegemony (e.g., Stavrakakis, 2017). Magioglou and Obadia in their 2013–2014 research seminar at the Ecole des Hautes Etudes en Sciences Sociales in Paris, discussed the heuristic value of HSR from this interdisciplinary

perspective, referring to democracy, religion, and the economy as HSR (<https://calenda.org/266441?lang=en>; Magioglou & Obadia, in press). In other words, HSR is not conceptualized just as a “bigger” SR, neither as a collective representation, in the way, Durkheim has defined it (2001). The heuristic value of an HSR in our view is that it involves institutions, social practices, roles, and social control, it also unites more than two or three “empty signifiers,” defined by Laclau (1996) as ambiguous constructs which often elude attempts at definition. Different social groups will try to reconstruct and appropriate signifiers, interpreting them in ways that may be mutually exclusive. Laclau uses the example of “order” and “justice” as empty signifiers, where different groups try to impose their definition as the only valid one, “filling in” the meaning void.

In this sense – “freedom” and “justice” can be considered “empty signifiers” both absent and present (Stavrakakis 2017). Importantly, these signifiers can give rise to symbolic tension, as illustrated by Nescolarde-Selva and Usó Doménech (2014, p. 73):

“Two objects, essentially the same and with similar functions, but that are existentially different, become an interchangeable symbolic unit. While agreeing in their functions, with the same properties, both objects that existentially are different, become a unit in the symbol and are interchangeable. The symbolic image is not an ‘example’ (an external and possible relation between two objects or connections), but an internal analogy (a necessary and constant relation).”

Sniderman et al. (1991) from the perspective of Political Psychology, have discussed the way freedom, equality, and justice construct democracy, in a relationship of symbolic tension and antagonism (Magioglou, 2008, 2014).

Another important characteristic of an HSR is the link to a “value”: HSR can be understood as something “valuable,” it allows for significant battles between groups looking for legitimation and to impose their course of action. An HSR is therefore conceptualized as a matrix, in the way democracy has been a matrix of different political systems carrying this name, which can be used to legitimate or delegitimize political systems.

## Hegemonic Social Representations as a Matrix and the Battle for Meaning (Generating Alternative, Polemic Representations)

To summarize, an HSR is conceptualized as a matrix of socially shared meanings constructed as something “valuable,” and vital for a community. By assigning different *meanings* to the elements of the matrix, the same HSR

may legitimate dominance and the status quo, or nourish dissent and minorities which will fight to reverse it (Gillespie, 2008). HSRs are socially, historically, and culturally embedded, but they can encompass different time periods and cultures. For example, democracy, as an HSR comprises different models, from the democracy of ancient Athens to representative democracy or socialism (Held, 2006). Importantly, this conceptualization of HSR as a matrix of constructs allows for different groups to attach different meanings to its components. In this sense, HSR functions as platforms for different forms of subjectivities and social identities.

In this light, if we see HSRs as matrixes of empty signifiers rather than actual content, we can imagine how – by filling the “matrix” with different concepts, the very same HSR can take on a very different meaning. In other words, the agenda-setting literature (Shaw et al., 1997) suggests that media do not tell us what to think, but what to think about, and HSRs establish the important components to be considered when thinking about “big issues.” Opposing social identities and alternative SRs are then mobilized to “fill in” the matrix with meaning in order to legitimate different forms of action, allocation of means, and intergroup conflict or cooperation. For example, as we will discuss later, an HSR of CC will include elements such as science, nature, and democracy, but what these elements actually mean to a group member, will depend on the predominant interpretation of the in-group. When the in-group (i.e., the group one belongs to and/or identifies with) interpretation of the matrix elements is different from the dominant one, it will come to construct what are the “alternative” voices, or “alternative social representations.” The “winning” HSR will be the basis upon which political, social, and institutional decisions are made for the society at large.

To summarize, an HSR is conceptualized as a combination of “empty signifiers” (Laclau, 1996) associated with core values with a highly legitimating power. They are matrixes of meaning-making, but are also historical and societal, involving institutions, social control mechanisms, and social practices. They constitute the battleground of opposing interests and are co-constructed through power struggles, symbolically and materially.

## The Case of COVID-19: Research on Social Representations of the Pandemic

Research on COVID-19 from an SR perspective has focused on it as an emerging object of SR or its socially constructed meaning for societies around the world. This is compatible with the mainstream SR theory, where a new reality or

socially constructed object, for example, COVID-19, is emerging in the everyday experience of the laypeople (Duveen, 2008). This research describes how COVID-19 becomes “objectified” with specific images, as well as “anchored” to a preexisting system of categorizations, for example, it may be constructed as similar to a “flu” or the HIV epidemic, these different constructions will have implications for how COVID-19 is faced (Coli et al., 2020).

These initial studies, although very interesting, only focus on one piece of the new symbolic puzzle. Nevertheless, the emerging data allow us to see how different parts of the world construct COVID-19 or preexisting HSR in science, politics/democracy, and nature. Emerging themes we identified include:

- (a) *The role of science and expertise: To make sense of what is happening, but also to protect the population through medicine, mediated through the media.* Justo et al. (2020) provide an example here. The authors describe the polarization in the public debate in Brazil between the focus on public health and the focus on the economic crisis, with different institutions and public figures constructing COVID-19 in different and oppositional ways.
- (b) *The lived, everyday experience of COVID-19: Including feelings, practices, interactions of the everyday life and death.* Emiliani et al. (2020) used both questionnaires with free associations and qualitative data to demonstrate that, apart from descriptions of the everyday isolation and use of material such as masks and gloves, there is a feeling of void and a realization of a deep change. However, there are alternative constructions of this change, one perceives the disruption and the changes in the everyday “normal” as negative, focusing on the socioeconomic disruption and the fear. The other emerging discourse focuses on disruption from a previous hectic everyday rhythm of life, with a connection to positive changes for the environment. This relates to media images of a clearer atmosphere, due to the reduction of emissions during the first lockdown. However, it is unclear from the research what factors (e.g., socioeconomic status) might be related to the differing constructions.
- (c) *The political: Involving political leadership/decisions, policies imposed on everyday life, inequalities, conspiracy theories, and fake news.* Sitto and Lubinga (2020) using a media analysis in South Africa, present the way politics and pre-existing social inequalities, including access to health care, are involved in the social construction of the SR of the pandemic. They found COVID-19 was represented as a disease of the White and the wealthy. This representation influenced how those not belonging to this social group behaved, for example, lower adherence to guidelines to protect themselves, such as social distancing or wearing

masks, were reported. Deeply embedded social inequality and mistrust for political leadership (represented as corrupt or profiting from the crisis) were also found to be important aspects of the SR of COVID-19 in South Africa.

## **Nature: As the Body, as Something to Control With Science, as a Menacing External Virus, and the Role of Climate Change**

Castro et al. (2018) describe how a top-down political approach (new legislation) to protect the environment and change practices, is facing opposition from ordinary citizens with a different understanding of the situation. This is an example of nature and politics as HSR, used to legitimate opposing courses of action and positions. Pizarro et al. (2020) in a comparative study through a survey via Qualtrics between America, Europe, and Asia, analyze the range and content of SR about the COVID-19 pandemic. The results highlight the importance of the above-mentioned dimensions: nature (as viral), emerging ecology, politics, economy, and everyday citizens as villains, contribute to the construction of an HSR of risk. Social Dominance and Right-Wing Authoritarianism are the variables associated with contrasting representations of these dimensions. In other words, different social groups may construct differently the role of nature and of those considered responsible (political, economic, underdog villains) for the pandemic depending on their political ideology and their social dominance orientation.

The idea of “common destiny” referred by Jetten et al. (2020), can be reframed as a narrative of survival. In other words, the idea of shared, common destiny is – according to this view – an essential element of guaranteeing survival. We argue that the empty signifiers described above (i.e., science, the everyday, ordinary or normal experience, politics/democracy, and nature), are involved in the construction/re-emergence of the HSR of survival as common destiny. This HSR is starting to materialize in collective actions, oppositions, and gradually will redefine other HSR and recombine them in new ways.

## **Climate Change and Survival**

By drawing parallels between some of the key issues brought to the fore by the pandemic and those pertaining to the CC debate, we will argue that this ongoing process will determine whether COVID-19 will raise awareness and influence policy-making toward environmental protec-

tion and a new form of globalization (with regional and global political power stepping in to support people and communities). Additionally, we argue that it may also influence the degree to which it will stimulate hateful and stigmatizing forms of action. Raising awareness that we are in a malleable phase of the reconstruction of an HSR of survival will allow reflection on the determinants and consequences of the prevalence of certain interpretations of reality over others. It will also support identification of the challenges ahead concerning the renegotiation of meaning, structures, and behaviors which will allow the COVID-19 crisis to open the door to a “new normal,” in which addressing the negative impact of human activity on the environment are incorporated in the post-COVID recovery plan. Jetten et al. (2020) argue that a common social identity is a key to success in facing this new global challenge. We argue that positive social identities refer to HSRs for legitimization. It is by reinforcing the argument of a democratic balance of powers and a concept of nature and science as stakeholders in an understanding of an international public sphere and resources that “we” will not be created in opposition to “they” as in Sherif’s seminal work (e.g., Sherif et al., 1988).

In building this argument, we will rely on examples drawn from the COVID-19 ideological battleground, and highlight parallels to the CC issue. As illustrative examples, we will focus on how COVID-19 has led to the challenge and redefinition of hegemonic representations of science, politics/democracy, and nature. These constructs are also key elements in the constellation of meanings associated with the phenomenon of CC and the role of human beings in relation to it. At the same time, these ideas have become the ground of a battle of ideologies, and it is our contention that the winners of the battle will have also an increased weight in the CC battle.

To summarize our objective, after reviewing the ongoing research on COVID-19 and CC (e.g., Emiliani et al., 2020), we observe two potential tendencies: (a) alignment of the symbolic and meaning construction of CC with COVID-19 for the HSR of survival with a common social identity (see also Jetten et al., 2020); or (b) survival in opposition to CC where it is the survival of a group against others (of the fittest, the most powerful, the ingroup).

## **The Meaning of Survival**

COVID-19 has had a great impact, amplified by the lack of coordination in the global sphere. The multilateralism put in place after the major crisis of WWII, with a system of international organizations financed by nation-states, has been in crisis and a lot of uncharted areas without political or other regulation have become exposed (Le Drian, 2020). The World Health Organization, for example, has an advisory role and depends on nation-states for funding.

