Climate Crisis and the Human Factor: 10 Psychological Keys to Unlocking Climate Action

Opinion paper

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10 Psychological Keys to Unlocking Climate Action

Opinion paper of the EFPA's Expert Reference Group
for Psychology and Climate Change

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1. Abstract

Anthropogenic global climate change and its disruptive impact on ecosystems and communities around the world are subjects of widespread scientific consensus. The European Federation of Psychologists' Associations (EFPA) has made climate change one of its priorities. In this opinion paper, the EFPA Expert Reference Group for Psychology and Climate Change addresses what they consider to be the ten most important issues in the field of psychology and climate change, highlighting the role of psychology in mitigating and adapting to the climate crisis. The socio-ecological model is presented as an approach effectively encompassing various determinants of pro-environmental behavior, engagement in climate action, and climate change-related mental health at the individual, social, organizational, and systemic levels. Sustainability serves as the general framework for understanding the role of psychology. While sustainable transformation is necessary, it may be challenging due to psychological and systemic barriers. These barriers can be overcome through collective actions and building collective efficacy. Diverse emotions play an important role in shaping individual and collective behaviors related to climate change; they contribute to both resilience and the deterioration of mental health at the individual and community levels. In addition to internal mental processes, institutional, organizational and social mechanisms foster sustainable practices. Institutional, organizational, and societal mechanisms, alongside internal psychological processes, foster sustainable practices. Psychological research on these mechanisms and processes should inform strategies at the level of policy-making and environmental communication that are critical to shaping public perception and behavior. A unified approach to psychological research and practice across individual, societal, organizational, and systemic levels is needed for a resilient response to climate and associated societal challenges.

2. Keywords

climate change; climate crisis; climate action; climate resilience; pro-environmental behavior; mental health and well-being; psychology

3. Executive Summary

Psychology as the study of mind and behavior has a role to play in the field of climate change, where individual behavior in its socio-ecological context can make a substantial contribution. This document aims to describe with relevant points how psychological expertise can contribute to mitigating and adapting to the climate crisis, at different levels of influence. It was developed in collaboration between European academics, independent practitioners, under the auspices of European psychology organizations, and represents at a time empirical evidence and professional experiences.

I. Sustainability as a New Base. The pursuit of sustainability challenges traditional materialistic views of success and happiness, suggesting that greater well-being can be achieved through environmentally-friendly and less consumer-driven lifestyles. This shift requires a significant psychological and cultural adaptation, moving away from consumption-focused values towards a more sustainable approach to living.

II. Sustainable Transformation. Tackling the climate crisis involves balancing individual stress and participation in societal change. Psychology aids in navigating this by considering climate justice and individual differences. Personalized, appropriately paced behavior change within a broader societal context is key. However, focusing only on individual actions may neglect necessary systemic changes. Effective climate strategies should be sustainable, science-driven, and community-based.

III. Collective Efficacy. In confronting global crises, collective action is crucial. Working together in families, teams, and communities is more effective for coping with stress and adapting to change. Collective efficacy is key in environmental actions, influencing individual action and enhancing faith in community-driven change. This group-based approach, stronger than self-efficacy, motivates pro-environmental behavior and policy acceptance, showing that shared experiences and group norms are more impactful than mere information or persuasion in driving behavioral change.

IV. Emotions as Drivers for Action. In climate change psychology, the focus is shifting from being solely on cognitive attitudes to also include emotional responses in influencing pro-environmental behaviors. Emotions like eco-anxiety play a complex role in motivating action; they can be both adaptive and counterproductive. The 'emotional turn' in environmental communication acknowledges emotions as key drivers but caution is necessary, taking into account their potential negative impacts on mental well-being and the risk of over-relying on emotional appeals for inducing pro-environmental actions.

V. Mental Health and Resilience. The impact of climate change on mental health includes both direct effects, like heat-related stress, and indirect effects from natural disasters and socio-political pressures. In this context, emotions extend beyond motivating climate action to significantly impacting mental health and well-being. Negative emotions like eco-anxiety, although common in environmental concern, can contribute to mental health challenges, particularly for vulnerable groups. Addressing direct and indirect mental health effects requires recognizing the variety of affected groups and fostering resilience, both individually and within communities, to adapt to climate-related stressors effectively.

VI. Pro-Environmental Behavior in a Community Context. To mitigate climate change effectively, emphasis should be placed on high-impact pro-environmental behaviors within communities, targeting those most active in areas like transport, diet, consumption of goods and energy use. Overcoming barriers such as lack of awareness and structural challenges is crucial, and community-level interventions can harness social norms and values to propagate pro-environmental behaviors. This collective approach not only fosters individual and group resilience but also addresses ethical concerns related to global inequalities and the responsibilities of wealthier nations.

VII. Pro-Environmental Behavior in an Organizational Context. Organizations, including public, commercial, and NGOs, significantly shape pro-environmental behavior through both internal policies and public engagement. By embedding environmental values into their operations and communications, such as performance indicators and annual reports, they promote sustainable practices among employees and the wider public. Their role extends beyond influencing behaviors to actual CO_2 emissions reduction, requiring transparency and accountability to build trust and avoid greenwashing. These organizational efforts support broader systemic changes necessary for effective climate action.

VIII. Climate Policy. Psychology's role in shaping pro-environmental public policies is vital as policy moves beyond individual behavior changes to address systemic and political actions necessary for carbon neutrality. Psychologists bring insights from political psychology to influence policy design and implementation at various levels. Their involvement includes political advocacy, enhancing trust and hope in political processes, and ensuring policies are informed by an understanding of social dynamics and human behavior. This broader application of psychological principles helps empower communities, foster public engagement in environmental actions, and supports sustainable policy development.

IX. Climate Change Communication. Climate change communication aims to shift behaviors and foster societal engagement in sustainability through psychologically informed strategies. Effective communication requires more than just information delivery; it involves engaging in dialogues, strategic messaging, and visible examples of sustainable behaviors to establish new social norms. This approach leverages psychological insights to create messages that resonate with diverse values and motivations, using framing techniques to highlight the personal and collective benefits of environmental actions. The goal is to empower communities, enhance participation, and promote a broader commitment to environmental stewardship as well as improving efficacy of pro-environmental action.

X. Collective Responsibility. Broadening the scope of psychology in climate action is critical, emphasizing the need to move beyond influencing individual behavior to impacting collective efforts and systemic changes. Psychology must engage with community actions and target decision-makers and economic leaders who possess the capability to implement transformative, large-scale environmental reforms efficiently. This shift is essential for achieving substantial and effective solutions to climate as well as other socio-ecological challenges.

GLOSSARY: EFPA Expert Reference Group. (2023). Climate Change and Psychology Glossary. European Federation of Psychologists' Associations (EFPA). https://www.efpa.eu/sites/default/files/2023-06/efpa-expert-reference-group-climate-change-and-psychology-glossary_may-2023.pdf

4. Introduction

4.1 Psychology and Global Climate Change

An anthropogenic global climate change and its disruptive impact on ecosystems and communities around the world is subject to a widespread scientific consensus (IPCC, 2022). Global warming and related loss of biodiversity indicate a threat to environment, society, economy, geopolitics, and human health. Therefore, they are often called the climate crisis or the climate emergency to emphasize an urgency of the issue (Arias et al., 2021; Cardinale et al., 2012). They are the most pressing examples of socio-ecological crises (Future Earth, 2021; World Economic Forum, 2022).

The way of describing climate change linguistically is considered important, but it is also a matter of debate: a descriptive term of *climate change* or *global warming* tends to be criticized for leaving a space for perception of global warming as neutral or even beneficial. *Climate crisis* and *climate emergency* are free from this flaw but raise other controversies: *crisis* suggests a relatively short-time extreme situation, whereas the problem has been going on since the 1970s (Dunlap, 2013). Framing it as *climate emergency* is, in turn, suspected to undermine climate justice in the context of policymaking (Osborne & Carlson, 2023).

In contemporary understanding, crisis can also be understood as a longer critical period in the face of a significant threat. Especially from a psychological perspective, the experience of crisis is also an important indicator for the presence of a crisis. And this crisis perception has shaped public and political debates since the emergence of the recent climate movement and the increasing media coverage of global, sometimes catastrophic, weather phenomena that have been linked to global warming. Climate change has in fact already led to disasters in many places and threatens to bring the entire world community into a global (health) emergency (Abbasi et al., 2023). In our paper, we thus use the terms climate crisis and climate emergency interchangeably; while psychology may lack perfect terminological solutions, the discipline needs to recognize the relevance of language when addressing these issues (Shome & Marx, 2009).

The climate crisis contributes to the global cumulative crisis with pandemics, armed and civil conflicts, crisis of migration and refugees, and economic crisis, all creating immense challenges for individuals, communities, and society (Lawrence et al., 2022). The urgency and complexity of the threats posed by climate change are leading to many different academic and practical disciplines working to understand the climate emergency and define the actions needed to mitigate it (i.e., to prevent further environmental degradation caused by the climate change); and adapt to those irreversible natural and social consequences that cannot be prevented anymore. Reducing greenhouse gas emissions is central to stopping further climate change (IPCC, 2022), however, it is not only a matter for natural science and technology. Efforts on the side of medical science, behavioral science, social science, and humanities are also needed to understand our abilities to introduce and sustain necessary changes, and our vulnerabilities in the face of the climate threat. Therefore, although in this paper we focus on the particular task of psychology in relation to climate change and crisis, we call to promote a cross disciplinary approach in investigating and educating about climate issues.

Psychology participates in the task of mitigation of and adaptation to global climate change, just like it has contributed and should continue to contribute to maintaining democracy, peace, equality, and justice. Climate responsibility may be ascribed to psychology as an academic discipline (including

universities being the institutions able to introduce and model the necessary changes), as a field of practice (e.g., dealing with the mental health consequences) and policymaking (e.g., with organizational psychology supporting companies and institutions like schools or universities in creating sustainable organizational culture and leadership), as well as to the actions and attitudes of psychologists as individual citizens. The reason for this is that psychology may have the tools for fueling the necessary urgent actions, for addressing challenges to take the actions, and for supporting people in building their resilience (e.g., APA Task Force on Climate Change, 2022).

The European Federation of Psychologists' Associations (EFPA) made climate change one of its priority actions and a focus for the goals of EFPA's working groups. Therefore, in 2021 it formed the *Expert Reference Group for Psychology and Climate Change*, comprising European experts with research track records and professional knowledge in psychology and climate change. The composition and focus of the group has ensured that contributions are based on evidence and in-depth reflection. This paper is a result of ongoing discussions and a literature review grounded in the varied academic expertise in the field that has been conducted by the group. It has been consulted with a community of psychologists during a workshop organized at the European Congress of Psychology held in Brighton, United Kingdom, in July 2023. Results of the consultation were included in the paper and supplemented by further literature analysis. In a second consultation round, further peer feedback has been obtained. In this paper, the expert reference group shares their choice of the most important issues in the field of psychology and climate change with the broader community of psychologists and has set out to develop an informed opinion on how psychology should address the challenges arising from the climate emergency.

