

# International Conference 5 ENVIRONMENTAL MINDFULNESS

editors Luca Simione Antonino Raffone Salvatore G. Chiarella

# **BOOK OF ABSTRACTS**

# International Conference 5 ENVIRONMENTAL MINDFULNESS

editors
Luca Simione
Antonino Raffone
Salvatore G. Chiarella



Cnr | Istituto di Scienze e Tecnologie della Cognizione (ISTC)



in collaboration with









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International Conference on Environmental Mindfulness November 13th, 2023 - November 16th, 2023 Rome, Italy

#### **PROGRAMME**

## November 13th, 2023

14:00 - 14:45	Opening ceremony	
14:45 - 15:00	Short movie	
	Lia Antico	"Biophilia"
15:00 - 16:00	Keynote talk	
	Jon Kabat-Zinn	Tending the Inner and the Outer
16:00 - 17:00	Introductory talks	
	Luca Simione	Be aware, feel connected, and take actions now: how mindfulness can inspire a better world
	Oleg N. Medvedev	Mindful publishing in the AI era: Navigating trends and fostering environmental awareness

## November 14th, 2023

9:00 - 11:00	Morning dialogue	
	Florian G. Kaiser	A psychological theory of environmental protection
	William Van Gordon	Leveraging contemplative practices to address major global concerns: How the practices of mindfulness and non-attachment can improve our relationship with nature
11:00 - 11:20	Coffee break	
11:20 - 12:40	Mindfulness and sustain	nability
	Hendrik Stark	The self: A blind spot in mindfulness-based approaches to sustainability
	Serena Lidia Colombo	Understanding the role of dispositional mindfulness in moderating the environmental attitude-behaviour gap
	Ferdinando Fornara	The relationships between mindfulness, happiness, and proenvironmental behaviours
	Sara Pompili	The Role of Mindfulness in Sustainable Dietary Choices: A Preliminary Systematic Review
12:40 - 13:40	Lunch break	
13:40 - 15:00	Mindfulness and nature	2
	Nadine Richter	Mindfulness, connectedness to nature, personal ecological norm, and pro-environmental behaviour: A daily diary study
	Pooja Sahni	Neuroscience, psychology and philosophy of nature experience and mindfulness
	Caitlyn L. Wilson	Time in nature & well-being: The role of mindful engagement
	Hasan Erguler	Dispositional mindfulness, nonattachment, and nature connectedness: An exploratory cross-sectional study
15:00 - 15:30	Coffee break	
15:30 - 16:30	Evening keynote speak	er
	Simone Grassini	Psychophysiological methods for the study of human-nature interaction
16:30 - 17:30	Nature restoration	
	Alice Stocco	The effectiveness of immersive experiences in a lagoon landscape in restoring attention in adults
	Katriina Hyvönen	Recovering from work through nature experiences – Heading to the forest or a virtual forest?
	Jane-Veera Paakkolanvaara	Nature-based group treatment for depression – online vs. face-to-face facilitation
17:30 - 18:00	Guided meditation	

# November 15th, 2023

9:00 - 11:00	Morning dialogue	
	Christian A. Klöckner	Drivers and barriers of pro-environmental behaviour: The role of individual, social and contextual factors in explaining individuals' decision to engage in mitigative action
	Marieke van Vugt	The importance of getting unstuck through contemplative practices
11:00 - 11:20	Coffee break	
11:20 - 12:40	Mindfulness, nature, an	nd affectivity
	Trudi Edginton	Multidisciplinary environmental mindfulness approaches to reduce stress and eco-anxiety across the lifespan
	Johannes A. Karl	It is only natural: Understanding mindfulness in nature from an affective perspective
	Pascal Frank	Mindful self-compassion for future sustainability professionals - A thematic analysis of students' experiences with participating in a mindful self-compassion course
	Mirko Duradoni	The relationship between connectedness to nature and pro- environmental behaviours: A PRISMA systematic review
12:40 - 14:00 Poster session + Lunch break		
14:00 - 15:20	Ecomindfulness and so	cietal changes
	Margaret Sap	Beyond Green Initiatives: Mindful Art and Climate Justice
	Antonella Buranello	Mindful sustainable longevity: Human-nature flourishing
	Oriana Mosca	Mindfulness for a good societal environment
	Laura S. Loy	Connected to all the people. The relation between mind-body practice, global identity, and pro-environmental engagement
15:20 - 15:40	Coffee break	
15:40 - 16:30	Evening keynote speak	er
	Pascal Frank	Less preaching, more self-practice! A case for epistemic modesty and skepticism in research and teaching on the mindfulness-sustainability nexus
16:30 - 17:30	Methods and protcols f	or mindfuness
	Sara de Rivas	A map for the forest of mindfulness instruments: Current recommendations and developments
	Bernardo Paoli	Therapeutic protocol for approaching mindfulness
	Vasil Kolev	The role of enhanced theta connectivity in the left hemisphere for modulating attentional and monitoring brain networks in
		long-term meditators

# November 16th, 2023

9:00 - 11:00	Advanced to a all all and a	
J.30	Morning dialogue	
	Liane Stephan Jamie Bristow	The Inner Green Deal - Nurturing sustainability from the inside
		out
11:00 - 11:20	Coffee break	
11:20 - 12:40	Mindfulness in a changi	ing world
	Oscar Lecuona	Sustaining ourselves, sustaining the planet: Mindfulness as a bridge to global health
	Kira Jade Cooper	Cultivating pearls of wisdom: Moving towards wise practices for inner-outer transformation
	Elisabeth S. Blanke	Beyond individual stress reduction - The mindful students program benefits university students and increases their proenvironmental behaviour
	Knellee Bisram	Eco-affinity: A new global framework for healing people and the planet
12:40 - 13:30	Lunch break	
13:30 - 14:20	Evening keynote speake	er
	Ute Thiermann	Do we protect nature because we 'should' or because we really care? The potential of experiential strategies for strengthening our relational motivations for pro-environmental behaviours
14:20 - 15:20	Special online session	
14:20 - 15:20	Special online session Ekaterina Denkova	Examining intrusive thoughts and mindfulness in promoting pro-environmental engagement
14:20 - 15:20	•	
14:20 - 15:20 15:20 - 15:40	Ekaterina Denkova	pro-environmental engagement  We need social mindfulness because the climate crisis is a social
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15:20 - 15:40	Ekaterina Denkova  Mark Leonard  Coffee break	pro-environmental engagement  We need social mindfulness because the climate crisis is a social
15:20 - 15:40	Ekaterina Denkova  Mark Leonard  Coffee break  MBI in nature	pro-environmental engagement  We need social mindfulness because the climate crisis is a social crisis  Some principles of nature-based therapeutics: Lessons learned in the development of a theoretically grounded, integrated
15:20 - 15:40	Ekaterina Denkova  Mark Leonard  Coffee break  MBI in nature  Freddie Lymeus	pro-environmental engagement  We need social mindfulness because the climate crisis is a social crisis  Some principles of nature-based therapeutics: Lessons learned in the development of a theoretically grounded, integrated nature- and mindfulness-based health intervention  MINDLIVEN Training: Meditation exercises in a virtual natural
15:20 - 15:40	Ekaterina Denkova  Mark Leonard  Coffee break  MBI in nature  Freddie Lymeus  Valentina Mariani	pro-environmental engagement  We need social mindfulness because the climate crisis is a social crisis  Some principles of nature-based therapeutics: Lessons learned in the development of a theoretically grounded, integrated nature- and mindfulness-based health intervention  MINDLIVEN Training: Meditation exercises in a virtual natural environment and its effects in workplaces  The effectiveness of a brief online mindfulness intervention for



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# Be aware, feel connected, and take actions now: how mindfulness can inspire a better world

#### **Luca Simione**

Climate change is an urgent global crisis, and there is a strong consensus within the scientific community that human activities are its primary drivers. While natural factors like volcanic eruptions and solar radiation have historically contributed to climate variations, the current rapid warming trend cannot be solely attributed to natural processes. It is the direct result of human actions, and the consequences are profound. Recognizing this anthropogenic cause of climate change is crucial because it underscores our collective responsibility to confront and mitigate this crisis. The need for sustainable behaviors is no longer a matter of choice; it is a global imperative. Furthermore, the impact of climate change is becoming increasingly severe, leading to heightened psychological distress, depression, and eco-anxiety among individuals worldwide. These emotional and mental challenges, in turn, can lead to a state of ecoparalysis and reduced engagement in proenvironmental behaviors. This poses a serious threat to our ongoing efforts to address the already critical situation we face.

Given these circumstances, it is important for the scientific community to take proactive measures and prioritize environmental studies, recognizing the significance of this critical challenge. In this regard, the community engaged in mindfulness and contemplative studies is progressively integrating this area of research, recognizing the pivotal role of mindfulness in addressing the psychological and emotional dimensions of climate change. However, these efforts have, for the most part, remained fragmented, with individual researchers or isolated research groups taking the lead.

In this scenario, we imagined a forum when mindfulness researchers would have the opportunity to share their cutting-edge works, a forum when all the nuances of the mindfulness influences on sustainability could be explored, a forum in which comparing different techniques, protocols, and methodological approaches to study mindfulness. As a result, we conceived the 1st International Conference on Environmental Mindfulness (ICEM), an exceptional event designed to delve into the profound connection between

mindfulness, nature, and sustainability. With a highly motivated group of researchers, we sought to establish a collaborative event that could catalyze advancements in our understanding of the role of mindfulness on environment perception and engagement. We believe that mindfulness is not just a tool for personal well-being but a pathway to counteract the negative psychological impacts of climate change, fuel pro-environmental behaviors, and pave the way for a more sustainable future for all of humankind.

At ICEM, we hold a firm belief in the value of interdisciplinary collaboration and knowledge exchange. Our commitment to fostering dialogue between environmental psychologists and mindfulness experts is at the heart of our conference's mission. To facilitate this exchange of ideas and expertise, ICEM provides unique opportunities for both communities. We have dedicated specific morning sessions where environmental psychologists and mindfulness experts come together to share their insights, research findings, and practical experiences. These sessions serve as a dynamic platform for exchanging ideas about innovative strategies to address the challenges posed by climate change. By encouraging this synergy between these distinct but interconnected fields, ICEM aspires to catalyze the emergence of new perspectives and solutions that can contribute significantly to our collective efforts in building a more sustainable world.

During this conference, we explore the variety of topics in which mindfulness could relate to the environment and to nature. First, we'll delve into the role of mindfulness in enhancing pro-environmental engagement, and how can mindfulness practices inspire and sustain a commitment to environmental conservation and sustainability. Second, we'll examine how mindfulness is intricately connected to one's sense of nature. The conference explores how this connection influences well-being and cognitive restoration, offering insights into the profound impact of nature-based mindfulness practices. Third, we explore the complex relationship between mindfulness, nature, and affectivity. This examination becomes even more pertinent in light of the growing prevalence of eco-anxiety and heightened ecological concerns. Furthermore, ICEM features special methodological and clinical sessions, where innovative protocols for mindfulness interventions are presented. These protocols focus on increasing awareness of the natural world and nurturing pro-environmental attitudes through mindfulness practices.

