Research

Coping and Adapting to Climate Change in Australia: Yoga Perspectives

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Abstract

Scientists caution against ignoring human-induced climate change and related health repercussions, with a growing body of literature highlighting the mental health effects of climate change and the importance of understanding coping and adaptation strategies. Less is known, however, about sustainable personal practices fortifying mental health in the context of climate change. The present study sought to investigate how long-term yoga practitioners (yoga therapists or yoga teachers) in Australia with a lived experience of climate change–related events are coping and adapting. The aim was to better understand participants' reports of climate change–related experiences and how yoga influences their mental health and choices in the face of climate change. Eleven in-depth telephone interviews were conducted and analyzed using an interpretive phenomenological methodology. Participants reported that their ongoing relationship with yoga influences how they cope with climate change-related stressors and their being-in-the-world, and how concern for all life bolsters their responses to climate change. The results illustrate the part yoga may play in supporting long-term practitioners to prepare for, cope with, and respond to climate change events and impacts. Offering inclusive, interdisciplinary yoga therapy and community-based networks fostering ethical living and response flexibility may prove beneficial not only for the mental health and coping ability of participants, but for the planet. *David et al. Int J Yoga Therapy 2022(32). doi: 10.17761/2022-D-22-00016.*

Keywords: climate change, mental health, coping, adapting, lived experience, yoga therapy, Heidegger

Abbreviations Used
ANS autonomic nervous system
IPCC = Intergovernmental Panel on Climate Change
PI = principal investigator
PVT = polyvagal theory
PWD = people with disability

Introduction

Given the stressors associated with acute and subacute events such as bushfires and drought, and the existential threat of enduring changes, research confirms that healthy coping and adaptation strategies[1] are needed to meet mental health challenges related to climate change. Failure to meet such challenges is likely to add to existing mental health issues and their impact on global burden of disease.[2–5] Although attributing relationship between climate change and mental health is more complex than pinpointing its effects on physical well-being, increasing evidence links experience and fear of climate change–related impacts to a range of mental health effects.[6,7] Research into acting on climate change as a positive coping strategy is also growing.[8,9] Yet a gap exists in knowledge on how holistic practices such as yoga influence coping and adapting in this context. Although some authorities, such as former U.N. Executive Secretary for Climate Change Christiana Figueres, have enlisted practitioners of ancient wisdom in the endeavor to alert world leaders to the multiple impacts of climate change and unify responses,[10] most have not.

Health is a holistic continuum including mental health, defined as mental illness and disturbance, as well as mental, psychosocial, and spiritual well-being; connection to nature[11,12]; and resilience.[13] Linked to resilience is coping, ever-evolving cognitive and behavioral efforts to deal with internal and external demands evaluated as surpassing personal resources.[14] Research is examining how human beings can shift from shorter-term coping toward adaptation—adjusting to existing and expected climate change

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effects.[15–17] Reser and Swim[18] explained that generators of the adaptation process are experienced as stressors, including direct and indirect experiences with climate change events and impacts. Thus, as stress is an aggravating factor for health, direct and indirect experiences and existential threat represent potential stressors related to the coping and adapting demanded by climate change.

Humans have long drawn on yoga in coping[19] and adapting by holistically strengthening health and sense of connection.[20,21] Yoga philosophy reflects interrelated practices as a path to seeing clearly in the face of stressors.[22,23] Yoga therapy is defined as "the professional application of the principles and practices of yoga to promote health and well-being within a therapeutic relationship that includes personalized assessment, goal setting, lifestyle management, and yoga practices for individuals or small groups."[24(p. 2)] With the emergence of this distinct profession in the West and growing numbers of yoga practitioners globally,[25–27] there is a need to better understand the benefits yoga may offer. This includes benefit to coping with and adapting to climate change and potential associated mental health effects.[28–31] Evidence suggests that the more yoga is practiced, the higher the chance practitioners, including those with chronic conditions, believe it improves their health; these findings lead researchers to surmise that benefits may take time to accumulate.[32] Long-term practitioners with lived experience of climate change–related events are well-placed in terms of experiential understanding of yoga's vast tradition, which may prove relevant to coping with and adapting to climate change.

Notable gaps in the current climate change, mental health, and adaptation literature guided the aims of the present research. Although investigation into what supports individual coping, effective mental health interventions,[33] and adaptation capacity building[17] is growing, there is a gap in the research into populations from broad demographic backgrounds who share holistic health practices. Individuals from such populations may provide important insights into coping and effective adaptation[17] to help humans navigate this "uncomfortable space of denying neither endings nor possibilities,"[34(p. 1)] because such individuals have long been applying practices to life. The present study sought to explore long-term practitioners' relationship to yoga and their experiences of coping and adapting in the face of climate change–related stressors.

Methods

The present qualitative study employed in-depth interviews to generate data. To support the research aim of understanding lived experiences and meanings evoked by participants, a Heideggerian interpretive, constructivist approach was chosen because it offers a foundation capable of encompassing the complex, evolving nature of the study phenomena. Key concepts underpinning methods were the reflexive role of the researchers; *dasein,* the idea of a living entity with an understanding of its own being and potentiality[35–37]; and Heidegger's hermeneutic circle of interpretation, primarily using the approach to data analysis explained by Benner.[38] As a rehabilitation counseling student, educator, yoga therapist, and former crisis worker, lived experiences sparked the principal investigator's (PI; T. D.) motivation to better understand climate change mental health. Reflective journaling and supervision helped maintain "an awake stance" toward preunderstandings.[39] Hermeneutic analysis of data involved circular interpretation of the "factual concrete" of lived experiences,[38,40(p. 80)] with journaling aiding data triangulation.[41]

This project was approved by Griffith University Human Research Ethics Committee (reference No. 2021/345) and adheres to the Australian National Statement on Ethical Conduct in Human Research.[42] The project is part of a Master of Rehabilitation Counselling degree, supervised by academics with expertise in rehabilitation, yoga, and climate change adaptation. To ensure participants' informed consent, invitation emails included a written consent form outlining study details including purpose, benefits, risks of participation, and consent for audiorecording interviews. Participants were informed that they could request that recording be halted and withdraw from participation at any time without consequence. Verbal consent was again obtained at the start of each interview. Participants' privacy and confidentiality were maintained throughout, with transcriptions de-identified. Data were kept in a password-protected database, accessible only to the researchers, and de-identified before analysis and reporting.

