“Feeling your emotions is an act of rebellion:” Exploring the emotional and psychological wellbeing of children and young people in the climate crisis

by

Madison Emily Cooper

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Science

in

Health Promotion and Socio-behavioural Sciences

School of Public Health
University of Alberta

Abstract

Exposure to climate change is increasingly impacting the emotional and psychological wellbeing of children and young people. The disruption to ecosystems, built environments, economic systems, food systems, social support networks, culture and place-based identity is resulting in experiences of anxiety, grief, distress, isolation, post-traumatic stress disorder, substance use, and suicidality among younger generations. Understanding these complex impacts and how children and young people can be supported while growing up in a time riddled with current and imminent climatic changes is necessary for protecting mental health and wellbeing. Therefore, the purpose of this research was to explore children and youth mental health and wellbeing in the context of climate change.

This thesis begins with a systematic review that examined the nature, range, and extent of current academic literature published between 2010 and 2022 on climate-sensitive mental health outcomes, risk and protective factors, and coping strategies for children and young people. Articles explored clinical and subclinical mental health outcomes such as anxiety, depression, stress, post-traumatic stress disorder, and impacts to social/community wellbeing. Factors such as age, economic insecurity, displacement, and a lack of social support were identified in literature as those that amplify the vulnerability of children and young people to these impacts. Studies also explored how strong social support networks, education, and connection to culture can protect youth from these adverse outcomes.

Within the realm of social support, peer support is emerging as a coping strategy for young people in the context of climate change. This idea was explored in the second part of this dissertation. Youth who have attended climate cafés in Canada, a peer support space for

reflecting on climate emotions, as well as climate café facilitators, participated in semi-structured interviews. Participants found that through active listening and shifting their focus from external action to their internal emotional experiences, climate cafés were helpful in processing emotion and building community and resilience. These feeling-centered healing spaces have the potential to positively influence feelings of self-worth, and help youth manage burnout.

As youth continue to learn how to live in a time of constant environmental change, it is necessary to explore and understand the complex ways in which climate change impacts mental health and wellbeing. This understanding is needed to recognize varying manifestations of climate-sensitive mental health outcomes and potential risk and protective factors, as well as to actualize coping strategies that build connection and empower children and young people.

Preface

This thesis is an original work by Madison Cooper, completed under the supervision of Drs. Sherilee Harper and Ashlee Cunsolo. The research project, of which this thesis is a part, received research ethics approval form the University of Alberta's Health Research Ethics Board (HREB) (Project Name "Climate Change and Mental Resilience: How climate cafés can influence wellbeing and internal activism among youth", PRO. 00116540) and Memorial University's Interdisciplinary Committee on Ethics in Human Research (ICEHR) (File No. 20230165).

Dedication

For each of you who shared your story.

You are, and always have been, good enough.

Land Acknowledgement

I would like to begin by acknowledging the Treaty and Traditional Territory of the Mississaugas of the Credit First Nation, the Haudenosaunee Confederacy, and the Huron-Wendat and Wyandot Nations covered by Treaty 13A, the land on which I reside and have conducted this research. I also acknowledge that the University of Alberta is located on Treaty 6 territory, the Traditional lands of the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/Saulteaux/Anishnaabe, and Inuit. I am incredibly grateful for the wisdom of Indigenous Peoples who have been here since time immemorial and their stewardship of the land.

I recognize how I have benefited as a daughter, sister, friend, and student in a colonial system on stolen lands. I don't take lightly the responsibility I have as a treaty partner in respecting Indigenous sovereignty, the land, and living in a way that provides for future generations.

Acknowledgements

To all those who participated in this project, thank you for helping me imagine a better future. After all, "*in the end, all we have are stories*" (Robert C. Shank).

Drs. Ashlee Cunsolo and Sherilee Harper, thank you for the opportunity to study under your supervision. Your insight was invaluable to this project and my success in the program. I appreciate your passion and dedication to the climate-mental health field, and often find myself in awe of your work and the space you have created in this field for students like myself. It has been an honour to be a member of your lab team.

I would also like to thank Dr. Shelby Yamamoto for being on my committee. I appreciate the time you dedicated to my research, and I am grateful for the guidance and feedback you provided through every part of this dissertation.

Thank you to my colleagues in the Climate Change and Global Health Research Group at the University of Alberta, Breanne Aylward, Marina Banuet-Martinez, Hannah Bayne, Stephanie Olsen, Kelsey Robertson, and Rachael Vriezen for your support, insight, and hours of reading, editing, and collaboration.

Thank you to my mentor and friend, Dr. Nicole Yantzi, for introducing me to this heart-centered work, encouraging me to apply to this program, and supporting me along the way.

And lastly, thank you to my Mom who never lets me cross a finish line alone.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

1.1 The beginning of a relationship with ecological grief

I come to this research with an identity and experiences that influence how I conduct and interpret research. I live in Southern Ontario which shelters me from some of the most severe climate change impacts being experienced by young people globally. I am white, cis-gendered, and I've been afforded the privilege of attending post-secondary institutions. I am also neurodivergent and have struggled with my mental health, including some climate-related mental health impacts, for which I have also benefited significantly from consistent access to mental health care. My experiences, particularly around climate-sensitive mental health outcomes and watching other young people around me grapple with this burden, catalyzed my passion for the topic and my desire to conduct this research.

In the third year of my undergraduate degree in Environmental Studies, my peers and I began engaging in conversation about feeling depressed and hopeless after years of course material on climate change and ecological loss. Most of the conversations were casual, often infused with humour, and sometimes did not even need full vocalization about what we were feeling and experiencing. Sitting around the table in one of these classes, my friend slid me a note. Inscribed on the paper was their idea for a better name for the course, "Environmental Sadness." We exchanged a sigh and smile; no further explanation was needed. In response to how we were feeling, a professor shared an article with our class titled "Ecological grief as a mental health response to climate-change related loss." The article referred to ecological grief among Indigenous communities in Nunatsiavut, Canada and farmers in the Western Wheatbelt in Australia (Cunsolo & Ellis, 2018). The people in the research were not students, but the article still provided terminology, context, and validation for the feelings I was noticing. This was a powerful moment for me, as "to name something is to begin a relationship with it" (Ó Tuama, 2015, p. 18).

This relationship with grief and other climate emotions eventually led me to discover climate cafés, a supportive environment and community focused on creating spaces to discuss climate emotions, which deepened my relationship with myself, others, and nature. I realized through attending a climate café that after years of studying climate change and being consumed

with anxiety over my everyday actions, I was desperate for a space that did not require me to act. It was the first climate-focused space I found that required nothing of me but showing up.

It was hearing the lived experience of those around me, as well as discussions with colleagues and experts in the field that inspired me to pursue graduate work. I began this master's program with an interest in studying the mental health impacts of climate change on young people (like my peers in my undergraduate program), in order to discover strategies and opportunities for enhancing resilience, supporting mental wellness, and creating community. Studying the potential impact of these spaces on young people trying to process climate emotions, build community and resiliency, sustain their activism, and imagine a liveable future, became a natural focus of my thesis research, and that is where this thesis dissertation research on climate cafés began.

It has been my intention and responsibility to be reflexive throughout this research, particularly in my role as an insider researcher. I am a young person who has both attended and facilitated climate cafés and who experiences climate distress. The aims of this research were academic as well as personal. I have personally benefited, and have seen others benefit, from climate café spaces which served as inspiration for this project.

As true to the reflexive research approach, I felt "curious, passionate, [and] disturbed" (p. 16) (Clarke & Hoggett, 2009, p. 16) throughout the data collection and analysis process. This is "part of the work" (Hickman, 2020, p. 412). The desire to accurately portray the experiences of the young people and facilitators I spoke with weighed heavily on me. When I was feeling this way, particularly after interviews, I spent time writing out these reflections. This was an important part of the analysis process that allowed me to revisit what stood out to me in the immediate moments following the interview and approach the subsequent revisions of interview recordings and transcripts with a more grounded perspective. Some of my own reflections occurred through poetry, which became an important part of the analytical process. Out of this poetic inquiry emerged emotional expressions about the research process and my relationship with participants that aided in my reflexivity, by making meaning of my experiences, and the interpretation of data (Fernández-Giménez et al., 2018). After all, "I am a storyteller. I am a qualitative researcher and I collect stories; that's what I do. And maybe stories are just data with a soul" (Brown, 2010). I believe these stories can help shape the future of research on climate-aware peer support spaces.

1.2 Climate change and mental health

In their Sixth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) projected that the frequency of climate hazards will continue to increase globally in the near- and long-term (IPCC, 2021; Seneviratne et al., 2021). Human activities have driven increases in global surface temperatures, resulting in: reductions in Arctic sea ice, glaciers, snow cover, and permafrost; warming oceans; global mean sea level rise; and other impacts (IPCC, 2021). Many of these changes will remain irreversible for centuries to millennia. Even with 1.5°C of global warming, the IPCC projects unprecedented increases in the frequency of extreme weather and climate events including temperature extremes, heavy precipitation, cyclones, drought, and wildfires (IPCC, 2021; Seneviratne et al., 2021). These current and increasingly frequent and severe climate hazards are negatively affecting: health and wellbeing; ecosystem functioning; infrastructure; economic, food, water, and housing security; migration and displacement; social support networks, and culture (IPCC, 2022). The result is increased morbidity and mortality related to increasing temperatures, heatwaves, floods, drought, and storms; malnutrition; climate-related food-borne, vector-borne, water-borne, and zoonotic diseases; chronic, non-communicable respiratory diseases; extreme poverty; involuntary displacement; violence and armed-conflict; humanitarian crises; and eroding cultural heritage (Campbell-Lendrum et al., 2023; Cissé et al., 2022; Ebi et al., 2020).