COVID-19 is exposing further its vulnerabilities and the organization does not have the legitimation and means to take the necessary action (Hale & Held, 2017). Individuals, local communities, and nation-states are left to face an emergency that would require more cooperation and coordination (e.g., Jakovljevic et al., 2020).

COVID-19 emerged quickly and has become the epicenter of our existence, and a life-death issue. It is difficult to escape conversations, jokes, fear, the sickness itself, or the death of a loved one. Mesfin (2020) explains:

“For perhaps the first time in modern history, the entire, interconnected world is focused on solving a single problem. The novel coronavirus, SARS-CoV-2, and the disease it causes, COVID-19, have transfixed the global community, as leaders and citizens seek to respond to a threat whose dimensions are neither entirely certain nor entirely known.” (p. 1)

Despite the existence of a common objective and the realization of common destiny in facing a threat to survival, if action is not coordinated and our common resources are not put together, groups will be fighting literally and symbolically for meaning-making in order to legitimate their course of action (Bibby et al., 2020).

Actions to counter the COVID-19 pandemic are taken at the level of the individual, the communities, and nation-states. Both at the individual and community level, the rupture provoked by the pandemic raises questions like: Why has the pandemic happened?; How? What does it mean for me (us)?; Who should be blamed?; What should be done? In other words: How to make sense of it? A dilemma faced by ordinary citizens, policymakers, scientists, religious leaders, and atheists alike. Meaning-making is a collective process involving both dialogues, and conflict, and the literature on intergroup communication processes in intergroup contact situations highlights the crucial role played by dialogic engagement in promoting positive outcomes (Nagda, 2006). The battle of signification will therefore have consequences for survival: How we define it?; Who are the main actors?; and What are the key components of the redefined global community's response to this threat? As we discussed earlier, when reviewing the SRs associated with COVID-19, three other HSR and main areas of contention among different groups in this battle, have been science, politics/democracy, and nature. We will now turn to analyze each and to link them to CC as a matter of survival.

## Science

The COVID debate often revolved around the role of science in our society. So in one camp, we see science as responsible for the creation and spread of the virus in certain conspiracy-theory accounts (Imhoff & Lamberty,

2020), as backing up with fake or manipulated data an inexistent threat, or science – and the production of a vaccine – as the only potential savior, able to rescue humanity from this “invisible enemy.” Thus, a discussion on the role and purposes of scientific evidence in the public sphere is brought to the fore with unprecedented urgency and emphasis in this context. Luckily for scientists, Plohl and Musil (2021) show that in a sample of 525 English speaking participants recruited on social media, the average level of trust in science is high (4.12 in a 1–5 Likert scale), in line with polls that suggest that (at least in the UK) the majority of people would rely on [medical] scientists' advice on the best way to address the emergency (Carrel, 2020). Thus, while social psychological work warns us against ignoring the impact that a small, but consistent and committed minority has on the general populations' attitudes and behaviors (Wood et al., 1994), the debate over where the responsibility lies, what is the role of science in it and what is the best way forward is still very much in favor of science being a guiding principle in the public's decision making when facing a threat to survival.

When it comes to the CC debate, we see similar tensions between a view of science and scientists as interested elites who are responsible for or complicit in the environmental crisis (Douglas & Sutton, 2015), proponents of an inexistent crisis for their interests and gains, or committed and competent members of society who are capable of guiding us to safety (e.g., Woods et al., 2018). We argue that the way in which we understand the role of science in our societies, and its legitimacy in driving political decision-making is an important element in the matrix also when it comes to the challenge to survival posed by CC, and that the way in which this has been seen within the COVID-19 crisis could play an important role in the debate. We make a case, however, that – while science must be included in the considerations about the best way forward, in order to be able to develop the sense of “we-ness” that Jetten et al. (2020) refer to, it is important to reconsider and reshape the way in which we understand “expertise.”

## Science and Democracy or Science and Populism: The Role of Expertise

Experts and expertise are other significant ideological battlegrounds: who is allowed to speak, whose voice is heard, and with what authority? Indeed, scholars have started exploring the various forms of “ordinary expertise” in the media. For example, Eriksson and Thornborrow (2016) edited a special issue dedicated to ordinary expertise, in the media which demonstrated, on the one hand, the ubiquitous presence of “traditional” experts (i.e., individuals with academic qualifications or relevant experience who are deemed knowledgeable and able to transfer their knowledge to others; Livingstone & Lunt, 1994), and on the other,



the shifting forms of expertise were presented (e.g., Chovanec, 2016). In the case of COVID-19 coverage, we have “the establishment” (the State) and its representatives, claiming they are grounding their policies on the advice coming from experts. Additionally, we also have “alternative” experts who propose different readings of the phenomenon and argue for alternative forms of intervention (see, e.g., Horton, 2020). However, we also have the views and experiences of ordinary people such as frontline workers or those who have lost a loved one to COVID-19. These propose yet other accounts of what is going on and why. It becomes, therefore, important to consider how expertise is defined and understood in a democratic society facing a threat to its survival, and whose voices are constructed as expert voices, worth being listened to, and why.

Curran et al. (2014) have provided initial correlational data showing how a wider representation of democratic (non-establishment) voices in the news are associated with improved engagement in politics. The data from the same study, however, show (Tiffen et al., 2014) how establishment voices still constitute the vast majority of the voices heard in news media across the nine sampled nations. Coen et al. (2020) argue that for more successful communication among citizens on CC impact and responses, and that it is important to redefine expertise and give a broader representation of different experiences and competencies. Thus, we argue for scientific evidence as an ongoing process and not as an objectivation, should be a guiding principle, an element in the matrix when it comes to addressing and debating CC as a challenge to survival. At the same time, though, we suggest that the inclusion of “ordinary citizens” as legitimate voices and elements in the HSR matrix, would strengthen the perception of CC as an issue that directly involves every individual in a society, each bringing to the fore their unique understanding and experience in the solution of this global emergency. In order to achieve this, however, there needs to be a consideration of another important battleground: Who are the ordinary citizens? and What is their role in democratic societies?

### Ordinary People and Democracy

Issues surrounding individual versus institutional responsibility were highlighted in deliberation about lockdown measures adopted by some governments (see also Steffens, 2020). For example, in nations (such as Italy or the UK) in which Governments took more radical measures by imposing a lockdown, the issue of individual responsibility has appeared in governments’ demands to abide by lockdown regulations, as well as on media coverage of the (minority) of instances in which individuals breached the rules, thus, effectively shifting responsibility from rule-makers to rule-breakers (e.g., Christodoulou, 2020; Scognamiglio,

2020). Sweden – traditionally characterized by risk-averse and cautious measures in the face of pandemics, has adopted a different response model, what Giritli Nygren and Olofsson (2020) call *ethnopolitics*:

“The moral component means that individuals are expected to self-regulate in accordance with the norms of a moral, or rather ethical, righteous life (Rose, 2001), where responsibility for the avoidance of risk is bestowed upon individuals, who are supposed to regulate themselves in line with the directions of health authorities.” (ibid, p. 4).

Similar debates occur on the CC front, where individuals’ own responsibility and behavior are often contrasted to that of others’ (and institutional), in order to justify engagement or lack of engagement with environmental issues. For example, Woods et al. (2018) show how individuals commenting on CC related news display arguments in support of or against action aimed at reducing CC emissions, based on the extent to which they attributed moral responsibility to single individuals, groups (e.g., scientists, politicians), or nations. So, the framing of (moral) responsibility for dealing with a global crisis as something to be assigned to different social actors, is associated with support for different types of interventions, both in the context of the pandemic and in the context of CC.

The COVID-19 crisis has also sparked a rejuvenated sense of community, where ordinary citizens signed up to volunteering initiatives in support of the most vulnerable in society, as well as coordinated efforts to support others locally or via social media (e.g., Booth, 2020), demonstrating how ordinary people display greater solidarity and altruistic behavior in emergency situations (Drury, 2018). In other words, independently from the attribution of responsibility, ordinary citizens have been able to self-organize and support each other, build communities, and coordinate action in a truly democratic fashion. Thus, in order to emphasize the sense of “we-ness” when dealing with the CC emergency, it becomes important to better understand and define who “we” are, and to what extent we have representative portrayals of ordinary citizens. Tensions between ordinary citizens and political elites are characteristics of another important area we now turn to consider: politics (Bowman et al., in press).

### Political Leadership and Trust

Politics is a fundamental area of contention and debate. On the one hand, we have a representation of politics as decision-making for the collective. In this case, politicians present themselves as custodians and protectors of the public interest, in a *primus inter pares* fashion. On the other hand,

politics can be represented as “other,” and politicians as self-serving representatives of the elites. The extraordinary case of Dominic Cummings (chief advisor to the UK prime minister at the start of the COVID-19 pandemic) illustrates this point. It emerged that during national lockdown Dominic Cummings – who had tested positive for COVID – violated the travel restriction he contributed to establish. This gave rise to a scandal and the demand from the part of the public for Cummings to resign; it seemed that the political elite was issuing rules for the population, while not abiding by them. While this is in itself a very interesting case study, which illustrates many issues (including the attempts on the part of government and majority MPs to reframe the actions of Cummings as the behaviors of a concerned father and loving husband), in this specific circumstance, the battle of meaning concerns politics and what political representatives stand for. In a way, this debate resembles the debate concerning populism and populist views, and the fact that this faux pas was committed by a populist leader is not lost on some journalists (Hide, 2020). The divide between political elites and citizenry in the public’s understanding of what politics is and what it is for is present also in the CC debate, where academics call for a re-definition and re-construction of the political in relation to this issue (Swyngedouw, 2013). The below description of the way in which CC is addressed in the post-political Western democracies seems to parallel significantly what happened during the COVID-19 emergency:

“Although disagreement and debate are of course still possible, they operate within an overall model of elite consensus and agreement, subordinated to a managerial-technocratic regime (Crouch, 2004). Disagreement is allowed, but only with respect to the choice of technologies, the mix of organizational fixes, the detail of the managerial adjustments, and the urgency of their timing and implementation, not with respect to the socio-political framing of present and future natures.” (p. 6)

In other words, the hegemonic definition of politics in the anthropogenic western world has completely lost elements in the HSR matrix which allows to us imagine and construct a different future for its survival. One of these elements concerns human beings’ relationship with nature.