Convenience sampling techniques were used to recruit participants to partake in semistructured interviews, with a target population of long-term Australian-based yoga therapists or yoga teachers with lived experience of climate change–related event(s) and impacts. To reach this intended population, project information, including a link to complete the prescreening recruitment survey, was released via the Australasian Association of Yoga Therapists, Yoga Australia, and the International Yoga Teachers Association through emails, newsletters, and digital platforms. The survey's main purpose was interview recruitment. Participation was voluntary, and an email address was provided for potential participants to contact the PI for further details. Reminders were posted via the associations' social media pages prior to survey close. Based on fully completed surveys, respondents expressing willingness to participate in potential interviews and who had provided contact details were approached by email within 3 weeks following survey

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close; they were informed that if they were still so inclined they had been selected for an interview, to be scheduled by return email, and that they would receive a transcript of their interview for their records.

Nonprobability, purposive sampling techniques were adopted to select "information-rich cases for study in depth"[43(p. 264)] that included an array of backgrounds, locations, and experiences based on the following criteria: Only participants with a regular, self-defined yoga practice of 10 years or more and experience of climate change–related event(s) and impacts were eligible to participate. The number of participants was also partially determined using a theoretical sampling technique to cease recruiting when few new data arise[41,43] and considering the PI's master's program timeframe. Interviews were conducted by the PI, and participants were not offered any incentives. Interviews were scaffolded around the questions outlined in Table 1.

Qualitative studies[44–46] exploring lived experiences of climate change have reported sample sizes between 10 and 30 participants, supported by additional researchers suggesting that 10 interview participants are sufficient to reap rich data.[47] The target sample size for this study was 11 interviewees, allowing for variation but small enough for interviews to provide rich accounts of experiences for phenomenological analysis and interpretation.[41]

Table 1. Semi-Scaffolded Interview Questions

1. Can you tell me what made you decide to participate in this study?
2. Please tell me about your yoga practice and philosophy? What does yoga mean for you? a. What strengths do you consider yoga cultivates in you personally?
3. Please tell me about what climate change means to you.
4. Can you tell me about your experience of a climate change–related event(s)? a. What are some things you found challenging in relation to this event and its flow-on effects?
5. What practices, philosophy, or related aspects of yoga have you found most helpful in coping with these challenges? a. Do you believe your yoga practice influences your capacity to cope with climate change-related events and/or impacts? In what ways? b. How does yoga impact on your mental health and well-being in the face of climate change events and threats?
6. Do you feel yoga and/or being part of the yoga community has influenced your perceptions of climate change and ways of adapting to climate change? a. How? b. Specific adaptation measures taken?
7. Is there anything else you would like to add to help us understand the meaning of yoga for you as it relates to coping with and adapting to the impacts of climate change?

Data collection was undertaken using LimeSurvey, with the survey link open mid-June to mid-July 2021. This was followed by single, semistructured telephone interviews of approximately 1 hour in August 2021.[48,49] The PI prepared for interviews by researching best practices.[50] Interviews began with open questions to encourage engagement, help participants relax, and minimize researcher bias.[41] However, each interview was unique due to the varying experiences reported (e.g., participants could be asked to clarify meaning). Recorded interviews were transcribed verbatim after each interview using Word Dictate and hand-checking of audiorecordings against transcript, forming the primary data, and supplemented by the PI's preliminary notes and analytical memos, recorded in a journal. This reflexive process aligns with Heideggerian hermeneutic analysis and yoga philosophy.[38,51–53] Prior to de-identification and analysis, each participant received a copy of their interview transcript to honor their valuable contribution and uphold research authenticity and integrity.[54] As recommended by McConnell-Henry et al.,[55] there were no follow-up interviews or member-checking.

Data were analyzed using a process congruent with interpretive phenomenological approaches encompassing deconstruction, interpretation, and reconstruction.[38,56] Heidegger claimed that meaning is shaped through our shared humanity and life experiences,[57] asserting that although it is impossible to bracket experiences, one can grow more aware of one's assumptions through reflection.[51,53] The PI recorded reflections of her own "horizon of significance"[47] in a journal, noting that researchers are cognizant that yoga's efficacy varies based on individual needs and motivations. Heideggerian hermeneutic analysis enabled the researchers to adopt a perspective beyond yoga's own comprehensive framework.[52] Given the evolving nature of concepts being examined—mental health as a fluid, holistic spectrum[12]; yoga as "a whole package pathway"[21(p. 2286)]; and "hard to predict," "pervasive," and "non-linear"[58(p. 1865)] climate change health impacts—Heidegger's hermeneutic circle allowed for progressively delving deeper into data and examining preunderstandings by moving between part and whole.[38,40]

This bridging of participants' and researchers' horizons was done by highlighting key points from interviews, writing individual summaries and preliminary analyses, and comparing and contrasting these with overall notes after revisiting transcripts at the end of the interview period.[38,47] Coding and data management were trialed using NVivo12,[59] but coding and thematic analysis were chiefly hand-written, iterative processes[60] undertaken by the PI and guided by coauthors' recommendations. Supporting

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confirmability, these researchers, including a qualitative social scientist working on climate change adaptation and a lead author for the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report in Working Group II, assisted in further analysis and discussions to reach consensus on emerging themes and coding categories. Emergent themes were labeled, subcategories described, and verbatim notes used to support understandings identified and recorded in a reflective journal with codebook.[41] This phase also involved concept mapping[61] linkages between themes and subthemes. When the number of subthemes became unwieldy, similar subthemes were merged, with discrepancies resolved collaboratively by having subthemes encompassing both/and rather than either/or.