In essence, ICEM represents the forefront of mindfulness-based studies within the broader field of environmental psychology.

Even if we made some errors in environment management in the past that should be recognized and if we feel anxious while thinking to our future as humankind and as inhabitants of the Earth as a whole, we need to take action now, in the present. This is the only time we have to make the difference, not only for us and for our children, but for any living things on this planet. It is time for awareness, responsibility, and change, and we hope that this conference will illuminate the transformative potential of mindfulness into the field of sustainability. We hope to inspire future research on this topic, and future decisions from policymakers on those delicate matters.

Our vision extends beyond the immediate challenges we face. At ICEM, we aspire to create a world where every individual, regardless of their background or circumstances, has the opportunity to participate in the collective effort to protect our planet, to preserve the beauty and diversity of our natural world.

As researchers in the field of mindfulness, we are doing our part at our best. Now, we want to inspire others to do the same.

ICEM is a collaborative initiative, driven by the Italian National Research Council (CNR) and Sapienza, University of Rome, in partnership with prestigious organizations like Consciousness, Mindfulness, Compassion (CMC), Mind & Life Europe, Associazione Italiana di Psicologia (AIP), and Italia Mindfulness. ICEM is also made possible thanks to the hard work and commitment of all members of the Scientific Committee and the Organizing Committee. Without them, this event would never have come to fruition. From the bottom of my heart, thank you. Together, we will chart a path to a more sustainable future, making ICEM an inclusive platform for diverse voices and ideas.

# Keynotes

## Tending the inner and the outer

#### Jon Kabat-Zinn

Center for Mindfulness, University of Massachusetts Medical School, USA

You cannot be healthy in an unhealthy world. Whether we are talking about psychological health or the health of the body, or of the body politic, there is no separation between, inner and outer, between you and the world. Life in all its myriad forms is a miraculous evolutionary expression of this tiny blue sphere in the vastness of space — and how we take care of it influences how we take care of ourselves and vis versa. The human capacity for mindfulness is crucial here — both as pure awareness and as heartfulness, as embodied compassion. The human world is erupting in terrible conflicts where all sense of a common humanity is lost in a sense of misguided self-interest and the dehumanizing othering of "us" verses "them." This creates causes and conditions that are a prescription for untold present and future harm and suffering — that is, unless we wake up as a species to our own true nature and potential: Homo sapiens sapiens — the species that is aware and is aware that it is aware. The same is true when it comes to environment degradation and climate change on both local and planetary levels. When we do not cultivate intimacy with our own capacity for awareness and sense of belonging, and that of others, we create hell-realms. When we recognize our potential for inner and outer healing and transformation, we humans have the capacity, individually and collectively, to heal ourselves and our world.

Keywords: Inner and outer; Psychological health; Mindfulness; Embodied compassion; Climate change

Do we protect nature because we 'should' or because we really care? The potential of experiential strategies for strengthening our relational motivations for pro-environmental behaviours

#### Ute Thiermann\* & William R. Sheate

Centre for Environmental Policy, Imperial College London, UK

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The dominant view in environmental psychology is that the strongest motivators for individual pro-environmental behaviour are to either reward people financially or by reputation (gain goal), to make them feel good (hedonistic goal), or to reinforce their feelings of moral obligation (normative goal). While this approach is well-suited for a capitalist society ran by hedonistic principles, it also has disappointed with limited short-term success. The 2-pathway model of pro-environmental behaviours expands on this view by integrating the marginalized but growing scientific evidence that strong relationships with others and nature (relational goal) play a deciding role about the depth of people's motivation to protect the environment. This theoretical model emerged under the umbrella of the self-determination theory and emphasizes the multifaceted nature of pro-environmental behaviours and their connection to human well-being. The 2-pathway model also underlies the assumption that experiential strategies, such as mindfulness and nature exposure, could help create long-lasting behaviour change by physically, cognitively, and affectively stimulating meaningful experiences in relation to oneself, others, and nature. Findings from a qualitative research project based on semistructured interviews with 13 mindfulness practitioners and 5 non-practitioners support the nuanced view on pro-environmental behaviours of the 2-pathway model. Moreover, the reflexive thematic analysis of the interview data allows for a better understanding of the various interconnected mechanisms through which formal and informal mindfulness practices can support the development of pro-environmental motivations and behaviour, while also highlighting the challenge and context-dependency of researching at the interface of mindfulness and sustainability.

Keywords: Nature connection; Relational values; Mindfulness; Pro-environmental behaviour; Qualitative methods

## A psychological theory of environmental protection

#### Florian G. Kaiser

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What makes people engage in environmental protection? More specifically, what makes them effectively reduce their CO<sub>2</sub> emissions and energy consumption? As environmentally protective behaviour is rather diverse, people can protect the environment by recycling paper, using public transportation, refurbishing the thermal insulation of their homes, and much more. Most of these behaviours have traditionally been addressed specifically and explained uniquely, but this practice stands in contrast to what I am suggesting today. For example, supporting environmental policies, like any other environmentally protective behaviour, is controlled by two sources: its costs and people's environmental attitudes. Any behaviour is endowed with costs in terms of exertion, money expenditures, and inconvenience. Such costs can be small (e.g., when a person expresses approval for environmental protection) or substantial (e.g., when a person commutes by bicycle). However, understanding people's behaviour is not enough to capture whether they will eventually reduce their environmental impact. To comprehend the impact that people have, we also need to understand the intensity of their engagement. In the proposed theory, the strength of environmental attitude accounts not only for what people do but also for how rigorously they do it and, thus, whether their CO<sub>2</sub> emissions and energy consumption actually shrink.

Keywords: Environmental Protection; Protective Behaviour; Energy Consumption; Environmental Attitudes; Theory

## The Inner Green Deal - Nurturing sustainability from the inside out

### Liane Stephan\* & Jeroen Janss

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How contemplative and evidence-based sustainability programs that strengthen specific inner human qualities such as compassion, courage, awareness, or agency promote a mind shift toward long-term orientation and systems thinking. Design and outcomes of several practical interventions that lead to stronger pro-environmental behaviours. These interventions were supervised by Dr. Christine Wamsler from Lund University.

Keywords: Mindfulness; Compassion; Sustainability inside-out; Reconnection; Inner Green Deal

# Less preaching, more self-practice! A case for epistemic modesty and skepticism in research and teaching on the mindfulness-sustainability nexus

#### Pascal Frank

Education & Learning Sciences, Wageningen University & Research, Netherlands pascal.frank@wur.nl

In line with growing interest in mindfulness, mindfulness-based practices have gained increasing popularity as a means to contribute to sustainable development too. While the underlying rationale explaining such a mindfulness-sustainability nexus is plausible, I argue that the empirical evidence justifying promoting mindfulness in the context of sustainability is poor. Furthermore, current research in the field suffers from major methodological shortcomings, often rooted in positivity bias and a reductionist view on sustainability. Against this backdrop, I hold that promoting mindfulness as a way to foster sustainable development risks forfeiting the credibility of the practice and might even have counter-intended effects on sustainability. To avoid such effects and advance the field and better understand the mindfulness-sustainability nexus, more self-reflexive and (self-)critical research approaches are needed. Moreover, I suggest reminding ourselves that mindfulness is a practice that allows us to explore ourselves. While we can invite others to engage in this exploration, there should be no expectation as to how this experience unfolds for them. If we really want to demonstrate the practice's potential for a sustainable future, we should intensify our own practice and epitomize its transformative potential through our actions. Until then, a modest posture concerning this potential seems to be more mindful to me than trying to induce inner-outer change in others.

Keywords: Mindfulness; Sustainability; Epistemic Modesty; Skepticism; Self-Practice

Drivers and barriers of pro-environmental behaviour: The role of individual, social and contextual factors in explaining individuals' decision to engage in mitigative action

#### Christian A. Klöckner

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In my talk, I will introduce some of the more prominent factors influencing proenvironmental behaviour from the individual, the social and the contextual level. Taking a starting point in the Comprehensive Action Determination Model, I will present a number of empirical studies outlining the importance of these factors in different contexts. The presentation will be a starting point for discussing the potential of mindfulness techniques to support some of the processes.

Keywords: Pro-environmental behaviour; Individual factors; Social factors; Contextual factors; Mindfulness techniques

#### Psychophysiological methods for the study of human-nature interaction

#### Simone Grassini

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The intricate relationship between urban and natural environments on human mental well-being has intrigued environmental psychologists for decades. Historically referring to the Stress Reduction Theory (SRT) and Attention Restoration Theory (ART), researchers have posited that natural surroundings foster resilience, diminish stress, and restore attentional and cognitive processes. Traditionally, these hypotheses were tested through self-evaluations and physiological measurements such as heart rate, and cortisol levels, often within controlled laboratory settings using image slideshows. A recent paradigm shift has incorporated neuroscientific methods such as Electroencephalography (EEG) and Functional Magnetic Resonance Imaging (fMRI) to delve into the brain's reactions to natural and urban environments. Laboratory studies employing EEG have consistently highlighted that exposure to natural settings is associated with a modulation of alpha and theta waves, suggestive of relaxation states. The effect of natural setting on brain structures related to emotional processes as the amygdala, has been shown by recent studies using fMRI. Incorporating auditory stimuli into this research, studies have presented findings where natural sounds, like bird songs, induce brain relaxation markers. However, recent studies have shown that the perception of the stimuli' origins, whether natural or urban, can pivotally influence both perceptual processes and brain activity. To achieve a higher level of realism while maintaining experimental control, methodologies have evolved from static images to videos and Virtual Reality (VR) simulations. Field studies leveraging mobile EEG have ventured outside controlled settings to tap into real-world experiences. As technology advances, an amalgamation of brain physiological markers and artificial intelligence pave the path for increasing our understanding of the symbiotic relationship between humans and their environments, potentially reshaping the way we can study human-nature interaction.

Keywords: Nature; Environment; Physiology; Human-Nature Interaction; Environmental Psychology

#### The importance of getting unstuck through contemplative practices

#### Marieke van Vugt

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One often overlooked mechanism practised in many of the contemplative practices is befriending our mind, so it becomes more flexible and less "sticky". In this talk I will describe how we try to measure the stickiness of the mind and how different contemplative practices may make our minds less sticky. Finally, I will reflect on the importance of reducing mental stickiness for improving environmental behaviour and avoiding being struck by climate anxiety.