### **Nature: “Bras De Fer” With Nature or a Socially Constructed Hegemonic Social Representation?**

Nature and our relationship to it is another area which has been brought forward in the COVID-19 debate: nature can

be seen as an “invisible enemy,” a “threat” to human life-style and our very existence (Morin, 1973; Moscovici, 1968): for example, bats or wild animals are carriers of viruses; the last frontier is between them and us; contact with them might be dangerous (e.g., Harari, 2020). This understanding of nature might also target and stigmatize the eating habits of certain populations and cultures which put in danger the rest of humanity. It divides “us” and “them” which can bring further conflicts and divisions. In this logic, punishing these populations is the best way of action (Kappler, 2020). Nature is also represented as a passive resource to exploit for humanity, particularly in neoliberal discourses of modernity. In this sense, there is a division between humanity and nature, but also a relationship of dominance.

Contrastingly, nature is seen as a resource and a refuge for people struggling in these unprecedented times, with calls for individuals to take advantage of the forced reduced reliance on technology and artifacts, to re-engage with nature and “the old ways.” People have started noticing the effects of reduced pollution in the atmosphere, the appearance of birds and animals in the absence of noise and threat posed by transport, and have started appreciating the value of walks in parks and in the countryside to de-stress (Honey-Rosés et al., 2020). This is a more positive view of nature but still relies on the same idea of nature being something at the service of human beings.

Naomi Klein, in *This changes everything* (2015) argues that the key to addressing the climate crisis is to reconceptualize our perception of nature, and our relation to it. Conceptualizing nature as something we are part of, and we need to respect and work in harmony with, would help address the thorny problem of the way we relate to it. Thus, Klein challenges the predominant representation of nature and proposes an alternative representation. The philosopher Michel Serres argues that global environmental change has forced us to reconsider our relationship to nature. In his influential 1990 book, *Le Contrat Naturel*, Serres calls for a natural contract to be negotiated between the Earth and its inhabitants. In the author’s view, our survival depends on the extent to which humans can join together and act globally, on an earth now conceived as an entity. Tracing the ancient beginnings of modernity, Serres examines the origins and possibilities of a natural contract through an extended meditation on the contractual foundations of law and science. The new legislators of the natural contract must bring science and law into balance.

The very definition of nature, its relationship with human beings, and its role in the organization and management of our societies is, therefore, an important area of contention, intensified by the COVID-19 crisis, which will play a significant role in the way in which we deal with CC as a survival issue.

## The “New Normal”

We contend that in this battle of meaning, the “winning” versions of an HSR will determine the dominant view of what is “normal” and “desirable” in society. In other words, the “winning” representations will determine the reference points against which individuals will construct and evaluate their position and understanding of society, the default.

In this light, it is not surprising to see how environmentalists and environmental groups have tried to claim the space of representation, adopting a similar language to that used in the context of COVID-19 to advance its demands on CC. An example is the slogan “let’s flatten this curve too” proposed by Extinction Rebellion to stress how the COVID-19 emergency has shown that societies are able to radically change their way of living in the face of an emergency when faced with an existential threat. The movement’s name in itself is evocative of survival and often claims its actions are driven by the need to guarantee the survival of all forms of life on Earth.

The popular hashtag #notgoingback is used on Twitter to indicate the desire of activists to use the COVID-19 crisis as an opportunity to move away from the “old” normal, which has contributed to the emergence of the CC. Interestingly, Prideaux et al. (2020) draw on lessons learned from COVID-19 to re-design and transform the tourism industry in order to address the CC. Similarly, Honey-Rosés et al. (2020) illustrate post-COVID-19 considerations concerning the future of public spaces. There seems therefore to be an appetite, at least among some, to transform the challenges posed by COVID into opportunities to redesign societies and lifestyles in a more environmentally friendly way.

While desirable (at least for the authors), this endeavor, and its outcomes are not guaranteed. Indeed, the push to “go back to normal,” and the exploitation of the crisis to push further current ideological (capitalistic) agendas and values, constitute a significant challenge (Swyngedouw, 2013). The outcome of which, we argue, will depend also on the outcome of the “battle of meaning.”

## Survival: An Inclusive Social Identity or as the Ingroup (Fittest, “Best,” Powerful)?

We argue that the battle of signification occurring over COVID-19, the latest threat to survival, will have a significant impact on the way in which people will think about survival in global terms, and act upon environmental

issues. Already established HSRs such as science, democracy/politics, and nature will be re-interpreted and reconstructed by different groups in order to legitimate their social identity and action, in a new form of globalization imposed by the realities of the pandemic.

From the psychological perspective of metamodernism (e.g., Vermeulen & Van den Akker, 2010), survival can be considered a form of HSR under construction or a “central imaginary notion” (Castoriadis, 1998) of what constitutes a key part of the globalized world. It acts as the matrix for the creation of other meanings, practices, institutions, and social realities. Democracy, nationalism, and economy, are examples of HSR in modernity, in other words, complex matrices of meaning, culturally created and claimed as legitimating agents in the debates taking place in highly unequal societies. Groups in the competition are constantly reconstructing them. Dominant groups, marginalized minorities, groups with different interests, try to impose their definition as the only legitimate and to legitimate their course of action. In other words, different groups might recognize the “existence” and importance of an HSR and take a position, either by supporting its mainstream definition by dominant groups, using a strategy of reinterpretation, or rejecting it altogether and offering an alternative HSR. In the case of CC, whether and how science and nature will be included as key stakeholders within the global community, our understanding of politics and the role of ordinary citizens in the shaping of the future global society will have important consequences for the way in which we understand and justify the way in which our societies and communities will address the global environmental crisis, providing guiding principles and dimensions along which strategies will be formulated and evaluated.

To conclude, COVID-19 has highlighted some important battlegrounds in the construction of what we understand as survival, restructuring its components and its interpretations. In particular, science and scientists, the role of their expertise in public debates and decision-making, the role of ordinary citizens in the public sphere, our understanding of politics, political priorities, and nature. We have shown how these are key elements of contention also in the case of the CC debate. As Farr (1993) suggests, in order to be able to fruitfully contribute to society “the scientist [...] must make some concessions to common sense, or else risk their advice either being misunderstood or not being acted upon” (p. 198). We hope that this paper has demonstrated that the adoption of the theoretical framework we propose can go further and enable scholars to reflect on how HSR and meaning-making processes and common sense affect social, political, and economic decision-making in the face of global issues.