Results

Eleven people (29.7%) from 37 fully completed surveys participated in interviews (9 females and 2 males). Ten interviewees reported practicing yoga for more than 20 years, and all but one were currently teaching yoga. Nine were sole proprietors, including eight identifying as yoga therapists. Interviewees hailed from all states except South Australia, with locations reported as remote (n = 1), rural (n = 3), regional (n = 2), metropolitan (n = 3), and capital cities (n = 2). Four interviewees (36.4%) reported living with chronic illness, which included asthma, sleep apnea, depression, eczema, osteoarthritis, psoriasis, and/or complex posttraumatic stress disorder. Yoga styles/lineages reported included Anusara, Hatha, Iyengar, Krishnamacharya, Kundalini, Laya, Raja, and Satyananda. Interviewees described direct experiences of climate change–related events (drought, heatwave, flood, bushfire, and smoke associated with bushfire) in the last 3 years and prior events (cyclones, floods, bushfires, and distress of existential threat).

The results present a range of experience-based insights into when, how, and why yogic practices and perspectives may be beneficial for coping and adaptation in the context of climate change. Three main themes were identified: the mixed experience of coping with climate change–related stressors; being-in-the-world through yoga and the structure of care; and temporality, yoga, and responding to climate change.

The Mixed Experience of Coping with Climate Change–Related Stressors

Data relating to the first theme reflected complex impacts of climate change-related stressors and the coexistence of positive affect alongside distress. Hence, subthemes depicting this relationship of opposites[62,63] are summarized in Table 2. Some descriptors and quotes illustrate subthemes. Yoga philosophy/texts/practices were also commonly referred to in interviews and are included in Table 2, as they were reported as having direct relevance to coping with climate change–related stressors because of the benefits participants attributed to them.

Interviewees described how experiences of acute and subacute events sometimes led to strong feelings of anxiety and fear. Exacerbating these effects were perceived lack of political leadership and the existential threat climate change represents, producing feelings of sadness, frustration, and anger. Yet, even during events, uncomfortable emotions were countered by other, "positive" ones.[64] Whether reflecting sense of humor (*"Just as well we're yogis and we don't have any possessions"* [Participant D]), or a capacity for broad perspective-taking (*"I think positive things happen in drought as well"* [Participant C]), data revealed the complexity of climate change–related coping experiences. All respondents referred to practices and philosophy, regardless of the type of climate-change event or their geographic location, professional background, or yoga lineage. The common sentiment was of yoga affording space to experience stability, to allow mixed feelings to arise and be acknowledged, and then to draw clarity, meaning, functionality, and strength to advance. Participants reported this path as not an easy one.

Being-in-the-World Through Yoga and the Structure of Care

Interviewees' descriptions of yoga's meaning were categorized into five subthemes linked to aspects of yoga perceived as underpinning daily lives and capacity for coping with and adapting to climate change. Data conveyed embodied practices that found expression in attitudes and actions toward participants themselves and beyond. Choices relating to daily living were considered through the Heideggerian lens of the structure of care, encompassed within the unique time and space climate change represents[34] (Fig. 1).

Describing Yoga's Meanings

Participants reported that yoga is a holistic framework that permeates their daily lives, allowing them to practice inner contemplation to comprehend their place in the world and helping them live to their potentiality.[36] They voiced how sustained practice reveals potentiality as also interrelating with others and the natural environment. Universal interconnectedness was perceived as important to transcending differences. The gross and subtle aspects of long-term practice led participants to express that yoga aligns with nature and life. Several saw yoga as life-changing/saving in the face of climate change-related stressors. Interviewees emphasized the relevance of living in harmony with the natural environment to coping and responding to climate change:

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Table 2. Interview Subthemes Depicting Oppositional Relationships in Coping with Experiences of Climate Change