Keywords: Contemplative practices; Mental flexibility; Stickiness of the mind; Environmental behaviour; Climate anxiety

Leveraging contemplative practices to address major global concerns: How the practices of mindfulness and non-attachment can improve our relationship with nature

#### William Van Gordon

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When we breathe in, we breathe in the out-breath of plants, flowers, and trees. When we breathe out, we breathe out the in-breath of insects, birds, and animals. Humans and nature are interconnected to the point that it is impossible to distinguish a separation humans are a part of nature and nature is a part of humans. Therefore, it is unsurprising that there appears to be a strong empirical link between mental health and how we view, engage with and care for nature. In this talk, I will begin by highlighting emerging research findings which indicate that by improving our relationship with ourselves, contemplative practices such as mindfulness and non-attachment also have the potential to improve our relationship with nature. I will then draw upon teachings in the traditional contemplative literature that likewise emphasise the importance of the two-way connection between mind and nature. Finally, I will conclude by outlining examples of specific contemplative techniques that can be used to deepen our understanding of, and feeling of connection to, the natural world.

Keywords: Contemplative practices; Mindfulness; Non-attachment; Mental health; Nature connectedness

# **Talks**

# Connected to all the people. The relation between mind-body practice, global identity, and pro-environmental engagement

Laura S. Loy<sup>1</sup>\*, Luisa Bill<sup>1</sup>, Alicia Clemens<sup>1</sup>, Laurin Dressel<sup>1</sup>, Lilien Herkommer<sup>1</sup>, Kathrin Herrmann<sup>2</sup>, Anna-Clara Kindler<sup>1</sup>, Miriam Kögel<sup>1</sup>, Chiara Kurschat<sup>1</sup>, Nele Nau<sup>1</sup>, Elisabeth Prestele<sup>1</sup>, Lea Reiter<sup>1</sup>, Isabella Rudloff<sup>1</sup>, Alisa Scheuermann<sup>1</sup>, Leonie Spang<sup>1</sup>, Gerhard Reese<sup>1</sup>

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Global environmental crises require globally concerted action. Referring to Social Identity Theory (Tajfel & Turner, 1979), scholars argued that a global identity (i.e., identification with all humanity as inclusive ingroup and concern for people all over the world; McFarland et al., 2019) can motivate action for the benefit of all humanity (Reese, 2016). Indeed, prior research found that global identity is positively related to people's pro-environmental behaviour and policy support (Pong & Tam, 2023). However, little is known about how to strengthen global identity. We argue that mind-body practices (e.g., meditation, yoga) might increase global identity because connectedness with people all over the world is a traditional goal of these practices. Through a strengthened global identity, mind-body practices may have the potential to foster pro-environmental engagement. We tested these assumptions in a series of studies in Germany. We surveyed and compared people with a regular mind-body practice and non-practitioners regarding their global identity and pro-environmental engagement (Study 1, N = 258; Study 2, N = 401; Study 3, N = 468; Study 4, N = 505). In a randomised-controlled pre-post study, we evaluated effects of a 7-day meditation training via app (Study 5, N = 164). We surveyed participants before and after meditation retreats (Study 6, ongoing). Finally, we experimentally tested whether brief one-time meditation momentarily raises global identity salience and the intention to engage pro-environmentally. We compared Metta meditation to a control group (Study 7, N = 220), and mindfulness and meta meditation to control groups (Study 8, N = 560; Study 9, ongoing). In a randomised-controlled pre-post study, we compared whether Metta meditation was practiced individually online or in a group offline (Study 10, N = 71). Our findings suggest that global identity and pro-environmental engagement are

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stronger among regular mind-body practitioners compared to non-practitioners. Global identity can be strengthened through short but intense meditation formats. Indirect relations suggest that global identity could be a mechanism through which mind-body practice motivates pro-environmental engagement. However, our results on one-time meditation are inconsistent. We discuss the necessity to evaluate longitudinal effects of long-term mind-body practice in future research.

Keywords: Mind-body practices; Global identity; Pro-environmental engagement; Meditation; Metta

## Mindfulness, connectedness to nature, personal ecological norm, and proenvironmental behaviour: A daily diary study

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The mindfulness concept has been discussed as a promising pathway to increased pro-environmental behaviour, which is at the same time related to personal well-being. A number of studies identified correlations between trait mindfulness and pro-environmental behaviour (PEB) and identified different mediators. In order to gain more fine-grained insights into this connection, the present study investigated mindfulness as a predictor of same-day connectedness to nature, personal ecological norm activation (PENA), PEB and well-being on a within-person level. In a daily diary study (N = 183, days = 1197), multilevel regression analysis showed (i) positive same-day within-person relationships between mindfulness and PENA, connectedness to nature and well-being, (ii) a significant effect of mindfulness on next-days PEB, (iii) relationships between regular mind-body practices, such as mindfulness meditation, and daily PEB. Path analysis showed, (iv) a path from mindfulness to PEB mediated by connectedness to nature and PENA. The study confirms the significance of mindfulness in everyday life for connectedness to nature, PENA and well-being. Furthermore, the study points out to the relevance of investigating predictors of PEB on a within-person level.

Keywords: Mindfulness; Connectedness to Nature; Personal Ecological Norm; Proenvironmental Behaviour; Daily Diary Study

# A map for the forest of mindfulness instruments: Current recommendations and developments

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Mindfulness is a recent global scientific and social movement. Definitions propose mindfulness as a state, disposition, and practice consisting of psychological processes (present-cantered attention combined with accepting, decentred, and detached attitudes) and a cultural movement (including a commitment to prosociality such as compassion, loving-kindness, and sustainability). Available scientific literature provides promising evidence that mindfulness holds scalable benefits for ecological, physical, psychological, and social health. Recent contributions make inquiries about the robustness of this evidence alongside more global questions about the replicability of science. In addition, the evidence is mainly based on psychometric instruments that measure dispositional mindfulness and related constructs (e.g., self-compassion or detachment). Moreover, the plethora of mindfulness scales makes it difficult for researchers to choose which is more appropriate. To overcome these issues, we propose a review of the current psychometric evidence on dispositional mindfulness. The most studied instrument in the dispositional mindfulness field is the Five Facet Mindfulness Questionnaire (FFMQ). Despite several psychometric studies adapting it to different populations, numerous studies point out unresolved issues in its properties. These issues primarily concern its content and construct validity (e.g., the Observe facet, the general mindfulness factor being unstable, and the presence of latent profiles). Still, there are also some issues regarding external validity (e.g., not predicting homogeneously impacts of mindfulness-based interventions). Thus, the FFMQ shows unclear psychometric properties. Alternatives to the FFMQ are currently being used (e.g., MAAS, PHIMS, CAMS) or being developed (e.g., CHIME). However, each instrument provides unique limitations, while most literature continues using the FFMQ. This exposes the field

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to undesirable consequences. To overcome these issues, we review the available psychometric evidence on the measurement of dispositional mindfulness. Then, we propose a simple algorithm of recommendations for basic and applied researchers to select the best instrument for their needs. These recommendations will be based on prioritizing internal and external validity and built towards clarifying their caveats and features. Finally, we propose ways forward in mindfulness assessment to aid in a better mindfulness science.

Keywords: Mindfulness; Assessment; Review; Psychometric; Guidelines

## The self: A blind spot in mindfulness-based approaches to sustainability

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Humanity is knowingly heading into a socioecological crisis and science has spent decades trying to understand this paradox of conscious (self-)destruction. In the process of searching for answers, mindfulness practices from the health sector have been applied in the sustainability discourse, hypothesizing they can support sustainable lifestyles. Evidence for this hypothesis, however, is still weak, possibly owing to methodological factors. Other reasons may include our understanding of mindfulness and why we practice it. In this regard, we revisited the traditional Buddhist roots of mindfulness alongside literature on secular mindfulness, (environmental) psychology, sociology, and sustainability. There we discovered an unconsidered theme, a blind spot, in our search for explanations and solutions to society's self-destructive tendencies: our understanding of "self" and our existential awareness. "Existential awareness" here refers to our sense of "self" and reality and is modulated through contemplative practice along gradients from reification to dereification. Importantly, dereification addresses a hidden discrepancy between our theoretical understanding of "self" as a compounded phenomenon or reflexive awareness, and our experience of "self" as a reified, seemingly independent entity. Interestingly, such a reification of "self" seems to have crept into and become commonplace in sustainability discourse, too. There, this "self" is treated as possessing those values, norms, beliefs, motivations, and identities that are commonly studied as drivers of environmental degradation. Considering the Buddhist teachings, however, one may argue that this reification of "self" co-emerges with dualistic notions of reality and corresponding mind-sets that are detrimental to proenvironmental behaviour and sustainability. In our view, tackling the socioecological

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crisis requires a deeper understanding of mindfulness, and how it can support dereified modes of existential awareness and "self" in relation to sustainability. This is inevitably linked to a critical reflection of our culturally and scientifically shaped perspectives on "self" and reality. We suggest this will help unravel hidden conditions underlying the socioecological crisis and potential pathways out of it.

Keywords: Self; Mindfulness-based approach; Sustainability; Existential Awareness; Socioecological Crisis

# Understanding the role of dispositional mindfulness in moderating the environmental attitude-behaviour gap

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Whilst awareness about climate change has increased in recent years among the global population, global greenhouse gases emissions have not ceased to rise. As the environmental crisis deepens, understanding why individuals struggle to take action despite increased environmental concern is not only a relevant research question but also a pressing social challenge. Findings from multiple studies point out that higher dispositional mindfulness would be a predictor of higher engagement in proenvironmental behaviour (for a review, see Fisher et al, 2017; and Geiger et al, 2019). This phenomenon has been mostly explained in terms of an increased tendency of mindful individuals to be aware of environmental stimuli, resulting into higher sense of connectedness with (hence concern for) nature and other human-being affected by the crisis. Yet, other studies pinpoint that the positive association between mindfulness and pro-environmental behaviour might also be related to increased abilities, of individuals high in mindfulness trait, to act with awareness and better control their behaviour (Amel et al., 2009; Li et al., 2021). Based on these findings, and on findings indicating a role of self-regulation processes in explaining pro-environmental behaviour performance (for a review, see Colombo et al., 2023), we made the hypothesis that dispositional mindfulness could contribute to explain why certain individuals are more likely to perform proenvironmental behaviours whilst others seem to struggle to display a behavioural response coherent to their attitudes towards the environmental crisis. To assess our hypothesis, we carried out a first correlational study on 228 people investigating the role of mindfulness in explaining the pro-environmental attitude-behaviour gap. Results

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indicate that the Acting with Awareness and Nonjudging dimensions of mindfulness would be moderators of the relationship between pro-environmental attitudes and behaviours, suggesting that the positive relationship between mindfulness and pro-environmental engagement could be also explained in terms of better behavioural regulation. The findings, limitations and implications of this study will be discussed. Also, to expand our understanding of the dynamics of the relationship between mindfulness and pro-environmental engagement, we will discuss the first results of a second study (on-going) exploring the potential role of increased emotional regulation in explaining the link between mindfulness trait and pro-environmental behaviour performance.