4.2   The Socio-Ecological Model

Human individual, social, and organizational behavior is related to climate change in many ways, in particular human health and wellbeing is impacted by the climate emergency. This is in line with the *Socio-Ecological Model* that has been applied to various types of behaviors and health determinants (Dahlgren & Whitehead, 2021), including pro-environmental behavior and the impact of climate change on mental health and emotional well-being (e.g., Lawrance et al, 2022; Patrick et al, 2022). Psychological expertise from various sub-disciplines (e.g., clinical and health psychology, social psychology, neuropsychology etc.) and at all levels (micro, meso, macro; individual, social, organizational) should be applied to understand climate change and its critical consequences for individuals and society, as well as supporting a sustainable and just environmental transition (Brutzman et al., 2022).

The individual stands at the core of the Socio-Ecological Model, but the model assumes bi-directional relations between all levels (Dahlgren & Whitehead, 2021). Thus, changes could be initiated by individuals as well as organizations, communities or introduced at the policy level (O'Brien & Sygna, 2013; Stadelmann-Steffen et al., 2021). For example, a policy measure like imposing an air tax for short flights, will impact the organizational level (e.g., a company may decide that it is more cost efficient to take trains for short trips and impose this on their employees), social or community level (e.g., peer pressure of choosing sustainable means of transport), and eventually at individual level (e.g., changing a person's attitudes towards air travel for short distances). At the individual level or the level of psychological practice, we may focus on changing behavior of a person, but it is influenced by factors at other levels as well, for example political, economic, and cultural factors (e.g., economic or cultural opportunity for certain behaviors, like substituting meat by high-quality plant-based proteins). However, the individual influences the system as well: in democracies,

policymakers need to be sensitive to the will of citizens if they aim to stay in power. Industry and its executives are responsive to consumer demands. If individuals and families were to purchase only environmental-friendly products (*green products*), the market would need to follow in order to stay in business. And of course, policymakers or company leaders are also individuals influencing systems, besides their official roles.

Since industry often attempts to influence and co-create demands and needs of consumers, the regulatory power of policymaking is often required to foster sustainable values in society. However, affordability of green products for a great part of the population seems to be a condition for consumer choices to impact the industry and market, and the environment as a result. It is reasonable to recognize economic factors, not only psychological and social factors, as decisive for people's behavior. Behavior is therefore inevitably linked to the context of economic system. Especially growth-oriented market processes and economic inequalities, which are highly responsible for the climate emergency, shape people's behavioral repertoire as well and may create challenges to mass adoption of pro-environmental behaviors.

Thus, these factors need to be included in psychological understanding of human (un)sustainable behavior and in designing sustainable behavioral change, particularly when climate justice is regarded as a leading value of mitigation and adaptation efforts. Even the most noble and environmentally beneficial recommendations, directed at individuals and communities that cannot afford implementing them, may result in helplessness, psychological burden, or resistance toward the pro-environmental change.

4.3   The Individual and the System

Psychology as a discipline of academic research and evidence-based practice and intervention is usually thought of as dealing with individuals at various levels (i.e., their intrapersonal mechanisms, individual traits, interpersonal relationships, their systemic co-dependencies in family, in organization, in community). While systemic, social, cultural issues are frequently addressed, an individual person seems to remain the basic unit of psychological knowledge. However, psychological research is broad with diverse sub-disciplines. There are differences in approach among these sub-disciplines and professional psychologists related to the extent to which the human condition and human functioning are determined by individual, social, systemic, or cultural factors. As a consequence, there are differences in how the role of individual determinants is perceived in building psychological theory, knowledge, and expertise. Importantly, these differences remain unresolved since they are rather a matter of various basic assumptions in psychology sub-disciplines, than a matter of empirical evidence. These differences are clearly visible in the emerging field of the psychology of climate change, where we may encounter constant tension between individual and systemic approaches (the former are then criticized as erroneous individualization, and the latter as inappropriate politicization of psychological knowledge).

In the context of climate change, when psychology is subject to criticism for excessively individualizing and naturalizing phenomena of a socio-political and cultural character, it is usually considered part of the problem (since it is believed to implicitly legitimize and consolidate the status quo that has contributed to the climate crisis, among other contemporary adverse socio-political phenomena) (Riley et al., 2018). Regardless of whether this criticism is found plausible by an individual psychologist or within a particular sub-discipline, psychology presently bears significant responsibility for contributing to mitigation of and adaptation to the climate crisis, and this may also

require critical reflection and re-thinking of some established key psychological concepts (Kałwak & Weihgold, 2022; Parker, 2007; Riley et al., 2018; Uzzel, 2008).

For example, clinical psychology usually looks at an individual and their intrapersonal psychopathological processes to diagnose and treat mental health difficulties, whereas community psychology sees mental health as an issue of the person's environment and the various resources to which they do or do not have access. While the coexistence of individual and environmental factors is generally believed to be responsible for good and worse mental health, clinical psychology and community psychology differ in what is emphasized (Kagan et al., 2022; Kagan et al., 2011). This difference of basic assumptions about the aetiology of worsened psychological condition is vividly present in the discussion on mental health and climate change. It usually includes a recognition of increasingly worse mental health of people and observing new psychological syndromes arising from the impact of the climate emergency on the one side; and on the other side, a critique of individualizing and medicalizing the systemic issue of environmental degradation (Adams, 2021; Burke & Cunsolo WIllox, 2014; Clayton & Karazsia, 2020; Kalwak & Weihgold, 2022).

Similarly, it is often discussed if the necessary pro-environmental change should or should not be constructed in psychological expertise as a responsibility of individuals, while global systemic changes seem to be necessary for an effective transition. This tension between individual vs. contextual (systemic) determinants of human experience, action and behavior is especially visible in the emerging field of the psychology of climate change, which is concerned with sustainable transformation necessary for adaptation to and mitigation of the environmental crisis (Chater & Loewenstein, 2023; Fritze et al., 2008; O'Brien & Sygna, 2013).

To what extent can we understand an individual as responsible for pro-environmental change? Is it justified and just to rely on individual resilience, or should we focus on community resilience when dealing with climate change's impact on mental health? Can policymakers, governments, and big enterprises be exclusively burdened with the necessary changes, or would the changes not happen without engagement of individuals? Should psychology continue to focus on determinants of individual behavioral change toward reducing carbon footprint, or should it rather work for political mobilization among citizens?

As authors of this paper, we have experienced lively discussions and the diversity of professional informed opinions concerning the individual and systemic psychological aspects of the climate crisis; this diversity was also present during the workshop in Brighton in 2023, and it may be visible in this document. While we believe that variety of informed opinions, and sometimes discrepancies in existing evidence, may result from the diversity of basic assumptions in the discipline of psychology, collective reflexivity and transparent discussion about them are crucial to the process of building knowledge and putting knowledge into practice for a psychology that genuinely addresses climate issues.

5. Roadmap: 10 Psychological Keys

In summary, this paper explores the critical intersections of psychology and climate change, structured around ten key topics that collectively advance our understanding of how psychological insights can drive effective climate action. We begin by framing sustainability within a psychological context to provide the foundation for understanding the subsequent themes (Topic 1). Next, we discuss the necessary yet challenging aspects of sustainable transformation, examining psychological barriers that get in the way of such transformations (Topic 2) and setting the stage for the discussion on collective efficacy, which highlights the power of collective actions in overcoming these obstacles (Topic 3).

As we go deeper, we explore the emotional dimensions (Topic 4) and mental health implications of climate change (Topic 5), respectively, demonstrating how these affect and are affected by individual and collective behaviors.

The following sections take the discussion from internal psychological processes to more institutional and societal issues, showing how communities (Topic 6) and organizations (Topic 7) can use psychological principles to foster sustainable practices. Further, we expand the scope to policy-making, emphasizing how psychological research informs strategies at the political level (Topic 8), before we examine the communication challenges that are critical to shaping public perception and behavior (Topic 9).

The final chapter briefly synthesizes the insights from all sections, advocating a unified approach that leverages psychological principles for a resilient societal response to climate challenges (Topic 10).

> **In short:** Psychology as the study of mind and behavior has a role to play in the field of climate change, where individual behavior in its socio-ecological context can make a substantial contribution. This document aims to describe with relevant points how psychological expertise can contribute to mitigating and adapting to the climate crisis, at different levels of influence. It was developed in collaboration between European academics, independent practitioners, under the auspices of European psychology organizations, and represents at a time empirical evidence and professional experiences.

I.   Starting Point: Sustainability as a New Base

Main message: *The pursuit of sustainability challenges traditional materialistic views of success and happiness, suggesting that greater well-being can be achieved through environmentally-friendly and less consumer-driven lifestyles. This shift requires a significant psychological and cultural adaptation, moving away from consumption-focused values towards a more sustainable approach to living.*

The concept of *sustainability* carries some basic psychological messages, which seemingly contradict mainstream thinking about the modern concept of success and happiness. The very reason why sustainability is being set as a global goal is that there is growing evidence that the ways in which societies are currently trying to ensure human progress and the greatest possible level of human happiness are unsustainable in the long run. That's why environmental messages tend to be about giving up something, like the suggestion that we cannot afford to travel by plane, to use cars and to eat meat at the rate we do today if our goal is to live sustainably (Siegmar et al., 2014).

i.   Benefits of Sustainable Lifestyles

From a psychological perspective, the important question is whether, for human health, well-being, and happiness, we need the focus on consumption as it is today. There is a standpoint, supported by evidence, that material wealth and happiness or well-being are not entirely bonded (Dittmar et al., 2014; Ferrer-i-Carbonell, 2005; Kahneman et al., 2006; Kasser et al., 2014). Worldviews focused on material wealth may even be connected to a lower level of happiness and well-being. While a certain level of material wealth is needed for a dignified life, modern societies may be seen as dangerously obsessed with material growth. The danger not only lies in the negative impact on the environment, but it also has an impact on the well-being of individuals (e.g., air-pollution or burn-outs under the extreme work pressure) (Brown & Kasser, 2005; Kang et al., 2021; O'Mahony, 2022). In some cases, this leads to a desire to regress or adapt intensive measures, which is reflected in the ideas emerging in the context of sustainability, such as 'de-growth', 'voluntary simplicity' or 'back to the past' (Alexander & Ussher, 2012; Brown & Kasser, 2005). Another sign of this desire or interest is the increasing number of attempts to present evidence on the positive impact of *sustainable lifestyles*, valuing and caring for nature for the mental health and well-being (Capstick et al., 2022; Hickel et al., 2022; Kang et al., 2021; Lampert at al., 2021; O'Mahony, 2022; Zawadzki et al., 2020).

Furthermore, there is also evidence showing that the sense of taking meaningful actions and contributing to the well-being of the planet as a whole, contributes to subjective happiness (Csíkszentmihályi, 2004). It can be explained, for example, by the mechanisms of hedonic (i.e., pleasure attainment and pain avoidance) vs. eudemonic (i.e., finding meaning and self-realization) well-being (Ryan & Deci, 2001). Taufik et al. (2015) found that acting in an environmentally friendly way can be psychologically rewarding, suggesting that appealing to intrinsic rewards, in the form of positive feelings, a phenomenon known as warm glow, can be an effective way to encourage pro-environmental actions. In the field of health studies, the term *planetary health* has been coined in order to offer an understanding of human health (i.e., mental health) and well-being as being dependent on healthy natural systems of our planet (e.g., Horton & Lo, 2015).