## References

- Arruda, A. (2014). Social imaginary and social representations in Brazil. *Papers on Social Representations*, 23, 13.1–13.22.
- Bibby, J., Everest, G., & Abbs, I. (2020). Will COVID-19 be a watershed moment for health inequalities? *The Health Foundation*. <https://www.health.org.uk/publications/longreads/will-covid-19-be-a-watershed-moment-for-health-inequalities>
- Booth, R. (2020). Community aid groups set up across UK amid coronavirus crisis. *The Guardian*. <https://www.theguardian.com/society/2020/mar/16/community-aid-groups-set-up-across-uk-amid-coronavirus-crisis>
- Bowman, B., Magioglou, T., & Haste, H. (in press). Can I trust my future? In A. Weinberg (Ed.), *The psychology of democracy*. Cambridge University Press.
- Carrel, S. (2020). Trust in scientists grows as fake coronavirus news rises, UK poll finds. *The Guardian*. <https://www.theguardian.com/world/2020/may/05/trust-in-scientists-grows-as-fake-coronavirus-news-rises-uk-poll-finds>
- Castoriadis, C. (1998). *The imaginary institution of society*. Blackwell.
- Castro, P., Seixas, E., Neca, P., & Bettencourt, L. (2018). Successfully contesting the policy sphere: Examining through the press a case of local protests changing new ecological laws. *Political Psychology*, 39(1), 107–123. <https://doi.org/10.1111/pops.12388>
- Chovanec, J. (2016). "It's quite simple, really": Shifting forms of expertise in TV documentaries. *Discourse, Context & Media*, 13, 11–19. <https://doi.org/10.1016/j.dcm.2016.03.004>
- Christodoulou, H. (2020). FLOUT & ABOUT Coronavirus lockdown breakers revealed in UK heat map—find out if YOUR neighbours are staying at home. *The Sun*. <https://www.thesun.co.uk/news/11336779/coronavirus-lockdown-uk-rule-breakers-map/>
- Coen, S., Meredith, J., Woods, R., & Fernandez, A. (2020). Talk like an expert: The construction of expertise in news comments concerning climate change. *Public Understanding Science*. Advance online publication. <https://doi.org/10.1177/0963662520981729>
- Coli, E., Norcia, M., & Bruzzone, A. (2020). What do Italians think about Coronavirus? An exploratory study on Social Representations. *Papers on Social Representations*, 29(2), 7.1–7.29.
- Cucinotta, D., & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. *Acta Bio-Medica: Atenei Parmensis*, 91(1), 157–160. <https://doi.org/10.23750/abm.v91i1.9397>
- Curran, J., Coen, S., Soroka, S., Aalberg, T., Hayashi, K., Hichy, Z., Iyengar, S., Jones, P., Mazzoleni, G., Papathanassopoulos, S., Rhee, J. W., Rojas, H., Rowe, D., & Tiffen, R. (2014). Reconsidering "virtuous circle" and "media malaise" theories of the media: An 11-nation study. *Journalism*, 15(7), 815–833. <https://doi.org/10.1177/1464884913520198>
- Douglas, K. M., & Sutton, R. M. (2015). Climate change: Why the conspiracy theories are dangerous. *Bulletin of the Atomic Scientists*, 71(2), 98–106.
- Drury, J. (2018). The role of social identity processes in mass emergency behaviour: An integrative review. *European Review of Social Psychology*, 29(1), 38–81. <https://doi.org/10.1080/10463283.2018.1471948>
- Durkheim, E. (2001). *The elementary forms of the religious life*. Oxford University Press.
- Duveen, G. (2008). Introduction. In S. Moscovici (Ed.), *Psychoanalysis, its image and its public* (pp. xi–xvii). Cambridge University Press.
- Emilian, F., Contarello, A., Brondi, S., Palareti, L., Passini, S., & Romaioli, D. (2020). Social representations of "normality". Everyday life in old and new Normalities with COVID-19. *Papers on Social Representations*, 29(2), 9.1–9.36.
- Eriksson, G. & Thornborrow, J. (Eds.). (2016). Mediated forms of ordinary expertise. *Discourse, Context & Media*, 13(1), 1–3. <https://doi.org/10.1016/j.dcm.2016.05.003>
- Farr, R. M. (1993). Common sense, science and social representations. *Public Understanding of Science*, 2, 189–204.
- Gillespie, A. (2008). Social representations, alternative representations and semantic barriers. *Journal for the Theory of Social Behaviour*, 38(4), 375–391.
- Giritli Nygren, K., & Olofsson, A. (2020). Managing the COVID-19 pandemic through individual responsibility: The consequences of a world risk society and enhanced ethopolitics. *Journal of Risk Research*, 23(7–8), 1031–1035.
- Hale, T., & Held, D. (2017). Introduction. In T. Hale & D. Held (Eds.), *Beyond gridlock* (pp. 1–27). Polity Press.
- Harari, Y. N. (2020). *The world after coronavirus*. <https://www.ft.com/content/19d90308-6858-11ea-a3c9-1fe6fedcca75>
- Held, D. (2006). *Models of democracy*. Polity Press.
- Hide, M. (2020). The truth about why Cummings hasn't gone: Johnson is too terrified to sack him. *The Guardian*. <https://www.theguardian.com/commentisfree/2020/may/26/dominic-cummings-boris-johnson-terrified-sack-him?fbclid=IwAR270FCKkxihGwjurloPW9kDCRcqA5cHaSBkOMvr50flVymAknnDREylXYX#maincontent>
- Honey-Rosés, J., Anguelovski, I., Chireh, V. K., Daher, C., Konijnendijk van den Bosch, C., Litt, J. S., Mawani, V., McCall, M. K., Orellana, A., Oscilowicz, E., Sánchez, U., Senbel, M., Tan, X., Villagomez, E., Zapata, O., & Nieuwenhuijsen, M. J. (2020). The impact of COVID-19 on public space: An early review of the emerging questions – design, perceptions and inequities. *Cities & Health*, 1–17. <https://doi.org/10.1080/23748834.2020.1780074>
- Horton, R. (2020). Scientists have been sounding the alarm on coronavirus for months. Why did Britain fail to act? *The Guardian*. <https://www.theguardian.com/commentisfree/2020/mar/18/coronavirus-uk-expert-advice-wrong>
- Imhoff, R., & Lamberty, P. (2020). A bioweapon or a hoax? The link between distinct conspiracy beliefs about the coronavirus disease (COVID-19) outbreak and pandemic behavior. *Social Psychological and Personality Science*, 11(8), 1110–1118.
- Jakovljevic, M., Bjedov, S., Jaksic, N., & Jakovljevic, I. (2020). COVID-19 pandemia and public and global mental health from the perspective of global health security. *Psychiatria Danubina*, 32(1), 6–14.
- Jaspal, R., & Nerlich, B. (2020). Social representations, identity threat, and coping amid COVID-19. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(S1), S249–S251. <https://doi.org/10.1037/tra0000773>
- Jaspal, R., Nerlich, B., & Cinnirella, M. (2014). Human responses to climate change: Social representation, identity and socio-psychological action. *Environmental Communication*, 8(1). <https://doi.org/10.1080/17524032.2013.846270>
- Jetten, J., Reicher, S., Haslam, A., & Gruwys, T. (2020). Introduction. In J. Jetten, S. D. Reicher, S. A. Haslam, & T. Cruwys (Eds.), *Together, apart: The psychology of COVID-19* (pp. 7–19). Sage.
- Justo, A. M., Bousfield, A. B., Giacomozzi, A. I., & Camargo, B. (2020). Communication, social representations and prevention-information polarization on COVID-19 in Brazil. *Papers on Social Representations*, 29(2), 4.1–4.18.
- Kappler, M. (2020). *Why blaming COVID-19 on "bat eating" and "wet markets" is racist and inaccurate*. [https://www.huffingtonpost.ca/entry/wet-market-coronavirus-racist\\_ca\\_5ebad4bec5b6d-d02e421a876?guccounter=1&guce\\_referrer=aHR0cHM6Ly93d3cuZ29vZ2xLmNvbS8&guce\\_referrer\\_sig=AQAAADq2NMPIUq-RekxnpXrfHSMGrTdVvIRxrfYQoff9laorDBbpieOfLnrMPZ2x-6H2AzzFBqkIZ-O92yuid6vg9awj9lPJ9C3PJVWIH13VCxzShSFDHwI-rQJmGwi0\\_8XKXgFTpKjG3f-j3VNxbhPham77sAq-JyK7tvqM5bn\\_-JDL\\_](https://www.huffingtonpost.ca/entry/wet-market-coronavirus-racist_ca_5ebad4bec5b6d-d02e421a876?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xLmNvbS8&guce_referrer_sig=AQAAADq2NMPIUq-RekxnpXrfHSMGrTdVvIRxrfYQoff9laorDBbpieOfLnrMPZ2x-6H2AzzFBqkIZ-O92yuid6vg9awj9lPJ9C3PJVWIH13VCxzShSFDHwI-rQJmGwi0_8XKXgFTpKjG3f-j3VNxbhPham77sAq-JyK7tvqM5bn_-JDL_)

- Klein, N. (2015). *This changes everything: Capitalism versus the climate*. Simon & Schuster.
- Laclau, E. (1996). *Emancipation(s)*. Verso.
- Le Drian, J. Y. (2020). *The COVID-19 pandemic is a wake-up call for multilateralism*. <https://onu.delegfrance.org/The-COVID-19-pandemic-is-a-wake-up-call-for-multilateralism>
- Livingstone, S., & Lunt, P. K. (1994). *Talk on Television: The critical reception of audience discussion programs*. Routledge.
- Magioglou, T. (2008). The creative dimension of Common Sense Thinking in the case of the representation of democracy for young Greeks. *Culture & Psychology*, 14(4), 442–466.
- Magioglou, T. (2014). Democracy as an open-ended question. In T. Magioglou (Ed.), *Culture and political psychology: A societal perspective* (pp. 3–26). Infoage.
- Magioglou, T., & Obadia, L. (in press). Hegemonic social representations and the battle for meaning: Democracy, economy and religion. *Papers on Social Representations*.
- Mesfin, M. (2020). *It takes a world to end a pandemic*. <https://www.foreignaffairs.com/articles/2020-03-21/it-takes-world-end-pandemic>
- Morin, E. (1973). *Le paradigme perdu : La nature humaine* [The lost paradigm: Human Nature]. Editions du Seuil.
- Moscovici, S. (1968). *Essai sur l'histoire humaine de la Nature* [Essay on the human history of nature]. Flammarion.
- Moscovici, S. (1988). Notes towards a description of social representations. *European Journal of Social Psychology*, 18(3), 211–250.
- Moscovici, S. (2007). *Psychoanalysis, its image and its public*. Polity Press.
- Nagda, B. R. A. (2006). Breaking barriers, crossing borders, building bridges: Communication processes in intergroup dialogues. *Journal of Social Issues*, 62(3), 553–576.
- Nescolarde-Selva, J. A., & Usó-Doménech, J. L. (2014). Myth, language, and complex ideologies. *Complexity*, 20(2), 63–81.
- Pizarro, J. J., Cakal, H., Mendez, L., Silvia, D., Zumeta, L., Gracia-Leiva, M., Basabe, N., Navarro-Carrillo, G., Cazan, A.-M., Keshavarzi, S., Delfino, G., Carvalho, C. L., Pinto, I., Mohsin, Z., Espinosa, A., Cueto, R., Cavalli, S., Martinez-Zelaya, G., & Yagiyayev, I. (2020). Tell me what you are like and I will tell you what you believe in: Social Representations of COVID-19 in the Americas, Europe and Asia. *Papers on Social Representations*, 29(2), 2.1–2.38. [https://ri.conicet.gov.ar/bitstream/handle/11336/124419/CONICET\\_Digital\\_Nro.685a2126-a286-4c7c-b927-409e016cabe0\\_A.pdf?sequence=2](https://ri.conicet.gov.ar/bitstream/handle/11336/124419/CONICET_Digital_Nro.685a2126-a286-4c7c-b927-409e016cabe0_A.pdf?sequence=2)
- Plohl, N., & Musil, B. (2021). Modeling compliance with COVID-19 prevention guidelines: The critical role of trust in science. *Psychology, Health & Medicine*, 26(1), 1–12. <https://doi.org/10.1080/13548506.2020.1772988>
- Prideaux, B., Thompson, M., & Pabel, A. (2020). Lessons from COVID-19 can prepare global tourism for the economic transformation needed to combat climate change. *Tourism Geographies*, 22(3), 1–12. <https://doi.org/10.1080/14616688.2020.1762117>
- Scognamiglio, R. (2020). Ecco perché tra soli 10 giorni rischiamo un nuovo lockdown [Here is why we risk a new lockdown in 10 days]. *Il Giornale*. <https://www.ilgiornale.it/news/cronache/fase-2-sui-navigli-milano-pieno-giovani-che-fanno-laperitivo-1861225.html>
- Serres, M. (1990). *The nature contract*. Michigan University Press.
- Shaw, M. E. M. D. L., Weaver, D. H., & Mc Combs, M. (1997). *Communication and democracy: Exploring the intellectual frontiers in agenda-setting theory*. Psychology Press.
- Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. W. (1988). *The Robbers Cave experiment*. Wesleyan University Press.
- Sitto, K., & Lubinga, E. (2020). A disease of privilege? Social representations in online media about COVID-19 among South Africans during lockdown. *Papers on Social Representations*, 29(2), 6.1–6.29.
- Sniderman, P. M., Brody, R. A., & Tetlock, P. E. (1991). *Reasoning and choice*. Cambridge University Press.
- Stavrakakis, Y. (2017). Populism and hegemony. In C. R. Kaltwassser, P. Taggart, P. Ochoa Espejo, & P. Ostiguy (Eds.), *The Oxford handbook of populism* (pp. 1–22). Oxford University Press.
- Steffens, N. K. (2020). Compliance and followership. In J. Jetten, S. D. Reicher, S. A. Haslam, & T. Cruwys (Eds.), *Together, apart: The psychology of COVID-19* (pp. 31–35). Sage.
- Swyngedouw, E. (2013). The non-political politics of climate change. *ACME: An International Journal for Critical Geographies*, 12(1), 1–8.
- Thompson, J. B. (1982). Ideology and the social imaginary: An appraisal of Castoriadis and Lefort. *Theory and Society*, 11(5), 659–681.
- Thunberg, G. (2018). *No one is too small to make a difference*. Penguin Books.
- Tiffen, R., Jones, P. K., Rowe, D., Aalberg, T., Coen, S., Curran, J., Hayashi, K., Iyengar, S., Mazzoleni, G., Papatthanassopoulos, S., Rojas, H., & Soroka, S. (2014). Sources in the news: A comparative study. *Journalism Studies*, 15(4), 374–391. <https://doi.org/10.1080/1461670X.2013.831239>
- Vermeulen, T., & Van den Akker, R. (2010). Notes on metamodernism. *Journal of Aesthetics and Culture*, 2(1), Article 5677. <https://doi.org/10.3402/jac.v2i0.5677>
- Wood, W., Lundgren, S., Ouellette, J. A., Busceme, S., & Blackstone, T. (1994). Minority influence: A meta-analytic review of social influence processes. *Psychological Bulletin*, 115(3), 323–345.
- Woods, R., Coen, S., & Fernández, A. (2018). Moral (dis)engagement with anthropogenic climate change in online comments on newspaper articles. *Journal of Community & Applied Social Psychology*, 28(4), 244–257.