The cumulative and compounding impact of climate change on the mental and emotional health of people and communities through direct, indirect, and vicarious pathways is increasingly evident (Arnout, 2023; IPCC, 2022; Obradovich et al., 2018). Environmental change, trauma from extreme climate and weather events, vicarious and anticipatory experiences of climate-related events and loss of livelihoods and culture has led to ecological grief, solastalgia, and despair congruous to impairing mental health (Albrecht et al., 2007; Charlson et al., 2021; Cissé et al., 2022; Corvalan et al., 2022; Cunsolo & Ellis, 2018; Manning & Clayton, 2018). Studies across diverse contexts and populations are uncovering the complex pathways by which exposure to acute and chronic environmental change and loss adversely affects psychological and emotional wellbeing, including mental disorders and general wellbeing. Mental disorders include diagnosable conditions which disrupt daily functioning, such as anxiety, depression, acute and post-traumatic stress, sleep disorders, substance misuse, and suicidal thoughts and suicidality (Charlson et al., 2021; Cianconi et al., 2020; Cissé et al., 2022; Clayton, 2020; Harper

et al., 2022; Manning & Clayton, 2018). General wellbeing, which is interconnected with physical and mental health, is reflected in part by a healthy relationship with others and the natural world, life satisfaction and self-actualisation, a predominance of healthy emotions and moods, unimpaired cognitive functioning, cultural identity, and a sense of meaning (Cianconi et al., 2020; Cissé et al., 2022).

Researchers have given name to the various emotional responses to climate change and ecological loss that impact wellbeing. Glenn Albrecht (2019) has termed some emotional responses to environmental change as "psychoterratic (psyche-earth) syndromes," such as solastalgia (the homesickness you feel at home), global dread, tierratrauma (the moment when a person experiences a sudden negative environmental change), mermerosity (anticipatory mourning or grieving), and terrafurie (earth anger). Cunsolo & Ellis (2018) catalyzed research on ecological grief, to explain the emotional and psychological response to disruptions to livelihood, culture, and identity due to current and anticipated ecological changes. Ecoanxiety, first coined by a journalist in 1990 to describe concerns around pollution, is now widely used in literature and media to explain worry and fear of climate change along with emotional and psychological responses of anger, panic, powerlessness, guilt, distress, and terror (Albrecht, 2019; Hickman et al., 2021; Leff, 1990; Pihkala, 2022).

1.3 Climate change and mental health of children and young people

Children and adolescents, particularly girls, as well as women, the elderly, Indigenous Peoples, low-income households, socially marginalised groups, and people with existing physical and medical challenges are most at risk of experiencing the physical and mental health impacts of climate change (Cissé et al., 2022; Clayton, 2021; Clayton et al., 2017; Cunsolo Willox et al., 2015; Manning & Clayton, 2018; Sidun & Gibbons, 2023). Children and young people's unique interaction with the environment, including their reliance on adults combined with lifelong exposure to climate-related risks, all influence their ability to cope with stress. In addition to age, other intersecting factors, such as gender, socioeconomic marginalization, physical and mental ability, pre-existing conditions, displacement, and disrupted food, healthcare, and social systems and networks, contribute to the frequency and severity of mental health outcomes and to the ability of children and young people to cope with the impacts (Cissé et al., 2022; Clayton et al., 2023). For example, children and young people are impacted by their

reliance on parents and caregivers because adults make decisions on their behalf that control their exposure (Barkin et al., 2021), and their reaction to children's negative emotions influences their coping ability (Ojala, 2015). Instead of feeling supported by caregivers and adults, there have been increasing reports from young people of feeling dismissed, ignored, and belittled, or as if they are responsible for finding solutions to the climate crisis, when reaching out for help with anxiety about the future and a safe place to share their concerns (Hickman, 2020).

Exposure to acute and chronic climate-related stressors increases the likelihood of depression, sleep disorders, substance abuse, PTSD, and suicidal ideation among young people (Burke et al., 2018; Léger-Goodes et al., 2022; van Nieuwenhuizen et al., 2021). This psychological distress during important periods of psychological and physiological development has long-lasting impacts, including increased impairment in memory, lower academic achievement (van Nieuwenhuizen et al., 2021), difficulty regulating emotions, behavioural issues, and mental illness well into adulthood (Burke et al., 2018). In addition to stress-related disorders, children and young people are experiencing a range of strong emotions: fear, uncertainty, hopelessness, and anger, as they are naturally grieving and anxious in response to current and anticipated climate-related loss and change (Léger-Goodes et al., 2022; Martin et al., 2022; van Nieuwenhuizen et al., 2021).

1.4 Protective factors and coping strategies for children and young people

How children and young people cope psychologically with climate change is important to understanding and addressing the impacts on mental health and wellbeing. Clinical therapy may be required to assist children and young people in coping with impacts such as PTSD, substance-use, suicidality, depression, anxiety, and school performance. In addition to professional help, emotional regulation; education that emphasizes connection to place, narrative, and art or incorporates humour or dance; and social support, can increase engagement, agency, community, and resiliency (Ojala, 2013; Sanson et al., 2019).

1.4.1 Emotional regulation

Meaning-focused coping is an emotional regulation strategy crucial for building resilience and adaptive capacity (Sanson et al., 2019). This incorporates validating the stressor while still being able to reframe the situation, activating positive feelings without dismissing

negative feelings, finding meaning in difficult situations and engaging meaningfully in action, turning to spiritual beliefs and relying on sources outside oneself (Chawla, 2020; Ojala, 2013). For example, while acknowledging the problem of climate change, children and adolescents in Sweden activated positive feelings by also recognizing that it was encouraging that there was increasing public awareness (Ojala, 2012). Similarly, in response to changes in temperature and rainfall in Malolos, children displayed positive re-appraisal by adjusted to these day-to-day changes by caring for siblings, participating in post-disaster clean-up, acknowledging the ways they have influenced positive change in their communities, and finding meaning and comfort in their trust in fate or God (Berse, 2017). It is important to help young people see and connect with communities (Pihkala, 2020), organizations, and other societal actors that are working on solutions (Sanson et al., 2018). Building trust and confidence in such as teachers, caregivers, peers, science and technology, politicians, international agreements, religion, and spirituality, fosters hope and self-efficacy and supports re-appraisal (Ojala, 2012).

1.4.2 Education

Place-, arts-, and narrative-based education, as well as comedy, music, and dance, are all valuable approaches to educating young people on climate change and coping with climate-sensitive mental health outcomes (Bentz, 2020; Hendersson & Wamsler, 2020; Malena-Chan, 2019; Osnes et al., 2019; Plummer et al., 2022; Prno et al., 2011; Sanson et al., 2019; Tai, 2018; Verlie, 2019). For example, traditional knowledge camps connect young people with Elders and the land while building knowledge and skills (Prno et al., 2011). As well, place-based stewardship programs facilitated by schools and community groups in economically disadvantaged and marginalized communities engage children and young people in local environmental projects; action which is important to fostering resilience and agency (Sanson et al., 2019). Solidarity and awareness can be fostered through environmental stewardship programs (Sanson et al., 2019), programs centered around dance (Tai, 2018), art (Bentz, 2020), music (Plummer et al., 2022), and comedy (Osnes et al., 2019), which each offered a pathway for communicating and evaluating a complex idea like climate change and expressing and processing emotion. Affective coping practices include art, humour, performance, and laughter that increase engagement, self-efficacy and motivation to act (Boykoff & Osnes, 2019); and

mindfulness which can be protective against PTSD and academic burnout following extreme weather events (Barkin et al., 2021).

1.4.3 Social support

Peer support is a protective factor against adverse climate-sensitive mental health outcomes for children and young people (Carnie et al., 2011; Cunsolo Willox et al., 2012; Godsmark, 2020; Kornbluh et al., 2022; Ma et al., 2022; Sciberras & Fernando, 2022). Greater peer social support reduces anxiety, depression (Ma et al., 2022; Udas et al., 2021; Witt et al., 2022), PTSD (Ma et al., 2022), hopelessness (Udas et al., 2021), academic burnout (Witt et al., 2022), and supports a sense of belonging, self-efficacy, and engagement (Udas et al., 2021; Witt et al., 2022), following climate change events. Young people express that coping is a collective practice (Klocker et al., 2021). In community with their peers they can interact, connect, and debrief with one another (Devonald et al., 2022; Klocker et al., 2021; Verlie et al., 2021). Group interventions in school that teach coping strategies (Witt et al., 2022) and informal support groups for people to share their worry about climate change (Clayton & Karazsia, 2020) are soliciting peer support and communal coping (Frydenberg, 2020). While social support from friends and peers can lower the risk of children and young people developing certain climate-sensitive mental health outcomes (Crandon et al., 2022; Ma et al., 2022), disconnection from peers may influence climate anxiety in children and adolescents (Crandon et al., 2022). For example, this disconnection increased feelings of isolation in young people in rural and remote New South Wales where drought was forcing relocation and limiting community participation and school attendance (Carnie et al., 2011). Furthermore, collective action and engagement are important to increasing resilience, agency, and connection (Budziszewska & Kalwak, 2022; Chawla, 2020; Flanagan, 2022; Gislason et al., 2021; Ojala, 2017, 2022; Spyrou et al., 2022; Verlie, 2019). Participating in climate action as a community encourages participation and solicits feelings of reassurance and optimism (Nairn, 2019; Verlie, 2019). Collective action fosters a sense of belonging and companionship, and thus increases trust in others, hope, and agency (Ojala, 2017). Cultivating this sense of belonging and collective and individual agency through community building and connectedness helps people cope with climate stressors (Budziszewska & Kalwak, 2022; Pihkala, 2020; Verlie, 2019).

1.5 Climate cafés

Climate cafés are one way to take a collective approach to building a culture of care (Climate Psychology Alliance, 2022). Modelled after Death Cafés, which began in the UK as a space to talk about death and dying, they both exist to normalize topics that are considered taboo and are difficult to talk about (Bryant, 2019; Climate Psychology Alliance, 2022; Haines, 2021). These gatherings are spaces where individuals can express thoughts and feelings about climate change with like-minded people without needing to offer advice or encourage action. They are simply places to acknowledge and explore the various psychological and emotional reactions to the climate crisis.

Climate cafés, like those hosted by the Climate Psychology Alliance, often follow a specific format and guidelines. There are typically two designated facilitators to open and close the space and guide conversation where needed. Facilitators open the space by explaining the purpose and sharing the ground rules. For example, this can sound something like: "We are meeting here today to talk about how we are feeling about the climate crisis. All emotions are welcome. In this space we want to acknowledge others' emotions and experiences without offering advice or encouraging action."