It is therefore safe to say that there is a great potential for psychologists to help transform the public mindset into a more sustainable one. By emphasizing that a sustainable lifestyle could bring just as much happiness (focusing on eudemonic well-being) – if not more – as an unsustainable drive to accumulate material wealth and increase our consumption (focusing on hedonic well-being). People

could find more happiness and well-being in sustainable lifestyles focusing on family values, intellectual development, aesthetic experience, a healthy nature and environment, strong social connections, and contribution to the sustainable development of the local community (Stoknes & Rockström, 2018).

ii.   Challenges in Adopting Sustainable Lifestyles

While a sustainable lifestyle may promise an increase in happiness, well-being, and health, the potential to implement such a scenario depends on the biography, socialization, the nearest social environment, and broader cultural background of a particular individual. Since economic growth, accumulation of wealth, and consumption have often constituted socialization in Western societies, attempts to pursue the sustainable transformation in this context may result in interpersonal conflicts, risk of social criticism or rejection, as well as it may be related to intra-personal experience of conflicting values, motivations, and destabilized identity. Open social discussion may support people in accepting and coping with the conflicts in this potentially challenging process of lifestyle transformation. This discussion, in turn, may inform psychological practice of counseling and psychotherapy in order to support those individuals who struggle to cope (Bednarek, 2021; Budziszewska & Jonsson, 2021).

At the same time, it is important to remember that ideas of sustainable transformation, often promoted by wealthier Western countries as a path to well-being and happiness, may not be universally acceptable. For nations and communities striving to overcome poverty, economic growth is seen as essential for achieving well-being. Therefore, addressing these differences in perspective is crucial for promoting equity on a global scale, which is a fundamental aspect of climate justice.

TAKEAWAYS

Redefining Well-being: Psychological research suggests that happiness and well-being are not solely dependent on material wealth; sustainable lifestyles can offer greater fulfillment.

Cultural and Psychological Shifts: Transitioning to sustainability requires significant changes in mindset and cultural norms, particularly in societies accustomed to consumerism.

Role of Psychology: Psychologists play a crucial role in helping individuals and communities navigate the shift towards sustainable living, balancing environmental consciousness with personal and societal well-being.

HAVING ESTABLISHED A BASIC UNDERSTANDING OF SUSTAINABILITY FROM A PSYCHOLOGICAL PERSPECTIVE, WE NEXT LOOK AT THE PSYCHOLOGICAL BARRIERS AND COMPLEXITIES THAT CHALLENGE THE NECESSARY SHIFT TOWARDS SUSTAINABILITY.

II.   From Theory to Application:
   Sustainable Transformation is Necessary but also Challenging

Main message: *Tackling the climate crisis involves balancing individual stress and participation in societal change. Psychology aids in navigating this by considering climate justice and individual differences. Personalized, appropriately paced behavior change within a broader societal context is key. However, focusing only on individual actions may neglect necessary systemic changes. Effective climate strategies should be sustainable, science-driven, and community-based.*

From a social psychology and health perspective, a prescription for individuals to act pro-environmentally in the context of permanent socio-ecological crises, such as the climate crisis, should include a complex understanding of determinants of the transformation and the individual action. It entails knowing that living in a time of crisis is already demanding, and simultaneously participating in the attempts to transform our ways of living may add up to a burden.

i.   Adaptation and Transformation

Part of the character of the current socio-ecological crises is that they have reached a global scale and will continue for a long time. If the underlying causes are not addressed, there will be no end to them on a human scale. On the contrary, they will continue to escalate (Homer-Dixon et al., 2022; Steffen et al., 2018) and to expose individuals to permanent ecological and societal stress. However, stress and burden results too from the attempts to conduct the necessary transformation, since they require an extensive use of various resources (that are scarce anyway) and a change of established cultural and social ways of living, habitual actions, and fixed attitudes (Mazar et al., 2021).

To sum up, people and communities need to

- *cope* with acute and chronic stressors resulting from the climate change and environmental degradation (e.g., extreme weather events or mass migration; Fritze et al., 2008; Lawrence at al., 2022; Ojala, 2013);
- deal with necessary *adaptations* to irreversible changes (Kates et al., 2012);
- participate in and deal with an urgent sustainable *transformation* of society and economy to mitigate the crises (Wullenkord & Hamann, 2021).

The success of the task of transformation seems to depend on making sure that the coping and adaptation capacities of individuals, communities and societies do not fail in the long term (Juhola et al., 2022). Psychology can help in designing the process of transformation to protect our adaptation capacities, with a concern for climate justice (see e.g. Majumdar & Weber, 2022). It means a consideration of various vulnerabilities and multidimensional approach to *climate resilience* (e.g. Behrens et al., 2022; Doppelt, 2017; Lonzano Nasi et al., 2023; Wilson et al., 2020), including the issues of ethnicity and race, social and economic class, global economic inequalities. (Amorim-Maia et al., 2022).

ii.   Challenges of Individual-Focused Interventions

Focusing on the individual level, addressing climate change requires targeted and appropriately paced behavior change, as attempting multiple changes at once often fails. Self-regulation theories suggest setting personally relevant goals and using techniques like action plans and implementation

intentions for effective change. This approach involves choosing actions based on individual priorities, increasing the likelihood of success. Kurz et al. (2015) emphasize that changing climate-relevant actions requires understanding both individual cognitive processes and broader societal patterns. They advocate for a dual approach: addressing individual behaviors through cognitive interventions (e.g., choosing actions based on individual priorities, designing and implementation of action and coping plans), while also considering the societal context that shapes and maintains these behaviors.

A trap that could wipe out the positive environmental effect of any pro-environmental behavior is the well-documented *Jevons paradox*, which describes the phenomenon that changing to less polluting behavior could lead to the more frequent occurrence of the particular behavior, and so could lead to the same or even higher level of environmental pollution (e.g. higher energy efficiency leads to more intense use of energy even on national level; York & McGee, 2016; see also *rebound effect*, Galvin et al., 2021). Therefore, a crucial message should be to emphasize frugality and sufficiency and pay attention to the total of environmental impacts of individuals and not use pro-environmental changes as an excuse to continue or even increase other environmentally harmful behaviors. In this context, it is important overall that climate protection measures are no longer implemented using approaches that are actually ineffective, neither regarding individual behavior, nor with respect to collective or systemic measures, nor concerning the communication of climate protection efforts (*efficacy simulations)* (Hagedorn & Peter, 2024).

While psychology has a wealth of evidence-based expertise on how to implement behavioral change effectively and motivate people to get involved in climate action, the strong focus on individual action in the discipline is also subject to criticism. When looking at the individual level, it must be considered that individuals' abilities to act and bring about change do not depend only on the motivation and attitudes, but they vary with individuals' differential access to resources and with other social, economic and historical determinants. Financial resources, power, and influence are unequally distributed in all societies, therefore those individuals and societies with more political and economic power have greater responsibility (Hagedorn & Peter, 2024; Nielsen, Clayton et al., 2021).

There is a risk that focusing on individual behavioral changes in the wider population in terms of reducing the ecological footprint, will not lead to the timely and significant change that is needed to mitigate the climate emergency and could even distract from the necessary systemic transformations (Otto et al., 2020). Furthermore, the construction of social requirements and ethical norms (using psychological expertise and popular messages) for individual change that are perceived as unrealistic, unjust or impossible to fulfill by a significant proportion of society can create resistance to climate action in general and undermine much-needed social consent. Moreover, effective environmental protection also requires large-scale changes across economic and social sectors. Thus, it is important (1) that there is a political and moral demand for climate action on the side of society, and the corresponding large-scale changes are seen by people as the right thing to do, (2) that the changes are made possible by those with political and economic responsibility, and (3) that the population is involved in a way that keeps resistance and skepticism towards these changes to a minimum (e.g. Kapeller & Jäger, 2020; Otto et al., 2020; Stadelmann-Steffen et al., 2021).

Finally, specific actions to deal with the socio-ecological crises should above all meet the following criteria:

1. They should follow a sustainable approach (without being limited to a specific topic such as climate or biodiversity, as social and economic issues are also important).
2. They should focus on science-based high-impact behaviors (Hagedorn & Peter, 2024; Nielsen, Cologna et al., 2021), whether they are behaviors to reduce the ecological footprint or to co-create sustainable beneficial societal change in the constructive sense of *the ecological handprint* (Guillaume et al., 2020).
3. They should be embedded in a specific community context.

TAKEAWAYS

Complexity of Response: Addressing the climate crisis requires understanding and balancing individual and societal challenges, including coping with environmental stress at the one hand and participating in transformative actions at the other.

Behavior Change Strategy: Effective climate action involves personalized, appropriately paced behavior change, with a focus on sustainable, science-based solutions that are rooted in community contexts.

Role of Psychology: Psychologists play a vital role in guiding individuals and communities through ecological stress, advocating for systemic changes, and integrating climate justice into their practices.

UNDERSTANDING THE NEED FOR AND CHALLENGES OF SUSTAINABLE CHANGE HIGHLIGHTS THE NECESSITY FOR COLLECTIVE EFFORT. IN THE FOLLOWING, WE WILL THEREFORE LOOK AT HOW COLLECTIVE EFFICACY AND THE POWER OF COLLECTIVE ACTION CAN HELP TO OVERCOME PSYCHOLOGICAL BARRIERS.

III.   The Importance of Collective Efficacy: Making a Difference Together

Main message: *In confronting global crises, collective action is crucial. Working together in families, teams, and communities is more effective for coping with stress and adapting to change. Collective efficacy is key in environmental actions, influencing individual action and enhancing faith in community-driven change. This group-based approach, stronger than self-efficacy, motivates pro-environmental behavior and policy acceptance, showing that shared experiences and group norms are more impactful than mere information or persuasion in driving behavioral change.*

In the face of permanent global crises, it is important for people not to have to act alone. Coping with shared experiences like acute stressors is more effective together, in families, in teams, communities, and organizations. In addition, both adapting to the changing living conditions and shaping societal transformation are tasks of a community. Without the collective perspective, people will neither be sufficiently effective nor have the required impact. Moreover, seeing oneself as an (effective) part of an (effective) collective can help people cope with the magnitude of the crises, strengthening for example *self-efficacy* and *participative efficacy* (Grønhøj, 2006; Hamann & Reese, 2020; Wullenkord & Hamann, 2021;) and thus transformative resilience of individuals and society (Doppelt, 2017; Haldane & Morgan, 2021).

i.   A Model of Pro-Environmental Action

The concept of *collective efficacy*, as highlighted in the Social Identity Model of Pro-Environmental Action (SIMPEA) by Fritsche et al. (2018), plays a significant role in environmental actions and attitudes. It underscores the belief in a group's collective power to achieve desired environmental outcomes, influencing individual engagement in pro-environmental actions. This belief in collective efficacy complements individual coping mechanisms, enhancing a person's faith in their community's ability to enact change and foster environmental responsibility. Thus, integrating the understanding of collective efficacy into environmental strategies strengthens both individual and societal resilience against ecological crises.