Keywords: Mindfulness; Pro-environmental behaviour; Self-regulation; Attitude-behaviour gap; Dispositional mindfulness

Some principles of nature-based therapeutics: Lessons learned in the development of a theoretically grounded, integrated nature- and mindfulness-based health intervention

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Background: Nature-based therapies (NBT) draw increasing interest, not least since the pandemic when more researchers and laypeople noticed the health benefits of maintaining regular nature contact. Environmental psychologists have long studied how human-nature transactions aid stress-management and bolster adaptive capacities. However, exchange between environmental and treatment-oriented psychological research has been minimal. Purpose: This presentation illuminates principles derived and applied over ten years' development and empirical testing of the Restoration skills training (ReST) course. ReST integrates theory and practical knowledge from natureand-health research, health psychology and meditation science, aiming to 1) appeal to people with weak self-regulation capabilities (who risk non-compliance and hampered benefits in conventional programs); 2) develop their skills in drawing on available nature to prevent and recover from stress; and 3) facilitate their adoption of lasting practice habits that can yield long-term health benefits. Methods: Over five small, consecutive RCT's mixing methods from otherwise disconnected fields, 83 students with stress or concentration problems went through five-weeks ReST while similar numbers attended different active and passive control conditions. Results: Findings and experiences from the consecutive iterations informed theory integration and its practical application. ReST is an acceptable and promising health intervention, particularly for participants with weaker self-regulation capabilities. Restoration skills improved and practice habits and health improvements were sustained over six months. Conclusions: Findings motivate and inform a forthcoming large-scale RCT to validate and extend an evidencebase for ReST. Its development process and principles can guide related NBT projects, furthering broad acceptance of integrated environmental and treatment-oriented health approaches.

Keywords: Mindfulness; Restoration; Environment; Training; Health

Mindful publishing in the AI era: Navigating trends and fostering environmental awareness

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Mindful publishing plays a key role in bridging technological advancement with environmental mindfulness. This presentation is offering an editor's perspective on the current trends and future directions in the publishing world, with a central focus on fostering environmental awareness by considering potential benefits and risks of Al engagement.

Drawing upon recent data and publications journals such as Mindfulness, we illustrate the powerful potential for a symbiotic relationship between mindfulness research, Al technologies and environmental stewardship in publishing. The talk further navigates the emergent pathways of conducting research and dissemination of knowledge leveraging Al tools, while minimizing environmental footprint. By introducing the Special Issue on Environmental Mindfulness, we invite stakeholders to explore the landscape of mindful publishing in the Al epoch, a venture promising to open fresh avenues for research and discussions. By delineating the contemporary nexus of mindful publishing and Al, we aim to spearhead a movement towards more conscious, environmentally sustainable knowledge dissemination paradigms, thereby championing the nurturing of a society that is both informed and sustainable.

Keywords: Mindfulness; Research; Publishing; Artificial Intelligence; Environmental Awareness

# Sustaining ourselves, sustaining the planet: Mindfulness as a bridge to global health

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Humanity is facing extraordinary challenges for ecological, physical, psychological, and socio-political health. These humanitarian and public health issues include climate change due to ecological damage, increasing poverty and precariousness, uncontrolled consumerism, social inequalities, and social fragmentation. These phenomena have damaged physical and mental health and well-being of humanity, such as increases in physical diseases (e.g., obesity), suicides, stress, psychopathology, and mental health demands. All of these have been exacerbated by recent pandemics, economic recessions, and violent conflicts. Global health is proposed as an overarching construct to counter these issues. Defined as international initiatives of research and action to promote health throughout the planet, it aspires to the creation of a universal basic health care. Common tenets of global health are environmental care, eradication of poverty and hunger, equity and social justice, responsible consumerism, eradication of physical and mental diseases, and the elimination of social discomfort. In other words, global sustainability. Mindfulness is a recent global scientific and social movement. Definitions propose mindfulness as a state, disposition, and practice consisting in psychological processes (present-cantered attention combined with accepting, decentred, and detached attitudes) but also a cultural movement (including commitment to prosociality such as compassion, loving-kindness, and sustainability). Available scientific literature provides promising evidence that mindfulness holds beneficial, scalable impacts for ecological, physical, psychological, and social health. Specifically, by increasing psychological health and well-being with secondary benefits on physical health; promoting awareness and commitment to ecological, and social sustainability; increasing prosocial behaviours and attitudes, and reducing tribalism and polarization; and allowing for greater self-regulation and resilience, favouring sustainable consumerisms. Thus, we propose that mindfulness

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is an essential vehicle for global health. In this contribution, we propose a theoretical framework to encompass the role of mindfulness in global health, the state-of-the-art of mindfulness research, its limitations and areas of improvement, and its potential to foster scalable actions for global health. Or, to put it more bluntly, how science and spirituality can provide a more sustainable future for Humanity through mindfulness.

Keywords: Mindfulness; Global health; Sustainability; Review; Agenda

# MINDLIVEN Training: Meditation exercises in a virtual natural environment and its effects in workplaces

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To cope with modern work contexts, people need to develop new skills such as cognitive flexibility, problem-solving abilities, and work-related stress resilience (Carnevale and Smith, 2013). Pieces of evidence have shown that mindfulness practices applied to work contexts can strengthen these skills. In fact, among the outcomes of a constant mindfulness practice, work-related stress reduction, increased creativity, problemsolving, and cognitive flexibility can be listed (Bazarko et al., 2013; Burton et al., 2017; Glomb et al., 2011). Spending time in regenerative natural environments (e.g., green areas, gardens, forests) has also been shown to lead to similar outcomes (Lee et al., 2022; Spano et al., 2022). However, modern lifestyle and pressing work schedules make it difficult for most people to carry out prolonged mindfulness practices in nature (Cox et al., 2018). To enable as many people as possible to benefit from such practices, we created MINDLIVEN, a digital training platform consisting of a virtual natural environment in which it is possible to run a complete mindfulness training, composed of a set of nine lessons of increasing difficulty. We carried out a pilot study on 140 workers who voluntarily participated in the project. Before starting the training and after completing it, we measured the participants' levels of work-related stress, perceived restorativeness of their work environment, and emotional regulation abilities using the following instruments: the Health and Safety Executive (HSE; Balducci et al., 2013) for levels of work-related stress, the Nature Contact Questionnaire (NCQ; Largo-Wight, 2011) and the Restorativeness at Work Scale (REST@WORK) for the perceived restorativeness (Brondino et al., 2023) and the EMRS (Gross et al., 2003) for the strategies of emotional

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regulation. At the end of the course, we also measured the mindfulness experience with the Toronto Mindfulness Scale (TMS; Lau et al., 2006). The structure of the Mindfulness-in-Nature training platform MINDLIVEN and the positive outcomes obtained with the training will be discussed.

Keywords: Mindfulness; Nature; Virtual environment; Wellbeing; MINDLIVEN training

# Cultivating pearls of wisdom: Moving towards wise practices for inner-outer transformation

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As trends towards unsustainability worsen across social and ecological systems, there is growing interest in shifting mindsets to support collective flourishing. Mindsets including values, worldviews, and beliefs — play a vital role in processes of imagining, sensing, and meaning making. Accordingly, many scholars now attest that transforming these inner dimensions is essential for making progress towards sustainability. Practices drawn from contemplative and wisdom traditions, such as mindfulness, are increasingly recognised as potential catalysts for encouraging more sustainable behaviours. Through a case study analysis, this research first reveals that many interventions for inner change are in fact adaptive responses to unsustainability as opposed to catalysts for transformation. Second, it demonstrates how twin capacities for individual and systemic maturity are required to move beyond the bounded rationality that centralises modern ways of seeing and being towards a more holistic and systemic conception of sustainability. Third, it explores how approaching interventions for inner transformation through "best practices" is frequently insufficient and sometimes even detrimental to advancing progress towards long-term viability and why "wise practices" are urgently needed. Drawing on Indigenous trans-systemics and systems transformation, this work advances understanding of how inner and outer sustainability might be synergized and the potential perils of attempting to force paradigmatic shifts through practices such as mindfulness without a complexity-informed perspective.

Keywords: Sustainability; Transformations; Indigenous trans-systemics; Wise practices; Complexity

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### Neuroscience, psychology and philosophy of nature experience and mindfulness

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Literature is replete with examples where humans have sought refuge in nature for spiritual and psychological restoration. However, little is known about the neurocognitive processes that are affected by natural surroundings. Growing research suggests the beneficial effects of natural environments on cognitive functioning. It is argued that the "elements" in the natural environment evoke "effortless" involuntary attention and that might be helpful in improving voluntary attention central to focus, attention and mindfulness. In my talk, I will present the findings from my two research studies that examines the role of nature experience in mindfulness, directed attention and investigates the underlying fronto-parietal neural mechanisms. Different aspects of nature experience as intentional or indirect will be discussed. The presentation will show evidence from time and frequency domain analysis on how even a brief nature experience rewires the neural circuitry, declutters the mind and enhances the functions of cognitive control and attention. The findings from EEG/ERP analysis reveal an interesting play of brain oscillations in relaxed yet alert state of mind after nature experience. Understanding the underlying neural mechanisms for attention enhancing effects of nature experience has the potential of its use in various therapies for attentional disorders as well as for improving cognitive functioning and mindfulness.

Keywords: Neuroscience; Psychology; Philosophy; Nature Experience; Mindfulness

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### Mindful sustainable longevity: Human-nature flourishing

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In an era characterized by the global aging megatrend and pressing environmental challenges, we stand at a pivotal crossroad—a profound opportunity to reimagine our understanding of well-being and sustainability. It is increasingly evident that the flourishing of both humanity and the natural world is not only interconnected but also interdependent: we are profoundly intra-connected (Siegel D., 2022), integral components of a larger ecosystem. To effectively navigate this transformation, Longevity Psychology (De Beni R., 2015) champions an integrative and holistic approach to mindful aging and caregiving. This approach requires a fundamental shift away from an egocentric worldview and towards an eco-centric awareness (Scharmer O., 2016). It entails bridging the disconnect that has grown between humanity and nature (Benyus J. M., 2009) while dismantling individualistic narratives (Morin E., 2020). Guiding this profound change involves cultivating compassionate leadership, reinventing organizations (Laloux F., 2014), practicing interdependence to heal collective trauma (Hübl T., 2023), and designing a world that transcends the anthropocentric paradigm (Norman D., 2023). Adopting a sustainability mindset (Rimanoczy, 2020), nurturing collective agency (Bristow, 2020), and dedicating ourselves to inner development (Wamsler C., 2022) are not just important actions; they are urgent imperatives. These actions hold the key to restoring and nurturing both humanity and nature, allowing them to not merely survive but thrive in harmonious coexistence. In this context, Mindful Sustainable Longevity emerges as a beacon of hope and possibility. Illustrating this approach are the inspiring projects undertaken by ISRAA, an Italian public senior care provider: the Borgo Mazzini Smart Cohousing project, launched in 2014 through participatory age-friendly design offers a socially and environmentally sustainable alternative for elderly urban living; the European Project SEFAC, a mindfulness-based intervention aimed at promoting selfmanagement of chronic conditions and a healthy lifestyle. Mindfulness-Based Elder Care (McBee, 2008), Social Mindfulness (Leonard, 2019), and Mindful Photography

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interventions are continuing to evolve through projects like Ri.Guardo. Aptly named (meaning "look again" and "respect" in Italian), this initiative aims to overcome ageism, challenge negative perceptions of elderly care, empower individuals and communities and pave the way for a more sustainable, socially equitable, and compassionate future.