Subtheme	Descriptors of Lived Experience	Sample Quotes
Constriction AND	Hard to breathe, bated breath, encroachment, stuck, ruminating, feel very small, contracted, pressure, stricken	*"I think natural disasters are constricting"* [Participant C]
Expansion	Yoga creates space, expanding, big picture, effortless, opening	*"Aligning with that bigger picture"* [Participant E]
Confusion AND	Panicked, scattered, unpredictable, unknowns, uncertainty, oscillate, agitated, grappling, edgy, unrest	*"Thinking about having to sell the property and selling it at a loss"* [Participant K]
Clarity	Stay in focus, becoming more aware, clear mind, clarity	*"You're much more capable of being able to know what are the appropriate things that need to be done in any given situation"* [Participant B]
Dysregulation AND	Digestive issues, carried away with, unnerving, extremes, posttraumatic drought syndrome, traumatized, catastrophizing	*"I was driving at 5 kilometers an hour up this mountain. Sometimes fire trucks would come out of the smoke and you were terrified. You couldn't see the road, so I didn't know if I was on the road or if I was off of it. Or if I was on the right side of the road. It was absolutely terrifying. . . .*
Regulation	Grounded, dug down, regulate nervous system, self-regulation, able to focus on things you can control, steadier, calmer, quiet, adaptable, soothing, still, resilient	*And my friend said, 'I think I'm just going to do some chanting,' and I said, 'Yes, please.' So they were chanting, I was chanting, but really focusing on where I was going, and I just really felt that was so supportive"* [Participant D]
Disconnection AND	Lethargic, disconnected from who we are, internalizing, denial, ignored, dismissed, too painful to think about	*"I used to go to the beach a lot. I rarely do that now unless it's very early in the morning"* [Participant J]
Connection	More connected with what was going on with the body, affects all nations, symbiotic relationship, live in harmony	*"That idea of the ground being a connection to all of us, all over the world"* [Participant F]
Threat-to-life AND	Devastating, can wipe out species, treacherous, precarious, your own mortality, destruction, life-taking, shrivel and die	*"It doesn't mean that people weren't suffering, 'cause they were, immensely, but we just knew we were only one gunshot away from tragedy"* [Participant G]
Meaning and purpose	Keep focused on what is important, recovering, rehabilitation, more to offer, empower, life-changing, purpose, life-giving	*"Connecting to something that is always larger than us, whether that's your higher consciousness, people might call it God, but it's not necessarily a religious thing"* [Participant H]
Yoga philosophy/practices and texts	Patanjali's 8 limbs: *yamas* and *niyamas* (ethical precepts) and the concept of trust or faith *Asana* (physical postures; flowing *vinyasa,* e.g., sun salutations) Breath awareness, *pranayama* (breathwork; e.g., *ujjayi* [victorious breath] variations such as soft and *anuloma* [alternate-nostril], *nadi shodhana* [alternate-nostril with retentions], *sitali* [cooling breath] for heatwave, *brahmari* [bee breath], *bhastrika* [bellows breath] for extreme winters) *Trataka* (specifically candle-gazing), mantra and chanting (e.g., OM, lam, so hum, Gayatri), *nyasum* (focused finger movement), *sankalpa* (intention-setting), affirmations, visualization, *bhavana* (cultivating spiritual fortitude through embodied visualization) Yoga nidra guided relaxation, meditation (compassion, gratitude) Most prominently referenced yogic texts: Patanjali's Yoga Sutras, Bhagavad Gita	

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Figure 1. Participants' Descriptions of Yoga's Meaning and Connection with Heidegger's Structure of Care and Time

> *What we do to our environment isn't external to ourselves. It's very intimate to us. With that deep ecological understanding and sensitivity, what I think yoga can assist with specifically, because I know through my own lived experience, is it can make us more able to positively influence the direction that we need to move as the whole.* [Participant B]

Interviewees also emphasized the relevance of connection with human nature: *"[Yoga] teaches you to live in harmony with your own nature and then how that connects to other people, in your family, or your community"* [Participant D]. Thus, the expansion participants described was seen as not only personal but translating into the context of relationships. Fluid practice responding to physical, energetic, emotional, and spiritual needs facilitated spaciousness in being within and "being with." Interviewees voiced humility and trust in meeting these needs *"on a day-to-day basis"* [Participant A] through yoga practice.

The Structure of Care—Self and Beyond

Eight participants referred to Patanjali, the ethical principles of the *yamas* and *niyamas* outlined in the Yoga Sutras,[19,63] as conveying their experience of practice and its application to internal and external concerns.[14] They enlarged on concepts such as nonharm and nongreed. Several emphasized mental health benefits such as stress relief and clarity from a combination of observances (Patanjali's *kriya* [action] yoga: *tapas* [effort], *svadhyaya* [self-study], and *ishvara pranidhana* [surrender to the Divine]) in relation to coping with and responding to climate change. Others reported that experiencing daily life through yogic ethical living tendencies[65] facilitated peace of mind and quality sleep.

All participants claimed that yoga contributes to their physical functionality and strength, but also, importantly, to their observation capacity. Self-awareness[66] gained through consistent practice translates to noticing shifts in the nervous system, feelings, thoughts, and reactions. Participants deemed this capacity for awareness to provide insights that help *"in how you then might choose to move to the next moment"* [Participant E].

Community and Connection

Data revealed varying experiences of community, for example, local, state, national, global, yoga practitioners, and other populations (scientists, indigenous peoples, farmers, women, people with disability [PWD], children). Some interviewees further identified as belonging to one or more of the above demographics, adding another level of personal experience. Findings also revealed the conviction that scientific, indigenous, and farming populations are likely to hold invaluable climate change–relevant knowledge. The vulnerability of certain populations was also acknowledged, conveying a sense of responsibility toward others, particularly children and PWD. Finally, results demonstrated the centrality of connection to oneself in terms of mental health and adaptation, *"[t]hat sense of being able to find belonging and find home, wherever you are"* [Participant E].

The majority of interviewees perceived that local yoga community fosters caring connections. Many experienced the supportiveness of broader yoga and yoga therapy communities through associations, notably since online opportunities had expanded. Several prioritized keeping yoga spaces as *"sanctuaries"* [Participant F] where climate change–related concerns are acknowledged but not fueled. Although the level of influence yoga community had on individuals' coping with and adapting to climate change was mixed, beyond the practice's haven many considered climate action necessary. Regarding yoga's tradition of retreats, one mused that *"it's an isolationist sort of approach. And I think we live in times where that's maybe not good enough"* [Participant J]. Some reported that first-hand witnessing and media coverage of places becoming uninhabitable raised awareness of the reality of domestic and international climate migrations.