Beyond the effects on the sense of individual coping, collective efficacy has shown to be a stronger predictor than self-efficacy of people's problem-focused coping and self-reported pro-environmental behavior in collectivistic cultures (Chen, 2015). Perceived collective efficacy has been proven to be associated with pro-environmental intentions (Jugert et al., 2016), climate policy support, activist behavior (Thaker et al, 2019; Wang, 2018) and adaptive behaviors (Pakhmer, 2020). It seems that collective efficacy brings individuals into community practices where sharing of information and experiences can motivate both pro-environmental acts as well as acceptance of relevant policies. The normative effects of belonging to groups and possibilities to experience pro-environmental behavior together are more effective in changing behaviors than information and persuasion (Hornsey et al., 2021; see also Fritsche et al., 2018).

TAKEAWAYS

Collective Action is Crucial: Addressing global crises effectively requires collaborative efforts, as coping with stress and adapting to changes are more successful in collective settings like families, communities, and organizations.

Importance of Collective Efficacy: The SIMPEA model highlights that believing in the collective power of groups to drive environmental change, enhances individual participation in pro-environmental action, complementing personal coping mechanisms.

Impact beyond Individual Efforts: Collective efficacy, being a stronger motivator than individual self-efficacy, encourages shared environmental practices and policy support, emphasizing the power of community norms and shared experiences over simple information dissemination.

ALTHOUGH THE FOCUS IS ON COLLECTIVE ACTION AND ITS EFFECTIVENESS, INDIVIDUAL EMOTIONAL RESPONSES ALSO HAVE A MAJOR IMPACT ON SUCH EFFORTS. WE WILL THEREFORE DISCUSS IN THE NEXT SECTION HOW EMOTIONS CAN BOTH MOTIVATE AND HINDER THE REALIZATION OF CLIMATE MITIGATION GOALS BY BUILDING A BRIDGE BETWEEN COLLECTIVE ACTION AND PERSONAL EMOTIONAL DRIVERS.

IV. Individual Actions in a Collective Context: Emotions as Important Drivers

Main message: *In climate change psychology, the focus is shifting from being solely on cognitive attitudes to also include emotional responses in influencing pro-environmental behaviors. Emotions like eco-anxiety play a complex role in motivating action; they can be both adaptive and counterproductive. The 'emotional turn' in environmental communication acknowledges emotions as key drivers but caution is necessary, taking into account their potential negative impacts on mental well-being and the risk of over-relying on emotional appeals for inducing pro-environmental actions.*

Academic literature in psychology of climate change focuses on the psychological and social determinants of reducing CO_2 emissions and preventing further environmental damage, specifically on development and implementation of effective individual and socio-political measures supporting the mitigation of climate change (Bernard, 2019; Stern, 2011). As systemic solutions and mass social and political support for pro-environmental policies are needed, researchers are also looking for determinants of people's engagement in individual pro-environmental behaviors (e.g., decreasing individual carbon footprint by reducing consumption of meat) and collective actions (e.g., environmental activism; Gifford, 2011; Higham et al., 2016; Röhrle, 2024; Rootes et al., 2012; van Zomeren et al., 2008).

i. Beyond Cognitive Attitudes

Traditionally, a cognitive attitude and value orientation addressed with a term "environmental concern" have been investigated as underlying the intentions of an individual to act in a pro-environmentally manner (Gifford & Nilsson, 2014; Stern & Dietz, 1994). However, it has been repeatedly observed that while individuals' beliefs, social norms, and value-based environmental concerns play an important role, they do not fully allow to predict initiating and maintaining pro-environmental actions (Bergquist et al., 2020; Fritsche et al., 2018; Gifford & Nilsson, 2014; Page & Page, 2014; Perry et al., 2021). There is, however, a need for best possible predictions to design effective interventions aimed at motivating people to engage pro-environmentally.

Thus, in search for a more comprehensive picture, researchers are looking for other psychological determinants of pro-environmental activity, referring to basic and bottom-up mechanisms rather than norm-driven attitudes (e.g., perceptual and cognitive determinants, attentional mechanisms, habits, or the individual's level of self-efficacy; Ejelöv et al., 2018; Gifford, 2011; Mazar et al., 2021; Page & Page, 2014; Verplanken, 2012). Among them, affective and emotional responses to the climate crisis are emphasized as major drivers of climate action. As a result of an exceptional importance of emotions in the context of climate emergency, a category of *climate emotions* (or somewhat more broadly *eco-emotions*) has emerged in academic literature (e.g., Clayton, 2020; Neckel & Hasenfrantz, 2021; Pihkala, 2022).

Climate emotions is an umbrella term that incorporates a wide range of responses (i.e., emotional reactions) to climate change, covered by both academic literature and popular media (including social media). While climate emotions are related to emotional states known from all the typical contexts of *feeling* in human life (i.e., to anxiety, guilt and pride, nostalgia etc.), scientists tend to use special words to refer to them in the context of climate emergency (i.e., solastalgia, climate anxiety, eco-guilt, and eco-pride). The reasons are that, firstly, eco-emotions are normal reactions to a permanent, overwhelming, and abnormal situation, which is not comparable to anything typical in human experience; and secondly, we could potentially make use of them to mitigate this abnormal

situation. We therefore emphasize them by these special words in our everyday and academic language, as well as in public environmental communication.

ii.   The Role of Climate Emotions in Environmental Action

Emotions are perceived in general as a *source of drive* that may be diverted into action, and as *important evaluative information* that reorients an individual's behavior toward personally relevant issues (e.g., Dennison, 2023). Various types of emotions are addressed in detail as being responsible for (lack of) support for climate policies and (dis)engagement in pro-environmental behaviors or environmental activism. The role of emotions in motivating pro-environmental action has been investigated for several decades; the number of studies significantly increased in recent years, including attempts to prove experimentally the impact of particular emotionally framed messages and other interventions on pro-environmental behavior and support for pro-environmental policies (e.g., Berquist et al., 2020; Ibanez & Roussel, 2021; Lange & Dewitte, 2020; Lohmann et al., 2024; Passyn & Sujan, 2006; Reese et al., 2015). Any exhaustive review or final answer on which emotions are the most effective in fueling pro-environmental behavior are beyond the scope of this paper, due to the large number of published studies, and some inconsistence resulting from them so far (Armbruster et al., 2022; Hurst & Sintov, 2022; Lange & Dewitte, 2020; Russel & Ashkanasy, 2021).

For example, some researchers have emphasized the role of hope, which may motivate people to act by making them believe that their efforts may be successful. However, results on the effects of hope in the context of climate action are ambiguous (e.g., Geiger et al., 2023). Hope can increase support for climate policies among the public. Hope and optimism for the future can also induce the perception of climate change as a more distant threat with less personal relevance, whereas recognizing the risk as highly probable and relevant can enhance motivation to take action (Brosch, 2021; Chu & Yang, 2019; Feldman & Hart, 2018; Fritze et al., 2008; Kleres & Wettergren, 2017; Neckel & Hasenfrantz, 2021; Ojala, 2015). *Constructive hope*, grounded in both realism and active engagement in pursuing goals, has been differentiated from unrealistic optimism in a discussion on climate emotions (Grund & Brock, 2019; Ojala, 2015).

Overall, the most important research question on climate emotions concerns the role of positive vs. negative emotions in fueling pro-environmental actions (e.g., a mobilizing impact of anger for engaging in climate activism or the role of anticipated pride in engaging in everyday pro-environmental behaviors) (Coelho et al., 2017; Hurst & Sintov, 2022; Lange & Dewitte, 2020; Lohmann et al., 2024; Taufik & Venhoeven, 2018). When the role of emotions is discussed, it is related both to those feelings that are actually experienced by (dis)engaged individuals and those that might be purposefully induced by an intervention to shape people's engagement (e.g., through media messages or education). For example, negative and fearful media messages were initially claimed inappropriate and ineffective; however, recent studies show that fear appealing messages accompanied by a perspective for effective action may bring the desired results (Miller, 2021; O'Neill & Nicholson-Cole, 2009; Passyn & Sujan, 2006; Reese & Bamberg, 2015; Sarrina Li & Huang, 2020). On the other hand, scary media messages or educational content are discussed as potentially mentally impairing and disempowering, especially to children and young people (while skillful management of moderate negative emotions in educational contexts may help turn them into positive actions; Gao et al., 2020; Holman et al., 2020; Jones & Davison, 2021; Pihkala, 2020; Sampath et al., 2020). Additionally, some studies bring discouraging results on positive emotional framing and pro-environmental behaviors (Hurst & Sintov, 2022; Lange & Dewitte, 2020). For example, Lohmann et al. (2024) in their experimental research showed no effect of messages based on anticipated positive

emotions of pro-environmental behaviors ('warm glow' effect). The likely ground of this result is that presenting private benefits as overly salient may decrease motivation to act for altruistic individuals (Lohmann et al., 2024). Finally, it was also observed that moderate levels of worrying and anxiety around climate change have an adaptive effect in a sense of motivating pro-environmental behavioral change (Bouman et al, 2020; Kurth & Pihkala, 2022).

Among the negative emotions (im)mobilizing engagement in various pro-environmental actions, social or moral emotions like guilt and shame are often emphasized (e.g., in the context of consumers' behaviors, like shame in relation to flying; Hurst & Sintov, 2022; Miller, 2021; Mkono & Hughes, 2020; Rees et al., 2015; Passyn & Sujan, 2006). Social emotions are investigated next to group values, social norms, social identity, and social influence that were shown to motivate pro-environmental behavior (nevertheless, emotions may remain the most effective; Berquist et al., 2020; Bouman et al., 2020). Pihkala (2022), based on an extensive literature review, offers a taxonomy of climate emotions with such categories as threat-related emotions, social emotions (strongly related to guilt and shame), positive emotions (e.g., empowerment, care), etc.

Many authors in the field of climate emotions focus on the popular concept of eco-anxiety that is usually an umbrella term for various negative climate emotions and states of decreased well-being (e.g., Clayton, 2020; Hickman et al., 2021; Ogunbode et al., 2022; Pihkala, 2020). Eco-anxiety may be considered "practical" and healthy (Kurth & Pihkala, 2022) when it encourages pro-environmental behavior, but its extreme levels are considered a risk for an individual's mental health (Clayton & Karazsia, 2020). The term is therefore rather questionable as too general and inaccurately medicalized, especially as it could mask the independent meaning of other important negative emotions. Anger (eco-anger) is a good example as it is often hijacked by the concept of eco-anxiety, while it has its distinct empowering and constructively political character (e.g., Contreras et al., 2023; Gregersen et al., 2023; Kalwak & Weihgold, 2022; Marczak et al., 2023; Sabherwal et al., 2021; Stanley et al., 2021, 2023).

iii. Emotions in the Foreground: The 'Emotional Turn'

The recent focus on emotions and affects in interdisciplinary environmental studies and in environmental communication is addressed as an 'emotional turn' or 'emotionalization' of the public debate. There are differing opinions among scholars regarding the emotional turn: sometimes it is subject to criticism on the ground that it may jeopardize the aims of environmental protection and climate change communication. On the other hand, emotions are seen as rational and powerful drivers for action and value-based evaluation of the existing situation, and public silencing of emotional responses may be seen as inhibiting the drive for pro-environmental change, especially since the change requires modification of the status quo (Flemming et al., 2018; González-Hidalgo & Zografos, 2020; Lemmings & Brooks, 2014; Leys, 2011; Neckel & Hasenfrantz 2021; Pile, 2010; Staiger et al., 2010; Voşki et al., 2023).