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# Five Roles for Psychologists in Addressing Climate Change, and How They Are Informed by Responses to the COVID-19 Outbreak

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**Abstract:** This paper discusses five areas where psychologists have roles in helping to address climate change, its effects on the planet and human beings, these five areas are as follows: (1) Changing human behaviors that are causing climate change. (2) Increasing human connection with nature in positive ways to heal both the planet and human beings. (3) Advising and assisting on leadership for good governance to protect the planet. (4) Providing support and psychological interventions for those affected by climate change. (5) Preparing for bad outcomes and helping adaptation and survival should these occur. This paper considers the Coronavirus (COVID-19) outbreak and how responses to it give insights for responses to climate change.

**Keywords:** psychologists, climate, COVID-19, behavior, leadership

## Changing Human Behaviors That Are Causing Climate Change

Climate change is evident from global temperature rise, warming oceans, shrinking ice sheets, glacial retreat, decreased snow cover, sea-level rise, declining arctic sea ice, extreme events, and ocean acidification (NASA, n.d.). The executive summary of the Climate Science Special Report (CSSR; 2017) concludes from multiple sources of evidence indicate that: “it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century. For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence.” (CSSR, 2017, p. 35). This is the result of the emissions of greenhouse gasses that reflect back heat to the planet rather than it escaping into space, and the human activities that create these gases, these being the burning of fossil fuels, deforestation, nitrogen fertilizers, and fluorinated gases (European Commission, n.d.). If human activities significantly contribute to Climate Change humans can also

stop it. However, to do so will require changes to beliefs and behavior.

Psychology being the science of the human mind and behavior is the science ideally placed to help alter beliefs and behaviors towards activity to reduce climate change. While scientists from other disciplines develop the technologies to mitigate the effects of climate change, psychologists have a role in persuading people to adapt to activity and use new technologies. Fielding et al. (2014) state: “We do not make the claim that social psychology has all the answers but rather that the theories, models and research methods of social psychology can provide a powerful arsenal to complement the approaches of other disciplines” (Fielding et al., 2014, p. 413).

Stern (2011) believes that the theories of psychological science can be used to change consumer behavior; reduce energy significant behaviors and reduce household carbon emissions. Consumer behavior needs to change through more recycling and reusing, reducing meat in the diet, driving, and flying less, using clean energy and water conservation. Psychology research suggests a range of approaches to change beliefs to motivate people to make

the changes including reinforcing social norms (Biel & Thøgersen, 2007), increasing a sense of cooperation (Brewer & Kramer, 1986), and offering rewards and sanctions (Balliet et al., 2011).

However, changing attitudes do not necessarily lead to changes in behavior, a phenomenon that has been explored in relation to concern for the environment by Blake (1999), Barr (2004), and Retallack et al. (2007). Blake (1999) identified a series of barriers to change which are as follows: that the person does not see it as their responsibility, that they do not trust the government's intentions, or that practically pro-environment decisions are hard to put into practice. Blake considers that changing attitudes is not enough and policy has to tackle these barriers. Psychologists can help in finding how to persuade people that they are the kind of person who makes environmentally responsible decisions, that lack of trust in the government should not stop them from acting pro-environment. In addition, psychologists can advise policymakers on how to make the environmentally virtuous decision the easiest one to make.

Psychological theory can be used to address psychological barriers in order to persuade doubters that climate change is occurring, is largely man-made, and that we all, including them, need to take action now. Psychologists are aware of how people use procrastination to manage anxiety (Pychyl & Sirois, 2016), and how people can defend against emotionally difficult material with defenses (Freud, 1937). They also have the knowledge of how to move people to more effective approaches that actually address the problem rather than managing the difficult emotions associated with it instead. There is still work to be done, as a poll in 2019 of 28 countries demonstrates the variance between nations, for example, 71% of the participants from India believed that climate change is occurring and that humans are mainly responsible, whereas in Norway only 35% believed this. Broadly speaking, the findings on a range of questions showed a "noticeable difference" between the global East and West in beliefs about climate change (YouGov, 2019). Psychologists can explore the reasons for this variance, how factors such as the direct experience of climate change and culture have an impact.

It is important to acknowledge that if everyone changed their behavior to reduce the carbon emissions of their households it would not be sufficient unless there is a change in the actions of corporations and governments, *The Carbon Majors Report* (2017) states that 70% of the world's CO<sub>2</sub> emissions can be traced back to just 100 companies, therefore leverage needs to be applied to these companies. In addition, businesses need to influence one another by establishing norms for actions to reduce climate change, and to in turn influence governments (Schendler, 2009). Psychologists need to work with economists,

environmental scientists, business leaders, and politicians to achieve this change.

The COVID-19 outbreak gives insight into how people respond to change at a time of crisis and how science can inform how government communications shape responses. Lunn et al. (2020) conducted a multidisciplinary search of 100 papers from behavioral science for interventions to change behavior in a crisis, such as how to encourage public-spiritedness through messages of collectivism and how to present risk through numbers showing ranges to describe uncertainty. In addition, research shows that in their communications: "Authorities need to show empathy in communications and demonstrate that they understand how people feel." (Lunn et al., 2020, p. 8).

At the beginning of the COVID-19 outbreak, panic buying occurred in some countries. However, according to Mawson (2005), though it might be assumed that panic and social discord would be the common response in a crisis, reassuringly mutual aid is more likely, as social attachment theory suggests that human beings are essentially gregarious animals where attachments are primary. It is important for the mass and social media to reflect this and not place biased salience on panic behavior which may both encourage them and dispirit others.

Responses to the COVID-19 outbreak in the UK support Lunn et al. (2020) that a sense of shared collectivism was important for adherence to restrictive changes in lifestyles. This is likely to be also the case with climate change with lifestyle adaptations needing to be shared. Guan et al. (2020) state that in response to the COVID-19 outbreak cultural factors were important in understanding responses, at both an individual and a national level, with cultural psychology having important insights to offer. Cultural psychologists can also assist in how cultural factors affect responses to climate change.

During the COVID-19 outbreak, behavioral scientists advised some governments on how to manage the crisis, as it was accepted that until vaccines were developed, altering human behavior would be crucial in reducing deaths. The effectiveness of this involvement may affect public response to the communication of scientists in relation to climate change. The development of vaccines may cause a boost in public perceptions of the importance of science.

## Increasing Human Connection With Nature in Positive Ways to Heal Both the Planet and Themselves

In countries that have seen large scale industrialization and urbanization there has been a negative impact on the



relationship between human beings and the natural environment, as Soga and Gaston (2015) state: “that the loss of interactions with nature does not just diminish a remarkable range of health and well-being advantages, but also discourages people’s positive emotions, attitudes, and behavior with regard to the environment, implying a cycle of disaffection towards nature” (Soga & Gaston, 2015, p. 2). Psychologists have demonstrated this disconnect in a number of ways, for example, Kesebir and Kesebir (2017) found evidence in cultural products, such as reduced references to nature in fiction books, film storylines, and song lyrics, from the 1950s onward. They believe that this may socialize people into a lack of curiosity, respect, and concern for nature echoing the views of Soga and Gaston (2015). The sense of being interconnected to the planet has diminished leads to an increased likelihood that people will act in ways that take less regard for their environmental impact. In addition, there are benefits for humans as: “we are just beginning to appreciate the wealth of human health benefits that stem from experiencing nature and biodiversity” (Sandifer et al., 2015, p. 1).

Increased connection with nature and having a sense of being part of its ecosystems has been demonstrated to be beneficial to human well-being, in healing the planet, this connection may heal people too. Green environments have been demonstrated to have beneficial effects on mental health (Sarkar et al., 2018). In a large-scale survey study ( $n = 19,608$ ) of people’s engagement with nature White et al. (2019) found that 120 min or more engaged with nature was associated with good health and well-being. Nature-based activities can take many forms, for example, Soga and Gaston (2017) through a meta-analysis demonstrated a range of health benefits of gardening, and they concluded that: “A regular dose of gardening can improve public health” (Soga & Gaston, 2017, p. 92).

Psychologists have researched how the connection can be restored and whether this does affect concern for climate change. Clayton et al. (2013) in a study of 7,000 visitors to a zoo and aquarium found that feeling connected to the zoo animals was associated with cognitive and emotional responses to climate change as well as social group affiliation. There is a role for researchers in the area of environmental psychology to find the messages that can both remake those connections and to also activate more self-interest driven motivators. Marshall et al. (2019) in a survey into responses to changes to the Great Barrier Reef found that effective communications about climate change include messages that target altruism and biosphere, together with messages that target egotism through appeals to the health and well-being impact for humans of maintaining a healthy planet.

The COVID-19 outbreak gave a stark warning of how ecosystems connect, and that human beings are part of

them. The same warning was present in the Nipah virus in Malaysia where man-made deforestation added to draught, the 1997/8 El Niño Southern Oscillation event, leading to a reduction in fruiting and flowering forest fruit trees for fruit bats to feed on, and this led to a migration of fruit bats to orchards where pigs were kept. There the pigs ate apples contaminated by bat feces and they caught the virus and when humans ate the pigs they too caught the virus (Chua et al., 2002). Perhaps after the COVID-19 outbreak, there will be a better appreciation that humans are part of nature and our actions have repercussions for the planet and ourselves.

