

Review

Climate Distress: A Review of Current Psychological Research and Practice

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Abstract: Environmental disasters will increase in frequency and severity due to disruptions to Earth systems, including increased global mean temperatures, caused by human activity, and consequently our health care system will be burdened by ever-increasing rates of illness, mental and physical. Psychologists will need to respond to this pressure by ensuring they have the training, education and interventions to respond to climate-related distress, as well as realising the limits of the therapeutic approach. Climate psychology, a recent field of study integrating and advancing core expertise around climate distress, has become more prominent with the increasing urgency of climate change and emerging documentation of its impacts on mental health and wellbeing. The purpose of this scoping review is to survey the research being undertaken on climate distress, and to identify gaps in the existing literature with a view to shaping practice and informing future research. Younger people, notably, are experiencing climate distress disproportionately and will bear a larger share of the mental health burden caused by climate change, and yet their voices are underrepresented in theoretical and practical interventions. Enlisting young people as research collaborators and co-designers will facilitate more effective responses to the psychological aspects of the climate crisis.

Keywords: climate distress; climate psychology; ecopsychology; climate change and mental health



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1. Introduction

Anthropogenic (human-caused) climate change is precipitating an alarming [1] increase in extreme weather events, ecosystem collapse, species extinctions, cross-species contagion events and major disruptions in lifestyle for vulnerable populations [2,3]. Large-scale impacts on society and communities include resource conflicts, migrations, dislocations, post-disaster adjustment, and chronic environmental stress [4–6]. Consequentially, the global population will see an increase in poor nutrition, physical illness, and poverty, and decreases in job, housing and financial security [4]. The World Health Organisation predicts that for the two decades 2030–2050, climate change will cause some 400,000 deaths per year [4]. It is little wonder, then, that climate change and related environmental disasters are having significant impacts on global mental health. Direct impacts of extreme weather events and rising temperatures include post-traumatic stress disorder (PTSD), somatic disorders, major depression, drug and alcohol abuse, and higher rates of suicide, mortality, child abuse, physical assault and spousal abuse [4–6]. Catastrophic natural disasters and damage to ecosystems can cause extensive loss of food and housing security, forcing mass displacement and migration and disturbing cultural and spiritual continuity [7].

Indigenous and rural populations are particularly vulnerable to the devastating experiences of the destruction of the natural environment [7–9]. In Australia, the country where all authors are based and on which we will focus, already disproportionately poor health outcomes and socioeconomic disadvantages for First Nations groups will be exacerbated

due to the effects of climate change on ecosystems, generating in turn even greater risks of poverty, increased mortality, and loss of cultural practice [9].

There is a rapidly increasing awareness of the rising incidence of climate-related distress responses, primarily manifesting in feelings of anxiety, worry, guilt, despair, grief, denial, psychological defence, apathy and paralysis [6,10]. One concern is the growing risk of developing serious mental illness from these increased levels of distress, since those with high levels of mental distress are more likely to develop a psychiatric disorder. Diagnosed psychiatric disorders, in turn, have been associated with higher mortality risk, including increased rates of cancer deaths. This is due to the causal relationship between stress and telomere attrition (cellular ageing) [4,11].

The impact of climate change on global mental health and wellbeing will continue to rise, with an immense burden on national mental health systems, including predictions of global costs as high as \$16 trillion by 2030 [12]. This is particularly troubling for large, vulnerable populations throughout the world, since up to 90% of low-socioeconomic status individuals with mental health disorders are already not receiving treatment [12]. An overburdened healthcare system will be unable to keep up with the rising numbers, a compounding factor that may further reduce population life expectancy. If effective mitigation strategies are not promptly developed and implemented on a large scale, some estimate that global life expectancy will be reduced by 10–20 years [4,13–15].

Worldwide, psychologists will see an increase in clients expressing climate distress. As we experience a rise in high temperatures, natural disasters, mass displacement and ecosystem collapse, there will also be a crucial need for training psychologists in effective interventions targeted at supporting these individuals. To understand the best approaches to this issue, we need to explore research undertaken in the field of climate psychology, a field which has emerged in the last decade, with roots in ecopsychology but drawing interest and practitioners from across various schools of psychology. While early surveys and articles began appearing from the early 2010s, climate psychology as a distinct and recognisable area of research and practice has only been evident since 2019, as a more visible section of the psychological community has begun to respond to the climate crisis in an organised fashion.

Up until now, many reviews have been undertaken to understand the impacts of climate change on mental health, and our feelings, emotions and behaviours that have caused or are in response to climate change. These reviews will be explored in this article, together with the relations of this literature to the developing field of climate psychology. The intention of this article is to understand what research is being conducted within and adjacent to the forming field of climate psychology, asking how this literature can inform the work of clinicians and mental health agencies and organisations to best support the increasing number of clients presenting with climate distress. Because climate psychology has links with ecopsychology, this will figure in the review. Ecopsychology emerged in the 1990s, with its own roots in the counterculture and environmental movements of the 1960s, nuclear psychology [16], humanistic [17] and transpersonal psychology [17,18].