Keywords: Mindful ageing; Sustainability mindset; Social mindfulness; Inner development; Collective agency

# Examining intrusive thoughts and mindfulness in promoting pro-environmental engagement

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There has been growing interest in examining emotional and cognitive factors promoting pro-environmental behavioural engagement. Emerging research based on affective science suggests that negative emotions (i.e., anxiety) and concerns are needed, at least to some degree, to motivate impactful behavioural engagement (Brosch, 2021). Yet, there are mixed findings regarding the direct association between climate anxiety and behavioural engagement, suggesting a more complex relationship may be at play (Clayton & Ogunbode, 2023). Furthermore, there has been scant research examining the impact of cognitive factors, such as mindfulness, as resilience building capacities in the face of increasing climate change concerns (Whitmarsh et al., 2022). The present study aims to address this gap by examining two questions: i) Is climate anxiety associated with behavioural engagement through the experience of more frequent climate change-related intrusive concerns? ii) Does dispositional mindfulness play a protective role in leveraging emotional concerns into effective pro-environmental behavioural engagement? To address these questions, young adults (n = 180) were recruited and asked to report their climate change anxiety and behavioural engagement using the Climate Change Anxiety Scale (Clayton & Karazsia, 2020), frequency of intrusive concerns regarding climate change via an adaptation of the Experience of Intrusions Scale (EIS; Salters-Pedneault et al., 2009), and dispositional mindfulness using the 15-item Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). Our results yielded two main findings. i) More frequent intrusive concerns significantly mediated the association between climate anxiety and behavioural engagement, suggesting their role in promoting behavioural engagement. ii) Higher (relative to lower) levels of dispositional mindfulness strengthen the relationship between climate-intrusive concerns and behavioural engagement. Collectively, these findings suggest that some level of noxious concern is needed to promote pro-environmental behavioural engagement and that trait mindfulness may promote engagement by leveraging climate concerns in an adaptive way. As such, more studies should consider investigating the impact of trait-level mindfulness and mindfulness-based interventions as they relate to pro-environmental engagement.

Keywords: Climate change anxiety; Pro-environmental engagement; Climate-related intrusions; Mindfulness; Intrusive Thoughts

# Beyond individual stress reduction - The mindful students program benefits university students and increases their pro-environmental behaviour

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Abstract of the contribution: Mindfulness-based interventions (MBIs) benefit the individual, most importantly with regard to health and well-being. However, whether MBIs may also lead to a more conscious relation to the environment is still an open question. In the present study, university students received an MBI, which was designed by the second author to improve how students relate to themselves, to others, and to the environment, using various practices, including practices known from mindfulnessbased stress reduction (MBSR), mindfulness-based compassionate living (MBCL), and deep ecology. The intervention, the Mindful Students Program (MSP), took place at Leipzig University, Germany, and was embedded in the curriculum, spanning 13 sessions (1,5hrs each), with one additional half-day long retreat. At the beginning (T1) and at the end of the course (T2) various questionnaires were administered. Two control groups were used: a control group recruited by a polling institute and a group waiting for an online mindfulness program. First results for students who participated at both measurement occasions across the three semesters are presented as compared to the control groups (N = 505; 78% female). Students who received the MBI were very satisfied with it and participated regularly. Multilevel models revealed that, compared to both control groups, participants' stress levels significantly decreased across the semester, and their mindfulness and their pro-environmental behaviour increased. Limitations such as study drop-out and potentials for adverse side effects will be discussed. The results of the study shed light on the opportunities of teaching MBIs embedded in ethical orientations at universities.

Keywords: Mindfulness-based intervention; University students; Pro-environmental behaviour; Mindful Students Program; Ethical Orientations

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### Therapeutic protocol for approaching mindfulness

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It happens that some patients, during psychotherapy, tell of having tried a "Mindfulness program" without being able to find benefits, due to an excessive internal dialogue and an obsessive tendency that made them experience mindfulness as a procedure to be performed. In these cases, it has proved effective to use a therapeutic protocol for managing internal dialogue during individual psychotherapy sessions of Brief Therapy, which consists of three steps of in-session therapeutic restructuring and out-of-session therapeutic experiences that accompany the patients in reducing the pervasiveness of their internal dialogue, so that they can approach mindfulness more satisfactorily and effectively.

Keywords: Internal dialogue; Approaching mindfulness; Obsessive disorder; Protocol; Brief Therapy

The effectiveness of immersive experiences in a lagoon landscape in restoring

#### attention in adults

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Today, it is widely acknowledged that interactions with Nature positively affect restoration from mental fatigue and stress relief, enhancing focus and psychological well-being. However, quantifying these effects isn't always straightforward because they are typically assessed through subjective measures, making it challenging to precisely highlight the underlying cognitive responses. Moreover, existing research has predominantly focused on the positive effect on cognitive benefits provided by terrestrial landscapes, like forests and urban green spaces, while overlooking other ecosystems, such as coastal and water-dominated ones. Consequently, the potential of aquatic ecosystems and their landscapes to reconnect people with Nature and alleviate mental fatigue has been scarcely evaluated. In this study, we present the results of an experiment aimed at objectively evaluating the restorative qualities of a lagoon ecosystem in Northern Italy. After measuring participants' connectedness to Nature, we assessed their attentional performance through a test requiring sustained and active attention. Subsequently, the group embarked on a mindful walk along a trail, surrounded by the lagoon environment. After the immersive experience, we measured the perceived restorativeness value of the lagoon landscape, and the participants' scores on a second attention test administered post-excursion. Remarkably, the majority of participants exhibited improved performance on the attention test, with a significant reduction of 21.7% in the time taken for the post-excursion test, compared to the pre-excursion one. Our findings contribute to the growing body of evidence supporting the positive impact of Nature on human mental well-being and suggest that spending time in coastal and lagoon ecosystems, with their unique characteristics, can significantly enhance efficiency in tasks requiring sustained active attention, while promoting relaxation and contemplation.

Keywords: Perceived restorativeness; Connectedness to Nature; Attention; Aquatic landscapes; Immersive experiences

The role of enhanced theta connectivity in the left hemisphere for modulating attentional and monitoring brain networks in long-term meditators

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Neuroimaging research has consistently identified a prominent cluster of lefthemispheric activation across different meditation styles in long-term practitioners. In addition, increased leftward grey matter asymmetry has been observed for associative cortical regions. Neurophysiologic studies of oscillatory dynamics based on electroencephalographic recordings (EEG) have confirmed the presence of synchronized theta networks in the left hemisphere with a local synchronizing hub in the parietal regions of experienced meditators. This hub is present in different meditation conditions implying that theta frequency may support large-scale coherent oscillations to reinforce intensified consciousness within the global neuronal workspace. The left-hemisphere hub may, however, also be related with a more specific role for theta in cognitive control processes that undergo substantial neuroplasticity changes in the course of meditation practice. The present study was undertaken to highlight the involvement of this left-hemisphere theta hub in specific neurocognitive process. Meditation practice is suggested to engage training of cognitive control systems in the brain, particularly processes of attention and cognitive monitoring. Therefore, the synchronization of fronto-parietal (FP) attentional and medial-frontal (MF) monitoring brain networks was analysed. Using the imaginary part of coherence, the synchronization of FP and MF networks was measured in highly experienced meditators during different meditation states (focused attention, open monitoring and loving kindness meditation). The question of whether and how the connectivity EEG theta patterns of FP and MF networks are modulated by meditation style and expertise was addressed. It was found that highly experienced meditators exhibited a strong theta synchronization of both FP and MF networks in left parietal regions in all mediation styles. The connectivity of intra-hemispheric theta FP attentional networks in the left hemisphere depended nonlinearly on meditation expertise. In contrast, the connections between the left parietal and medial frontal regions supporting executive monitoring increased linearly with progression of meditation expertise only during focused attention meditation. These differential relationships with meditation expertise imply a more specialised role for left parietal theta in processes of executive control, possibly mediated by enhanced metacognition and facilitated access to consciousness.

Keywords: Meditation; Long-term meditators; Attentional and monitoring brain networks; Theta connectivity; Left hemisphere

# The relationships between mindfulness, happiness, and pro-environmental behaviour

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Mindfulness involves individual's greater sensitivity to the environment, openness to new information, awareness of multiple perspectives, attentiveness to a distinct place and is associated with increased levels of happiness and well-being. Mindfulness triggers the behavioral change in several happiness domains, as well as in general Pro Environmental Behaviors (PEBs). To investigate the relationships between Happiness, Mindfulness, and PEBs we have administered an online survey to a sample of 130 participants (Females 67%, mean age = 30, sd = 9.10). The survey included the following measures: Satisfaction with Life Scale (SWLS; Diener et al., 1985; Italian adaptation, Di Fabio & Busoni, 2009), Interdependent Happiness Scale (Hitokoto & Uchida, 2015, Italian version, Mosca, Maricchiolo, Krys & Lauriola, 2021), Subjective Happiness (Lyubomirsky & Lepper, 1999, Italian adaptation, Iani, Lauriola, Layous & Sirigatti, 2014), Italian short form of the Five Facet Mindfulness Questionnaire (FFMQ-SF, Bohlmeijer et al., 2011), State Mindfulness Scale (Tanay & Bernstein, 2013) and Pro-environmental behaviors Scale (Meloni, Fornara, & Carrus, 2019). The relationships between the investigated variables were tested via correlation and mediation analysis. Limitations and future developments will be discussed.

Keywords: Mindfulness; Happiness; Well-being; Pro-environmental behaviours; Mediation-moderation analysis

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## The effectiveness of a brief online mindfulness intervention for university students: A randomised controlled trial

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Objectives: The objective of this study was to assess the impact of a brief online mindfulness intervention on depression, rumination, and trait anxiety in university students, while controlling for their baseline mindfulness levels, to ensure the validity and reliability of the findings.

Method: The sample consisted of 486 participants including 205 (42%) in the experimental group and 281 (58%) in the control group. The experimental group practiced mindfulness meditation during regular class hours and followed a daily practice program, whereas the control group was involved in regular class activities without practicing mindfulness. The outcomes were assessed at pre and post intervention using well-validated measures of mindfulness, depression, rumination, and trait anxiety. The data was analysed using repeated measures factorial ANCOVA while controlling for baseline mindfulness levels as co-variate.

Results: Our results demonstrated the effectiveness of a brief online mindfulness intervention in reducing depression, rumination, and trait anxiety of university students. Moreover, the initial trait mindfulness predicted the effectiveness of the brief online mindfulness intervention at individual level and was inversely linked to depression, trait anxiety and rumination.