Temporality, Yoga, and Adaptation to Climate Change

Participants deemed yoga to be an adaptive advantage when it fosters clarity and flexible responsiveness to evolving situations. Several interviewees reflected on whether yoga's "slow-burn" process was up to the urgency of climate

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change. Participants referred to awareness of past, current, and future climate change events and impacts while drawing knowledge and strength from past generations, yoga lineages, and long-term practice. This culminated in present-moment awareness and moving forward, well-reflected in the statement of one interviewee:

> *[I]f we do not look back, we do not learn the lesson. So, therefore, how can we bring the knowledge, not the devastation, not the fear, not the negative, but how do we bring that knowledge forward and use it today, if we haven't looked back to see what it was? Or what it is, or what it can be.* [Participant I]

Participants' capacity to comprehend the bigger picture struck the PI (reflective journal, 2021, Aug. 20) and was revealed through their choices toward diet, materials, water use, transportation, and other living beings. Yoga was seen to influence preparation for events (e.g., keeping a box of belongings at the back door in case of future evacuation), mitigation (membership in environmental or climate activist groups, writing to/speaking with local officials, voting, planting trees), and adaptation decisions (investment in renewables, sustainable practices, moving locations).

Discussion

The results from the present research highlight distinct ways yoga experience supports preparedness for, coping with, and recovering from climate change–related stressors, and how the practice influences mitigation and adaptation responses. Findings conveyed the potential of long-term practice to fluidly orient individuals to their interconnected being-in-the-world, revealing authentic choices and temporal awareness around climate change.[36]

Understanding Mixed Experiences of Coping with Climate Change–Related Stressors

The study period, June–August 2021, was a time of significant national and worldwide events worth noting. Many Australian states and territories went into COVID-19 lockdowns, parts of rural Australia were experiencing mouse plague, and extreme heatwaves, bushfires, and floods were occurring in the Northern Hemisphere. Furthermore, the IPCC's 6th Assessment Working Group I Report[67] was released August 9, the day interviews began, and Hurricane Ida struck the United States as the interview period closed. All participants expressed awareness and impacts of one or more of these events, with some acknowledging additional distress generated, yet they were determined to share their lived experiences and yoga practices deemed helpful to coping.

Findings suggest that participants' self-awareness[68] through long-term practice afforded flexibility in adapting techniques and outlook to address internal and external circumstances.[14,69,70] Research demonstrates that self-awareness plays a crucial role in identifying obstacles, a key factor in the self-regulatory process of pursuing goals; the finding of the impact of self-awareness remained when controlling for other variables, such as negative mood or rumination.[66] Moreover, the current findings underline prior research into yoga's efficacy, compared to physical exercise, to reduce rumination, intrusive thoughts, and muscular tension.[71,72] Capacity to *"attune to"* [Participant B] what is, breaking from cognitive and behavioral patterns, corresponded with reported mood enhancement[73] and improved mental clarity[74] among the present study's participants. Such experience may represent dasein escaping the "thrownness" (being "thrown" into the world) of being trapped by a certain mood or state of mind to live authentically.[36(p. 134)]

Climate change–related stressors can elicit natural responses of fear, worry, and frustration, partly because of feelings of certainty regarding climate change reality and uncertainty around events and existential threats.[6,75] Practicing yoga is not about eliminating strong emotions, but instead provides a means of recognizing, acknowledging, and letting be. Individuals are not *"failed yogis"* [Participant F] for experiencing such feelings. Data indicate that yoga experience enhances participants' capacity to accommodate change[76] and the relationship of opposites in the context of climate change.

Constriction and Expansion

The findings illustrate that a sense of safe spaciousness and connection helped participants to cope with what Moser terms the "paradoxical tension" dangerous climate change represents.[34(p. 1)] Research has found that climate change denial may be linked to low tolerance for ambiguity, which also relates to factors such as personality and political orientation.[77] In affording experiences of expansion as opposed to the constriction caused by climate change–related stressors, long-term yoga practice may increase tolerance of ambiguity. Although the current findings highlight that climate change–related stressors disrupt equanimity and influence behavior, data also revealed that elemental to individuals' definition of "regular yoga practice" was their capacity to modify techniques or change tools based on self-awareness[68] and current needs and opportunities. Psychological flexibility cultivated through practice experience can enhance self-efficacy,[78,79] attitudes, relationships, and peace of mind.[80] The data thus convey the importance of spaciousness and the potential limitations of blanket interventions or definitions that equate regular practice with *asana* (physical postures) rather than with varied yoga techniques explored daily.[81,82]

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Confusion and Clarity

Prior research findings show that yoga studies can paint "a muddy picture,"[25(p. 469)] beset by the challenge of dependent variables that affect research into any complex, dynamic process, including coping and climate change adaptation.[83] The current data evidenced that yoga practice supported mental clarity, stress relief, and recovery, all areas where yoga's health benefits are clear.[84] Research has shown that positive affect and self-compassion mediate the relationship between yoga and stress,[85] and that moving through the limbs of yoga elicits the relaxation response, inverse to the physiological effects of the stress response.[86] According to current data and prior studies, familiarity with this recovery pathway results from dedicated practice.[87] These findings suggest that recovery and self-regulation support mental clarity in the context of changing climate, substantiating previous findings on coping and the importance of recovery.[88,89]