Climate Change, Distress, and Emotional and Mental Health

Mental health is an expansive term, indicating a state of emotional, psychological, and social wellbeing and encompassing our thoughts, feelings, and behaviours [19]. Research on feelings and mental health impacts pertaining to climate change has given rise to an abundance of descriptive terms, including variations of anxiety, guilt, grief, trauma, depression, despair, and paralysis, modulated by prefixes such as environmental, climate, and eco [20]. Eco-anxiety is a commonly used term that has gained substantial traction in the media [8]. This term also maps most directly onto mental health vocabularies and is used, for example, in the American Psychological Association's 2017 report on mental health and climate change. Eco-anxiety is identified as chronic worry associated with the climate crisis and its origins, present functions and particularly its future impacts, which may result in temporary functional impairment [10]. One approach to eco-anxiety and

other negative climate emotions, including paralysis, apathy, and chronic despair and grief, views them as maladaptive responses to the climate crisis. The functional implications of maladaptive responses include adjustment disorders, anxiety/mood/behavioural disorders, or worse—major psychopathology [6]. Maladaptive responses are more likely when the impacts of climate change are experienced directly or in those who lack effective coping strategies [6] and they are exacerbated by the perception of chronic or systemic inattention from government bodies, older generations, family members and close friends on the issue [21].

Maladaptive responses are contrasted with responses described as ‘normative’, which include curiosity, scepticism, concern, information-seeking, creativity, innovation, engagement, problem solving, and support seeking. These are considered constructive responses or coping mechanisms; problem- and meaning-focused action that involves proactive eco-friendly behaviour, optimism, social connection and seeking emotional support [10]. Given the gravity of the crisis, it is possible that those who respond in constructive ways may find some measure of meaning or sense of purpose in climate action. They may even “flourish”, particularly if they feel surrounded by like-minded people [6].

Others are critical of the move to pathologise emotions and psychological effects which may well be proportionate or efficient motivators. Those who habitually worry about climate change may not be demonstrating a psychological imbalance [22] but a closer attunement to ecological reality and even a measure of self-transcendence [23]. Indeed, while some have argued that ‘not knowing’ about an unbearable crisis which the individual may do very little about, such as nuclear war, may be an adaptive response [24], climate denial is often characterised as a maladaptive response which does not allow an individual to make healthy behavioural responses or form effective coping strategies [6,10,25].

Given the multiple frameworks for understanding eco-anxiety and other ecological emotions, then, this article will use the term “climate distress” to cast a wide net across all negative emotional interactions around climate change. While we appreciate that, in mental health contexts, the word “distress” may indicate serious psychological conditions, we suggest that it also has a milder meaning in wider society and that the psychological and emotional effects of climate change fall across this semantic range [26]. We use the term, therefore, to include everything from mild baseline discomfort to chronic distress as well as more acute, discrete episodes of distress. In line with the psychosocial approach common in psychological studies of crisis and conflict, we take it that these presentations are part of a collective, if individuated, psychological response to climate change and therefore bear consideration together.

Various frames and analytical approaches to climate distress, and ecological distress more broadly, have been developed across three decades or more. Early studies were understood as adopting psychosocial or ecopsychology approaches, but since 2009 a discrete ‘climate psychology’ has begun to emerge, originally focusing on climate denial and problems in effective climate communications, but since the late 2010s increasingly addressing climate distress in individuals. Ecopsychology and climate psychology share much in common; ecopsychology is the study of the relationship between our mind, emotions, and earthly nature [27]. It considers human identity and psyche as a part of, not isolated from, the web of life, and that connection to nature is essential to wellbeing [27]. It has tended to see little participation by trained psychologists [28]. Climate psychology is defined by the Climate Psychology Alliance [29] as a psychology that is “concerned with the emotions, and the social and mental processes that have contributed to the ecological and climate crisis, and our responses and processes of adaptation to it”. While climate psychology is a critical movement within psychology, much of its distinctive urgency and theoretical and practical innovations arise from its emergence at the interface between psychology and climate activism. Climate psychology now stands prominently within the broader spectrum of psychological responses to the climate crisis. Its roots in activism are not always acknowledged, though its practitioners continue to offer regular support to activist organisations [30]. Its positioning and mission statements tend to be more general and

conventional, and where ecopsychology now tends to be peripheral, climate psychology is increasingly drawing supporters from the main schools of psychology.

This scoping review has been undertaken to explore recent research on climate distress, including within the framework of climate psychology. The aims of this review are: (1) to explore how psychologists are responding to climate change-related feelings, behaviours and illnesses/disorders, particularly within the climate psychology movement; (2) to understand the experience of mental health clinicians and service users on discussing climate change distress in therapy; (3) to identify psychology- and alt. psychology-based interventions used to address climate distress; (4) to inform ongoing research on addressing climate distress; and (5) to contribute to the knowledge bases about how clinicians and mental health services may address climate distress.