One of the themes of the *lockdowns* that were put in place to deal with the COVID-19 outbreak was a greater appreciation of nature, including observing how nature responds with reduced human activity, how the planet starts to heal and how nature reclaims our spaces. In the UK the annual *Wildlife Trusts Thirty Days Wild* campaign, which occurs in June, there was a significant increase in interest in 2020 compared to previous years (Barkham, 2020). The health, well-being, and environmental benefits of this could be long-lasting if Richardson and McEwan (2018) are correct, their analysis of the 2017 campaign indicated sustained effects in nature connection, health, happiness, and conservation behaviors.

## Informing on the Type of Leadership and Good Governance That Protects the Planet

The responses of individuals to climate change will not be sufficient, countries and large global corporations have good leadership and governance to act as well. Climate change needs to concern governments from the left to the right of the political spectrum. However, climate change and action to address it are associated with the wider environmentalist, Green movement, and progressive politics. Acceptance of the reality of climate change is influenced by political position; in a survey in the USA in 2017, 92% of Democrat voters believed that there is solid evidence that the temperature of the planet is warming which contrasts to only 52% of Republican voters (Pew Research Centre, 2017). This difference may impair politicians associated with the political right to embrace the need for change. There is a need to address this in order to connect with the values of people of all political persuasions. Psychologists with a specialist interests in communications and politics could work together to find dialectics that bridge the divides of political orientation to find unity to address climate change.

The COVID-19 outbreak has demonstrated how different leadership approaches may have different outcomes when people are faced with a challenge that is environmentally based rather than from other human beings. Different leaderships have varied in their concordance with the advice from social scientists on how to communicate and change behavior in a crisis: “German Chancellor Angela Merkel embraces science. Brazilian President Jair Bolsonaro rejects it. The U.S. President Donald Trump’s daily briefings are a circus-like spectacle, while Indian Prime Minister Narendra Modi holds no regular briefings at all, even as he locks down 1.3 billion people.” (Friedman, 2020). The leadership of the Prime minister of New Zealand has come in for particular praise, as it demonstrated both standing with her people, collectivism, and empathy. However, her approach would not be embraced by all.

The COVID-19 outbreak showed the need for cultural sensitivity, as core values for some can be triggered to lead them to oppose the actions needed to deal with the crisis. This was seen in the response around the world from those who saw the lockdown as an attack on their values and civil rights (Ward, 2020). In addition to cultural value, there was fear that tackling the COVID-19 outbreak would trigger an economic crisis. These cultural and economic factors also affect the response to climate change and here cultural and economic psychologists can inform strategy and communication to assist global adherence to the actions needed to reduce climate change.

## Providing Support and Psychological Interventions for Those Affected by Climate Change

The effects of climate change have already impacted the lives of many people in the world, who are facing hardships, displacement from their homes, and trauma. In the USA and Mexico, the evidence shows that climate change is affecting the psychological well-being of rural communities, with an increase in temperature associated with more suicides (Burke et al., 2018). This replicates findings from India, where Carlton (2017) found that in the last three decades climate change lead to crop failure that was responsible for 59,000 suicides of farmers and farmworkers. Psychologists have a role in working out the pathways from climate change and crop failure to farmer and farmworker suicide, together with establishing interventions to mitigate the effects and prevent suicides; how rural communities can be made supportive so that crop failure is not interpreted as a personal failure and the farmer considers themselves as a community provider, not a burden.

It is not only violence to self that increases with climate change but violence to others does as well. Ranson (2014) modeled the effects of a warming temperature and crime by looking at USA records from 1960 to 2009 and established a strong relationship between temperature and violent crime. The prediction is that with global warming there will be an additional 3,500 murders and 216,000 rapes between 2010 and 2099 in the USA. These statistical associations fit with what we know about how changes in temperature affect human behavior, Anderson and colleagues in a series of laboratory studies (Anderson & Anderson, 1984; Anderson et al., 2000) demonstrated how an uncomfortable air temperature increases aggression. In addition, climate change leads to crop failure and a lack of resources that can cause conflicts and violence over what remains. This has been demonstrated by a study by Butler and Gates (2012) which examined the effects of weather changes on East Africa cattle farmers. Further, because climate change disproportionately affects the poor it can lead to a feeling of injustice and be a recruiting sergeant for terrorists. Psychologists can have roles in intervening to provide advice on the impact of temperature, to explain the process of intergroup conflict, and to find ways that people can direct their sense of injustice in more productive directions.

Evidence from the UK suggests that those affected by severe weather events such as storms and flooding have an increased likelihood of psychological problems (Environmental Agency, 2020). Psychologists have a role in helping those affected and who are marginalized from the decision-making process. Climate change disproportionately affects women, as Habtezion states: “Climate change is not gender-neutral” (2013, p. 2) as a result of structural inequalities being more likely to experience poverty and having less socioeconomic power; with a particular vulnerability in developing countries with their income tied to natural resources. Yet women have far less ability to influence because of inequalities and their structural disempowerment globally (UN Women, 2018). In the UK the evidence from the Environmental Agency (2020) suggests that people of low incomes are eight times more likely to be living on land that has a tendency to flood. Psychologists can work actively using their research and interviewing skills to help those who are marginalized yet most affected to have a voice.

People who have yet to experience climate change in physically adverse ways are experiencing increased levels of anxiety about climate change. The term *eco-anxiety* is now used where anxiety is impairing the person’s ability to function. Anxiety about climate change is particularly prevalent for young people, a survey for the UK Children’s television program Newsround (2020) found that climate change was important to 80% of children, 73% worried

about the state of the world now, 58% worried about the effect of climate change on their futures, and 17% said they worry was affecting their eating and sleeping. A survey for Friends of the Earth (2020) indicates an increase in anxiety in 18- to 24-year-olds with 70% more worried about climate change than they were last year. Psychologists have already begun to start to address this, for example, workshops for young people run by Kennedy- Williams (Taylor & Murray, 2020).

Climate scientists who produce and communicate information on climate change are experiencing increased stress affecting their emotional well-being (Gilford et al., 2009), caused by the difficult and complex nature of the material, and that it is open to misinterpretation and misuse. Psychologists have a role in supporting climate scientists to maintain their psychological well-being and hope, to not become dispirited, to avoiding burn out and to remain confident in speaking truth to power.

The COVID-19 Psychological Research Consortium (2020) conducted a survey that indicates the COVID-19 outbreak led to an increase in depression and anxiety across the UK population. In the USA, Twenge and Joiner (2020) found in representative samples of USA citizens in April 2020 participants were eight times more likely to meet the criteria for a serious mental illness than in 2018. An increase in mental health problems in the future is predicted (Holmes et al., 2020). From this, it is reasonable to predict that as the effects of climate change become stronger then there will be an increase in anxiety-related to it. One of the similarities between the COVID-19 outbreak and climate change is that for psychologists working to help other people deal with the psychological consequences, they too are living through the same experience and may experience the same negative effects.

## Preparing for a Bad Outcome and Helping Adaptation and Survival if This Occurs

It is far from certain that significant climate change will be averted, and the impact may threaten the survival of many species of plants and animals across the planet including human beings. Strategies will be needed to maximize species survival of all species including human beings.

Psychologists can have an important role in providing coaching and training for individuals and communities in adapting to climate change. Helping people to identify their risks and vulnerabilities, to prepare for events so if they occur they have a series of prepared responses which should hopefully lead to better decision making in a crisis,

give a sense of mastery, and reduce anxiety. This work may be direct, in collaboration with colleagues from other disciplines, or indirectly through preparing manuals that can be worked through in training and coaching.

Climate change, if not stopped, will lead to large migrations of people from areas severely affected to those less so, putting a strain on migrants and impacting on people in the area they migrate to. Myers (2002) predicts that 200 million people could be climate refugees by the middle of the century. Migration as climate refugees is an adaptive response, but may well not be viewed as such by some people in the areas they migrate to. Migrations in recent years have led to hostility from some. Berg and Fiddian-Qasmiyeh (2018) believe there is a need for a collaboration of scholars, practitioners, and activists from the humanities, arts, and social scientists from the global north and south to reduce the negative effects of migration.

Reducing prejudice is a growing area of research where psychologists have played an important role, for example, the anti-racism approach of Duckitt (1992) that synthesizes the findings of social psychology research into prejudice and racism. If the children of today are taught to be low on prejudice and racism then they will be better placed to be tolerant and kind towards climate refugees in the future. In reducing prejudice, the behavior of parents will be crucial, as demonstrated by Degner and Dalege's (2013) whose meta-analysis of 143 studies covering 43,000 child-parent dyads, unequivocally demonstrated the relationship between parent and child intergroup attitudes through childhood and adolescence.

For migrants their experience has profound psychosocial effects on them, challenging their sense of identity, heritage, ability to maintain traditions together with a decline in community health, and an increase in community aggression due to stress (Hayes et al., 2018). There is a role for community psychologists to work with migrant communities to reduce the impact of psychosocial stressors on their psychological well-being. Preparation work involving psychologists can increase community resources for those facing the worst effects of climate change. Stain et al. (2011) in a study of Australian drought found that when faced with severe drought the psychological effects were mitigated by having a personal sense of hopefulness. Psychologists can help those implementing change policies at these times to build in a sense of hopefulness in their strategies and communications. In addition, communities can be worked with to build their resilience, including both physical and psychological health care systems being made climate change resilient.

The COVID-19 outbreak demonstrated how when a crisis deepens rapidly it is possible for the responses of decision-makers to become more confusing as they manage different agendas including both managing the crisis as well

as their own political survival. There will be a role for psychologists in advising on good leadership and governance for the benefit of as many people as is possible together with our fellow species and the planet.

As the COVID-19 outbreak progressed people delivering various services and providing health care had to adapt to the changing circumstances and to embrace changes that they had not thought possible or had resisted. For example, there was a movement for psychologists from working face to face in a room to working remotely. A survey by Pierce et al. (2020) of 2,619 licensed psychologists in the USA found that though pre-pandemic only 7.07% of the work was teletherapy during the pandemic it had gone up to 85.53% and that post-pandemic they expected to remain at 34.96% of their work to remain as teletherapy. This forced rapid change and helped overcome prejudices against teletherapy. Other health care providers made a similar transition were possible. This was an evidence move in addition to being a risk management one. A systematic review of Monaghesh and Hajizadeh (2020) concluded that “The use of telehealth improves the provision of health services. Therefore, telehealth should be an important tool in caring services while keeping patients and health providers safe during COVID-19 outbreak” (Monaghesh & Hajizadeh, 2020, p. 1). In terms of climate change, it helped reduced health providers’ carbon-footprint. Moving to the *new normal* demonstrated to everyone how if required change to a *new normal* is possible. However, adaptation was more stressful for some than others. Psychologists have an important role in identifying what helps adaptation and coaching those who find it difficult, and this also applies to making the changes to prevent further Climate and adapting to the now inevitable effects.