Individual recovery relates to broader climate change recovery intervention aims.[46,90] Prior research suggests that yogic breathing–based interventions could support psychological distress relief post-natural disaster.[91] The current findings further understanding by providing evidence that long-term practitioners found psychological relief and clarity in the face of climate change–related stressors via self-selecting yoga practices. In the flux of changing climate, finding an anchor for mind and body is essential for psychoemotional health. The current study suggests that long-term yoga practitioners are able to redirect their focus away from stressors, essential for executive function and otherwise beneficial, as prior research has suggested that people suffer an emotional cost for wandering minds.[92]

Like researchers,[93] some interviewees considered yoga's inherent mindfulness[94] a priority skill set to develop to deal with strong emotions associated with climate change-related stressors. Mindfulness is described as awareness of what is happening here and now without wanting things to be different,[95] a possibly paradoxical standpoint that may prove helpful in coping with and adapting to climate change. The current data convey how focused attention on breath and slow breathing are gateways to mindfulness and participants' coping capacity.[23,96]

However, rather than examining the mental health effects of a postevent yoga program, the current study aimed to understand the mental health experience associated with long-term yoga practice that precedes and proactively traverses climate change–related events and impacts. Such an approach is warranted, as it is perhaps during events and within the context of dangerous climate change that capacity for calm and focus most starkly means the difference between life and death.[97]

Dysregulation and Regulation

Seven interviewees referred to polyvagal theory (PVT) and/or the autonomic nervous system (ANS) in reporting ways they perceive yoga supports their self-regulation, including in the face of climate change–related stressors.[98,99] It is therefore relevant to briefly examine potential links among PVT, climate change-related mental health, previous research aligning yoga therapy with PVT,[74] and the current data.

PVT describes the ANS and advances that humans' autonomic default setting is for safety and connection,[100] evidenced in this and previous research on climate change-related recovery and coping through communities pulling together.[101] The parasympathetic nervous system is a two-way cranial nerve system largely linked to the vagus nerve and mainly made up of fibers that transmit messages from body to brain. The theory proposes that when ANS capacity is challenged, evolutionarily older sections engage hierarchically: First, the sympathetic nervous system (SNS) triggers fight or flight, but if this strategy is ineffective the system shifts to dorsal-vagal dominance, the "freeze" response.[102,103] PVT may map the "distress," "upset," and "dread" raised by some of our study's participants, as well as the disrupted coregulation and disengagement perceived in "very isolated" individuals within their local communities, as corresponding with psychoterratic syndromes such as eco-stress, eco-anxiety, solastalgia, and eco-paralysis.[104,105] PVT may illustrate characteristics of such "syndromes" as natural, adaptive stress responses, highlighting the value of mind-body practices in supporting mental health (Table 3).

If PVT does pertain to psychoterratic syndromes, top-down, bottom-up,[106] interdisciplinary interventions associating yoga therapy and tailored talk therapies[107,108] may help to alleviate distress and anxiety, and improve autonomic and emotional regulation and social functioning in ways that support being-in-the-world with greater equanimity.[109,110]

Table 3. Potential Polyvagal Responses to Climate Change

Polyvagal Theory Hierarchy of Response	Beneficial Responses	Psychoterratic Syndromes
Parasympathetic ventral vagal dominance	Social connection post-acute and subacute events, and/or during subacute events	
Sympathetic fight or flight	Fight response of individuals and community action	Eco-stress and eco-anxiety
Parasympathetic dorsal vagal dominance		Eco-paralysis

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Disconnection and Connection

The current findings confirm that experiential knowledge through sustained connection determines what interventions are beneficial, for whom, and when. Supporting this relationship is research from Hayes and colleagues,[111] who call for interdisciplinary interventions linked with local knowledge. Participants reported that local and broader yoga networks can enhance practice and health. The current investigation advances the idea that long-term yoga practice facilitates access to a felt sense of safety, thereby nurturing potential for social connection in the context of climate change. Many participants in the current study reported feeling inspired by others, including fellow practitioners, and having trust or faith in yoga or in "something greater" (Table 2). It is therefore important to consider how dedication to practice and purpose beyond self help individuals to orient their efforts and fuel courage and humor to cope with and adapt to climate change–related stressors.

Threat-to-Life and Meaning and Purpose

Meaning-focused coping has been shown to intervene in the transactional stress process,[89] potentially promote well-being and environmental engagement,[112] and positively relate to well-being and optimism.[113] The current findings corroborate these results and Folkman's[89] appraisal that coping strategies (emotion-, problem-, and meaning-focused) operate in concert during crisis. Prior research suggests that use of coping strategies depends on proximity or controllability of a situation and the fear it provokes.[114] For instance, although the present study's findings confirm that faith supports coping with climate change–related stressors, one interviewee was asked to clarify why, in her experience, this was not always evident throughout acute events. The current data may expand on previous research suggesting that spirituality is salient to coping with life-threatening situations but that satisfying primary needs is considered more important than praying for some individuals.[115] The present findings propose that during evacuations, where interviewees still had some opportunity for action-taking, the dominant coping strategy was problem-focused but reinforced by inherently meaning-focused yoga practices. The present study suggests that the expression of yogic faith or trust varies to accommodate and support other context-specific coping strategies to reorder priorities and focus on tasks. The results provide evidence that yoga experience affords flexibility, including in selecting techniques, so that familiar breathing practices or mantra mediate fear in emotion-focused coping,[23] whereas honed attention orientation assists problem- and solution-focused coping. The present study evidences how subtle techniques, normally augmenting the effects of physical practices in Western contexts, may be recruited to bolster actions for physical survival in the face of climate change–related stressors (e.g., breath practices supporting heat regulation, mantra supporting focused action).