2. Methods

2.1. Search Strategy

This review used a standardised literature review approach including a manual search. Searches were conducted in the databases CINAHL, Medline and PsycINFO. Keywords searched within the entirety of the article text included “climate distress” OR “climate-distress” OR “climate anxiety” OR “climate-anxiety” OR “eco-anxiety” OR “ecoanxiety” OR “eco-trauma” OR “eco-angst” OR “ecological grief” OR “climate change” OR “climate crisis” OR “climate emergency” OR “mass extinction” OR “solastalgia” OR “place-based distress” OR “psychoterratic syndrome”. Additionally, the keyword “psychology” was to appear within the entirety of the text to limit the scope of the literature to the research topic of interest.

Three limiters were applied: a publication year between 2012–2022 to capture current research; availability of the full article; and peer-reviewed journal articles only to assist in quality control of the evidence. The research design of the journal articles could be quantitative, qualitative, mixed, reviews or editorials. Since one important origin for climate psychology is ecopsychology, all resulting articles within ecopsychology literature were considered. Database searches resulted in 133 non-duplicate studies, and these were all considered in this review.

A second database search was conducted, searching for the term “climate psychology” in all text. This resulted in 36 articles, with 8 being considered for analysis in this review after the article content was screened for applicability. After the full text of all articles were reviewed, 28 articles were selected to be included in this scoping review.

A handpick search of Google Scholar and reference lists revealed 16 additional articles deemed relevant for this research. The researchers also handpicked published books authored by ecopsychologists and psychotherapists to deepen their understanding of the interlinked aims and methods of climate psychology and ecopsychology.

2.2. Overview of Search Results

Of the 44 articles identified, the populations studied varied. Excluding reviews, opinion and editorial articles, participants ranged among children, high school students, university students, adults, and elderly. Occupations included high school students, university students, farmers, mental health clinicians and service users. Residencies included cities, suburbs and rural areas.

Countries of origin for the research conducted were as follows: Australia (8), the United States of America (6), United Kingdom (4), Canada (3), Netherlands (3), Switzerland (3), India, (2), Finland (1), New Zealand (1), and Sweden (1). Of the remaining studies, six were conducted by researchers based across the globe, and seven did not explicitly state the country of origin.

The sample sizes ranged from qualitative reviews interviewing up to 14 participants to quantitative surveys completed by 1000–10,000 participants. Data were extracted from a total of 23,163 participants, not including the systematic reviews.

Among the 44 articles, four utilised mixed methods study designs, eight were quantitative studies, seven used qualitative approaches, two were systematic reviews, four described themselves as scoping reviews, and seventeen were defined as reviews. Of the remaining articles, three were opinions, two were classified as editorials, and one was presented as a report. The six quantitative studies were surveys, and four of the seven qualitative research design studies were analysis of semi-structured interviews.

Editorials, theories, opinions and reviews were all considered valuable, as climate psychology is a rapidly growing field, particularly in the context of research on climate distress, and these writings are important for raising the awareness of the field in the minds of psychologists, health professionals, and the public, as well as shaping the field from within.

The aims of the articles included exploring climate change's impact on mood, mental health and wellbeing, identifying subtypes and exploring the literature about interventions of the emerging "psychoterratic" syndromes, exploring the psychological and psychosocial motivations and influences on climate change-related feelings, behaviours and action, understanding the experience from clients and professionals on speaking about climate change in psychotherapy, and how psychology-based theories, models and research methods assist in comprehending and approaching climate change action and response.

3. Findings

3.1. *Impact of Climate Change on Mental Health*

The impact of climate change on mental health occupies a spectrum from climate concern to more debilitating effects, and people can be moved along the spectrum by experiencing acute events or slow change to action. Global studies have found a relatively high incidence of climate change-related concern. In their research, Comtesse et al. found that 29% of Americans self-reported as being 'very worried' about the impact of climate change [31]. The rate of concern increases in France, Germany, Great Britain and Norway, where 30% of participants report themselves to be feeling either 'very' or 'extremely worried' [31].

Climate awareness alone can be a source of distress, anxiety and fear, as reported in a global scoping review by Hayes & Poland [32]. However, this review explored adaptation behaviours triggered after experiencing extreme weather events that may build resilience and support one's local community. These included a sense of compassion, altruism and post-traumatic growth, on a scale both individual and communal [32].

The increased incidence of extreme heat is one of the most obvious effects of climate change, with cities, states and countries regularly experiencing their hottest days and years in recorded history. Links between higher temperatures and increased rates of suicide, conflict and domestic violence have been established [33]. Extreme heat also increases the risk of deadly bushfires and wildfires. A study of individuals exposed to California's 2018 wildfires, the deadliest in its history, found an increased risk of mental health disorders, primarily PTSD and depression following in the aftermath of the fires [34]. This quantitative study is notable for its large sample size ($n = 725$). Australia experienced its hottest year on record in 2019, amongst an increasing frequency and intensity of yearly bushfires and droughts [35]. A perspective article by Comtesse et al. [31] recounts a survey in which 56% of rural Australians worry about climate change, which is unsurprising considering Australia's Indigenous population are disproportionately exposed to climate change-triggered extreme heat, rainfall and drought [9]. Devastating droughts, particularly, have affected rural Australians, causing chronic psychological distress, generalised anxiety, depression, and an increased incidence of suicide [4].