The café begins with a grounding exercise that invites people to settle into the space and share who they are and why they have come to a climate café. Following this round of introductions, participants are invited to expand further on how they are feeling or any emotions that were evoked by listening to the other participants share their stories. After two rounds of sharing, the facilitator closes the space by asking everyone to share one word about how they are feeling at the end of the café. Once the café is formally closed, the facilitators remain available for anyone who feels like they need further support (Bryant, 2019; Climate Psychology Alliance, 2022). Other programs that share the qualities of a climate café space are being created to support young people. For example, the Good Grief Network (https://www.goodgriefnetwork.org/teens/) has a new offering called GGN-Z, a five-week peer-support program for teens ages 14-18 facilitated by members of the Good Grief Network team (Good Grief Network, 2023). The program offers a space for teens to build trusting relationships through active listening and vulnerability, while offering practices for coping with climate emotions such as journaling, meditation, and breathwork. Participating in active-listening or

action-free spaces can provide young people with tools to build resiliency and sustain their climate action (Good Grief Network, 2023).

1.6 Dissertation research rationale and objectives

Globally, young people are suffering the loss of livelihoods, identity, and security resulting from climate change. Current literature has not yet studied climate cafes as effective coping strategies; however, preliminary learning from the research on the impacts on mental health indicates that young people are particularly susceptible to being burdened with the increasing number of complex impacts on physical and mental health. With an increased understanding from current literature about how mental health and wellbeing is impacted by climate change, there is a need to invest in research on strategies that help children and young people adapt and reduce harm. Therefore, this research aims to identify effective strategies to help some of the most impacted, but most influential partners in the climate movement, to cope with the climate crisis. The goal of this dissertation is to provide an overview of climate change and the mental health of children and young people globally, and an analysis of climate cafes, a peer support space, as a form of support for the wellbeing of young people. The specific objectives are to:

1) synthesizes evidence that has been published on (a) climate change and mental health risks for children and young people; (b) protective factors that enhance resilience to these risks; and (c) supports and coping strategies to increase the resilience of children and young people and reduce negative mental health outcomes related to climate change; and

2) explore young peoples' experiences at climate cafés in Canada; and

3) characterize how climate cafés impact emotional and psychological resilience of young people and their ability to deal with various climate emotions.

1.7 Dissertation research design and structure

This manuscript style dissertation includes two standalone research chapters, followed by a conclusion chapter. We intend to publish both chapters in peer-reviewed journals.

Chapter 2 presents a review of literature on climate-mental health outcomes, risks, protective factors, and coping strategies for children and young people. An in-depth look at a specific coping strategy, peer support, is provided following the review, in chapter 3. This chapter presents a qualitative study on the impact of climate cafés, a peer support space, on the mental wellbeing of young people and the ability to process climate emotions. It is critical to listen to the needs of young people as climate change impacts continue to worsen.

Therefore, taken together, chapter 2 and 3 contribute to the growing body of research on climate change and young peoples' mental health by addressing the need for tools and resources that support young people in processing climate emotions and finding ways to sustainably participate in climate activism.

References

Albrecht, G. A. (2019). *Earth Emotions: New Words for a New World*. Cornell University Press.

Albrecht, G. A., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The Distress Caused by Environmental Change. *Australasian Psychiatry*, *15*, S95–S98. https://doi.org/10.1080/10398560701701288

Arnout, B. A. (2023). An epidemiological study of mental health problems related to climate change: A procedural framework for mental health system workers. *Work*, *75*(3), 813–835. https://doi.org/10.3233/WOR-220040

Barkin, J. L., Buoli, M., Curry, C. L., von Esenwein, S. A., Upadhyay, S., Kearney, M. B., & Mach, K. (2021). Effects of extreme weather events on child mood and behavior. *Developmental Medicine and Child Neurology*, *63*(7), 785–790. https://doi.org/10.1111/dmcn.14856

Bentz, J. (2020). Learning about climate change in, with and through art. *Climatic Change*, *162*(3), 1595–1612. https://doi.org/10.1007/s10584-020-02804-4

Berse, K. (2017). Climate change from the lens of Malolos children: perception, impact and adaptation. *Disaster Prevention and Management*, *26*(2), 217–229. https://doi.org/10.1108/DPM-10-2016-0214

Boykoff, M., & Osnes, B. (2019). A Laughing matter? Confronting climate change through humor. *Political Geography*, *68*, 154–163. https://doi.org/10.1016/j.polgeo.2018.09.006

Brown, B. (2010, December 23). The Power of Vulnerability. In *TED Talk*. https://brenebrown.com/videos/ted-talk-the-power-of-vulnerability/

Bryant, A. (2019). *Climate Café International*. Climate & Mind. https://www.climateandmind.org/climate-cafe

Budziszewska, M., & Kalwak, W. (2022). Climate depression. Critical analysis of the concept. *Psychiatria Polska*, *56*(1), 171–182. https://doi.org/10.12740/PP/127900

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018a). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/s11920-018-0896-9

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018b). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/S11920-018-0896-9

Campbell-Lendrum, D., Neville, T., Schweizer, C., & Neira, M. (2023). Climate change and health: three grand challenges. *Nature Medicine*, *29*(7), 1631–1638. https://doi.org/10.1038/s41591-023-02438-w

Carnie, T.-L., Berry, H. L., Blinkhorn, S. A., & Hart, C. R. (2011). In their own words: Young people's mental health in drought-affected rural and remote NSW. *Australian Journal of Rural Health*, *19*(5), 244–248. https://doi.org/10.1111/j.1440-1584.2011.01224.x

Charlson, F., Ali, S., Benmarhnia, T., Pearl, M., Massazza, A., Augustinavicius, J., & Scott, J. G. (2021). Climate change and mental health: A scoping review. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094486

Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, *2*(3), 619–642. https://doi.org/10.1002/pan3.10128

Cianconi, P., Betrò, S., & Janiri, L. (2020). The Impact of Climate Change on Mental Health: A Systematic Descriptive Review. *Frontiers in Psychiatry*, *11*(March), 1–15. https://doi.org/10.3389/fpsyt.2020.00074

Cissé, G., McLeman, R., Adams, H., Aldunce, P., Bowen, K., Campbell-Lendrum, D., Clayton, S., Ebi, K. L., Hess, J., Huang, C., Liu, Q., McGregor, G., Semenza, J., & Tirado, M. C. (2022). Health, Wellbeing, and the Changing Structure of Communities. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1041–1170). Cambridge University Press.

Clarke, S., & Hoggett, P. (2009). Researching beneath the surface: a psycho-social approach to research practice and method. In S. Clarke & P. Hoggett (Eds.), *Researching Beneath the Surface: Psycho-Social Research Methods in Practice* (1st ed., pp. 1–26). Routledge. https://doi.org/10.4324/9780429479564

Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders*, *74*, 102263. https://doi.org/10.1016/j.janxdis.2020.102263

Clayton, S. (2021). Climate Change and Mental Health. *Current Environmental Health Reports*, *8*(1), 1–6. https://doi.org/10.1007/s40572-020-00303-3

Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*, *69*. https://doi.org/10.1016/j.jenvp.2020.101434

Clayton, S., Manning, C. M., Hill, A. N., & Speiser, M. (2023). *Mental Health and Our Changing Climate: Children and Youth Report 2023*.

Clayton, S., Manning, C. M., Krygsman, K., & Speiser, M. (2017). *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*.

Climate Psychology Alliance. (2022). *Climate Cafés*. https://www.climatepsychologyalliance.org/index.php/component/content/article/climate-cafes?catid=13&Itemid=101

Corvalan, C., Gray, B., Prats, E. V., Sena, A., Hanna, F., & Campbell-Lendrum, D. (2022). Mental health and the global climate crisis. *Epidemiology and Psychiatric Sciences*, *31*. https://doi.org/10.1017/S2045796022000361

Crandon, T. J., Scott, J. G., Charlson, F. J., & Thomas, H. J. (2022). A social–ecological perspective on climate anxiety in children and adolescents. *Nature Climate Change*, *12*(2),

123–131. https://doi.org/10.1038/s41558-021-01251-y

Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, *8*(4), 275–281. https://doi.org/10.1038/s41558-018-0092-2

Cunsolo Willox, A., Harper, S. L., Ford, J. D., Landman, K., Houle, K., & Edge, V. L. (2012). "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science and Medicine*, *75*(3), 538–547. https://doi.org/10.1016/J.SOCSCIMED.2012.03.043

Cunsolo Willox, A., Stephenson, E., Allen, J., Bourque, F., Drossos, A., Elgarøy, S., Kral, M. J., Mauro, I., Moses, J., Pearce, T., MacDonald, J. P., & Wexler, L. (2015). Examining relationships between climate change and mental health in the Circumpolar North. *Regional Environmental Change*, *15*(1), 169–182. https://doi.org/10.1007/s10113-014-0630-z

Devonald, M., Vintges, J., & Jones, N. (2022). Supporting adolescent mental health in humanitarian settings: To what extent do interventions consider climate change and its intersectional impacts? *Intervention* , *20*(1), 81–97. https://doi.org/10.4103/intv.intv_31_21

Ebi, K. L., Vanos, J., Baldwin, J. W., Bell, J. E., Hondula, D. M., Errett, N. A., Hayes, K., Reid, C. E., Saha, S., Spector, J., & Berry, P. (2020). Extreme Weather and Climate Change: Population Health and Health System Implications. *Annual Review of Public Health*, *42*, 293–315. https://doi.org/10.1146/annurev-publhealth-012420-105026

Fernández-Giménez, M. E., Jennings, L. B., & Wilmer, H. (2018). Poetic inquiry as a research and engagement method in natural resource science. *Society & Natural Resources*, *32*(10), 1080–1109. https://doi.org/10.1080/08941920.2018.1486493

Flanagan, C. (2022). Commentary: Proactive practices to support youth coping with climate change - a commentary on Martin et al. (2021). *Child and Adolescent Mental Health*, *27*(1), 94–95. https://doi.org/10.1111/camh.12538

Frydenberg, E. (2020). My journey in coping research and practice: The impetus and the relevance. *Educational and Developmental Psychologist*, *37*(1), 83–90. https://doi.org/10.1017/edp.2020.9