Being-in-the-Climate-Changing-World Through Yoga and the Structure of Care

Heidegger explained dasein as orientational, with the current data accentuating that yoga experience may make care of self and others the mode of being that guides participants' time in the world.[36] Care is revealed through participants' day-to-day choices, from mats to eco-friendly modes of farming and transportation to prioritizing yoga practice and climate action. From yoga's first two "restraints" (yamas) in the Yoga Sutras, the findings expose interviewees' concerns and behaviors as self-care, but moreover, as respect and care for all life.

Based on data analysis, participants' definition of yoga was of a life-changing, flexible, holistic, universal framework that aligns with and reflects nature; at the heart of yoga experience lies potential to reveal silent, still, reliable awareness. These qualities may make long-term yoga engagement valuable to anchoring and adapting to climate change. As presented in Table 2, lived experience of yoga and climate change events seemed to shape behaviors and attitudes, which in turn influenced actions.[63,116] Flowing physical practices were deemed important to grounding and opening up. The data also illustrate that yamas, niyamas, *pranayama* (breathwork), and more subtle practices were considered vital to coping, perhaps corresponding with yoga's adaptability to different life-cycle stages.[117]

Interviewees asserted that yamas such as nongreed and nonstealing are expressions of yoga practice that work in opposition to greed and therefore may be useful in addressing climate change. The current findings concur with those proposed by Thompson et al.,[65] who suggest that climate change is largely caused by greed. Albrecht also considers "gaps between knowledge, values and behaviour" are the root of eco-anxiety and eco-paralysis globally.[104(p. 50)] Such gaps need bridging not just within but also between individuals and institutions. Long-term yoga practice and connection with inclusive yoga communities that provide spaces to engage ethically with life can support individuals to move beyond themselves, their species, and extreme desires or fears, aspects of what yoga calls the *kleshas* (obstacles), which arise through ignorance and ego.[63]

According to the present data, how someone cultivates equanimity may be partially attributed to living Patanjali's kriya yoga. Interviewees' observation of tapas in daily life was conveyed through efforts to overcome barriers to doing what they sense is right in terms of mitigation and adaptation choices. Ethically, putting tapas first provided relief because focusing on actions is tangible. There seemed a

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humble inevitability to such choices stemming from interviewees' practice and climate change experience.[47] For Heidegger,[35] acknowledging that we lapse into day-to-day ordinariness can be a springboard to clarity through which the ensuing anxiety on observing our world shifts mood, helping us to make authentic decisions and take responsibility in our interdependent relationships with things and others.[36]

Important mitigation and adaptation choices may relate to participants' consensus that yoga refined their capacity to discern between what is within their control, from planting trees to getting up earlier to avoid the heat, and what is not. Self-study cultivates capacity to move toward what matters, linking to research into self-awareness, pursuit of goals,[66] and inner coherence. Yoga is a strengths-based model that emphasizes regeneration and recovery as inherent seeds, the potentiality of dasein.[79,118] The current findings suggest that surrender (eased by practices such as yoga nidra), following kriya yoga's determined effort and self-study, supports stress alleviation and coping. For interviewees, reflecting on ethical actions taken enabled letting go temporarily from climate change–related stressors[65] to better reengage—dasein transitioning to a new phase of the cyclical process of being-in-the-world with less angst.[35] One study involving integral theory found that a surrendering practice can serve a "catalytic function,"[119(p. 113)] a salient concept in the context of climate change.

Interviewees also referred to the *gunas,* yoga's explanation of the forces driving change.[74] Interviewees considered yoga, like life, to be a dynamic process of ongoing recalibration. Such a view of change as constant could result in anthropogenic climate change denial or simply nonaction.[120] Although it cannot be determined from this research whether long-term practice shields practitioners from these outcomes, climate change skepticism was not observed among any of the interview participants. The findings indicate that long-term practitioners were aware of the compounding and cascading impacts of climate change,[67] and that their experiences fostered cognitive and behavioral flexibility and an ethical outlook relevant for coping and adaptation.[65]

Aligning with prior research, the current findings illustrate the importance of social support and community to coping with and adapting to climate change–related stressors.[121,122] Research acknowledges the mental health role of social capital and the power of inclusivity through social connection.[13,122] Strong communities are a protective factor for mental health in the face of changing climate, with the current study suggesting that this effect may also apply to local and broader yoga communities.[123] Meanwhile, yoga communities themselves may offer expansive contexts for inclusion and opportunities to explore ethical engagement with life.

Climate change adaptation research shows that consideration of lived experience perspectives at all levels—local to global—can contribute important understandings to questions of framing[124] and heuristics,[125] which can in turn improve the quality of policy-level adaptation decisions.[126] Research also contends that sustained interdisciplinary recovery interventions linked with local knowledge are needed.[111] The current data reveal that participants drew wise counsel from various sectors, including scientific, indigenous, and land-based.[75,127–129]

Multiple researchers have demonstrated that, along with those whose livelihoods depend on the land or ecosystems, those most vulnerable to changing climate are marginalized, albeit substantial, populations (indigenous, PWD, low socioeconomic status, children, women, elderly).[11,112,130] Each may have interrelating circumstances aggravated by climate change.[1,13,58] A side-effect of long-term yoga practice may be that it offers multiple coping strategies for such populations, as previous research suggests that vulnerable populations experience fewer barriers to participation in yoga than some other activities.[22,131] This finding is supported by the fact that many of the above population groups, and participants identifying as LGBTQI+, were represented in the current study. As previous research acknowledges the mental health role of individual social capital and belonging even through informal social connection,[13] there is a need to identify and increase availability of sustainable practices, such as yoga, that can foster connection and mental health benefits.