Some policymakers, experts and practitioners in environmental education and communication, and climate activists suggest that specific emotional states and processes should be evoked in a controlled manner to promote engagement of the public in climate action and pro-environmental behaviors (i.e., via positive and negative emotional messages; Flemming et al., 2018; Chu & Yang, 2019), thus they expect scholars to provide evidence on what would be the most effective. Some studies investigate the efficacy of affective education and empowering programs to promote

emotional awareness related to climate change and, as a result, promote pro-environmental behaviors (Mebane et al., 2023).

While there might be divergent opinions among scholars on acceptability of inducing negative emotions through media, political communication, or education, these opinions seem to reflect not only the available evidence, but also ethical dilemmas encountered in our discipline (e.g., biospheric values vs. values related to human well-being). It seems important to recognize what actually works, but also what effects it may have. For example, messages appealing to negative emotions may be effective in shaping pro-environmental action and simultaneously may add to psychological burden, deteriorated well-being and mental health, especially in vulnerable individuals. This calls for carefully tailored interventions and communication (Voşki et al., 2023).

> **TAKEAWAYS**
>
> **Emotional Impact:** Emotions, especially climate-specific ones like eco-anxiety, are increasingly recognized as vital in motivating pro-environmental behavior, demonstrating a complex interplay between emotional responses and action.
>
> **Beyond Rationality:** While traditional views emphasized cognitive attitudes, current research highlights the crucial role of affective responses in environmental action, challenging the dichotomy of emotion versus rationality.
>
> **Communication Challenges:** The 'emotional turn' in environmental communication acknowledges the power of emotions but also brings to light potential negative impacts on mental health and the risk of over-dependence on emotional appeals in driving pro-environmental actions.

THE DISCUSSION OF EMOTIONS INEVITABLY LEADS TO THEIR IMPACT ON MENTAL HEALTH. WE EXPLORE THE WIDER IMPLICATIONS OF EMOTIONAL RESPONSES, IN PARTICULAR HOW THEY IMPACT ON INDIVIDUAL MENTAL HEALTH AND VULNERABLE PARTS OF THE SOCIETY AS WELL AS THE NEED FOR RESILIENCE IN COPING WITH CLIMATE CHALLENGES.

V.   From Emotion to Well-Being: Mental Health and Resilience in the Climate Crisis

Main message: *The impact of climate change on mental health includes both direct effects, like heat-related stress, and indirect effects from natural disasters and socio-political pressures. In this context, emotions extend beyond motivating climate action to significantly impacting mental health and well-being. Negative emotions like eco-anxiety, although common in environmental concern, can contribute to mental health challenges, particularly for vulnerable groups. Addressing direct and indirect mental health effects requires recognizing the variety of affected groups and fostering resilience, both individually and within communities, to adapt to climate-related stressors effectively.*

Emotions in the context of a climate crisis should not be considered solely in terms of effective climate action. They should be approached from the perspective of challenges posed to mental health and well-being as well (e.g., the potential impacts of messages appealing to emotions, as mentioned in the previous chapter), to provide adequate psychological support to those who are involved in climate action and exposed to other climate change related mental health risks. Negative emotions are normal components of environmental concern and climate action (Clayton, 2020; González-Hidalgo & Zografos, 2020; Kleres & Wettergren, 2017; Pihkala, 2022). However, together with other factors, like chronic stress and activist burnout (Fra Europa, 2019), they may add up to the challenges of mental health and well-being, especially for vulnerable groups (White et al., 2023).

The issue of climate emotions and mental health is popularly addressed with medicalized terms such as eco-anxiety, climate grief, environmental trauma, etc. These terms used in academic literature, media, and everyday communication all seem to refer to the experience of *climate change distress* (Hayes et al., 2018; Ogunbode et al., 2021). Climate change distress may be understood as emotional suffering and mental health deterioration experienced due to the awareness and anticipation of the potential future damage brought about by climate change to natural and human environments (Kałwak & Weihgold, 2022). This is regardless of whether the damage is foreseen to happen locally in one's place of living or understood as a possibility of a global catastrophe. This type of impact mediated in environmental concern, anticipation of future consequences of the climate emergency, or exposure to distressing media messages, does not require first-hand experience, nor does it require an individual's lives to be affected by any climate crisis consequences (Hayes et al., 2018; Lawrance et al., 2021; 2022). In the 6th IPCC report it is called a "vicarious impact" and may be situated at the edge of continuum of possible direct to indirect influences of climate change on mental health (IPCC, 2023; Lawrance et al., 2022).

i.   Impact of Climate Change on Mental Health

More generally, the impact of climate change on mental health is a continuum of direct to indirect effects. They range from immediate risks related to the heat, and stress and trauma associated with extreme weather events like floods and hurricanes, to psychosocial impacts resulting from socio-economic and environmental disruptions such as mass migration or drought, to long-term emotional distress due to the ongoing awareness of climate change's threats to global well-being (Hayes et al., 2018; Lawrance et al., 2022).

The most evidence-based direct effect is the impact of heat on mental health (e.g. Charlson et al., 2021; Cianconi et al., 2020; Clayton et al., 2017; Hayes et al., 2018; Mourougan et al., 2024; van

Susteren & Al-Delaimy, 2020). Extreme heat can lead to conditions such as heat exhaustion, conditions that pose subsequent mental health challenges in addition to the immediate risk to life and health (i.e., a serious risk to the human cardiovascular system). More and more frequent climate change related heatwaves, as well as higher background temperatures, have been found to be responsible for the increase in suicidal attempts, psychiatric hospital admissions, first time and subsequent onsets of psychiatric diseases and symptoms, and violent behaviors (Dixon et al., 2014; Liu et al., 2021; Thompson et al., 2018). The risk related to heat is well-documented across the climate zones. However, it is more severe in sub-tropical and humid climates, in urban areas, in neighborhoods with poorer housing conditions and devoid of green areas, and in populations vulnerable to heat stress (i.e., children, older people, physical workers, individuals with pre-existing health condition or mental health diagnosis; Lawrance et al., 2022; van Susteren & Al-Delaimy, 2020). While the immediate influence of heat stress may not be subject to psychological intervention, due to its possible biological mechanisms (Lõhmus, 2018), an adequate psychoeducation directed to those who are exposed seem beneficial for adequate prevention and adaptation, as well as understanding of the related vulnerabilities at the systemic level of public mental health (e.g., Clayton et al., 2017).

Furthermore, climate change impacts mental health through various and complex pathways that intertwine physical health challenges, community well-being deterioration, and broader social and infrastructural issues (e.g., Berry et al., 2010; Hayes et al., 2018). For example, extreme weather events like floods and storms not only damage physical and social environments, especially in vulnerable and low-income areas, but subsequently can trigger serious mental health consequences similar to those caused by disasters such as earthquakes or chemical pollution (Morganstein & Ursano, 2020). These events exacerbate health problems, food and water shortages (e.g., as a consequence of droughts), and increase conflict and displacement, which further strains mental health. The trauma resulting from first-hand experiences of these extreme events, threats to physical safety, loss of livelihoods, and the ensuing socio-political and economic pressures contribute significantly to mental health deterioration across affected communities (e.g., Bartlett, 2008; Berry et al., 2010; Hayes et al., 2018; Lawrance et al., 2021; 2022). There are, however, numerous indirect impacts characterized by high complexity and interrelatedness, not always related to this first-hand experience and threat to life (Hayes et al., 2018; Lawrance et al., 2021; 2022), but the comprehensive description is beyond the scope of this paper.

ii. Global and Regional Polycrisis and Mental Health Vulnerability

In the context of mental health, the climate crisis is frequently addressed as an element of the polycrisis we are facing right now (e.g., Homer-Dixon et al., 2021; Kałwak et al., 2024). Due to its complexity, it is very difficult to study; and simultaneously the climate change-related mental health vulnerability is so profound and urgent that it is repeatedly emphasized by the leading international organizations such as World Health Organization and United Nations (UN, 2023a/b/c; WHO, 2022). Some of the best documented are the impacts of extreme drought on mental health and suicide rates in Australian and Indian farmers, and post-traumatic stress disorder in Australian children experiencing wildfires (as well as watching them in TV news; Bourqe & Cunsolo Willox, 2014; Hayes et al., 2018; Padhy et al., 2015; Page & Fragar, 2002).

Addressing indirect consequences of climate change for mental health in research and intervention is a demanding task for psychology, public health, and other health studies, especially when the differences between regions and underlying variety of risk factors and vulnerable groups are

considered. Global South, (sub)arctic and (sub)tropical climate zones are generally more at risk, as well as the populations and communities characterized by pre-existing vulnerabilities (Bourqe & Cunsolo Willox, 2014; Ogunbode et al., 2021; Padhy et al., 2015; Page & Fragar, 2002; e.g., Indigenous people, young people and especially young females, individuals, and families with lower socioeconomic status: see White et al., 2023).

However, the impact of increasing numbers of sub-extreme weather events, chronic and more slowly progressing climate change and environmental degradation in regions with a more temperate climate should not be beyond our attention. For example, in the European region (especially in Western and Central Europe) water scarcity and resulting desertification, deforestation, and agricultural drought are indicated as the greatest risk for the natural environment and for the economy (IPCC, 2023). Resulting challenges for individuals and communities making their livelihoods out of agriculture, fishery, shepherding, or living in the areas at most risk of repeated sub-extreme weather events should also be addressed from the perspective of mental health risks (IPCC, 2023).

As a conclusion, contrary to the climate emotions that were discussed at the first part of this chapter, direct and indirect mental health impacts of the climate crisis do not require climate change awareness and environmental concern to make an individual or a community at risk of deteriorated mental health and well-being (for example, some agricultural communities across Europe protesting against introducing green laws still may be vulnerable to this risk). For psychological research and intervention motivated by an idea of climate justice, it is important then to adequately identify the vulnerable groups and the risk factors. The current concentration in the academic and grey literature on eco-anxiety and climate emotions may create a false impression that mainly those who are environmentally aware and concerned, who are often city dwellers, well-educated, with a particular set of beliefs, values, and political attitudes, are at risk of mental health and well-being deterioration.

iii. Climate Change and Resilience

In terms of mental health and well-being, prevention is always the better choice when compared with addressing the actual health deterioration. Building resilience contributes significantly to positive mental health by enhancing individuals' ability to manage stress and recover from adversity. Thus, mental resilience is a frequently raised topic in the context of climate emergency. The thinking is that people should be resilient, or build their own resilience, to fit in the climate adaptation requirements and sustain their ability to cope with stress, work effectively, contribute to the society (e.g., Baker et al., 2021; Chen et al., 2020; Doppelt, 2017; Sanson et al., 2019; Wullenkord et al., 2024).