Gislason, M. K., Kennedy, A. M., & Witham, S. M. (2021). The interplay between social and ecological determinants of mental health for children and youth in the climate crisis. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094573

Godsmark, C. N. (2020). Inspiring climate action without inducing climate despair. *The Lancet Planetary Health*, *4*(5), e169–e170. https://doi.org/10.1016/S2542-5196(20)30102-9

Good Grief Network. (2023). *GGN-Z*. https://www.goodgriefnetwork.org/teens/

Haines, G. (2021, September 6). Introducing 'climate cafés', where you drink tea and talk global warming. *Positive News*. https://www.positive.news/environment/climate-crisis-the-rise-of-the-climate-cafe/

Harper, S. L., Cunsolo, A., & Clayton, S. (2022). Including mental health as part of climate

change impacts and adaptation assessment: A critical advance in IPCC AR6. *PLOS Climate*, *1*(5), e0000033. https://doi.org/10.1371/journal.pclm.0000033

Hendersson, H., & Wamsler, C. (2020). New stories for a more conscious, sustainable society: claiming authorship of the climate story. *Climatic Change*, *158*(3–4), 345–359. https://doi.org/10.1007/S10584-019-02599-Z

Hickman, C. (2020). We need to (find a way to) talk about … Eco-anxiety. *Journal of Social Work Practice*, *34*(4), 411–424. https://doi.org/10.1080/02650533.2020.1844166

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, *5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte, P. Zhai, A. Priani, S. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. Matthews, T. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009157896

IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009325844

Klocker, N., Gillon, C., Gibbs, L., Atchison, J., & Waitt, G. (2021). Hope and grief in the human geography classroom. *Journal of Geography in Higher Education*. https://doi.org/10.1080/03098265.2021.1977915

Kornbluh, M., Withers, M. C., Ades, J., Grennan, G., & Mishra, J. (2022). Identifying protective socio-ecological factors for college students in California's deadliest wildfire. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2047706

Leff, L. (1990, August 5). Ecology Carries Clout in Anne Arundel. *The Washington Post*. https://www.washingtonpost.com/archive/local/1990/08/05/ecology-carries-clout-in-anne-arundel/a01f0325-e1bf-4f25-b180-65bc4540ef0c/

Léger-Goodes, T., Malboeuf-Hurtubise, C., Mastine, T., Généreux, M., Paradis, P.-O., & Camden, C. (2022). Eco-anxiety in children: A scoping review of the mental health impacts of the awareness of climate change. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.872544

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine*, *301*. https://doi.org/10.1016/j.socscimed.2022.114888

Malena-Chan, R. (2019). A narrative model for exploring climate change engagement among young community leaders. *Health Promotion and Chronic Disease Prevention in Canada*,

39(4), 157–166. https://doi.org/10.24095/hpcdp.39.4.07

Manning, C., & Clayton, S. (2018). Threats to mental health and wellbeing associated with climate change. In *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 217–244). Elsevier. https://doi.org/10.1016/B978-0-12-813130-5.00009-6

Martin, G., Reilly, K., Everitt, H., & Gilliland, J. A. (2022). Review: The impact of climate change awareness on children's mental well-being and negative emotions - a scoping review. *Child and Adolescent Mental Health*, *27*(1), 59–72. https://doi.org/https://dx.doi.org/10.1111/camh.12525

Nairn, K. (2019). Learning from Young People Engaged in Climate Activism: The Potential of Collectivizing Despair and Hope. *Young*, *27*(5), 435–450. https://doi.org/10.1177/1103308818817603

Ó Tuama, P. (2015). *In the Shelter: Finding a Home in the World*. Hodder & Stoughton.

Obradovich, N., Migliorini, R., Paulus, M. P., & Rahwan, I. (2018). Empirical evidence of mental health risks posed by climate change. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(43), 10953–10958. https://doi.org/10.1073/pnas.1801528115

Ojala, M. (2012). Regulating worry, promoting hope: How do children, adolescents, and young adults cope with climate change? *International Journal of Environmental & Science Education*, *7*(4), 537–561. http://www.ijese.com/

Ojala, M. (2013). Coping with climate change among adolescents: Implications for subjective well-being and environmental engagement. *Sustainability (Switzerland)*, *5*(5), 2191–2209. https://doi.org/10.3390/SU5052191

Ojala, M. (2015). Hope in the Face of Climate Change: Associations With Environmental Engagement and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation. *The Journal of Environmental Education*, *46*(3), 133–148. https://doi.org/10.1080/00958964.2015.1021662

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. *Futures*, *94*, 76–84. https://doi.org/10.1016/J.FUTURES.2016.10.004

Ojala, M. (2022). Climate-change education and critical emotional awareness (CEA): Implications for teacher education. *Educational Philosophy and Theory*, *55*(10), 1109–1120. https://doi.org/10.1080/00131857.2022.2081150

Osnes, B., Boykoff, M., & Chandler, P. (2019). Good-natured comedy to enrich climate communication. *Comedy Studies*, *10*(2), 224–236. https://doi.org/10.1080/2040610X.2019.1623513

Pihkala, P. (2020). The Cost of Bearing Witness to the Environmental Crisis: Vicarious Traumatization and Dealing with Secondary Traumatic Stress among Environmental Researchers. *Social Epistemology*, *34*(1), 86–100. https://doi.org/10.1080/02691728.2019.1681560

Pihkala, P. (2022). Toward a Taxonomy of Climate Emotions. *Frontiers in Climate*, *3*.

https://doi.org/10.3389/fclim.2021.738154

Plummer, N., Wilson, M., Yaneva-Toraman, I., McKenzie, C., Mitchell, S., Northover, P., Crowley, K., Edwards, T., & Richards, A. (2022). Recipes for Resilience: Engaging Caribbean Youth in Climate Action and Food Heritage through Stories and Song. *Sustainability*, *14*(14). https://doi.org/10.3390/su14148717

Prno, J., Bradshaw, B., Wandel, J., Pearce, T., Smit, B., & Tozer, L. (2011). Community vulnerability to climate change in the context of other exposure-sensitivities in Kugluktuk, Nunavut. *Polar Research*, *30*. https://doi.org/10.3402/POLAR.V30I0.7363

Sanson, A. V., Burke, S. E. L., & Van Hoorn, J. (2018). Climate Change: Implications for Parents and Parenting. *Parenting: Science & Practice*, *18*(3), 200–217. https://doi.org/10.1080/15295192.2018.1465307

Sanson, A. V., Van Hoorn, J., & Burke, S. E. L. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201–207. https://doi.org/10.1111/cdep.12342

Sciberras, E., & Fernando, J. W. (2022). Climate change-related worry among Australian adolescents: an eight-year longitudinal study. *Child and Adolescent Mental Health*, *27*(1), 22–29. https://doi.org/10.1111/camh.12521

Seneviratne, S. I. ., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S., Wehner, M., & Zho, B. (2021). Weather and Climate Extreme Events in a Changing Climate. In V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. YelekçiR. Yu, & B. Zhou (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1513–1766). Cambridge University Press.

Sidun, N. M., & Gibbons, J. L. (2023). Women, girls, and climate change: Human rights, vulnerabilities, and opportunities. *International Journal of Psychology*. https://doi.org/10.1002/ijop.12942

Spyrou, S., Theodorou, E., & Christou, G. (2022). Crafting futures with hope: Young climate activists' imaginaries in an age of crisis and uncertainty. *Children & Society*, *36*(5), 731–746. https://doi.org/10.1111/chso.12529

Tai, J. A. (2018). Dancing climate on a high mountain. *Research in Dance Education*, *19*(3), 294–305. https://doi.org/10.1080/14647893.2018.1523381

Udas, P. B., Fournier, B., Christianson, T., & Desbiens, S. (2021). What Can We Learn from Rural Youth in British Columbia, Canada? Environment and Climate Change-Issues and Solutions. *Sustainability*, *13*(24). https://doi.org/10.3390/su132413562

van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwong, A. R. (2021). The Effects of Climate Change on Child and Adolescent Mental Health: Clinical Considerations. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01296-y

Verlie, B. (2019). Bearing worlds: learning to live-with climate change. *Environmental Education Research*, *25*(5), 751–766. https://doi.org/10.1080/13504622.2019.1637823

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education*, *37*(2), 132–146. https://doi.org/10.1017/aee.2020.34

Witt, A., Sachser, C., & Fegert, J. M. (2022). Scoping review on trauma and recovery in youth after natural disasters: what Europe can learn from natural disasters around the world. *European Child & Adolescent Psychiatry*. https://doi.org/10.1007/s00787-022-01983-y

Chapter Two: Climate change and mental health risks, protective factors, and coping strategies for children and young people: A systematic scoping review

Madison Cooper[1], Ashlee Cunsolo[2], Breanne Aylward[1], Rachael Vriezen[1], Shelby S. Yamamoto[1], and Sherilee L. Harper[1]

[1]School of Public Health, University of Alberta, Edmonton, Canada

[2]School of Arctic and Subarctic Studies, Labrador Campus of Memorial University, Happy Valley-Goose Bay, Canada

Abstract

Background: Direct, indirect, and vicarious exposure to climate change have psychosocial implications, especially for children and young people. Understanding the nature, range, and extent of these risks, as well as protective factors and coping responses is imperative.

Methods: A systematic scoping review was conducted to identify and characterize climate-mental health risks, protective factors, and coping strategies in published academic literature. Search strings were developed to identify and retrieve articles from five electronic databases. Using a two-stage screening process, two independent reviewers identified primary articles, systematic and non-systematic reviews, commentaries, editorials, and articles in trade journals that reported climate change impacts on mental health for children and young people (aged 6-29 years old). Data were analyzed using descriptive statistics and thematic analysis.