## Conclusion

The paper identified five roles for psychologists in helping to reduce climate change, roles informed by the COVID-19 experience. Firstly, overcoming barriers to pro-environment behavioral change and advising governments how to communicate messages about climate change and the actions needed. Secondly, demonstrating and promoting the value of people reconnecting with nature and our interdependence. Thirdly, informing on effective leadership for governments to tackle a natural crisis with cultural sensitivity. Fourthly, a psychologist can help people with the effects of climate change, managing anxiety, and a potential increase in violence. Fifthly, a psychologist can help prepare people for bad outcomes, helping adaptation, reducing the negative effects of migration, and reducing prejudice. It is hoped that this paper provides a useful overview and

organizational framework for how psychologists can intervene positively in climate change, with five key areas identified. In addition, some observations and insights from the COVID-19 pandemic have been presented for how they can inform the ongoing response to the far greater challenge of climate change.

## References

- Anderson, C. A., & Anderson, D. C. (1984). Ambient temperature and violent crime: Tests of the linear and curvilinear hypotheses. *Journal of Personality and Social Psychology*, 46, 91–97. <https://doi.org/10.1037/0022-3514.46.1.91>
- Anderson, C. A., Anderson, K. B., Dorr, N., DeNeve, K. M., & Flanagan, M. (2000). Temperature and aggression. *Advances in Experimental Social Psychology*, 32, 63–133. [https://doi.org/10.1016/S0065-2601\(00\)80004-0](https://doi.org/10.1016/S0065-2601(00)80004-0)
- Barr, S. (2004). Are we all environmentalists now? Rhetoric and reality in environmental action. *Geoforum*, 35(2), 231–249. <https://doi.org/10.1016/j.geoforum.2003.08.009>
- Barkham, P. (2020, May 30). Nature on UK doorsteps: thousands sign up for daily “random acts of wildness” Biodiversity. *The Guardian*. <https://www.theguardian.com/environment/2020/may/30/nature-on-uk-doorsteps-thousands-sign-up-for-daily-random-acts-of-wildness>
- Berg, M., & Fiddian-Qasmiyeh, E. (2018). Hospitality and hostility towards migrants: global perspectives – an introduction. *Migration and Society*, 1(1), 1–6.
- Biel, A., & Thøgersen, J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology*, 28(1), 93–112. <https://doi.org/10.1016/j.joep.2006.03.003>
- Blake, J. (1999). Overcoming the ‘value-action gap’ in environmental policy: Tensions between national policy and local experience. *Local Environment*, 4(3), 257–278. <https://doi.org/10.1080/13549839908725599>
- Brewer, M. B., & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology*, 50(3), 543–549. <https://doi.org/10.1037/0022-3514.50.3.543>
- Burke, M., Felipe González, F., Baylis, P., Heft-Neal, S., Baysan, C., Basu, S., & Hsiang, S. (2018). Higher temperatures increase suicide rates in the United States and Mexico. *Nature Climate Change*, 8, 723–729. <https://doi.org/10.1038/s41558-018-0222-x>
- Butler, C. K., & Gates, S. (2012). African range wars: Climate, conflict, and property rights. *Journal of Peace Research*, 49, 23–34. <https://doi.org/10.1177/0022343311426166>
- Carlton, T. A. (2017). Crop damaging temperatures increase suicide rates in India. *Proceedings of the National Academy of Sciences*, 114(33), 8746–8751. <https://doi.org/10.1073/pnas.1701354114>
- Chua, K. B., Chua, B. H., & Wang, C. W. (2002). Anthropogenic deforestation, El Niño and the emergence of nipah virus in Malaysia. *Malaysian Journal of Pathology*, 24(1), 15–21. PMID: 16329551
- Clayton, S., Luebke, J., Saunders, C., Matiassek, J., & Grajal, A. (2013). Connecting to nature at the zoo: Implications for responding to climate change. *Environmental Education Research*, 2(4), 460–475. <https://doi.org/10.1080/13504622.2013.816267>

- COVID-19 Psychological Research Consortium (PRC). (2020). Initial research findings on COVID-19 and mental health in the UK. PRC. <https://drive.google.com/file/d/1A95KvikwK32ZAX387nGPNBCnoFktddum/view>
- Degner, J., & Dalege, J. (2013). The apple does not fall far from the tree, or does it? A meta-analysis of parent-child similarity in intergroup attitudes. *Environmental Education Research*, 20(4), 460–475. <https://doi.org/10.1037/a0031436>
- Duckitt, J. H. (1992). Psychology and prejudice: A historical analysis and integrative framework. *American Psychologist*, 47, 1182–1193. <https://doi.org/10.1037/0003-066X.47.10.1182>
- Environmental Agency. (2020). *Prepare for flooding to reduce impacts on mental health* GOV.UK. <https://www.gov.uk/government/news/prepare-for-flooding-to-reduce-impacts-on-mental-health>
- European Commission. (n.d.). *Causes of climate change*. European Union. [https://ec.europa.eu/clima/change/causes\\_en#:~:text=Humans%20are%20increasingly%20influencing%20the,green house%20effect%20and%20global%20warmingmental-health](https://ec.europa.eu/clima/change/causes_en#:~:text=Humans%20are%20increasingly%20influencing%20the,green house%20effect%20and%20global%20warmingmental-health)
- Fielding, K. S., Hornsey, M. J., & Swim, J. K. (2014). Developing a social psychology of climate change. *European Journal of Social Psychology*, 44, 413–420. <https://doi.org/10.1002/ejsp.2058>
- Freud, A. (1937). *The ego and the mechanisms of defence*. Hogarth Press and Institute of Psycho-Analysis.
- Friedman, U. (2020, April 19). New Zealand's prime minister may be the most effective leader on the planet. Politics. *The Atlantic*. <https://www.theatlantic.com/politics/archive/2020/04/jacinda-ardern-new-zealand-leadership-coronavirus/610237/>
- Friends of the Earth. (2020). *Over two-thirds of young people experience eco-anxiety as Friends of the Earth launch campaign to turn anxiety into action*. FOE.Org. <https://friendsoftheearth.uk/climate-change/over-two-thirds-young-people-experience-ecoanxiety-friends-earth-launch-campaign-turn>
- Gilford, D., Moser, S., DePodwin, D., Moulton, R., & Watson, S. (2009). *The emotional toll of climate change on science professionals*. Eos. <https://eos.org/features/the-emotional-toll-of-climate-change-on-science-professionals>
- Guan, Y., Deng, H., & Zhou, X. (2020). Understanding the impact of the COVID-19 pandemic on career development: Insights from cultural psychology. *Journal of Vocational Behavior*, 119, Article 103438. <https://doi.org/10.1016/j.jvb.2020.103438>
- Habtezion, S. (2013). *Overview of linkages between gender and climate change – Policy brief*. United Nations Development Programme. [http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/TM1\\_AsiaPacific\\_Capacity.pdf](http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/TM1_AsiaPacific_Capacity.pdf)
- Hayes, K., Blashki, G., Wiseman, J., Burke, S., & Reifels, L. (2018). Climate change and mental health: Risks, impacts and priority actions. *International Journal of Mental Health Systems*, 12(28), 1–12. <https://doi.org/10.1186/s13033-018-0210-6>
- Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K., Madan, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., ... Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: A call for action for mental health science. *The Lancet: Psychiatry*, 7(6), 547–560. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)
- Kesebir, S., & Kesebir, P. (2017). A growing disconnection from nature is evident in cultural products. *Perspectives on Psychological Science*, 12(2), 258–269. <https://doi.org/10.1177/1745691616662473>
- Lunn, P., Belton, C. A., Lavin, C., McGowan, F. P., Timmons, S., & Robertson, D. (2020). Using behavioural science to help fight the Coronavirus: A rapid, narrative. *Review Journal of Behavioral Public Administration*, 3(1), 1–15. <https://doi.org/10.30636/jbpa.31.147>
- Marshall, N. A., Thiault, L., Beeden, A., Beeden, R., Benham, C., Curnock, M. I., Diedrich, A., Gurney, G. G., Jones, L., Marshall, P. A., Nakamura, N., & Pert, P. (2019). Our environmental value orientations influence how we respond to climate change. *Frontiers of Psychology*, 10, Article 938. <https://doi.org/10.3389/fpsyg.2019.00938>
- Mawson, A. R. (2005). Understanding mass panic and other collective responses to threat and disaster. *Psychiatry: Interpersonal and Biological Processes*, 68(2), 95–113. <https://doi.org/10.1521/psyc.2005.68.2.95>
- Monaghesh, E., & Hajizadeh, A. (2020). The role of telehealth during COVID-19 outbreak: A systematic review based on current evidence. *BMC Public Health*, 20, Article 1193. <https://doi.org/10.1186/s12889-020-09301-4>
- Myers, N. (2002). Environmental refugees: a growing phenomenon of the 21st century. *Philosophical Transactions of the Royal Society London*, B357(1420), 609–613. <https://doi.org/10.1098/rstb.2001.0953>
- NASA. (n.d.). *Climate change: How do we know?* *Global Climate Change*. <https://climate.nasa.gov/evidence/>
- Newsround. (2020). *Climate anxiety: Survey for BBC Newsround shows children losing sleep over climate change and the environment*. BBC.Org. <https://www.bbc.co.uk/newsround/51451737>
- Pew Research Centre. (2017). *The partisan divide on political values grows even wider. 7. Global warming and environmental regulation, personal environmentalism*. [https://www.people-press.org/2017/10/05/7-global-warming-and-environmental-regulation-personal-environmentalism/7\\_02/](https://www.people-press.org/2017/10/05/7-global-warming-and-environmental-regulation-personal-environmentalism/7_02/)
- Pierce, B. S., Perrin, P. B., Tyler, C. M., Mckee, G. B., & Watson, J. D. (2020). The COVID-19 telepsychology revolution: A national study of pandemic-based changes in US mental health care delivery. *American Psychologist*, 76(1), 14–25. <https://doi.org/10.1037/amp0000722>
- Pychyl, T. A., & Sirois, F. M. (2016). Procrastination, emotion regulation, and well-being. In F. M. Sirois & T. A. Pychyl (Eds.), *Procrastination, health and wellbeing* (pp. 163–188). Elsevier. <https://www.sciencedirect.com/science/article/pii/B9780128028629000086>
- Ranson, M. (2014). Crime, weather, and climate change. *Journal of Environmental Economics and Management*, 67(3), 274–302. <https://doi.org/10.1016/j.jeem.2013.11.008>
- Retallack, S., Lawrence, T., & Lockwood, M. (2007). *Positive Energy: Harnessing people power to prevent climate change – a summary*. IPPR.
- Richardson, M., & McEwan, K. (2018). 30 days wild and the relationships between engagement with nature's beauty, nature connectedness and well-being. *Frontiers in Psychology*, 9, Article 1500. <https://doi.org/10.3389/fpsyg.2018.01500>
- Sandifer, P. A., Sutton-Grier, A. E. W., & Ward, B. P. (2015). Exploring connections among nature, biodiversity, ecosystem services, and human health and well-being: Opportunities to enhance health and biodiversity conservation. *Ecosystem Services*, 12, 1–15. <https://doi.org/10.1016/j.ecoser.2014.12.007>
- Sarkar, C., Webster, C., & Gallacher, J. (2018). Residential greenness and prevalence of major depressive disorders: a cross-sectional, observational, associational study of 94,879 adult UK Biobank participants. *The Lancet: Planet Health*, 2(4), e162–e173. [https://doi.org/10.1016/S2542-5196\(18\)30051-2](https://doi.org/10.1016/S2542-5196(18)30051-2)
- Schendler, A. (2009, March 1). How business can influence climate policy. *Scientific American*. <https://www.scientificamerican.com/article/how-business-can-influence-climate-policy/>
- Soga, M., & Gaston, K. J. (2015). Extinction of experience: The loss of human-nature interactions. *Frontiers in Ecology and the Environment*. *Open Research Exeter*. [https://ore.exeter.ac.uk/repository/bitstream/handle/10871/18516/150802\\_manuscript.pdf;sequence=1](https://ore.exeter.ac.uk/repository/bitstream/handle/10871/18516/150802_manuscript.pdf;sequence=1)