Conclusions: The findings of this study have the potential to make a significant contribution to the field of public health by providing valuable insights into the impact of brief online mindfulness interventions to enhance well-being of university students. Educational institutions could incorporate mindfulness training into their academic curricula or offer it as an extracurricular activity to increase students' well-being.

Keywords: Online mindfulness intervention; Anxiety; Depression; Effectiveness; University students

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### Mindfulness for a good societal environment

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Mindful has the potential to improve the well-being of the environment and the society. For instance, being aware of one's pleasant sensations when in nature (e.g., Berman, Jonides, and Kaplan 2008; Tyrväinen et al. 2014) may help people fall back in love with nature and heighten their commitment to protecting the natural world. Mindful people may care more about the effects of their behaviour on the environment, through multiple paths, like an increased attention to bodily sensations and reactive thoughts and biases, openness to diverse perspectives and also awareness of self and political choices in alignment with self and values. Individuals with higher trait mindfulness display higher psychological flexibility and potential for taking action (Silberstein et al. 2012). Scientists and policymakers discuss the limitations of the current approach that equates social development with economic growth (e.g., Stiglitz, Sen, & Fitoussi, 2009). Mindfulness can be a tool to be used to make people aware of these collective sufferings. To investigate the role of Mindfulness in promoting the good development of both the environment and the society we have administered an online survey to a sample of around 200 people. The survey is composed of the following measures: Satisfaction with Life Scale (SWLS; Diener et al., 1985), Interdependent Happiness Scale (Hitokoto & Uchida, 2015), Subjective Happiness (Lyubomirsky & Lepper, 1999), Mindfulness (Kentucky Inventory of Mindfulness Skills, Baer et al., 2004), Value Survey (Schwatz, 2001), Construal of Power Scale (Sassenberg et al., 2014), and an hoc-built measure of good societal development. The relationships between the investigated variables were tested via correlation and mediation-moderation analysis. Mindfulness relates to the broader discussion on neoliberal (Harvey 2005) and neo-individual (Elliott and Lemert 2006) tendencies that emphasize individual responsibility and belief in individuals' abilities. However, using mindfulness practices the individual can only treat individualsocietal suffering at a personal level and not the triggering factors behind societal-based

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problems. Using mindfulness to refuel interest in the planet from the bottom up (i.e., a grassroots approach to motivating change, as opposed to policy-driven change) may help build a good society. Limitations and future developments will be discussed.

Keywords: Mindfulness; Happiness; Well-being, Good societal development; Societal Environment

# Multidisciplinary environmental mindfulness approaches to reduce stress and eco-anxiety across the lifespan

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The growing concerns and increased incidence of eco-anxiety regarding the uncertain future of our planet has been identified as a contributory factor to the rise in mental health difficulties across the lifespan (Usher et al, 2019). Increased levels of rumination, stress, anxiety and sleep difficulties can impact psychological, social and everyday functioning. Environmental mindfulness offers an accessible and holistic opportunity to engage with individuals across the lifespan in collaboration with psychologists, teachers, conservationists, academics and medical professionals in a range of clinical, educational and community settings. Recent funded initiatives led by the authors have explored the feasibility of integrating bespoke environmental mindfulness programmes for adolescent students in school and university settings and a group of individuals with Young Onset Dementia and their careers in the community. We adopted a mixed methods approach to evaluate accessibility, engagement, attendance; to assess subjective measures of wellbeing, QoL, mood and anxiety and refine the design of our multidisciplinary interventions. A 58% increase in wellbeing, a 51% increase in QoL and mood and a 62% reduction in stress and anxiety were reported with qualitative findings highlighting the social benefits for individuals and their carers that reduced loneliness and increased the focus on activism. These findings were aligned with the mental health benefits and positive feedback received by students and the increased engagement with conservation and citizen science curriculum that the authors have incorporated into the next stage of funding and development. Participants across all studies highlighted the impact of present moment awareness of thoughts, internal and external sensations along with an increased sense of empowerment associated with the ripple effects of being actively involved in community projects at a national and international level.

Keywords: Eco-anxiety; Mindfulness; Conservation; Mental health; Environmental mindfulness

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### Time in nature & well-being: The role of mindful engagement

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Background: Extensive literature has demonstrated that nature contact is linked to a range of health and well-being benefits (Jimenez et al., 2021). These associations are often rooted in Attention Restoration Theory (ART), which posits that attention fatigue is restored in certain natural environments (Kaplan & Kaplan, 1989). A recent framework hypothesized that through ART pathways, mindful engagement in nature (e.g., maintaining an awareness of internal/external experiences with a sense of curiosity, and without judgement or reactivity) may strengthen one's experience in nature through increased present awareness and heightened sensory impact (Macaulay et al., 2022). The present study examines the extent to which mindful engagement in nature moderates between-subjects associations between time in nature and wellbeing. Methods: Daily diary data were collected from undergraduate students in Denver, Colorado from February to May 2023. The current analytic sample includes 174 students who provided data once daily for ~7 days. Time in nature (yes/no) was summed across 7 days of assessment. Well-being outcomes included daily self-report measures of positive affect, meaning salience, and vitality. Results: Linear regression models demonstrated that time in nature was associated with positive affect (B(SE)=0.42(.17), p=.015), but not with meaning salience or vitality. The interaction between mindful engagement and time in nature was not significant. Notably, mindful engagement was significantly associated with positive affect, meaning salience, and vitality with time in nature included in the model (all p's < .003). Discussion: Results demonstrated that at the between-subjects level, those with more days in nature had higher positive affect on average (but not meaning salience or vitality) across 7 days. The relationship between time in nature and well-being did not significantly differ across levels of mindful engagement. However, mindful engagement was significantly associated with greater well-being regardless of the presence of an interaction effect, indicating that mindful engagement in nature may still be relevant for well-being. Subsequent analyses plan to examine within-subjects

associations between time in nature, mindful engagement, and well-being. Future research should continue to elucidate the relationship between mindful engagement in nature and well-being, as well as the mechanisms underlying these associations to inform future interventions.

Keywords: Time in nature; Well-being; Mindful engagement; Attention Restoration Theory; Daily Diary Study

## Recovering from work through nature experiences – Heading to the forest or a virtual forest?

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The research examines employees' recovery from work stress during visits in nearby nature and when viewing virtual nature with Virtual Reality (VR) headsets. During the nearby nature visits, participants were asked to focus their senses on their nature surrounding and be mindful of their experiences. The research provides information on the physiological and psychological recovery of employees. The intervention study took place in spring 2023 with a cross-over research design. The research was conducted among a sample of 57 participants who do remote or hybrid work. The research is registered and posted on the ClinicalTrials.gov public website (NCTo5830656). Of participants, 84% were female. About 90% of participants had a higher or lower university degree and 23% worked in management or leadership position. During the first week (control phase), the participants continued their daily routine as normal. During the second week of the intervention, a half of the participants were randomised to visit a nearby natural area after finishing work (exposure to nearby nature). The other half of the participants were randomised to view virtual nature videos with VR headsets after finishing work (exposure to virtual nature). On the third week of the intervention, the participants completed nature exposure the other way around. Participants responded survey questions about psychological recovery and work-related well-being, and in addition, completed Firstbeat Life measurements (e.g., physiological stress recovery) during intervention days. In the presentation, we will present new findings in relation to recovering from work in nearby nature and virtual nature through multidisciplinary perspectives of health, well-being, and tourism. These research findings are particularly relevant for fields in which there has been a growing trend for remote or hybrid work.

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The findings are applicable for employers and employees to find new ways of promoting work stress recovery, psychological detachment and restoration when making the transition between work time and personal time.

Keywords: Nearby nature; Virtual nature; Psychological recovery; Physiological recovery; Employees

# The relationship between connectedness to nature and pro-environmental behaviours: A PRISMA systematic review

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This systematic literature review examines the relationship between Connectedness to Nature (CN) and Pro-Environmental Behaviours (PEB). Considering the worsening climate change and the current climate emergency, pro-environmental behaviour has gained significant attention in the literature. PEBs aim to minimize negative impacts and maximize positive impacts on the environment. Researchers have focused on connectedness to nature as a potential driver of pro-environmental behaviour. However, there is no universally agreed definition of this construct, which can be understood as a profound connection with nature. The review of the literature was carried out by the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-analysis). To access the literature we consulted Google Scholar, PsycINFO, PsycArticles, PubMed, Science Direct, Sociological Abstracts, and Academic Search Complete databases, inserting as keywords: "connectedness to nature" and "pro-environmental behaviour". The search returned 2,280 results after duplicate removal. Of these 2,280 total results only 29 articles were selected based on the following inclusion criteria: (1) indexed articles on the selected databases (2) publication date until July 2022, (3) empirical study, (4) published in journals, conference proceedings, or as a Master's degree or Doctoral thesis, (5) written in English or Italian, (6) Two keywords had to be present in the abstract: "connectedness to nature" and "pro-environmental behaviour", (7) the studies had to evaluate the relationship between connectedness to nature and proenvironmental behaviour.

The reported results have clearly shown the presence of a significant and positive relationship between CN and PEB, however with great variability. On average, individual PEBs were more strongly associated with CN than activism PEBs.

Keywords: Connectedness to nature; Pro-environmental behaviour; Systematic review; Climate change; Climate emergency

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# A mindfulness-based intervention to promote prosocial and pro-environmental behaviour

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The contribution presents the concept of two programs Mindful Students Program / Mindful Teachers Program (MSP/ MTP), which aim to promote prosocial and environmentally protective behaviour for different target groups, specifically students and (student) teachers. The MBIs are currently implemented as part of the curriculum at Leipzig University, Germany, and several schools in Saxony, Germany. The program spans 12-13 sessions (1,5hrs each), with one additional half-day long retreat, and includes three phases. In the first phase, formal and informal mindfulness practices are introduced, some of which take place in nature to strengthen nature awareness and connectedness. These practices are complemented by psychoeducational elements such as stress and emotion regulation and cognitive restructuring. Participants are encouraged to notice their own patterns of thoughts, feelings, and behaviours, and they experience self-efficacy through consciously initiated change moments. In the second phase, own ethical values are challenged, expressed and translated into value-oriented action. Adopted narratives of lifestyles are questioned. By introducing a systemic view, participants experience interdependence and being integrated into natural systems. Likewise, by introducing compassion meditation, a global human connectedness is stimulated. Importantly, participants are empowered to express feelings of future and climate anxiety and to experience these feelings without avoiding them. Being able to regulate emotions in a mindful way helps participants to come up with concrete actions in line with their values, which enables a different concept of hope. The third phase aims to integrate the attitude of mindfulness into everyday life, including work-related practices (e.g., as teachers in the classroom). It contains exercises of appreciative communication and a systemic approach to the workplace culture such as break management, information channels or sustainable behaviour. The aim of this MBI is to enable participants to perceive and accept the reality that surrounds them and to develop responsible behaviours towards themselves (stress reduction), the resources of their fellow human beings (prosociality) and of their environment (pro-environmental behaviour). The development of the MBI, its implementation at the University and in schools, and its evaluation will be discussed.