Results: A total of 235 articles met the inclusion criteria. Articles explored climate change impacts on clinical and subclinical emotional and psychological outcomes for children and young people, such as anxiety (50% of articles), depression (34%), stress and post-traumatic stress disorder (PTSD) (30%) and impacts to social/community wellbeing (29%). Studies examined how age (50% of articles), economic insecurity (26%), displacement (24%), and a lack of social support (21%) might increase susceptibility to these outcomes. Studies also explored how strong social support networks (25% of articles), education (8%), and connection to culture (6%) can protect youth from these adverse outcomes. Coping strategies mentioned in the published literature included incorporating emotion-focused climate literacy in environmental education (18% of articles), enhancing community knowledge of climate change impacts (29%),

and increasing access to peer support spaces (24%). Furthermore, articles discussed the benefit of education that emphasizes place- and narrative-based learning, participating in community-based initiatives, and adult mentorship.

Conclusion: Understanding the varying climate change and mental health risks for children and young people, validating their emotional and psychological responses, and providing opportunities to foster community connection are vital to protecting wellbeing in the era of climate change.

Keywords: Climate change, mental health, children, young people, risks, protective factors, coping, education, social support, scoping review

2.1 Introduction

Our individual and collective mental health have already been impacted by current and imminent climate change (Cissé et al., 2022; Harper et al., 2022). Increasing mental health challenges are expected globally from direct, indirect, and vicarious exposure to climate hazards. Direct exposure pertains to experiencing climate and weather extremes (drought, fires, storms, heatwaves, floods) and slow-onset changes (sea-level rise, changing permafrost, freshwater, and sea-ice conditions, warming temperatures, coastal erosion, changes to wildlife and vegetation). Indirect exposure refers to the compounding consequences of these acute and chronic climate extremes and changes such as displacement and evacuation, food insecurity, disrupted social networks and cultural practices, unemployment, and conflict. Even in the absence of direct or indirect exposure, climate change can affect mental health and wellbeing through vicarious exposure. This encompasses learning about climate change, witnessing the impacts of climate change on family, friends, or on the news, and anticipating future loss and change (Berry et al., 2010; Cissé et al., 2022; Harper et al., 2022). There are various emotional and psychological responses to climate change that impact wellbeing, including mental disorders, such as anxiety, depression, acute traumatic stress, post-traumatic stress disorder (PTSD), suicide, substance abuse, and sleep problems; psychoterratic (psyche-earth) syndromes, such as solastalgia (homesickness you feel at home); ecological grief from disruptions to livelihood, culture, and identity; and feelings of anger, panic, powerlessness, guilt, distress, and terror (Albrecht, 2019; Cissé et al., 2022; Hickman et al., 2021; Pihkala, 2022). Although these responses are expected given the magnitude and severity of climate change impacts on lives and livelihoods, they have the potential to disrupt healthy relationships with others and the natural world.

Children and young people are thought to be particularly at risk of adverse mental health impacts from climate change because of ongoing physiological and psychological development and increased, long-term exposure (S. E. L. Burke et al., 2018; Clayton et al., 2017; Crisp, 2015; Parry et al., 2022). In response, there has been an increasing number of literature reviews published on the mental health impacts of climate change on children and young people. These reviews tend to be narrow in focus. For example, systematic reviews have focused on specific countries (e.g. Benevolenza & DeRigne, 2019; Berberian et al., 2022; Dawes et al., 2019; Gislason et al., 2021; Sharpe & Davison, 2022), examined certain sub-populations/demographics (e.g. Berberian et al., 2022; Canelón & Boland, 2020; Mann et al., 2021), explored certain

climate hazards or events (e.g. Martinez Garcia & Sheehan, 2016; Uibel et al., 2022; A. Witt et al., 2022), analyzed one specific mental health outcome (Chawla, 2020; Léger-Goodes et al., 2022; Witt et al., 2022), or characterized risk/protective factors (T. Ma et al., 2022). Although these reviews provide helpful in-depth and focused examinations of specific topics, a broader and more comprehensvie synthesis of the literature is missing. Furthermore, although many reviews have focused on characterizing risk and protective factors of specific climate-sensitive mental health outcomes, reviews have yet not explored how to design and implement supports that help children and young people process climate emotions and develop healthy coping mechanisms. Therefore, the objective of this review was to systematically examine the nature, range, and extent of published academic literature to further understand climate change and the mental health and wellbeing of children and young people. Specifically, it synthesizes evidence that has been published on (1) climate change and mental health risks for children and young people; (2) protective factors that enhance resilience to these risks; and (3) supports and coping strategies to increase the resilience of children and young people and reduce negative mental health outcomes related to climate change.

2.2 Methods

2.2.1 Scoping review

The scoping review methodology was selected to determine the nature, range, and extent of the literature on climate change and children and young people's mental health (ages 6-29), and, in turn, identify knowledge gaps and areas for future research. This scoping review involved: (1) identifying the research question; (2) developing a search strategy to identify potentially relevant studies; (3) selecting relevant studies; (4) charting the data; and (5) collating, summarizing, and reporting the results (Arksey & O'Malley, 2005). Herein, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines (Tricco et al., 2018). A protocol for this review was developed *a priori* and is available from the authors upon request.

2.2.1.1 Search Strategy

The search strategy was developed in collaboration with a research librarian. To identify relevant studies related to the children and young people's mental health in the context of climate

change, the following electronic databases were searched: Web of Science™ (coverage from 1900-present), Scopus® (1966-present), MEDLINE® (1879-present), PsycINFO® (1967-present), EMBASE™ (1947-present), CINAHL® (1961-present), and Environment Complete™ (1940-present). These databases were selected because they include global literature on life sciences, social sciences, health sciences, psychology, and interdisciplinary studies, and as such are relevant to the topic. Search strings were developed to include terms for the exposure, outcome, and population of interest (Table 1). Exposure terms were selected to identify articles in which the main exposure was climate change, including weather and climate extremes. Mental health terms were adapted from past reviews (Middleton et al., 2020), and the population terms captured children and young people (aged 6-29 years old). Similar search strings were used across databases but differed by proximity operators and subject headings that were tailored for each database. There were no limitations set on the searches based on location, date, or language. Pilot searches were conducted in the Web of Science™, Scopus®, MEDLINE®, PsycINFO®, EMBASE™, CINAHL®, and Environment Complete™ databases. The final search was conducted between July 27, 2021, and August 4, 2021, and an updated search was conducted September 7, 2022.

Table 1. Search string used in Web of Science™ database. Each search string was combined with the Boolean operator 'AND'. There were no limits used.

Terms	Search string
Exposure terms: Climate change	TS= ("climate change"/ or "climatic change"/ or "global warming"/ or "climate warming"/ or "global heating"/ or "climate crisis"/ or "climate emergency"/ or "climate hazard*")
Outcome terms: Mental health	TS= (anxiety OR depression OR burnout OR "compassion fatigue" OR anger OR sadness OR despair OR emotion* OR helpless* OR hopeless* OR apathy OR paralysis OR frustration OR guilt OR "mental health" OR "mental illness" OR "mental wellness" OR "mental wellbeing" OR psychosocial OR "psycho-social" OR "child development" OR "adolescent development" OR trauma* OR "pre-traumatic stress" OR "post-traumatic stress" OR "post-traumatic stress disorder" OR ptsd OR "self-injur*" OR bereave* OR (abuse NEAR/1 (substance OR alcohol OR drug)) OR ((emotional* OR mental* OR psychological* OR psychosocial*) NEAR/1 (resilien* OR adapt* OR cop*)) OR "coping behaviour" OR "adaptive behaviour" OR ((stress OR distress) NEAR/1 (emotional OR mental OR psychological)) OR grief OR griev* OR mourn* OR bereav* OR "ecological grief" OR "climate grief" OR "eco-anxiety" OR "climate anxiety" OR "nature-deficit disorder" OR solastalgia)
Population terms: Children and young people	TS= (child*/ or youth/ or juvenile*/ or prepubescen*/ or pre-pubescen*/ or pubescen*/ or pre-adolescen*/ or adolescen*/ or "young people"/ or "young person"/ or "young man"/ or "young woman"/ or "young men"/ or "young women"/ or "young adult"/ or boy/ or boys/ or girl*/ or "younger age group*"/ or "younger generation*"/ or pre-teen*/ or teen*/ or "older children"/ or "emerging adult"/ or "gen* z*"/ or millennial*/ or student*)

2.2.2 Screening and eligibility criteria

Once the database search was conducted, the returned articles were exported to the web-based bibliographic manager Mendeley™ (Mendeley Ltd, London, UK, v1.19.3), which automatically removed duplicates, and the remaining articles were imported to the systematic review software, DistillerSR©. A second duplicate detection was conducted in DistillerSR©, in which the reviewer manually compared and quarantined any duplicates.

Two librarians were consulted during the design of the inclusion and exclusion criteria (Table 2). To be included, articles had to address the intersection of climate change hazards and mental health for children and young people. For the purposes of this review, mental health included a wide range of potential climate change impacts on mental health and wellbeing (Albrecht et al., 2007; Clayton et al., 2017; Cunsolo & Ellis, 2018; Doherty & Clayton, 2011; Ellis & Albrecht, 2017; Middleton et al., 2020; Pihkala, 2018). Articles were included if they covered climate change impacts on mental, emotional, and psychological wellbeing such as ecological grief (Cunsolo & Ellis, 2018) and solastalgia (Albrecht, 2019), as well as general emotions (e.g., anger, sadness, despair) (Clayton et al., 2017; Doherty & Clayton, 2011) and clinical diagnoses (e.g., PTSD) (Clayton et al., 2017). Articles were included if it was indicated

that the mental health outcomes were studied in connection to climate change or a specific climate change hazard or event, as defined by the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2021). Climate change was defined according to the Working Group 1 contribution to the IPCC's Sixth Assessment Report, and included long-term trends in weather, as well as weather and climate extremes (IPCC, 2021; Seneviratne et al., 2021). Furthermore, we included climate hazards (e.g., wildfires, flooding) as per the IPCC Working Group II report (IPCC, 2022). Considering the World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), and the United Nations Population Fund's (UNFPA) definitions of young people, adolescents, and youth (United Nations Department of Economic and Social Affairs (UNDESA), 2013), articles addressing people aged 6-29 years old were included. Articles were excluded if the full text could not be located, or if a full text was not available in English, Spanish, or Portuguese. There were no geographical limitations.