This skew in the psychological impact of climate change is replicated elsewhere, with rural populations across the globe facing increased risks of traumatic natural disasters and related psychological distress. A qualitative study conducted in India [36] found that extreme weather events, environmental deterioration and loss of species led to distressing and life-altering consequences, including involuntary separation from traditional land

activities, forced adaptation strategies, loss of cultural and religious practices, and reduced self-worth. Thirty-four locals were interviewed, in which they identified experiences of emotional distress, solastalgia, adverse mental health and decreased psychological wellbeing [36]. Separation from nature, particularly for those who feel spiritually or culturally connected to the Earth and to non-human beings, can lead to an increased sense of isolation and reduced sense of self [37].

3.2. *Impact on Young People and Their Mental Wellbeing*

Young people today constitute a vulnerable population globally, as they will bear a disproportionate impact of Anthropocene disruptions. Mental health and wellbeing of young people are impacted by an awareness of the imminent threat, climate change-related anxiety and worry prevalent in many child populations [38]. A global survey of 10,000 young people (16–25) across 10 countries found: (1) 75% were frightened about the future; (2) 84% were moderately worried; (3) 59% were very or extremely worried; and (4) 45%+ reported climate change-related feelings negatively affected their daily life and functioning [21]. Additionally, Lawrance et al.'s broad narrative review on the impact of climate change on mental health found a 2020 survey in which 69% of respondents across 40 countries felt climate change was either very or extremely serious [12]. An overall lack of trust in government was also identified, with a wide belief that the government response to climate change will continue to be inadequate [21].

The impact on Australian young people is being felt, too. Research indicates that climate change is a significant concern for our young people (18–24), with prominent feelings of worry, eco-anxiety, stress, hopelessness, powerlessness, and not being listened to [39]. Young people's hope in their future wellbeing is also seeing a gradual decline, with 25% of Australian children believing the world will end before they get older [40]. Australian therapists are also seeing an increase in young people acknowledging the climate crisis as a contributing factor to their mental health and wellbeing, and not being as secure in long-term planning (i.e., starting a family) due to concerns about future safety and resources [41].

Thompson's review of the mental health of young people directly impacted by Hurricanes Katrina and Gustav found high levels of trauma, PTSD and depression. Four years after the disaster, 40.8% of parents in Louisiana and 49.1% of parents in Mississippi reported their children were experiencing emotional and/or behavioural problems [4].

Three quarters of mental ill-health is estimated to start before the age of 18, putting young people with existing mental illness conditions at significant risk of severe psychological disorder after experiencing the impacts of traumatic weather events [12].

3.3. *The Role of Clinical Psychologists in Addressing Climate Change Attitudes and/or Beliefs*

It is widely acknowledged that particular formations of human society—including Western imperialism and global capitalism—are contributing disproportionately to the disruption of Earth systems, including global climatic change. Within and around these formations, however, individual human behaviour throughout the world contributes, collectively, to these disruptions in a variety of complex causal paths, with implicit or explicit needs, desires, and anxieties underpinning those behaviours. Many therefore see an important role for clinical psychologists in engaging with environmentally significant behaviours, perceptions, motivations and (in)abilities to contribute to the problem, and to identifying and integrating human dimensions into solutions [42]. Psychology is key to understanding cognitive limitations, biases, emotional defences and group polarisation, and how our ego-centric motivations may override pro-environmental intentions [42]. It also offers theoretical frameworks and empirical methods to describe, model and predict environmentally significant behaviour.

In their global review on mental health and climate change, Hayes and Poland posit that effective psychologists may help individuals along a path of necessary transformation,

fostering personal strength, belonging to their community, and assisting them in developing a sense of gratitude and hope [32].

Whomsley [43] proposes five areas where psychologists have roles in helping to address climate change and its effects on the planet and human beings: (1) changing human behaviours that are causing climate change; (2) increasing human connection with nature in positive ways to heal both the planet and human beings; (3) advising and assisting on leadership for good governance to protect the planet; (4) providing support and psychological interventions for those affected by climate change; and (5) preparing for bad outcomes and helping adaptation and survival should these occur.

Van Lange et al. use a psychology lens to discuss climate change behaviour on a societal level, suggesting that the inability of society-wide eco-friendly movements to produce broad change is due to time, distance, uncertainty, and a tendency towards individual self-interest and the competitive mindsets of leaders [44].

3.4. *Understanding Motivation for Climate Action and Inaction through a Psychological Lens*

A pivotal role of psychology in the eco- and climate-sphere is understanding the multitude of motivations—social, political, religious, economic, personal, and more—which in turn promote or inhibit effective climate action. It has been noted that experiencing habitual distress about climate change and other kinds of ecological disruption may increase the likelihood of motivation towards eco-friendly behaviour and climate change action [10,22,45,46]. This includes Verplanken & Roy's [22] mixed-methods survey of 132 participants (mean age = 26), which found a near-zero correlation between habitual ecological worrying and pathological worry, as well as Li & Monroe's [46] mixed-methods survey of 728 high school students. It is important to distinguish between worry and concern, both of which are encompassed by the term 'distress'. 'Concern' indicates a lucid and often adaptive perception of risk, whilst 'worry' is more often used to describe a state of anxiety, indicating decreased function.