- Soga, M., & Gaston, K. J. (2017). Gardening is beneficial for health: A meta-analysis. *Preventive Medicine Reports*, 5, 92–99. <https://doi.org/10.1016/j.pmedr.2016.11.007>
- Stain, H. J., Kelly, B., Carr, V. J., Lewin, T. J., Fitzgerald, M., & Fragar, L. (2011). The psychological impact of chronic environmental adversity: Responding to prolonged drought. *Social Science Medicine*, 73(11), 1593–1599. <https://doi.org/10.1016/j.socscimed.2011.09.016>
- Stern, P. C. (2011). Contributions of psychology to limiting climate change. *American Psychologist*, 66(4), 303–314. <https://doi.org/10.1037/a0023235>
- Taylor, J., & Murray, M. (2020, February 10). Overwhelmingly terrifying: the rise of climate anxiety: Climate change. *The Guardian*. <https://www.theguardian.com/environment/2020/feb/10/overwhelming-and-terrifying-impact-of-climate-crisis-on-mental-health>
- The Carbon Majors Database. (2017). *CDP carbon majors report 2017*. CDP. <https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf>
- Twenge, J., & Joiner, T. E. (2020). *Mental distress among US adults during the COVID-19 pandemic*. <https://doi.org/10.31234/osf.io/wc8ud>
- UN Women. (2018). Turning promises into action: Gender equality in the 2030 Agenda for Sustainable Development. *United Nations Entity for Gender Equality and the Empowerment of Women (UN Women)*. <https://www.unwomen.org/en/digital-library/sdg-report>
- USGCRP. (2017). Executive summary: Highlights of the findings of the US global change research program climate science special report. In D. J. Wuebbles, D. W. Fahey, K. A. Hibbard, D. J. Dokken, B. C. Stewart, & T. K. Maycock (Eds.), *Climate Science Special Report: Fourth National Climate Assessment* (Vol. I, p. 470). US Global Change Research Program. <https://doi.org/10.7930/JQJ964J6>
- Ward, A. (2020, May 20). Anti-lockdown protests aren't just an American thing. They're a global phenomenon. *Vox*. <https://www.vox.com/2020/5/20/21263919/anti-lockdown-protests-coronavirus-germany-brazil-uk-chile>
- White, M. P., Alcock, I., Grellier, J., Wheeler, B. W., Hortig, T., Warber, S. L., Bone, A., Depledge, M. H., & Fleming, L. E. (2019). Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Scientific Reports*, 9, Article 7730. <https://doi.org/10.1038/s41598-019-44097-3>
- YouGov. (2019). International poll: Most expect to feel impact of climate change. *YouGovUK*. <https://yougov.co.uk/topics/science/articles-reports/2019/09/15/international-poll-most-expect-feel-impact-climate>

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# EFPA News and Views

## Meeting Calendar

**July 18–23, 2021**

**32nd International Congress of Psychology (ICP)**

Virtual Event

*Contact:* Congress Secretariat, Computer System Group a.s., 5. Kvetna 65, 140 21 Prague, Czech Republic, E-mail [secretariat@icp2020.com](mailto:secretariat@icp2020.com), Web <http://www.icp2020.com/>

**August 23–27, 2021**

**35th Annual Conference of the European Health Psychology Society**

Virtual Event

*Contact:* E-mail [info@easyconferences.eu](mailto:info@easyconferences.eu); <https://2021.ehps.net/>

**November 1–12, 2021**

**26th UN Climate Change Conference of the Parties (COP26)**

Glasgow, UK

*Contact:* <https://ukcop26.org/>

**January 11–14, 2022**

**20th EAWOP Congress**

Glasgow, Scotland

*Contact:* EAWOP, <https://eawop2022.org/home-page>

**April 11–14, 2022**

**Annual Meeting of the American Society on Aging**

New Orleans, LA, USA

*Contact:* ASA, Web <https://www.asaging.org/future-asa-annual-meetings>

**May 20–22, 2022**

**APS College of Clinical Psychologists Conference**

Brisbane, QLD, Australia

*Contact:* Australian Psychological Society, E-mail [contactus@psychology.org.au](mailto:contactus@psychology.org.au), Web <https://www.psychology.org.au/APS-CCLIN-Conf/2022>

**June 29–July 2, 2022**

**10th European Conference on Positive Psychology**

Reykjavik, Iceland

*Contact:* SENA, Reykjavik, Iceland, E-mail [gudrun@sena.is](mailto:gudrun@sena.is), Web <https://ecpp2020.com>

**July 5–8, 2022**

**17th European Congress of Psychology (ECP2022)**

Ljubljana, Slovenia

*Contact:* Slovenian Psychological Association, Web <https://www.ecp2022.eu/>, and European Federation of Psychologists' Associations, E-mail [headoffice@efpa.eu](mailto:headoffice@efpa.eu), [gregor.rogac@cd-cc.si](mailto:gregor.rogac@cd-cc.si), [registration@cd-cc.si](mailto:registration@cd-cc.si)

**August 12–13, 2022**

**International Conference on Psychology of Sustainability**

Venice, Italy

*Contact:* <https://waset.org/psychology-of-sustainability-conference-in-august-2022-in-venice>

**2022**

**36th Annual Conference of the European Health Psychology Society**

Bratislava, Slovakia

*Contact:* <https://ehps.net/conferences/#>

# European Federation of Psychologists' Associations

## What Is EFPA?

EFPA is the leading Federation of National Psychologists Associations. It provides a forum for European cooperation in a wide range of fields of academic training, psychology practice and research.

There are 37 member associations of EFPA representing about 300,000 psychologists.

The member organizations of EFPA are concerned with promoting and improving psychology as a profession and as a discipline, particularly, though not exclusively, in applied settings and with emphasis on the training and research associated with such practice.

The psychologists in the member associations include practitioners as well as academic and research psychologists.

The Federation has as one of its goals the integration of practice with research and the promotion of an integrated discipline of psychology.

## What EFPA Does

- Representation, advocacy, and lobbying at European level
- Promotion of psychology education, research and profession
- EuroPsy certification
- Test User Accreditation
- Support for Member Associations
- European projects
- Advice on professional affairs, work areas, new developments
- Publicity and information sharing
- European Congress of Psychology
- *European Psychologist* (Official Organ of the EFPA, <http://www.hogrefe.com/j/ep>)
- The EFPA News Magazine (<http://efpa.magzmaker.com/>)

## EFPA Membership

Membership is open to the national psychologist association of all European countries but there may be only one member association per country. EFPA has no individual members.

In countries where there is more than one national psychologist association, the Federation should endeavour to identify the most representative organization and, if appropriate, encourage the development of a national federation in order to promote co-operation among psychological associations.

Membership is determined by the General Assembly upon presentation of the applicant association's articles, statutes, and code of ethics plus details of the membership (see EFPA Statutes Article 5).

As a European federation representing the interests of psychologists in Europe, EFPA is committed to making contact with member associations of psychologists from European countries, which are not yet members of EFPA.

This is particularly the case in relation to psychologists' associations from countries in the east of Europe, with whom EFPA is concerned to make contacts, to share information and to promote collaboration.

A member of the EFPA Executive Council has responsibility for developing these links and contacts, and the EC will attempt to help to support initiatives.

A full list of all EFPA members associations can be found at <http://www.efpa.eu/members>

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May 2021



# 17th European Congress of Psychology

## Psychology as the Hub Science: Opportunities & Responsibility

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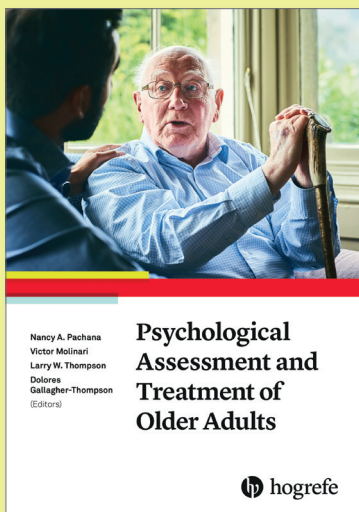
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