Keywords: Nature connectedness; Interdependence; Emotion regulation; Self-efficacy; Value-oriented action

# Nature-based group treatment for depression – Online vs. face-to-face facilitation

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Objective: This study investigates effectiveness of online facilitated nature-based group treatment (Flow with Nature treatment, FWN) for depression compared to the same treatment with face-to-face facilitation. Flow with Nature treatment is a 12-week, naturebased group treatment for clinical depression with an integrative theoretical background in e.g., mindfulness, attention restoration theory and environmental self-regulation. FWN treatment's efficacy has been previously shown in randomised, controlled trial (Hyvönen et al., 2023). Method: In this study, we had 108 participants in total: 69 participants in face-to-face groups and 39 participants in online or hybrid-facilitated groups. We used linear mixed model to compare if online-facilitated treatment differed from face-to-face treatment in regard to depression scores (BDI), psychological symptoms (CORE-10) and restoration (ROS). Results: Online-facilitated nature-based treatment for depression did not have a statistically significant difference in efficacy compared to face-to-face facilitated group; not in regard to depression symptoms (p=.48), psychological symptoms (p=.43) nor restoration (p=.53). Conclusions: Surprisingly, online/hybrid-facilitated nature-based group treatment was at least as effective as face-to-face facilitated one. The result implies that online-facilitated nature-based groups could be one viable option in the secondary prevention of depression.

Keywords: Restoration; Depression; Online treatment; Nature-based treatment; Integrative treatment

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# Dispositional mindfulness, nonattachment, and nature connectedness: An exploratory cross-sectional study

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Objectives: Dispositional mindfulness relates to a non-judgmental, curious, accepting, and an exploratory attitude towards all experiences via sustaining a meta-cognitive state of awareness (Bishop et al., 2004; Kabat-Zinn, 2003). Applications in daily life promote enhanced subjective well-being and reduce the likelihood of habitual reactivity (Cardaciotto et al., 2008; Tomlinson et al., 2018). In addition, nonattachment is conceptualized as the disposition towards appreciating the impermanence of all phenomena, ultimately enhancing flexibility related to not clinging on to positive or avoiding negative experiences (Sahdra et al., 2010). Furthermore, the concept of nature connectedness is a tendency to desire exposure to nature, experience well-being benefits from this, and to see the inherent inter-connectedness of humans with the natural environment (Van Gordon et al., 2018). Nature connectedness has been related to dispositional mindfulness (Schutte & Malouff, 2018) and eudaimonic well-being (Pritchard et al., 2020). Mindful awareness and nature connectedness were further related to positive affect and life satisfaction (Nisbet et al., 2019; Sadowski & Khoury, 2022). However, the possibility of bidirectionality between and facet level interactions of dispositional mindfulness with nature connectedness are not well understood (Schutte & Malouff, 2018; Van Gordon et al., 2018). This exploratory research is thus aimed to outline facet level interactions while also taking into account the confounding influence of nonattachment. Methods: The multiple regression model with simple moderation was used in SPSS with the PROCESS macro. In total, the sample consisted of 144 university students.

Results: Preliminary findings point out that nature connectedness showed a positive correlation with mindful awareness (p<.001). Furthermore, mindful acceptance

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moderated the relationship between mindful awareness and nature connectedness (F(1,142) = 5.06, R2 change = .03, p < .05) when nonattachment was also controlled for. Conclusions: Preliminary results suggest a primary role for mindful acceptance in relating mindful awareness with nature connectedness. This finding adds to the growing literature on pro-environmental behaviour and links with mindfulness traits as well as nonattachment. Future research is advised to address study variables in larger sample sizes while also focusing on state effects following brief mindfulness interventions in natural settings.

Keywords: Dispositional mindfulness, Awareness; Acceptance; Nature connectedness; Nonattachment

#### We need social mindfulness because the climate crisis is a social crisis

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The climate crisis represents a tragedy of the commons on a global scale. There are two ways of preventing ecosystem collapse in a common access resource: the first is to control the resource and exclude others and the second is to come up with equitable systems that distribute benefits afforded by access to the resource fairly. The first option is not open to us as the ecosphere is not a territory that may be controlled by any single group. This only leaves agreements to restrict access to this global resource as the only means of controlling overall exploitation levels. As the climate crisis progresses territorial resources are going to become stretched i.e., drought and famine will follow. This will lead to increasing migration and conflict. With a given level of technological advancement, there are two challenges to making agreements where limited resources may be shared equitably. The first amounts to conflict resolution and the second amounts to building social structures which maximise the efficient use of resources in the community. The key to overcoming both these challenges lies in becoming aware of implicit bias and being able to regulate our sense of identity consciously. This is what Mindfulness-Based Organisational Education (MBOE) is designed to do. We need to become aware of implicit bias and regulate our sense of identity consciously because identity becomes the means for mobilising ourselves into groups to protect resources when we feel they are threatened by "others". It enables us to dehumanise "others" and commit crimes of the most terrible kind. Identity enables us to sacrifice individual interests in the service of the greater good, and it is identity, which causes us to define what that greater good may be. MBOE was trailed with NHS hospital staff (Krusche et al, 2020) and is recognised as the first 'moderated low dose MBI) by British and Dutch standards. MBOE is highly scalable, and a group of international practitioners are now engaged in disseminating the programme.

Keywords: Organisation; Commons; Conflict; Equity; Climate Crisis

# It is only natural: Understanding mindfulness in nature from an affective perspective

#### Johannes A. Karl

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Why is mindfulness so often practiced in specific natural environments? Past research has largely focused on the effects of landscape type on attractiveness of spaces in general and found that overall individuals seem to prefer aquatic spaces. In our current study we aimed to extend this approach by a) investigating the effect of subjective emotional assessments of spaces on place attractiveness and b) including mountainous spaces in the analysis. We tested how perceived emotional categories of Drive, contentment, threat, and awe, as well as familiarity with a space influence the rated attractiveness of pictures of different spaces using data from 512 participants that rated aquatic, non-aquatic, or mountainous images on these dimensions. In our second study we show how participants mindfulness can be influenced by the affective nature of their surroundings. Bringing these two lines of study together we propose an affective framework in which we can understand the role of nature in mindfulness practice.

Keywords: Mindfulness; Nature; Affective Perspective; Emotional Assessments; Place Attractiveness

### Eco-affinity: A new global framework for healing people and the planet

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Over the last four years, AHAM Education, a US-based UN-ECOSOC accredited social investment organization, has been integrating mindfulness and contemplative approaches within UN multi-stakeholder dialogues, glocal actions and grassroots programmatic implementation on water, climate, gender, well-being and education in the United States and LAC region, in collaboration with faith-based and research institutions, climate action networks, and other UN stakeholders. This intention of this talk is to:

- Share current UN working group activities, action commitments and policy papers within the UN ecosystem that are working towards achieving sustainable development goals (SDGs) through the lens and application of mindfulness, unity, and well-being.
- Explore eco-affinity and unity framework and how mindfulness serves as a foundational principle. We will screen a short 2-minute clip of the AHAM documentary "Healing People Heal the Planet" slated for launch at COP28, and funded by Exposure Labs and the Southeast Climate and Energy Network. The film showcases mindfulness-based grassroots BIPOC programs such as Mindful Beach Clean Ups in historic BIPOC beaches, B.Nature Retreats, and Resilient Activist training that invite a paradigm shift to eco-affinity for both activists on the frontlines and BIPOC communities where healing themselves is not separate from healing the planet.
- Engage audience in practice and reflections on strategic mindful advocacy for our delegation (and others) actively participating at COP28 as well as share experiences of mindful living practices that achieve SDGs for those on the fringes of intergovernmental processes.

Keywords: Ecology; Well-being; Mindfulness; Sustainable development goals; Eco-affinity

# The role of mindfulness in sustainable dietary choices: A preliminary systematic review

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Past research has extensively explored mindfulness within the broader domain of sustainable behaviours. In recent years, there has been a growing interest in understanding its role in sustainable dietary choices. On one hand, some scholars considered how mindfulness could predict sustainable dietary choices. On the other hand, some scholars posited that mindful eating, which is the practice of being fully present during meals and appreciating food's sensory aspects, might potentially increase sustainable dietary choices. In order to synthesize the existing body of literature, we conducted a preliminary systematic review to identify studies investigating mindfulness and mindful eating in relation to sustainable food choices. Google Scholar and Connected Papers databases were searched. Of 19 potentially relevant studies found, 11 research papers were included in the review. The present review showed that most of the existing evidence on the topic relied on cross-sectional designs, which found that mindfulness and mindful eating were associated with preferring organic food consumption, having a plant-based dietary pattern, consuming more greens and beans, and reducing the consumption of animal protein. Furthermore, three studies found a relationship between mindfulness and the intention to choose a vegetarian diet and to support food waste efforts. Instead, only a few studies implemented mindfulness-based interventions, showing that they had significant effects on awareness, attitudes, and intentions to consume more sustainable foods, but not on changing actual food consumption behaviours. All in all, this review suggests that mindfulness and mindful eating seem to be promising in promoting healthier and more sustainable food choices. However, the reviewed studies exhibited significant heterogeneity in the utilized instruments, practices, and sample compositions. Furthermore, most of them conceptualized mindfulness or mindful eating as an individual's disposition assessed by self-reported measures, instead of an active practice experience. The field is nascent, and we discuss its limitations and future research directions.

Keywords: Mindfulness; Sustainable dietary choices; Mindful eating; Sustainable food choices; Mindfulness-based interventions

### Beyond green initiatives: Mindful art and climate justice

#### Margaret Sap\*

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My work explores the powerful link between creativity, mindfulness, environmental awareness, and the urgent need for self-connection. In our fast-paced world, blending creativity with mindfulness has great potential. When we approach art with mindfulness, it sparks innovation and helps us see nature in a new way. This creative process empowers us to imagine a healthier, more sustainable world. Visualization and imagination guide us, allowing us to plan for the future and take steps to protect our environment. Selfawareness is vital in our journey. We must admit our disconnection from nature and how it relates to relentless capitalism and resource use. More self-awareness can motivate individual and group action and hold our governments accountable. It encourages us to consider our impact on the environment and shifts our focus towards conservation. Our integrity is at stake, and personal leadership can drive the meaningful change we seek. Throughout history, women have shared a deep connection with the Earth. As creators and nurturers, they've protected life and land for generations. Long before 'sustainability,' indigenous communities fought against exploitation of people and nature. Women are crucial agents of change in our mission to preserve the planet. By rekindling this connection, they can bring wisdom and nurturing qualities to efforts that harmonize human life with the natural world. We must acknowledge that our current sustainability model mainly benefits the eco-elite, emphasizing technologies like solar panels and organic coffee. We must recognize this and evolve towards a more equitable climate justice framework. In summary, my presentation highlights how creativity, mindfulness, and environmental awareness can lead us to a sustainable and equitable future. Mindful art expression, combined with visualization and introspection, guides us towards balance. Recognizing our disconnection from nature and expanding our sustainability views through historical wisdom fuels collective action for justice and sustainability. This discussion aims to inspire the creativity and mindfulness of attendees, uniting us in our shared commitment to an environmentally harmonious Earth. Additionally, I can facilitate a creative session for participants to experience mindful artmaking.