Two levels of screening were conducted in DistillerSR©. In level 1 screening, a researcher screened each title and abstract using a stacked screening form. The form consisted of three questions. If a "no" was indicated for any question, then the article was excluded. A second reviewer screened the title and abstract of excluded articles to confirm exclusion. Any article for which a "yes" and/or "unsure" was indicated for all inclusion criteria proceeded to level 2 screening. In level 2, the entire article was reviewed in full according to the inclusion and exclusion criteria by one reviewer, and a second reviewer confirmed all exclusions. Any conflicts were discussed and resolved between the reviewers, and the level of agreement was calculated.

Table 2. Inclusion and exclusion criteria used to identify published articles on climate change and the mental health of children and young people.

Inclusion	Exclusion
Published online between 2010 and 2022 (screening level 1).	Published online before 2010 (screening level 1).
Published in English, Spanish, or Portuguese (Screening level 2).	Published in a language other than English, Spanish or Portuguese (Screening level 2).
Original article, review, commentary, or editorial published in an academic or trade journal (screening level 1 & 2)[1].	Published theses, blog posts, news articles, and opinion pieces (including viewpoints, debates, perspectives, short correspondences) (screening level 1 & 2).
Children and young people (aged 6-29 years old) are identified as the main population of focus in the article, or in a minimum of five sentences in a commentary or editorial (screening level 1 & 2).	Early childhood (0-5 years old), adults over the age of 29 years, or an age group is not specified (screening level 1 & 2).
The article makes direct reference to the mental health outcomes of climate change hazards for children or young people; or supports and strategies to increase resilience for children or young people (screening level 1 & 2).	The article does not make direct reference to the mental health outcomes of climate change for children or young people; or supports and strategies to increase resilience for children or young people. Or the article focuses on emotional appeals (i.e., measuring emotional responses to a climate change text) (screening level 1 & 2).

2.2.3 Data extraction and analysis

A data extraction form was created in DistillerSR© to manually capture data on article information and study characteristics (type of article, research methods, geographic scope, author and study location), as well as information relevant to the objectives of this review such as population characteristics, climate-mental health interactions, risk and protective factors, and coping and adaptation strategies (Table 3). Data extraction was completed by the first author. The results were exported into Microsoft Excel® to summarize data characteristics and information. Based on the data that were extracted, those articles that included coping strategies became the focus of the qualitative analysis. Then the first author used thematic analysis to explore these articles and identify key themes (Braun et al., 2019; Mayan, 2016). Articles that focused on educational and peer-support coping strategies (identified through data extraction and quantitative analysis) were read in full and relevant themes were highlighted and recorded in

[1] This inclusion/exclusion criterion was determined using Charlesworth Authorship Services' definition of commentary and opinion pieces (Charlesworth Author Services, 2022). Articles explicitly identified as a commentary or editorial were included.

Microsoft Excel®. After themes were identified, the texts were re-visited, and information related to the themes across the articles was recorded into Microsoft Word®. The information was combined into a chart and included in the results of the paper.

Table 3. Data extraction from each included article about climate change and the mental health of children and young people.

Data Extracted	Options
Article Information	
Year of online publication	2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021; 2022
Type of study	Primary; systematic review; non-systematic review; commentary/editorial
Research methods	Quantitative; Qualitative; Mixed
Geographic scope	Local/community level; provincial/state/regional level; National level; International level; Not specified
Author and study location[2]	Country
Population Characteristics	
Age group	School age (6-12)/Elementary-school students; Adolescence (13-17)/High school students; Young Adulthood (18-29); Children, not further specified; Youth or young people, not further specified
Climate-mental health interactions	
Mental health outcomes[3]	Mental health, not further specified; Anxiety; Depression; Trauma, stress, and/or post trauma reactions; Suicide, suicidal ideation, or self-harm; Substance use and abuse; Psychoterratic syndromes (e.g., ecological grief, solastalgia, nature deficit disorder etc.); Social and/or community wellbeing (e.g., interpersonal relationships, social support, sense of belonging, community cohesion, etc.); Emotional/psychological wellbeing; Spiritual and/or cultural wellbeing (e.g., sense of purpose, freedom to practice one's own culture/traditions, etc.)
Projected future climate-mental health interactions	Yes, qualitatively; Yes, quantitatively; No
Climate change hazards	
Hazards[4]	Climate change, not further specified; extreme weather events, not further specified; Temperature; Precipitation; Heat events; Cold events; Air quality; Drought; Flooding; Wildfires; Hurricanes; Tornadoes; Cyclones; Typhoon; Landslide; Ice storm; Snowstorm; Rainstorm; Wildlife changes; Vegetation changes; Sea level rise; Changes to

[2] The location of each author's primary affiliation, as indicated in the published version of the included article, was recorded. For study location, any locations identified in the text or supplementary materials were recorded.

[3] Mental health outcomes were not mutually exclusive, and multiple impacts could be recorded for each article.

[4] Climate hazards were separated into three categories for analysis: climate and weather extremes, slow-onset changes, and climate change (not further specified).

	freshwater access/conditions; Ocean conditions; Ice extent/stability/duration; Coastal erosion; Permafrost changes.
Exposure pathways	
Exposure pathways	Direct; Indirect; Vicarious
Vulnerabilities	
Risk and protective factors	Age; Stages of physiological and/or psychological development; Reliance on parents/caregivers; Larger burden of consequences over their lifetime/long-term; Access to supports and services (e.g. healthcare); Pre-existing health condition(s); Sex/gender; Economic status; Culture; Displacement/migration; Lifestyle factors; Social support networks
Coping/adaptation strategies	
Coping/adaptation strategies	No; Yes, in practice; Yes, suggested future implementation
Institutional and/or regulatory strategies[5]	Enhancing community knowledge; School programs/changes to curriculum; Alternative education programs; Peer-to-Peer support/Activist groups; disaster-preparedness, Clinical therapeutic interventions
Individual strategies[6]	Counselling/therapy; Coping strategies (problem-, meaning-, and emotional-focused); Pro-environmental behaviour/activism
Technological strategies[7]	Social media campaigns
Education-focused coping strategies	
Education-focused coping strategies	Yes; No
Curriculum development, alternative or formal education-based programs, or school-based intervention programs	Changes to curriculum: Increasing climate literacy through climate change education; Emotion-focused climate literacy; Increasing psychoeducational skills and the processing of grief; Hopeful pedagogy, telling alternative stories about the future, foster creative dialogue; School-based interventions for children following climate disasters; Disaster-risk education; Workforce mental health training for tertiary students, healthcare professionals and informal community-based mental health workers; Incorporating alternative forms of education; Incorporating education for "emotional awareness" in ESD in teacher education programs; Mandatory climate change education or ESD in teacher education programs; Teachers should promote meaning-focused and problem-focused coping; Connect students to nature Participate in school strikes for climate; Environmentally friendly practices in the school/classroom; Bring societal actors into the classroom; Promote agency (i.e. encourage action inside and outside the classroom); Programs for parents; Traditional knowledge camps; In-school support for mental health; Professional Development training for teachers

[5] Institutional and/or regulatory (i.e., implemented by institutions, organizations, or governments, such as education programs or communication initiatives)
[6] Individual behaviour changes (i.e., primarily individual behaviours and methods to adapt/cope, such as talking to teachers, family, peers, etc.)
[7]Technological changes (i.e., innovations to improve adaptation/reduce risk, such as social media campaigns)

Party responsible for the change/intervention	Not specified; Teachers/educators; Education systems; Students; Parents; National Parks; Collaboration with other sectors (i.e. municipal/volunteer/non-profit); Mental health professionals; Educational Institutions; Chaplains; Researchers; Elders; School nurses
Resources and financial support	Yes; No

2.3 Results

The search strategy retrieved 2,554 articles after duplicates were removed, and 235 articles met the inclusion criteria and underwent data extraction (Figure 1). Articles included in the review were published in English, Spanish, and Portuguese.

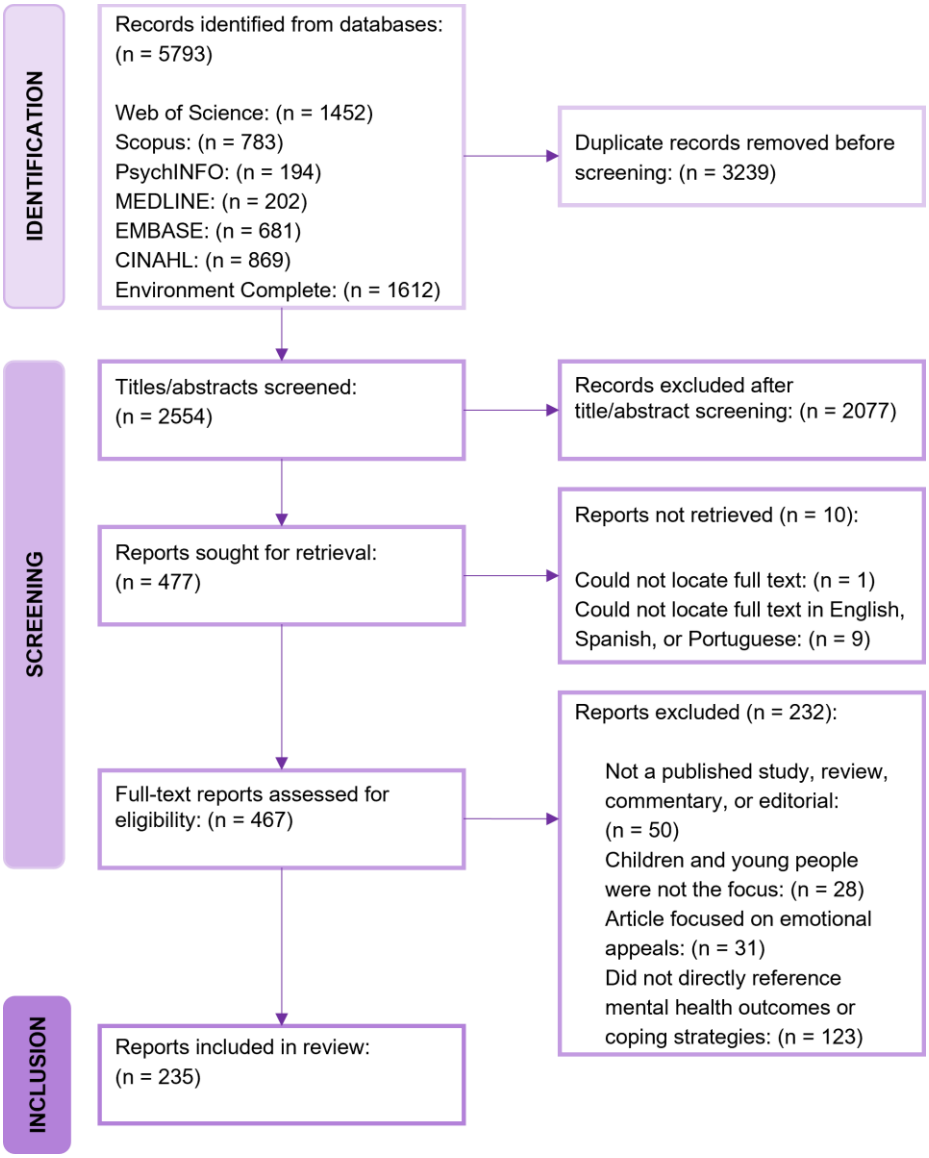

Figure 1. Flow chart illustrating the number of articles identified, screened, and included in the scoping review on climate change and the mental health of children and young people.