Milfont et al. [47] examine the socio-structural and psychological variables underpinning core climate change beliefs through a large quantitative survey with 6489 New Zealander respondents (mean age = 47.97). Younger individuals, females, parents, people of colour, holders of a liberal political ideology, and those with higher levels of education were more likely to hold environmentally friendly positions. Climate sceptics tended to be older, male, and in the ethnic majority. Those with greater environmentalism and relatedness with nature tended to have the 'Agreeableness' and/or 'Openness' personality types, according to the Big-Five model of personality [23]. Schwartz's norm-activation theory is used to explain environmentalism as seen in those with self-transcendent values, in comparison to individuals motivated by self-enhancement [23]. Evolutionary psychology concurs with this understanding, identifying self-interest as a strong motivator deterring one from eco-friendly behaviour [48].

Brick et al. state that a person's desire for self-enhancement may be used as a motivational drive for environmentalist belief and behaviour. Informing individuals of the co-benefits of an eco-friendly identity, such as a sense of development and benevolence, may improve the likelihood of eco-friendly behaviour [49].

Social and political identities hold strong motivators for climate action. Group polarisation and perceiving the beliefs of close friends and family members may be a large factor in whether information is ignored, depreciated, or embraced [48–50]. Bouman et al. discuss how the perception that social group members would endorse eco-friendly values increases the likelihood of an individual adopting or sharing those values [51]. This can be seen in cultural 'tipping points' (i.e., #MeToo and #BlackLivesMatter), wherein vocal minority groups were able to create large waves of social change through visible platforms [52].

The literature suggests that motivation may be cultivated by increasing a sense of individual and collective efficacy through climate action [46,49,50,53], fostering a sense of altruism [44], and emphasising the positive effects of climate change mitigation [50]. Acknowledging the uncertainty of the climate crisis is also recommended, as portraying

science as making rapid and effective progress can reduce the likelihood of individual action [50]. For high school-aged students, it is essential that information is easily understood and that information is paired with potential actions and solutions [46].

A lack of eco-friendly behaviour may also be explained by myopia and temporal discounting. In other words, as the impacts/rewards of climate change/climate action—can seem too far away, it is less likely for one to take consistent action [48]. Human beings prefer immediate rewards, and tend to focus on events wherein the experience is nearer and more certain.

Place- and legacy-based interventions have also been explored as effective motivational strategies [44,48,50,53,54]. This intervention involves increasing the individual's focus on and exploration of the impact of climate change and extreme weather events on future generations (kin or otherwise) or on environments to which they have an emotional connection. Wickersham et al.'s study found these interventions had a positive influence on the pro-environmental attitudes and behaviours of 1,005 American participants (with 45% identifying as environmentalists) [54].

3.5. Experience of Mental Health Clinicians & Service Users

Understanding the experience of working mental health clinicians and service users of discussing climate change and climate feelings within therapy is crucial to addressing the needs of both parties in future practice. A mixed-method exploratory study [55] found that while 73.2% of participants ($n = 160$ mental health professionals) felt climate change awareness was applicable to their field, over 50% did not believe they were equipped with the proper training to manage the subject in a session. Additionally, 37.6% of participants reported the rate of passing comments about climate change during a session had increased over the course of time.

Silva & Coburn conducted semi-structured, qualitative interviews with eight therapists on their experience of climate change and its implications for professional practice [41]. All participants had experience of working with clients impacted by climate change and believed professional bodies needed to acknowledge this and deliver leadership and guidance on how therapists should address the issue of climate change within sessions.

Therapists spoke about the frequent tendency for therapists to avoid naming or discussing climate change with a client, as well as the consequences of pathologizing climate distress. Notably, one therapist discussed how the foundation of needs is being shaken in the modern day, where young people are becoming less likely to feel they are guaranteed safety or resources in the future. Therefore, it would be naïve for sessions to address the individual's pathology before understanding the service user's lived context. Not unsurprisingly, participants felt value in the interview experience, as it allowed them the space to think and explore their feelings around climate change.

A qualitative study by Milton et al. asked a sample of British counselling psychologists about their experience of research, clinical work, and other engagement with climate change [47]. Respondents acknowledged that counselling psychologists need to be aware of the issue and be able to respond helpfully to clients who wish to discuss this topic, as many were receiving environmental- and/or climate-related concerns in the therapy room. Many respondents wanted training in this area.

Budziszewska & Jonsson explore the experiences of ten service users (age range = 18–49) who had discussed climate distress within psychotherapy [56]. These individuals struggled to find good conversation partners and had previous experiences of social isolation regarding climate emotions. They valued competent therapists who had knowledge of climate change and its potential consequences. Discussing climate change in psychotherapy validated and normalised emotions, fostered a sense of community beyond the therapeutic room, and enhanced competence to understand and manage emotions. Positive outcomes of psychotherapy included engaging in action for the sake of future generations, finding value in creating personal meaning around climate anxiety, endorsing its functional aspects, and channelling it “into something positive”. Psychology understands that one of the

most predictive factors in persons coping with emotional suffering and trauma is social acknowledgement of the difficult experience. Encouragement towards an active stance to the climate problem was seen as supportive by the participants; however, clinicians should take care not to lead their clients into burnout.