Keywords: Mindful art; Climate justice; Stewardship; Self-(re)connection; Ecological awakening

## **Poster**

# Deep listening and collective intelligence to facilitate the diffusion of coupled hydrogen and electric grids (SmInT-Grids): A stakeholder analysis for Hamburg

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Informed by Otto Scharmer's Theory U, which incorporates mindfulness principles, our research delves into the multifaceted perspectives of stakeholders within the hypothetical scenario of integrating interconnected hydrogen and electric island grids in Hamburg. Deeply grounded in Theory U, our stakeholder analysis holds a central position in our collaborative research. Our primary objective is to acquire profound insights into stakeholder perspectives, encompassing traditionally perceived "nominally powerless" stakeholders, and to understand the socio-psychological factors, barriers, needs, and drivers that influence transformation processes.

The stakeholder analysis comprises five key clusters. Firstly, the Identification and Categorization of Stakeholders phase identifies and categorizes relevant stakeholders involved or interested in Hamburg's energy system integration, unveiling their roles, interests, and spheres of influence. Secondly, the Stakeholder Perspectives and Impact Assessment segment involves exploring stakeholders' views tied to coupling electricity and hydrogen grids in Hamburg. This assessment covers social, economic, and environmental dimensions to reveal both opportunities and vulnerabilities. Thirdly, the Social Acceptance Paradigm of Coupled Island Grids cluster delves into stakeholder acceptance, aligning it with determinants identified in the existing research literature to grasp intricate dynamics governing social acceptance. Next, the Stakeholder Engagement and Mindful Communication cluster is dedicated to establishing an inclusive platform that fosters stakeholder engagement. This phase captures diverse perspectives, identifies synergies, and promotes mindful communication among stakeholders. Lastly, in our Methodological Framework Development and Recommendations cluster, we aim to derive recommendations to facilitate the diffusion processes of coupled energy systems and to incorporate stakeholder perspectives into decision-making processes. This phase focuses on gathering insights into opportunities, risks, and needs to inform

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actionable recommendations. Theory U, enriched with mindfulness principles, forms the theoretical foundation of our research. This theoretical framework guides our endeavour to comprehensively understand stakeholder perspectives within integrated energy systems, fostering transformative impacts in business, society, and individual consciousness.

Keywords: Stakeholder Perceptions; Integrated Energy Systems; Mindful Stakeholder Engagement; Social Acceptance; Theory U

### The relationship between character strengths and sustainable behaviour

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Over the past few years, researchers have developed models that emphasize the importance of exploring inner transformative qualities in investigating sustainable behaviour (Ives et al., 2020). The study's primary objective was to explore the correlation between character strengths and sustainable behaviour. Character strengths are defined as "...positive traits reflected in thoughts, feelings, and behaviours" (Park et al., 2004). According to the study of Valor et al. (2020), we hypothesize that individuals exhibiting higher levels of certain character strengths will also demonstrate a corresponding tendency towards sustainable behaviour. A total of 203 adults, ranging in age from 18 to 68, took part in the online survey. The online questionnaire was implemented using SoSci Survey (Leiner, 2019), and emails with the link to the study were sent out. Participants completed a socio-demographic questionnaire along with questionnaires assessing character strengths (VIA-120) (Höfer et al., 2020) and sustainable behaviour (Geiger et al., 2018). Significant correlations were found between sustainable behaviour and a range of character strengths, including curiosity, forgiveness, hope, judgment, kindness, love, love of learning, perseverance, prudence, social intelligence, and zest. In addition, diet preference and the character strengths of curiosity and spirituality were found to be significant predictors of sustainable behaviour. In summary, the study has unveiled a connection between character strengths and sustainable behaviour, suggesting that these inner transformative qualities could play a crucial role in fostering sustainable behaviour. In future research, it is recommended to analyse the motives behind engaging in sustainable behaviour and the potential rewards associated with such actions.

Keywords: Character Strengths; Sustainable Behaviour; Curiosity; Forgiveness; Hope

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# The effect of different meditative states on prospective and retrospective time perception

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Studies on time perception during meditation have reported conflicting results. These studies considered the variation of attentional resources as key element of the changes in time perception. However, also other mechanisms related to memory storage have been proposed. We contrasted two mindfulness meditations to investigate the role of attention and memory storage in time perception. A group of 32 non-meditators participated in a prospective judgment of short and long duration intervals, during two mindfulness practices (i.e., focused-attention and open-monitoring) and during a control condition (active listening of a story). Furthermore, at the end of each session, participants retrospectively self-reported time passage. Using a within-subjects design we contrasted prospective and retrospective estimations between the three conditions. Overall prospective time estimation's results showed that both FAM and OMM were judged shorter than control condition. Considering the two timescales, we observed no difference between FAM and OMM in the short intervals, although both were underestimated. For long intervals, FAM were shorter than control, whereas OMM and control were not different. Retrospective estimations showed that FAM and OMM time passage were experienced as slower than during control. Our study demonstrates that prospective estimation of short and long intervals is differently modulated during FAM and OMM. Prospective and retrospective result are discussed in light if the attentionalgate model and contextual change model.

Keywords: Time perception; Mindfulness; Attention; Focused attention meditation; Open monitoring meditation

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## The influence of aspects of connectedness and diet choice reasons on sustainable behaviour

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Internal transformative qualities like connectedness are important predictors of sustainable behaviour. Investigated aspects of connectedness in this study were connectedness to oneself (self-love), towards the environment (nature connectedness), and towards other human beings (pro-socialness). Furthermore, the influence of people's diet choices and the reasons for that choice were investigated as possible predictors of sustainable behaviour. Of one hundred thirty-nine participants (69 women, 68 men, 2 diverse, mean age: 22.65, SD = 3.73), 50 followed a vegetarian or vegan diet and 89 were omnivores. All participants filled out questionnaires about sustainable behaviour (food, clothes, in general), self-love, nature connectedness, and pro-socialness, and indicated their diet choice and the reasons for their nutrition (environmental-ethical and health reasons). The results showed significant correlations between sustainable behaviour and nature connectedness (r = .285), pro-socialness (r = .238), diet choice (r = .482), environmental-ethical (r = .581), and health (r = .236) reasons for nutrition. The significant relationship between nature connectedness and sustainable behaviour was fully mediated by environmental-ethical reasons for nutrition. To conclude, nature connectedness and pro-socialness as well as environmental-ethical and health reasons for nutrition are related to sustainable behaviour and could therefore be relevant aspects to improve sustainable attitudes and behaviours among adults.

Keywords: Nature Connectedness; Diet Choice; Sustainable Behaviour; Self-love; Prosocialness

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# The effectiveness of insight dialogue retreats on mindfulness, self-compassion, and psychological well-being

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Introduction. Insight dialogue (ID) is a structured interpersonal meditation practice consisting of didactic and experiential components, skills training, and practice (Kramer, 1999, 2007). It is a formal practice of dialogic meditation that brings into relationship practices deriving from Buddhist psychology that are typically limited to individual practice. ID orients individuals towards clearly seeing internal and external phenomena and events as they are, disengaging from painful urges, and inclining the mind towards contentment and kindness.

Objectives. The purpose of the current study was to examine the effectiveness of an ID intervention in promoting adults' mindfulness, self-compassion, and psychological well-being. Our hypotheses were that individuals taking part in an ID retreat would experience an increase in mindfulness, self-compassion, and psychological well-being.

Method. Participants (n = 100; Mage = 55.69; SD = 11.54) recruited from five ID retreats conducted across North America completed a battery of questionnaires including the Five Facet Mindfulness Questionnaire, the Self-Compassion Scale, and the Scales of Psychological Well-Being. Data were collected before and after each ID retreat.

Results. Repeated-measures ANOVAs showed significant effects of the ID practice from pre-retreat to post-retreat on mindfulness, self-compassion, and psychological well-being.

Conclusions. Overall, the results revealed a significant effect of the insight dialogue practice from pre-retreat to post-retreat on mindfulness, self-compassion, and psychological well-being, evidencing the benefits of this innovative interpersonal practice which brings the qualities typically cultivated in silent individual practice of mindfulness to the relationship.

Keywords: Insight Dialogue; Retreat; Interpersonal mindfulness; Self-compassion; Psychological well-being

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# Overcoming the challenge of measuring non-dual states: Evidence from the OVO chamber environment and the Sphere Model of Consciousness

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Observing, reporting and measuring non-dual states of consciousness has always been challenging for contemplative science researchers approaching these interesting, yet sometimes ineffable states. One solution is to use a neurophenomenological examination, such as proposed by the Sphere Model of Consciousness (SMC; Paoletti, 2002a, b; Paoletti and Ben-Soussan, 2019, 2020; Paoletti et al., 2020). We will discuss a specifically designed environment which is the physical embodiment of the SMC, called the OVO-Whole Body Perceptual Deprivation chamber (OVO, shaped as a human sized egg). The OVO has been designed to intentionally collapse the three axes of the SMC, namely time, emotion and self-determination (Paoletti and Ben-Soussan, 2019), with the aim of attaining a non-dual state. In addition, in line with the literature, SMC posits three types of Self in concentric circles: Narrative Self (NS), involving self-referential processes; Minimal Self (MS), the consciousness of oneself as an immediate and embodied experience in the "here-and-now"; and Overcoming of the Self (OTS), which is a non-dual state of consciousness. These can be linked to specific behavioural and electrophysiological features represented by faster-to-slower frequency bands as we go towards the centre of the sphere, that is, from NS, MS to OTS (for a recent review, see Paoletti et al., 2022). To support our claim, we will show several results from the general literature, giving examples from results obtained in our lab related to the transition from MS to OTS focusing on the OVO. More specifically, the OVO, which is mostly related to the OTS has been shown to create a state of absorption and was found to elicit increased delta activity, especially in the insula (Ben-Soussan et al., 2019). In contrast, a movement meditation mostly related to the MS, called the Quadrato Motor Training, has consistently showed to increase alpha activity (De Fano et al., 2019), similarly to other embodied in the "here-and-now" practices. In conclusion, the shift towards non-dual states can be measured electrophysiologically and is accompanied by a gradual shift towards slower frequency bands. The current approach is useful in operationalizing and mapping the different states and may help in comparing between them.

Keywords: Consciousness; Neurophenomenology; EEG; Self; Non-dual states