2.3.1 Article characteristics

The number of articles increased over time, with the amount published per year doubling between 2017 (n = 6) and 2018 (n = 15). Thirty-one percent of the articles were published in 2022 (Figure 2). Most of the articles included in the review were primary studies (n = 142/235, 60.68%); fewer articles were non-systematic reviews (n = 39/235, 16.59%), systematic reviews (n = 23/235, 9.78%), commentaries/editorials (n = 23/235, 9.78%), or articles published in trade journals (e.g., *The Psychiatric Times*) (n = 8/235, 3.40%). Among, primary research and reviews, many articles were qualitative in nature (n = 88/204/), whereas slightly fewer used quantitative methods (n = 76/204), and only 23.08% (n = 40/204) used a mixed-methods approach.

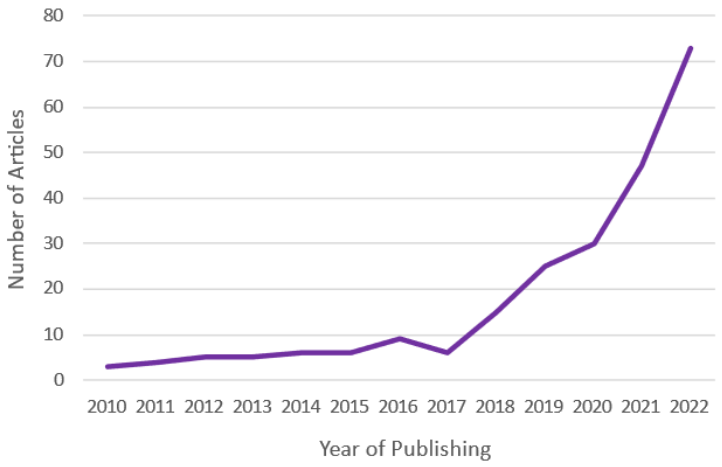

Figure 2. Distribution of articles by the year they were published that were included in the scoping review on climate change and the mental health of children and young people.

Study methodology varied by article type: quantitative methods were most often used among systematic reviews (n = 12/23, 52.17%), whereas a qualitative methodology was used most often in the other article types (Figure 3A). The proportion of article types and methodologies used generally remained consistent over time, except for an increase in articles in trade journals, which were all published between 2019 and 2022.

Most articles included research at the international level (i.e., articles included more than one country) (n = 75/235, 31.91%) or the local/community level (n = 64/235, 27.23%); fewer included research conducted at the national level (n = 49/235, 20.85%) or the regional/state/provincial level (n = 27/235, 11.49%), and some did not specify the geographic scope (n = 20/235, 8.51%). Articles that were international and national in scope used more

quantitative methods (n = 29/75, 38.67%; n = 22/49, 44.89%), whereas articles at the local/community level were mostly qualitative in nature (n = 39/63, 61.90%) (Figure 3B). The proportion of articles within each geographic scope generally remained consistent over time, with an increase occurring in international level research.

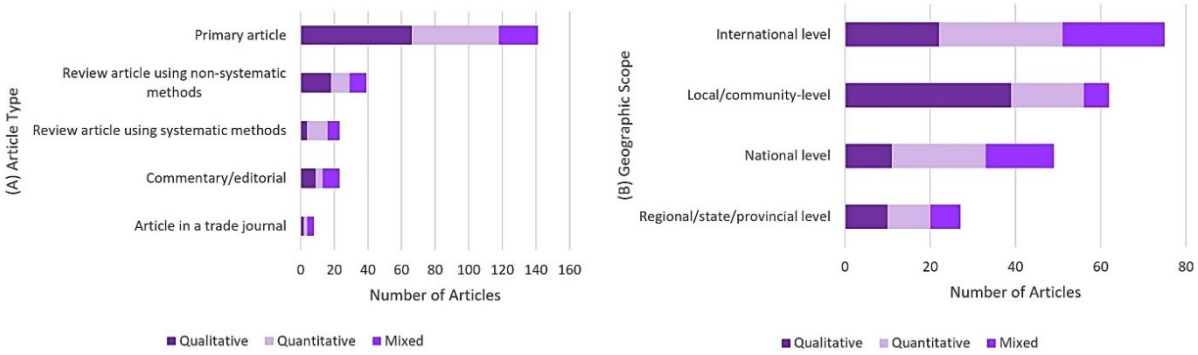

Figure 3. Study methodology by (A) type of article and (B) geographic scope included in the scoping review on climate change and the mental health of children and young people.

The location of the authors' affiliations included North America (n = 103), Europe (n = 83), Oceania (n = 47), East Asia (n = 11), Southeast Asia (n = 11), Latin America (n = 6), Africa (n = 6), and South Asia (n = 6), and West Asia (n = 3) (Figure 4A). Authors with affiliations from the United States published the most articles included in the review (n = 75/235, 31.91%) followed by Australia (n = 43/235, 18.29%). Regionally, most studies collected data in North America (Canada, United States, Mexico) (n = 95/235, 40.42%) followed by Europe (n = 70/235, 29.78%), Oceania (n = 59/235, 25.11%), South Asia (n = 27/235, 11.49%), Southeast Asia (n = 23/235, 9.78%), Africa (n = 21/235, 8.94%), Latin America (n = 19/235, 8.08%), East Asia (n = 18/235, 7.66%), West Asia (n = 9/235, 3.83%) and Central Asia (n = 1/235, 0.43%) (Figure 4B).

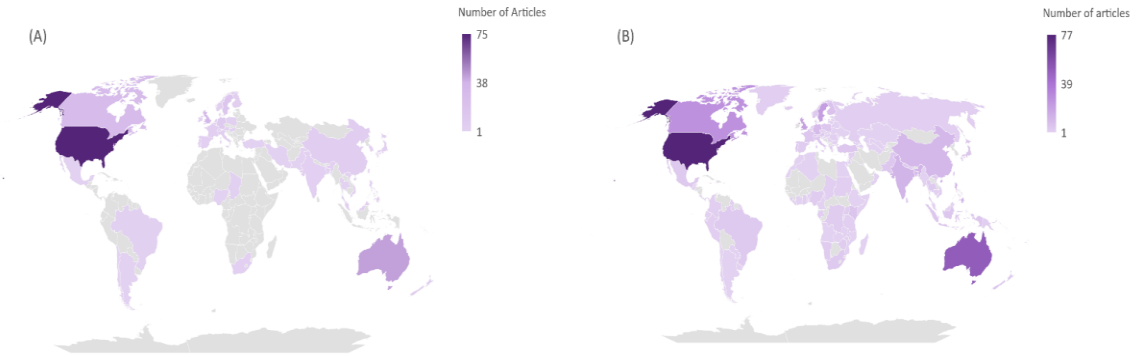

Figure 4. Geographic distribution of (A) author affiliation and (B) study location of articles included in the scoping review on climate change and the mental health of children and young people.

2.3.2 Climate change hazards

Most articles referred broadly to climate change (*n* = 132/235, 56.17%), and the most frequently reported climate hazards were flooding (*n* = 50/235, 21.27%), drought (*n* = 46/235, 19.57%), temperature (*n* = 43/235, 18.29%), and wildfires (*n* = 39/235, 16.59%).

The climate hazards examined within an article varied based on the type of research. Primary research mostly examined slow onset changes, whereas all other types of articles mostly examined whether and climate extremes. For example, primary articles reported most frequently on temperature (*n* = 28/143, 19.58%) and wildlife changes (*n* = 21/143, 14.69%). Weather and climate extremes, however, were examined more frequently than slow-onset changes in all other article types: systematic (*n* = 80/105, 76.19%) and non-systematic reviews (*n* = 101/125, 80.80%), commentaries/editorials (*n* = 58/67, 86.58%) and articles in trade journals (*n* = 18/22, 81.81%). For example, flooding was most often reported in systematic reviews (*n* = 10/23, 43.48%), non-systematic reviews (*n* = 13/39, 33.33%), and commentaries/editorials (*n* = 7/23, 30.43%).

When analyzing how the type of climate hazards reported varied by geographic scope, we found that most articles included data on multiple countries and primarily looked at weather and climate extremes. Regionally, drought and flooding were the most frequently reported climate hazards in Europe (*n* = 13/71, 18.31%; *n* = 13/71, 18.31%), Africa (*n* = 11/21, 52.38%; *n* = 9/21, 42.85%), West Asia (*n* = 5/10, 50%; *n* = 4/10, 40%), and South Asia (*n* = 11/27, 40.74%; *n* = 16/27, 59.26%). The most common hazards in literature from North America were flooding (*n* = 25/93, 26.88%), wildfires (*n* = 21/93, 22.58%), and hurricanes (*n* = 21/93, 22.58%). Drought (*n* = 16/58, 27.58%) and wildfires (*n* = 15/58, 25.86%) were the most commonly reported hazards in Oceania; flooding (*n* = 9/21, 42.86%) and hurricanes (*n* = 9/21, 42.86%) were most common in Latin American literature; flooding (*n* = 6/19, 31.58%) and temperature (*n* = 6/19, 31.58%) were most common in East Asia; and flooding (*n* = 9/21, 42.86%) and typhoons (10/21, 47.62%) were most common in literature on Southeast Asia. Most of the articles covering slow-onset changes were conducted at the local/community level (Figure 5).