To avoid ascribing too much responsibility to individuals for mitigation and psychological adaptation to the climate change, an alternative concept of community or collective resilience has been offered. This concept recognizes a supportive role of interrelationships within a community, a group, the health system or a whole society which may compensate lower capacities in some members to cope or access various resources, and relieve an individual burden (Behrens et al., 2022; Chen et al., 2020; Clayton et al., 2017; Haldane & Morgan, 2021; Kałwak & Weihgold, 2022; Sanson & Masten, 2024).

Key aspects of community or collective resilience in the face of climate change include:

- **Shared Responsibility**: Distributing the burden of adaptation and coping mechanisms across the community reduces the strain on any single individual, allowing for a more sustainable approach to dealing with climate impacts.
- **Social Support**: Strong social networks are vital for emotional support and practical assistance during times of stress and crisis, which are likely to increase with the ongoing climate emergency.
- **Resource Accessibility**: Community resilience ensures that resources, whether they be informational, emotional, or material, are more equitably distributed among community members, particularly benefiting those who are less capable of obtaining them on their own.
- **Enhanced Communication**: Effective communication within communities facilitates better preparedness and response strategies, fosters a sense of belonging and collective identity, and enhances the overall resilience of the group.
- **Learning and Adaptation**: Communities that can learn from past experiences and adapt to new challenges are better positioned to face future crises, including those related to climate change.

TAKEAWAYS

Mental Health Impact: Climate crisis not only triggers environmental concern but also significantly affects mental health, with emotions like eco-anxiety contributing to overall stress and psychological burden, especially among vulnerable groups.

Direct and Indirect Effects: Climate change impacts mental health directly through phenomena like heat stress and indirectly through consequences of natural disasters, creating trauma, socio-political pressures, and economic instability.

Resilience and Community Support: Building individual and community resilience is key in adapting to climate-related stressors. It involves fostering supportive networks that can alleviate individual burdens and enhance collective coping mechanisms.

BASED ON THE FINDINGS ON THE IMPACT ON MENTAL HEALTH, THE FOLLOWING EXPLORES HOW THESE FINDINGS CAN BE TRANSLATED TO THE COMMUNITY LEVEL TO PROMOTE TRANSFORMATIVE, SUSTAINABLE BEHAVIORS AS A KIND OF BUFFER AGAINST MENTAL IMPAIRMENT. WE EXPLORE STRATEGIES THAT COMMUNITIES CAN ADOPT TO IMPROVE RESILIENCE AND PROMOTE ENVIRONMENTAL ACTION.

VI. Transformative Collectives: Pro-Environmental Behavior in a Community Context

Main message: *To mitigate climate change effectively, emphasis should be placed on high-impact pro-environmental behaviors within communities, targeting those most active in areas like transport, diet,* consumption of goods *and energy use. Overcoming barriers such as lack of awareness and structural challenges is crucial, and community-level interventions can harness social norms and values to propagate pro-environmental behaviors. This collective approach not only fosters individual and group resilience but also addresses ethical concerns related to global inequalities and the responsibilities of wealthier nations.*

To meet the targets of mitigating climate change, focus must be on high impact pro-environmental behaviors, concerning transport, diet, consumption of goods, and energy use. Also, high impact audiences, in other words people who engage frequently in such behaviors, should be targeted. Since the high impact behaviors are often related to lifestyles and everyday habits that people share within families and communities and that are regulated through the functioning of society more broadly, we need to search for solutions at the community and social level.

Effective mitigation of climate change requires psychology to understand and address a persisting significant prevalence of indifference to climate change, both among and outside European countries, demonstrated in recent studies and in the latest Gallup poll (Evans, 2024; Kácha et al., 2022). This indifference is higher in high carbon emission countries; it includes denial of climate change in general and denying climate change to be an urgent threat (Lloyd's Register Foundation, 2019). In psychology, mechanisms of climate change denial have been discussed from various perspectives of social psychology, behaviorism, or psychoanalysis since the issue of climate change has been made public (e.g., Dunlap, 2013; Kiral Ucar et al., 2023; Weintrobe, 2013).

i. Overcoming Pluralistic Ignorance

Individual climate change beliefs and values play an important role in high impact behaviors. Those with strong biospheric values tend consistently to act upon pro-environmental cues, but (1) lack of awareness, (2) competing values and (3) high behavioral cost due to structural factors might hinder others (Steg, 2023). Moreover, people tend to underestimate the extent of biospheric values and consequent behaviors in others, and thus believe that others have generally weaker pro-environmental values and attitudes. Since social comparisons shape behaviors, this underestimation negatively influences one's own pro-environmental behaviors. This phenomenon, *pluralistic ignorance*, refers to a "false consensus" (Leviston et al., 2013; Ross, et al. 1977), that while a majority of people support firmer policies regarding mitigating climate change, people believe this to be a minority standpoint (Sparkman, et al. 2022). This also negatively affects social norms, which can be defined as an expectation of how others behave and a sense of obligation to behave alike in given situations (Bouman et al., 2020). Therefore, (1) strengthening biospheric values, (2) emphasizing previous pro-environmental behavior, (3) emphasizing biospheric values in others and (4) changing social costs and benefits, might help those not intrinsically motivated (Bouman & Steg, 2019; 2020). Social emotions like (anticipated) pride, guilt and shame may help people conform to these norms (Shipley & van Riper, 2022).

ii. Community Engagement

Generally, group values, social norms, social identities, and other ways of social influence have been shown to motivate pro-environmental behaviors effectively (Berquist et al., 2020; Bouman et al., 2020; Fritsche et al., 2018). For example, so called peer effects or neighborhood effects can be observed; such effects concern a social transmission of pro-environmental behaviors or adopting pro-environmental solutions in households, among neighbors and among social acquaintances. Social transmission of pro-environmental norms, attitudes and behaviors was also observed inter-generationally within families, and among friends in children and adolescents. Interestingly, social transmission of pro-environmental orientations may decrease the costs to municipalities and states of implementing green solutions. There are several possible mechanisms behind the neighborhood effect, from simple imitation to the influence of a neighborhood's social capital (i.e. the networks, resources, and shared sense of values of a community that bind people together for the common good), which all speak in favour of implementing interventions at the community level (Bigler & Janzen, 2023; Collado et al., 2019; Crociata et al., 2016; Grønhøj, 2006; Macias & Williams, 2016; Wang et al., 2021; Zhang et al., 2023).

Community psychology emphasizes ethical considerations when addressing common challenges like the climate crisis (Dittmer et al., 2023; Fernandes-Jesus et al., 2020). Key ethical challenges globally include the imbalance of wealth, the responsibility of economically and technologically advanced countries to address environmental damage, and the limited influence of more severely impacted populations in political decisions of wealthier nations. An idea of planetary sense of community has been developed to promote solidarity with people and communities experiencing more damage resulting from the global climate change, whereas they usually have contributed less to it (Fernandes-Jesus et al., 2020; Francescato, 2020; Mebane et al., 2023). Engaging communities collectively helps in sharing information, creating ownership of local challenges, and fostering personal and collective resilience through a sense of know-how and self-efficacy.

> **TAKEAWAYS**
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> **Community Focus**: Effective climate action requires community involvement to target and enhance pro-environmental behaviors in critical areas like transport and energy.
>
> **Barrier Reduction**: Tackling unawareness and structural challenges is vital for fostering sustainable behaviors within communities.
>
> **Ethical Integration**: Climate initiatives must incorporate ethical considerations, addressing global inequalities and the responsibilities of more affluent nations towards less developed ones.

MOVING FROM COMMUNITY EFFORTS, THE FOCUS WILL NOW SHIFT TO HOW ORGANIZATIONS CAN USE PSYCHOLOGICAL PRINCIPLES TO PROMOTE ENVIRONMENTAL SUSTAINABILITY IN THEIR OPERATIONS AND INFLUENCE BROADER ENVIRONMENTAL PRACTICES.

VII. Corporate Conscience: Pro-Environmental Behavior in an Organizational Context

Main message: *Organizations, including public, commercial, and NGOs, significantly shape pro-environmental behavior through both internal policies and public engagement. By embedding environmental values into their operations and communications, such as performance indicators and annual reports, they promote sustainable practices among employees and the wider public. Their role extends beyond influencing behaviors to actual CO_2 emissions reduction, requiring transparency and accountability to build trust and avoid greenwashing. These organizational efforts support broader systemic changes necessary for effective climate action.*

Public, educational, and commercial organizations (including industry and multinational corporations), government agencies and NGOs play an important role in changing relevant behaviors, norms, and attitudes. They can do so by offering pro-environmental solutions to their clients and broad public, but also by implementing policies and changing structural factors within their organizations (Lozano, 2022; Sarra, 2020). For example, pro-environmental change may be represented in investor criteria and key performance indicators, and as a consequence then expressed in company value statements and annual reports. If those changes are communicated as pro-environmental, members of that organization will more likely adopt pro-environmental values and attitudes (Ruepert et al., 2015).

i. Environmental Responsibility

Van der Werff et al. (2021) found that a stronger perceived environmental responsibility of organizations is related to a stronger environmental self-identity among employees of the organization. A stronger environmental self-identity was in turn related to a range of pro-environmental actions. This does also apply to those who individually wouldn't be very likely to adopt pro-environmental behaviors (Werff et al., 2021). Multilevel understanding of corporate environmental responsibility includes organizational culture and managers' attitudes and behaviors as driving forces for pro-environmental change within organizations (Karrasin & Bar-Haim, 2016). Therefore, there is a need for hopeful leadership and organizational effectiveness related to contribution to mitigating the climate change (Hofstad et al, 2023; Lozano, 2022).

Environmental responsibility of organizations seems to be based not only on the opportunity to shape and model pro-environmental behaviors and attitudes among the employees and broader public. Multinational corporations and industrial organizations are themselves significant CO_2 emitters, so they bear responsibility for a direct reduction of emissions too. Effectively shaping pro-environmental actions in employees and in the public may depend on trust in the organizations, which in turn requires accountability and transparency in disclosing CO_2 emissions (e.g., avoiding greenwashing practices; European Commission, 2013; Hahn et al., 2015; Robertson, 2021).

While systemic changes (on the national and international political level) are critical to promote society-wide climate actions, drive for change coming from within organizations would certainly support them. For bold political and commercial pro-environmental decisions to be taken and successfully implemented, a strong support base is crucial (Hofstad et al., 2023; Sarra, 2020). Factors that will affect general acceptability are costs and benefits of policies, fairness, and transparency in

distribution of such costs and benefits and the overall trust in responsible actors (Bergquist et al., 2021).

ii. The Particular Role of Educational Institutions

Educational institutions deserve special attention regarding climate change as educational systems are the most robust public systems aiming to shape the basic values and common literacy of societies. Otto et al. (2020) consider the education system to be a key candidate for *social tipping elements*, i.e., sectors of the global socio-economic system in which the required fundamental changes can take place and lead to a suitably fast reduction in human-made greenhouse gas emissions.

Psychology plays a pivotal role in shaping effective environmental education (not only in schools) by providing insights into system understanding, human behavior, cognition, emotion, and motivation. By applying principles of psychology, educators can tailor their approaches to promote pro-environmental behaviors. It is a vital responsibility of psychologists working in schools, colleges, universities, adult education centers, or media as providers of education, especially in teacher training (e.g., critical emotional awareness; Ojala, 2023), to contribute to the development of climate change education with their professional expertise.