Those who had negative experiences spoke about restraining themselves in therapy due to feeling the therapist was not informed on the topic; having perceptions that therapists were not fully aware of the scale and meaning of the climate problem; and fear that the therapist would be emotionally burdened by wholly exploring the climate crisis. When the validity of climate anxiety was questioned by the therapist, this caused feelings of painful isolation and hindered the therapeutic alliance.

3.6. Responsibility of Psychologists

There is some debate on what responsibilities should be expected of working clinicians as we see an increase in climate change distress in the therapy room. Many researchers agree that effective therapy and intervention should begin with practitioners engaging in their own inner work and self-reflection on their own experiences of climate change, as well as education on the topic [20,41,56–58]. Practitioners should be prepared to discuss the many ramifications of climate change on the ecosystem and society, as service users may feel uncomfortable exploring the extent of the impact of climate change if they sense their clinician does not have a full understanding [56,57]. However, it should also be acknowledged that there is a distinction between an awareness of scientific consensus and current events, and catastrophising the future based on uncertainty.

3.7. Intervention

A range of interventions have been applied to those experiencing climate distress, however it should be noted that many of these are not based in empirical evidence, but rather rooted in theory and qualitative experience. It is well known that engaging in effective psychotherapy fosters psychological adaptation and constructive coping that can improve wellbeing in the long term [12]. Therefore, it is crucial to increase a global understanding of the various ways to address climate feelings, the evidence of their benefits, and how to apply them according to circumstance and context.

Many researchers and clinicians highlight the importance of creating a safe space within therapy and validating the emotions of service users to allow a comfortability to engage in exploring climate change-related feelings [12,20,56]. Clinicians must ensure they do not minimise or question feelings of climate distress, as this can discourage meaningful exploration of the topic, hinder healthy coping strategies, and harm the therapeutic alliance [56,57,59]. Competent therapists may help their clients develop their understanding of emotions and channel their emotional energy into functional and meaningful climate-related action [20,56].

Interventions should address the issue holistically and with a sense of active hope [20,59,60]. The holistic approach to intervention is multi-pronged, addressing the service user's individual, social and environmental needs [57,59]. Active hope, in this context, could be defined as guiding the service user to acknowledge the reality of climate change and its impacts, establishing a clear intention and plan to address any maladaptive behaviours, and engage in actions outside the therapy room that minimise these behaviours [60].

The primary interventions cited in the literature included: (1) psychoanalysis and cognitive interventions; (2) fostering inner resilience; (3) taking action and engaging in community participation; and (4) engaging with the natural environment [6,20,57–60]. These interventions are discussed below.

1. Psychoanalysis and cognitive interventions: Baudon & Jachens [57] explore methods of engaging a person in their climate change beliefs, emotions and behaviours. These include cognitive interventions to reframe catastrophic views and stressors [33], actively connecting personal history to climate change response, and reflecting on the value and connection to nature in their personal life. They also speak on approaching

psychoanalysis with Jungian depth psychology; including dreamwork to connect both personal and collective myths and connection to nature, ecology, and the impacts of climate change.

2. Fostering inner resilience: pro-environmental behaviour may require dramatic shifts in one's routine, and could have some impact on their sense of identity, whether political or social. Additionally, it has been found that increasing one's awareness of climate change and in their daily life can have counterproductive effects on wellbeing outcomes and may increase anxiety, concern or distress [20,59]. Therefore, considerable work is necessary in therapy to ensure the client has a secure foundation of problem- and meaning-focused coping strategies [20,59]. Similarly, Bednarek [61] writes about the Nigredo stage of transformation; how a substance may only disintegrate safely when contained in a strong vessel. If an individual allows once-rigid structures, values and identities to dissolve without the correct coping strategies, they may risk psychological breakdown.

Self-reported resilience has been found to have a positive effect on both mental health and one's ability to recover after experiencing an extreme weather event [5,34]. Psychological adaptation requires an acknowledgement of the threats, coping strategies to manage feelings and thoughts related to the climate crisis, as well as behavioural and psychological engagement to reduce the threat and protect themselves [57,60]. Clinicians should acknowledge the loss and adapt the stages of grief: accepting the reality of the loss, working through the pain and grief, adjusting to the new environment, reinvesting emotional energy in a new life [25].

Strategies may include easily embedded daily activities, such as mindfulness, exercise, creative expression, cooking, or yoga, which have been shown to significantly lower depression and anxiety symptoms [5,34,62]. These practices, which may involve engagement with the natural world, allow the client to recognise themselves as a being that needs to actively inhabit nature, rather than passively observe and react to it [63].