Although reducing barriers to mental health support services and increasing leadership on climate action are essential, research also emphasizes that empowerment must come from within individuals and that the process and state of empowerment need to be defined by those individuals.[132,133] The current findings illustrate how yoga provides a sense of community not only with others, but also a greater sense of connection with oneself through awareness of physical body, breath, feelings, thoughts, and beyond. The data reveal the potential of long-term practice to enhance agency in the adaptation process by empowering individuals who may then elevate collective capacity.

Temporality, Yoga, and Responding to Climate Change

Heidegger presented the structure of care and dasein's existence as "being ahead of itself" (future), fundamentally linked with "already being in a world" (past), and then "being-together-with" (present).[36(pp. 178–183)] Integral to adaptive capacity is the potential to cope with and adapt to unfavorable, changing environmental conditions over time.[127] Yoga practitioners, like scientists,[17] do not function in a vacuum, and participants reported reaping benefits of experiential foresight,[115,134,135] background knowledge,[136] and present-moment awareness.[23]

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Findings reveal that like Patanjali, participants recognized that actions and attitudes have repercussions, including regarding climate change. Patanjali's sutras also outline how forceful change goes against nature and does not take root, whereas working with nature helps eliminate obstacles; significantly, the text refers to a farmer irrigating a field.[63(p. 184)] Farmer participants demonstrated care in adopting environmentally conscious farming practices[127,137] where possible. Although ecological sustainability and climate adaptation practices may come from other values, the data suggest that yoga's role-modeled, invitational inquiry may also influence such choices.

Heideggerian philosophy maintains that individuals "have built-in possibilities, thus freedom, and it is just this circumstance that brings difficulties. If individuals are free, then they are also free to choose; they have responsibility."[40(p. 81)] The present article reveals participants' capacity to experience strong feelings and hold acceptance and surrender, yet not allow old habits or the status quo to go unexamined and unchallenged.[120] Data analysis reveals that strong emotions appear to be countered by practice embodying care, galvanizing further action that includes preparation,[123] reflection, and surrender,[119] which are beneficial for mental health and perhaps the planet. It could be that informed, determined humility, bolstered by ongoing yoga practice, connection, and trust, are key to navigating climate change-related stressors.

Limitations and Learnings

As called for in Heideggerian approaches, to bridge researcher-participant perspectives[47] the PI reflected on how her understandings of climate change, yoga and yoga therapy, and her body's responses to the lived experience narratives may be perceived as a limitation or a strength. This approach offers a unique lens on what coping and adapting to climate change can mean by highlighting participants' voices and new insights into this project's cross-disciplinary phenomena.

Yoga practitioners are not expected to remain equanimous in the face of climate change–related stressors. The authors and participants acknowledge that yoga practitioners are not guaranteed, nor do they have a monopoly on, healthy lifestyles or ethical, caring behaviors. As the current study nevertheless involved participants from a diverse range of populations, its findings may be relevant to a much wider cohort. In alignment with Ross et al.'s[32] findings, the present study demonstrates that long-term practitioners believe that yoga improves their overall health, so larger samples are warranted.

As is often the case with yoga research,[25] study participants reside in a wealthy country, which may limit transferability of these results. However, researchers also claim that affluent societies have increasing rates of inequality, and that relative deprivation and exclusion lead to vulnerable populations being formed, concealed, and forgotten.[138] A major limitation of the research is the absence of indigenous voices. Although the majority of current interviewees referred to First Nations' cultures, including in addressing climate change, only one survey participant identified as Aboriginal and Torres Strait Islander and did not opt in for interview selection.

Although this project did not intentionally target female participants, the majority of practitioners in Australia are women,[27] as mirrored in this study's sample. Gender is a relatively new priority topic in climate change adaptation research,[17] and experienced female yogis may choose to share their strengths in navigating changing climate with younger women. Such mentoring could correspond with Hanigan et al's[139] suggestion that older Australian rural woman may hold wisdom relevant to supporting younger women to cope with climate change and build adaptive capacity and resilience. According to the data, such relationships are happening and may ease the "threshold crossings" humanity faces.[34(p. 1)]

Recommendations for Future Climate Change Mental Health Research

Studies on the role yoga studios and yoga therapy clinics play as community-based networks in climate change–vulnerable locations are required. Research is also needed into polyvagal-based interdisciplinary interventions that target displaced and marginalized populations. Researchers could examine yoga's role in supporting people's mindsets in their own capabilities to take climate change mitigation and adaptation actions, as measured by self-regulation and tolerance of ambiguity. Also warranted is research into mental health and climate change in schools, with protocols collaboratively established to examine health effects of sustained yoga programs and nature-based service or caring-for-country projects.

Conclusions

Lived experience was central to this study's methodological framework because this is where, Heidegger argued, meaning of existence resides.[36] Findings highlighted that participants perceive climate change reality and the exacting circumstances events and impacts present. The present study contributes to the climate change mental health field by conveying how yoga experience may enhance self-awareness, mental clarity, tolerance of ambiguity, and self-efficacy to find calm, stability, and meaning. The findings illustrate how strengthening individuals' capacity to process climate change's mixed experiences via varied practices allows

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space to recover and reflect, nurturing health, social connection, and skillsets that could prove for some to be key components to defining goals, selecting strategies, and taking action. This knowledge may be of wider value, as experts and philosophers recommend not waiting until we are personally in crisis to prepare,[140,141] confirming that early intervention improves capacity to deal with climate change–related events.[83,90] Long-term yoga practice may create the internal conditions that make coping, mitigation, and adaptation somewhat easier and more desirable, potentially enhancing individual mental health, collective response capacity, and care for the planet.

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Conflict-of-Interest Statement

The authors have no conflicts of interest to report.

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