TAKEAWAYS

Organizational Influence: Organizations like corporations influence pro-environmental behavior through their internal policies and public engagement strategies, embedding sustainability into their operational frameworks and communications.

Employee Behavior: Organizational commitment to environmental values fosters a stronger environmental self-identity among employees, leading to increased adoption of sustainable behaviors within the workplace.

Transparency and Accountability: Effective climate action by organizations also requires transparency and accountability, particularly in reporting CO_2 emissions to avoid greenwashing and build public trust.

THE ORGANIZATIONAL MEASURES DISCUSSED SET THE STAGE FOR BROADER POLICY IMPLICATIONS. WE NEXT EXAMINE THE WAYS IN WHICH THE INSIGHTS GAINED FROM PSYCHOLOGICAL RESEARCH ARE CRITICAL TO PUBLIC POLICY AND POLICY INTERVENTIONS.

VIII. Advocating Change: Psychological Strategies for Shaping Effective Climate Policy

Main message: *Psychology's role in shaping pro-environmental public policies is vital as policy moves beyond individual behavior changes to address systemic and political actions necessary for carbon neutrality. Psychologists bring insights from political psychology to influence policy design and implementation at various levels. Their involvement includes political advocacy, enhancing trust and hope in political processes, and ensuring policies are informed by an understanding of social dynamics and human behavior. This broader application of psychological principles helps empower communities, foster public engagement in environmental actions, and supports sustainable policy development.*

If society wants to achieve carbon neutrality, many measures require not only behavioral change at an individual level, such as consumer behavior, but also collective and political actions (Whitmarsh, 2021). As discussed in more depth in Chapter 2 above, various authors point to the limitations of psychology's focus on individual pro-environmental behavior changes, because such an approach can end up overlooking the importance of systemic regulations and other structural conditions that shape behavior (e.g., Adams, 2021; Chater & Loewenstein, 2023). At the same time, one should not overlook the important political role of the individual. Citizens participate in collective decision-making to change the structures, from climate activism, to green policy making based on social consultations, to elections.

i. The Role of Psychology in Political Advocacy

Political decisions are made at different levels: international agreements (e.g., through United Nations-led processes), regional, national, local, and community levels. Psychology and behavioral science that wants to influence at these levels is required to move beyond individual solutions, to bring their insights (e.g., from political psychology) to the design and implementation of global, national, and local policies of mitigation of and adaptation to climate change. This implies taking part in political advocacy, influencing decisions, raising issues, and bringing knowledge for political decision-making. This can be achieved by psychologists' active membership and advocacy in national and international organizations addressing various global issues, including the issue of climate emergency (e.g. United Nations) and by bringing the topic of climate change to the fore in national and international psychological associations (e.g., APA that has established the Global Psychology Alliance contributing to climate change policies; EFPA that has its expert groups concerning climate change and advocates at European Union level; and the work of both APA and EFPA (together with the Federation of Swiss Psychologists) in advocacy at the United Nations).

Furthermore, psychologists can make pro-environmental contributions also through advocacy outside these organizations, awareness raising campaigns, research, risk evaluation and management, joining and supporting pro-environmental activists and movements (e.g., Psychologists4Future), contributing to communication about climate crisis, urban rehabilitation and designing, testing, and evaluating public policies (APA, 2022). Raising issues within the public discourse, social engagement and pro-environmental advocacy are broadly accepted as the ways of political influence exerted by psychologist and psychological organizations. Climate change is subject to scientific consensus, just as the necessity of changes at the systemic and political levels are, so psychologists publicly involved in evidence-based mitigation and adaptation to climate change

should not be concerned about being perceived as overly politicized (this includes researchers approaching research problems related to the environmental issues).

ii. Integrating Psychological Insights into Policy

There are many specific insights from psychology that might help introducing pro-environmental change at the broad societal and systemic levels. For example, an awareness that behavior always occurs within context and is influenced by it, emphasizes the role of green nudging – nudges that promote an "environmentally benign behavior" – and the use of green social norms. They can help people and organizations – through green rules, regulations, and social incentives – to make pro-environmental and sustainable decisions (Schubert, 2017). Policies (e.g., creating walk- or motor traffic-free transport lanes), energy contracts that by default adopt green energy to increase the uptake of green choices, rules (e.g., charging for plastic bags to discourage the use of single-use plastic bags) are examples of how psychologists can promote changes in regulations to change behaviors in order to build more pro-environmental contexts (Ebeling & Lotz, 2015; Thomas et al., 2019).

Another example is understanding the role of trust and (realistic) hope in systemic and political attempts to mitigate and adapt to the climate change. This necessitates bold and effective political actions, and accountable and hopeful leadership (Hofstad et al., 2023; Sarra, 2020).

On a social level, *trust toward political systems* is important for people to accept political decisions and give up some privileges for the benefit of future generations (Fairbrother et al, 2019). Currently, trust in political systems is unstable, as people concerned with the climate emergency tend to perceive most political decisions as not bold and consistent enough to address the climate emergency effectively (e.g., Hickman et al., 2021; Reinhart, 2022). International and national political decisions and promises have not been wholly effective so far, and as a result, the distrust towards politicians and political processes creates despair and hopelessness in people. This may contribute to worsened mental health and well-being in individuals, or even in whole populations (e.g., climate anxiety and distress in young people; Hickman et al., 2021; Léger-Goodes et al., 2022).

Finally, understanding and creating links between political aims and actions and individuals' or communities' hopes, needs, and aims is important: both for political powers to make decisions aligned with the world's need for sustainability; and for people to sustain their support for pro-environmental policies and motivation to engage in pro-environmental actions (Grzymala-Moszczynska et al., 2023; Jaśko, 2023). For individuals and communities, participation in pro-environmental democratic political processes, especially taking part in group activities and collective actions, reinforces their sense of agency and identity (Musikanski et al., 2020). Especially, participation in successful local activities may increase environmental literacy and other competences, positive self-attributions, and may have generally empowering influence (Fischer, 2018).

TAKEAWAYS

Broadening Scope: Psychology's influence extends beyond individual behavioral changes to shaping systemic and political actions, crucial for addressing the complexities of climate change.

Political Advocacy: Psychologists are increasingly involved in policymaking, using their expertise to guide the creation and implementation of effective, sustainable public policies at all levels of governance.

Empowering Communities: Through their involvement in political and social systems, psychologists help build community empowerment, trust, and active participation in pro-environmental actions, enhancing overall public engagement and support for environmental initiatives.

HAVING DEVELOPED PROPOSALS FOR COMMUNITY, ORGANIZATIONAL AND POLICY IMPLEMENTATION, THE NEXT STEP IS TO COMMUNICATE SUCH RECOMMENDATIONS EFFECTIVELY. WE LOOK AT THE STRATEGIES AND PSYCHOLOGICAL CONSIDERATIONS NEEDED TO COMMUNICATE CLIMATE POLICY EFFECTIVELY TO ENSURE THAT IT RESONATES WITH AND APPEALS TO DIFFERENT STAKEHOLDERS.

IX.   Conveying Change: Psychological Insights into Climate Change Communication

Main message: *Climate change communication aims to shift behaviors and foster societal engagement in sustainability through psychologically informed strategies. Effective communication requires more than just information delivery; it involves engaging in dialogues, strategic messaging, and visible examples of sustainable behaviors to establish new social norms. This approach leverages psychological insights to create messages that resonate with diverse values and motivations, using framing techniques to highlight the personal and collective benefits of environmental actions. The goal is to empower communities, enhance participation, and promote a broader commitment to environmental stewardship as well as improving efficacy of pro-environmental action.*

Climate communication can aim for many different *goals*, like receiving input on policy plans, opening a dialogue with the target population to better understand their necessities, simply informing people about new developments or political choices, or increasing acceptance of changes in their living environment. One of the most common objectives is changing people's behavior from unsustainable to more sustainable acts, which is an important focus of climate psychology. While information and communication alone are rarely the triggers of behavior change, they are important for the processes of individual and social sense-making, for example when deliberately incrementing cognitive dissonance, strengthening the identification with climate change issues, or helping in pro-environmental identity formation.

i.   Climate Change Communication as a Complex Task

Moser (2007) describes communication as an ongoing and evolving interaction among individuals that enables them to share ideas, emotions, and information. This process helps to develop shared understanding and a collective vision for a desirable future. She links this dynamic conception of climate communication more fully with social change. Clayton & Manning (2018) and Boykoff (2011) highlight that communicating about climate change is challenging due to its complex and abstract nature. They note that the slow evolution of climate issues, combined with social and psychological defenses, makes it difficult for journalists and media to cover the topic consistently.

Climate psychology and climate communication are *intertwined*, as reaching strategic communication goals means understanding the psychological barriers and motives of the desired behaviors. Following Berlo's (1960) traditional SMCR model (Sender, Message, Channel, Receiver), in the complex practice of a person (or organization) who transmits a message (or multiple messages) to certain receivers, many obstacles – of which a large part are psychological – may influence the outcome negatively (Moser, 2007). To ensure effective communication, applying relevant psychological knowledge is essential. Questions on the right messenger, relevant psychological characteristics of the target group, visual and textual messages, timing, and context should be addressed by making use of recent literature on, for example, framing and persuasion when tailoring communicational interventions. Billions of euros are spent by companies to convince people to pursue unsustainable products. Likewise, marketing and communication strategies can also be adopted for sustainability purposes.

ii. The Channel

Communication could be seen as a *broad concept*, ranging from articles in a newspaper and press conferences to social media videos, emojis on an electricity bill, or street signage. From the *socio-ecological perspective*, senders must be aware of communication difficulties and opportunities on every level of the model. On the individual level, some psychologists specialize in applying conversation skills to have honest and open dialogues about causes, consequences, and solutions for climate change (Clayton & Manning, 2018).

Multi-channel approach proves to be the most effective way of environmental communication. On the community level horizontal communication between members is key for community resilience and bottom-up self-organization. Furthermore, diversity of communication tools should be emphasized to ensure intergenerational justice and accessibility for persons with disabilities. Transmitting information, new sustainable practices and norms through informal channels and networks would probably be more impactful, but also more difficult to influence in a systematic and planned way.

On the governmental and organizational levels, a knowledge base is needed to find the best ways and channels of communicating to, and with workers, clients, and/or citizens.

iii. The Sender

Moser (2007) states that if the ultimate goal is to reach the widest group of people, senders will need diverse, innovative, and more accessible communication approaches (e.g., various forms of popular, street, and higher art, and the digital media). This would also include creating spaces for dialogue and beginning the visioning that will be needed to keep going over the long term. Herein, the difference between one-way and two-way communication strategies is relevant. Sometimes one-way communication from transmitter to receiver is the only possible or necessary type of communication. But often, a two-way or even better, a *participatory communication approach* is needed and demanded. For example, Clayton and Moser (2018) discuss how conversations about climate change can enlighten individuals about the subject, encouraging them to think deeply about its implications and raising their awareness of its significance and risks. These conversations are also useful in devising and applying solutions to climate-related issues. In conversations, ideas can translate into group actions by generating collective efficacy and providing social support (van Zomeren et al., 2012).