3. Taking action and engaging in community participation: addressing ways the client can participate in meaningful eco-friendly action can mitigate hopelessness and anxiety [59,60], and enhance community participation, self-efficacy, and competence [6,20,57]. Group action or therapy results in a sense of common purpose, fostering relatedness, peer interactions and social connection [20,57,59].
4. Engaging with the natural environment: It has long been theorised that being in nature is a restorative experience for the prefrontal cortex, as the sensory experience only requires a relaxed 'soft focus' from the individual, rather than any demanding, active tasks [63]. Nature-based therapy includes activities and therapeutic experiences conducted outside (e.g., wilderness, horticultural, and animal-assisted therapies) [58,63]. This includes interactions with nature outside of therapy [20,57]. Developing a deep connection to place, wilderness and non-human beings provides a sense of stewardship and personal investment [59,60]. Biodiversity in natural environments has a positive effect on mood, attention and cognition [20,33,60]. This is in keeping with "forest bathing" (shinrin-yoku), a Japanese method of reducing stress and anxiety by immersing oneself in a natural environment [60,63].

4. Discussion

Climate change-related warming and natural disasters cause stress, anxiety, mental illness and a rise in violence and trauma. Continuing change in unstable and strained Earth systems, punctuated by dramatic tipping points with a plethora of ecological effects, will lead to decreasing mental health in global populations, particularly in marginalised demographics and amongst young people. This scoping review was undertaken to explore what research, literature and action was being undertaken by psychologists and other mental health-related fields to address this issue in order to inform ongoing research.

Clinical psychologists, ecopsychologists, climate psychologists, researchers and practitioners in other professional fields curious about the relation between the human psyche

and the impacts of climate change are researching and raising awareness of the issue at an ever-increasing rate. In the past 10–15 years, climate psychology has gradually emerged amongst a range of interventions, reviews, studies, theories and other literature in many psychological arenas, including ecopsychology and social sciences, and is rapidly gaining traction as an urgent field of study.

However, terminology remains an issue in this field of study, with several concepts and terms being used to describe and explore climate-related emotions and distress (i.e., eco-anxiety, climate anxiety, the psychoterratic, etc.), with the usage of each term subtly different in different communities and disciplinary backgrounds. This causes difficulties for replicability and comparability in research and may be limiting the ability of this field of study to evolve and become applicable to practice [8,38]. Indeed, the charge of an insufficient evidence base has been a thorn in the side of ecopsychology since its emergence, and continues to be a serious impediment for many psychologists who might otherwise be open to the urgency and severity of the challenge of climate change and its mental health implications. Work has been underway to develop a taxonomy of ecological [64] or Earth emotions [65]. More rigorous interdisciplinary conversations, reviews and research are needed to gather a consensus around the most accurate and effective terms for describe climate-related distress.

Future research must also distinguish within presentations of climate distress between climate concern—a rational perception of significant risk—and climate anxiety, which signifies an uncontrolled behavioural reaction to climate affects which impinge upon functionality [22]. It should not be the aim of clinicians to reduce someone’s concern of the climate crisis, but to provide strategies that help mitigate destructive climate-anxiety behaviours.

Clinicians require training, education, leadership and guidance to enable them to support both themselves and their clients in discussing, exploring and attending to climate change and climate-related distress [41]. Across literature focusing on action within the therapy room, it was highlighted that clinicians must create a safe space to foster open and non-judgmental conversations about climate change [55]. Trauma therapy may be drawn upon to understand how to best approach climate distress in the therapy room, as the service user must be guided through witnessing, acknowledging and reflecting on their feelings, emotions and behaviours in relation to the devastation of climate change to access growth [61]. It has been theorised that the loss or destruction of an environment that one feels a connection to is akin to losing a maternal figure, since we have been raised within and by our ecological network in a way that is comparable to our formation within familial and social environments [63]. The grief of being without a natural place that brings comfort, relaxation and security may be treated as if a loved one is gone. In addition, therapy outside the room, such as collective climate action or nature therapy, is beneficial to connecting oneself to a sense of community, belonging, understanding and to the restorative experience of immersion in a natural environment [20,33,57–60,63].

Wider research needs to be undertaken to explore the experiences of psychologists and clients regarding climate change and climate-related distress. More research is needed to explore the experiences of psychologists and clients of specific age groups and demographics, including young people, older adults and rural [8]. The intensity and frequency of extreme weather events are experienced differently around the world; therefore, it is important to explore the experience of mental health clinicians and service users around the globe. Researchers identified a lack of such literature being undertaken in Australia (where the authors are based). In particular, more thoroughgoing qualitative research which links the experience of specific climate-related and ecological changes with specific cultural, social and historical patterns and structures is urgently needed, to more precisely map current experience of ecological emotions, with implications for future experience as these ecological changes accelerate and intensify.

A major gap in the literature is the lack of quantitative, empirical evidence on evaluated interventions designed to address climate change emotions [12]. Most findings are qualitative

and theoretical in nature, based on experience and narrative. Whilst this has its merits in exploring and understanding concepts and experiences, it seems certain that policymakers and professional organisations will require targeted research before implementing any scaled, radical adjustment in patterns of intervention. It would be considerably advantageous for this field of study if researchers conducted designs higher on the hierarchy of evidence to increase the validation of interventions for climate-related distress and mental illness, including randomised control studies or well-designed control trials.