From here three components of Berlo's (1960) traditional SMCR model are dissected. First, the sender of a certain climate change message or the initiator of communication efforts can apply different psychological styles. Lertzman (2022) argues that being honest is most important in communication about climate and sustainability and that positivity is only one part of the communication package. She believes the best communicator is a 'Guide'. If changemakers work in a guiding manner, people are more likely to take action and more people feel heard. According to Lertzman (2022), climate communication should dive deeper than is often the case, as the subject taps into an existential level. With compassion, radical understanding of the target group, talking less, building and offering tools and forming a community, sustainability professionals can become guides.

iv. The Message

When sending a message or telling a story, communicators have a task in storytelling in such a way that it fits with the values, motives, norms, identities, interests, and attitudes of different groups (Clayton & Manning, 2018). Information needs to be *tailored* to particular target groups in order to be perceived by them as relevant.

One of the most studied topics related to the message is the science of *framing*. Special focus has been placed on the different impacts of positive and negative, hopeful and pessimistic, loss and gain frames. The effects of messages highlighting among other variables self- and response efficacy, goal framing, and intrinsic or extrinsic appeals, have been studied (Levin et al., 1998; Moxey et al., 2003). The difference between environmental and monetary appeals in messaging has also often been researched. For example, Wang et al. (2022) claim that the loss framework can be adopted for the general public to increase environmental risk perception from the perspectives of environmental protection and resource conservation, thus encouraging the public to participate in waste sorting.

Environmental appeals can motivate people to be altruistic and perform pro-environmental behaviors, even if the benefits are minimal (Carrico et al., 2017). Additionally, using a fear appeal in combination with a message that focuses on people's self-efficacy or confidence in their own abilities or with a response efficacy message, is found to have potential for climate action (Li & Huang, 2020; Witte & Allen, 2000). Next, research has shown that intrinsic goal framing (motivation from within), relative to extrinsic goal framing (motivation driven by external factors), leads to deeper engagement in an activity, deeper processing of the information related to an activity and more persistence (Vansteenkiste et al., 2004, 2006). Another interesting research outcome suggests that intrinsic goals alone result in more positive outcomes than the combination of intrinsic and extrinsic goals (Pelletier, 2008). Framing messages systematically in terms of intrinsic gains or losses (i.e., health, well-being) as opposed to extrinsic gains or losses (i.e., make or save money, comfort, prestige, and fame) facilitates the maintenance of the behaviors that people adopt over time. Finally, once people are ready to act, progressively communicating information on how they could implement their goals and their intentions could further enhance the internalization and the maintenance of behavior (Pelletier, 2008).

Communication approaches can help to increase the visibility of climate-friendly behavior of others. When people see or hear about other people taking environmentally friendly actions, they are more likely to do something for the environment themselves. The visible behavior of the group can create new social norms (Keizer et al., 2013) and the use of social norm messaging is one of the interventions that changes behavior most effectively (Bergquist et al., 2023). Research by Bouman et al. (2020; 2021) has shown that the values to which we think other people around us adhere, have an impact on our own behavior. We systematically underestimate the extent to which others have biospheric and altruistic values. It is therefore important to show in our communication messages that others (people we can relate to) believe that sustainability is an important topic. Referring to dynamic norms (emphasizing that more and more people change their behavior in favor of the environment) could also be an effective strategy to overcome the adverse effect of the general prevalence of behaviors harmful to the environment (Buvár et al., 2023).

Special attention should be given to communication by governments on where we stand on *climate policy*. Not communicating about climate change and new policies is not an option. Public acceptance is a precondition for implementing climate change mitigation policies. In this context, it is

important to highlight studies on policy acceptance. According to Dreijerink and Klosters (2021) acceptance depends on three determinants: expected effectiveness of the policy option, honesty or fairness, and the effect the policy will have on society and one's own life.

v. The Receiver

It is not only the message that predicts effectiveness of the communication effort, temporal and stable characteristics of the receivers also influence the outcome. For example, Anghelcev and Sar (2014) found that participants' moods influenced the impact of negatively or positively framed messages on intentions to recycle paper and evaluations of pro-recycling advertisements. Also, the dual-process model indicates that greater involvement with relevant content of the target group will lead to more systematic and effortful processing (Eagly & Chaiken 1993).

Many studies have been performed that investigate differences in effective framing for conservatives and liberals. Wolsko et al. (2016) found that political conservatives displayed more pro-environmental attitudes after a binding moral frame, i.e. making a case that it is the right thing to do. Attitude change was mediated by perceptions that the moral frame came from the ingroup. Maibach et al. (2008) argue that conservation messages for conservatives can use an economic, an energy independence, a legacy, a stewardship, a religious frame or a frame related to the own nation.

Finally, the regulatory focus framework indicates that *promotion-focused* participants prefer messages focused on the achievement of positive outcomes (e.g., "a green future") and *prevention-focused* participants prefer messages focused on the avoidance of negative outcomes (e.g., "every tenth of a degree counts"; https://independent.academia.edu/MauroBertolotti?swp=tc-au-25408609 Cesario et al., 2013).

vi. Concerning Efficacy

To conclude, in view of the worsening climate crisis and the narrowing time window for effective action, it is particularly important to ensure that the measures communicated are actually effective. Effective communication extends beyond merely disseminating information; it involves raising awareness, building public support, and motivating individuals, organizations, and governments to take significant steps toward a sustainable future (Hagedorn & Peter, 2024). To this end, communication strategies should (this list of recommendations is based on Hagedorn & Peter, 2024) …

… provide clear and reliable information about how effective sustainable actions are, especially focusing on high-impact behaviors in areas like personal consumption, economic choices, political involvement, and community activities (e.g., Gatersleben et al, 2002).

… include discussions about smaller-scale actions within a larger context that helps people understand the full scope of the problem, the necessary steps to address it, and how these actions fit into a comprehensive solution (Hagedorn & Peter, 2024).

… provide a balance in communicating the seriousness of the problem with practical solutions (Hagedorn & Peter, 2024), and to choose a message that is both clear and suited to the audience's needs (e.g., Nisbet, 2009).

… communicate the need for large-scale changes alongside individual actions (Abson et al., 2017; Chater & Loewenstein, 2022), highlighting that these changes should match the urgency and size of the problem, and recognize that there are time limits for finding solutions.

… raise awareness using specific examples about issues like greenwashing (false claims of sustainability), single-action bias (thinking one action is enough), the rebound effect (actions that negate positive impacts), and efficacy simulations (actions providing a sense of efficacy without generating an impact that is proportional to the problem) (Shome & Marx, 2009). Also, inform people about political and economic groups that benefit from spreading false information or delaying action (e.g., Franta, 2021).

… make genuinely effective sustainable behaviors and collaborative efforts more visible, as this can inspire others and create a ripple effect (e.g., Hamann & Reese, 2020; Jugert et al., 2016; Leviston & Uren, 2020.

Overall, communication should address not only information and knowledge but also social norms, values, emotions, and identity to foster a sense of collective responsibility and agency (Hagedorn & Peter, 2024).

TAKEAWAYS

Diversity in Communication Tools: Utilizing a variety of communication methods, from traditional media to innovative digital platforms, is essential. This approach ensures the message reaches a diverse audience, facilitating effective engagement and participation in climate action.

Role of Psychology in Effective Messaging: Leveraging psychological insights is crucial for crafting messages that resonate deeply with different audiences. It is important to consider the emotional, cognitive, and social factors that influence public perceptions and reactions to climate change information.

Authentic Communication: Avoiding efficacy simulations – where actions feel effective but have little real-world impact – is critical. Communication should not only inform but also motivate genuine and impactful actions, addressing the risk of creating a false sense of progress in climate action.

FINALLY, AFTER CONSIDERING THE IMPACT OF EFFECTIVE COMMUNICATION ON PUBLIC PERCEPTION AND BEHAVIOR, WE ONCE AGAIN EMPHASIZE THE IMPORTANCE OF A COLLECTIVE RESPONSE TO THE CLIMATE CRISIS AND THE PARTICULAR ROLE OF PSYCHOLOGY IN THIS. BASED ON THE FINDINGS DISCUSSED, WE ARGUE FOR A HOLISTIC APPROACH TO SUSTAINABILITY THAT PROMOTES COLLECTIVE EFFORTS AT THE INDIVIDUAL, COMMUNITY AND SOCIETAL LEVELS.

X.   Collective Responsibility: Towards a Sustainable and Resilient Society

Main message: *Broadening the scope of psychology in climate action is critical, emphasizing the need to move beyond influencing individual behavior to impacting collective efforts and systemic changes. Psychology must engage with community actions and target decision-makers and economic leaders who possess the capability to implement transformative, large-scale environmental reforms efficiently. This shift is essential for achieving substantial and effective solutions to climate as well as other socio-ecological challenges.*

In the journey towards a sustainable and resilient society, collective actions and efficacy are vital. Confronting global crises requires collaborative efforts, emphasizing the importance of working together within communities and organizations. Models like the Social Identity Model of Pro-Environmental Action (Fritsche et al., 2018) underscore the power of collective efficacy in driving environmental change, enhancing individual actions and community-driven initiatives. Beyond individual efforts, this collective approach fosters shared environmental practices and policy support.

Emotions, particularly in response to climate change, play a complex role, influencing both personal actions and mental health. Recognizing these dynamics, and the impact of direct and indirect effects of climate change on mental health, is essential. Strategies should involve fostering mental resilience and advocating for systemic changes, integrating climate justice, and focusing on sustainable, science-based community, organizational, and societal solutions. In this transformative journey, psychology has a critical role in guiding individuals, communities, institutions, leaders and policymakers through these multifaceted challenges.

However, a critical examination of psychology's role in this context reveals a potential oversight. The focus has often been disproportionately on consumer behavior (Nielsen et al., 2021), neglecting the influence of those with the power to enact rapid changes. With such a narrow focus, psychology may even have contributed to the fact that effective climate protection is often only *simulated* and not *actually realized* (Hagedorn & Peter, 2024). The limitation in scope risks marginalizing the impact psychology can have on decision-makers and leaders, who are instrumental in implementing large-scale, systemic changes. In this vein, more approaches, such as the 'de-growth movement' a psychology of modesty, justice and ecological adaptation etc., are discussed in Röhrle (2024). The potential of psychology is not fully realized if it remains limited to influencing individual consumers, rather than also addressing and understanding the motivations and behaviors of key political and economic stakeholders who can better effect the immediate and significant environmental changes required.

TAKEAWAYS

Psychology's Expanded Role: Psychology's potential extends beyond individual consumer behavior to encompass broader systemic influences, emphasizing collective actions and organizational behaviors as crucial areas for intervention.

Influence of Leaders: The decisions of policymakers and economic leaders play a critical role in the rapid and significant implementation of environmental reforms, suggesting the need for psychology to engage more deeply with these influential figures.

Multi-level Implementation: Community-driven initiatives and systemic interventions are vital for building resilience and addressing mental health challenges exacerbated by climate change, underlining the importance of such strategies in effective climate action.

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