Furthermore, there were a very limited number of qualitative studies of mixed quality. Only some of these articles involved cross coding, with very few applying member checking. The methods were limited in range, primarily using descriptive rather than interpretative (i.e., using theory) approaches. Interpretative phenomenological analysis (IPA), narrative analysis and surveys are all descriptive methods that do not engage adequately with contemporary theory in relation to climate affect. More sophisticated studies are needed, using methods that embrace place-based epistemologies, affect theory, and post-human ontological frameworks. These methods would allow more sophisticated questions to be asked so as to more carefully interrogate the contours of climate distress.

It would also be of value to create more structural space for inter-generational dialogue. Findings indicated that members of younger generations tend to distrust those of older generations, whom many see as implicated seriously in climate change. This distrust is likely to hinder therapeutic relationships, just as it is likely to impede broader climate action. Devising effective means of bridging this generational gap would also help to open up acute experiences of climate distress to families, communities, and decision makers. Building understanding of the acute impact of climate emotion in the formation and everyday experience of young people, now and in the future, will build greater awareness (emotional as well as cognitive) of the problems posed by climate change, and help to power swift and substantive climate action.

Furthermore, whilst some papers foreground Indigenous voices, they are few, and these voices are visibly missing from many other interventions. The deep connection and respect Indigenous cultures often have for the more-than-human world offers rich understanding of the relations between humans and other beings, and particularly of how these relations influence human wellbeing. It is worth noting that Indigenous communities almost universally have long, close experience of the feelings and mental states which arise when ecosystems are disturbed and when other creatures are exploited, harmed, or driven to extinction. In particular, studies of Indigenous psychology show the effect of these forms of trauma on cultural practice and identity [9], which is one way of framing the shifts beginning to take place in Western psychology. In an often-cited article, Potawatomi scholar-activist Kyle Whyte points out that Indigenous peoples have lived through many apocalypses [66]—a point which bears directly on the increasing experiences of dread and despair as broader populations anticipate climate cataclysm. It seems to us that future climate psychology research should engage far more robustly with Indigenous research and practice, and collaborate wherever possible with Indigenous researchers.

There is some discussion in the findings of how awareness of climate change and its impacts can be the impetus for climate-related concern and anxiety. Future research should look at how to increase awareness of climate change, including its impact not only on the environment but on mental health and wellbeing, whilst ensuring that education is delivered in a manner that values active hope and highlights the importance of community, practicality and connection in climate action.

5. Conclusions

As we have shown, a plethora of theories, interventions and discussions about how to approach climate distress in psychotherapy have been proposed over the past decade. Climate psychology is gradually growing, gaining acknowledgement as a sub-field or community of practice focused increasingly on climate distress. With its rise have come growing calls for an innovative, organised response to climate distress from clinical psychology. Its

insights, however, remain under-represented in the literature, and there is little consensus amongst psychologists about what interventions might be most effective and when and how best to implement them. The dearth of empirical evidence from gold-standard clinical research makes it difficult for mental health agencies and organisational bodies to move to address these problems at scale, including through curriculum reform.

There remains a lingering suspicion that climate change is not a problem of primary concern for psychology or that engaging with climate change is beyond the purview of psychologists—that it is structural and political. Certainly, there is little agreement that psychology as a whole might need to change to meet the challenges it poses. It is clear from the growing literature, however, that emotional and psychological functions and patterns are key components in the causes of climate change, in its effective navigation, and in any effective strategies for adaptation and mitigation. Psychologists, committed to the wellbeing and mental health of their clients, need to take seriously the profound impacts of climate change (direct and indirect) in these realms so that they can be clinically effective.

However, since climate change is already causing widespread distress, with both causes and experiences of distress set to rise, it is clear that the emotional and psychological aspects of climate change will need to be addressed beyond the clinic and counselling room. It seems that open, candid intergenerational dialogue about the impacts of climate change on consciousness and wellbeing, as well as on the physical environment, will improve individual and community capacities to navigate its challenges effectively, and prevent the development of acute symptoms. Collective engagement such as this fosters greater awareness of ecological realities as well as social connection, helping to mitigate feelings of isolation and despair. There is an opportunity for psychology to play a leading role in this work, adapting and developing their extensive expertise for preventive interventions at a large scale.

To turn towards this work, we suggest that clinicians will need to come to personal understandings of the seismic social changes and culture-shifting events taking place at a planetary scale, becoming more aware of their own emotional responses to these events and to their implications, and so better equipping themselves both for therapeutic and preventive interventions. They may also need to be more open to alternative psychological theories and therapies, as climate psychology advocates (drawing, in part, upon its roots in and continued links with activism). Cultivating individual connection to place, nature, and people appear to be core components of effective responses to climate change, and drawing on proven Indigenous approaches to social and emotional wellbeing, Eastern traditions and practices, and marginal Western traditions of ecopsychology and ecotherapy may be the most effective and sustainable means of cultivation.

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