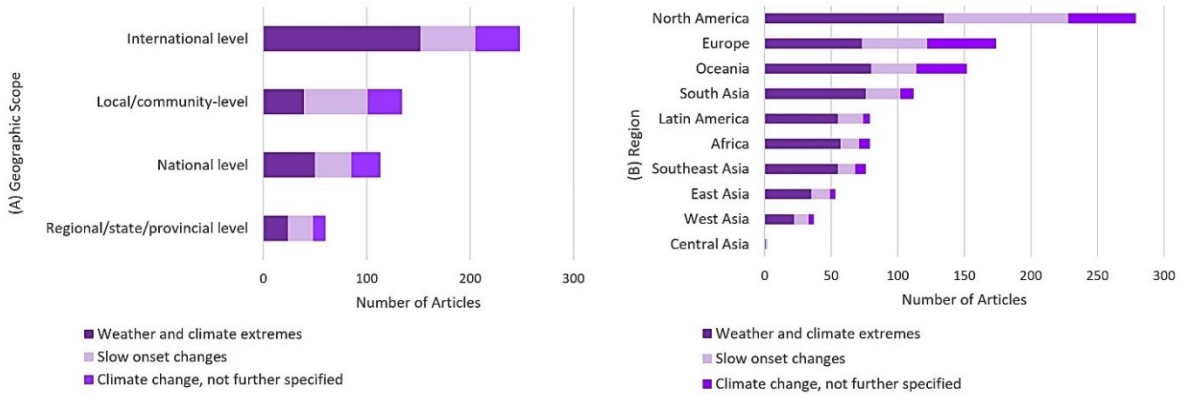

Figure 5. Climate hazards reported by (A) geographic scope and (B) region in the articles included in the scoping review on climate change and the mental health of children and young people.

2.3.3 Climate change and mental health risks

Reported mental health risks varied by study methodology, geographic scope, and climate change hazard. Articles predominantly reported on past or current climate-mental health impacts, and only three articles presented future projected impacts. Figure 6 demonstrates how mental health outcomes varied by climate hazard. Most of the included articles reported on impacts to emotional/psychological wellbeing (n = 189/235, 80.43), followed by anxiety (n = 118/235, 50.21% and depression (n = 79/235, 33.61%). Emotional/psychological outcomes included anger, sadness, distress, sleeplessness, burnout, aggressive behaviour, hopelessness, and several underexplored outcomes, such as climate change links to bedwetting, anti-social behaviour, eating disorders, and attachment styles (Barkin et al., 2021; Canelón & Boland, 2020; Mambrey et al., 2019; Vineis, 2010). The least-reported mental health risks were psychoterratic syndromes (n = 9/235, 3.83%) and substance use and abuse (n = 20/235, 8.51%) (Figure 6).

		Mental Health Outcome									
		Substance use and abuse	Suicide, suicidal ideation, or self-harm	Mental health, not further specified	Spiritual and/or cultural wellbeing	Psychoterratic syndromes	Trauma, Stress, Pre/Post-trauma Reactions	Depression	Social and/or community wellbeing	Anxiety	Emotional/ psychological wellbeing
Climate Hazard	Landslide	0	0	2	0	0	0	0	0	0	0
	Ice storm	0	0	0	0	0	1	1	0	0	1
	Cold events	0	0	1	0	0	2	1	1	1	1
	Snowstorm	0	0	1	0	0	2	1	1	1	1
	Rainstorm	0	0	1	0	0	3	1	1	1	1
	Permafrost changes	1	1	0	3	0	0	0	3	0	1
	Ocean conditions	1	1	1	2	2	2	2	1	2	3
	Coastal erosion	2	1	0	2	1	2	2	3	3	4
	Tornadoes	3	2	1	0	0	6	6	4	6	5
	Cyclone	1	0	2	0	0	4	4	2	5	6
	Changes to freshwater access/conditions	2	0	2	6	6	3	4	5	5	6
	Typhoon	0	0	4	0	0	5	5	2	9	8
	Ice extent/stability/duration	4	1	2	6	4	1	2	6	4	9
	Air quality	2	4	2	0	3	8	9	3	10	15
	Vegetation changes	3	3	3	7	7	3	8	10	9	19
	Sea level rise	3	4	4	5	6	7	8	7	11	19
	Precipitation	5	6	3	6	5	9	10	13	11	20
	Wildlife changes	4	1	2	8	8	5	7	12	13	22
	Hurricanes	8	8	5	3	3	22	21	16	21	23
	Heat events	7	5	4	4	5	14	17	15	18	28
	Temperature	9	15	9	8	9	10	18	17	17	29
	Wildfires	8	6	5	6	6	22	20	16	28	35
	Drought	8	9	12	8	7	23	22	21	29	39
	Flooding	8	9	6	7	6	31	26	22	28	40
	Extreme weather events, not further specified	6	11	11	7	8	31	25	23	31	42
	Climate change, not further specified	5	8	13	15	17	24	32	34	66	117

Figure 6. The intersection between climate change hazards and mental health risks as reported in articles included in the scoping review on climate change and the mental health of children and young people.

Where geographic scope was specified, depression and anxiety were often reported at the regional/state/provincial level (n = 14/27; n = 21/27 respectively). Emotional/psychological wellbeing (n = 55/63), social and/or community wellbeing (n = 16/63), spiritual and/or cultural wellbeing (n = 9/63), and substance use and abuse (n = 7/63)) were mostly reported at the local/community level more often than other mental health outcomes.

Articles reporting on emotional/psychological outcomes (n = 88/188), anxiety (n = 46/117), social/community wellbeing (n = 27/68), spiritual/cultural wellbeing (n = 12/26), and psychoterratic syndromes (n = 5/9) were mostly qualitative in nature, whereas the most articles on trauma, stress, pre/post-trauma reactions (n = 30/69), depression (n = 42/79), suicide, suicidal ideation, or self-harm (n = 22/31), and substance use and abuse (n = 9/20) were quantitative articles. Most mental health risks were reported in the context of weather and climate extremes, apart from spiritual/cultural wellbeing and psychoterratic syndromes, which were more often linked with slow-onset changes (Figure 7A).

Most mental health outcomes were reported as the result of direct exposure to climate hazards (n = 131/235, 55.74%). However, over half of the reported psychoterratic syndromes resulted from vicarious exposure (n = 7/9, 77.78%) and trauma, stress, pre/post-trauma reactions resulted from direct (n = 61/69, 88.41%) and indirect exposures (n = 37/69, 53.62%). Of the mental health outcomes reported as a result of vicarious exposure to climate hazards, emotional/psychological wellbeing (n = 90/189, 47.62%), anxiety (n = 57/118, 48.30%), social/community wellbeing (n = 31/68, 45.58%), and depression (n = 28/79, 35.44%) were most frequently associated. The most common age group reported in the included articles was adolescents ages 13-17 (n = 122/235), followed by young adults ages 18-29 (n = 104/235), and children ages 6-12 (n = 84/235). Across all age groups, impacts from weather and climate extremes were most frequently reported. Outcomes from slow-onset changes were reported most among children and young people ages 6-12 (n = 100/242, 41.32%) and 18-29 (n = 84/230, 36.52%) (Figure 7B).

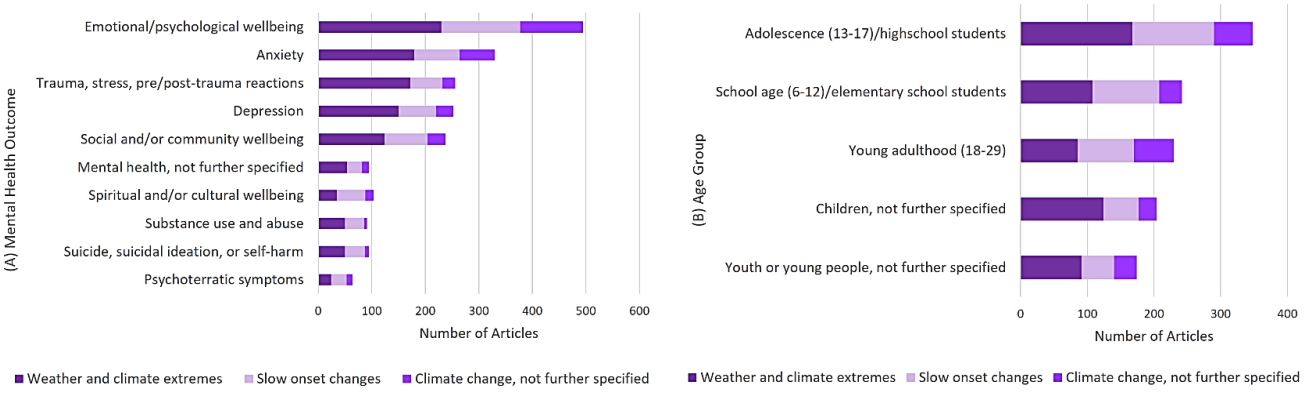

Figure 7. Climate hazards reported by (A) mental health risk and (B) age group in the articles included in the scoping review on climate change and the mental health of children and young people.

2.3.3.1 Factors that influence climate change and mental health risks

Factors that make children and young people vulnerable to the mental health impacts of climate change were reported in the majority of included articles (n = 173/235, 73.62%). The most frequently reported factor that increased mental health risks for children and young people was age (n = 135/173). Age includes other factors such as stages of psychological and physiological development (n = 42), experiencing a larger burden of consequences over their lifetime (n = 49), and a reliance on parents/caregivers (n = 44). The next most frequently

identified factor was identifying as female, which included dimensions of sexual violence and forced early marriages (n = 43/173); displacement (n = 56/173); economic insecurity (n = 62/173); and disrupted social support networks (n = 49/173) (Figure 8A). Having a strong social support network was the most recurrent protective factor (n = 58/91, 63.74%) for all mental health risks (Figure 8B).

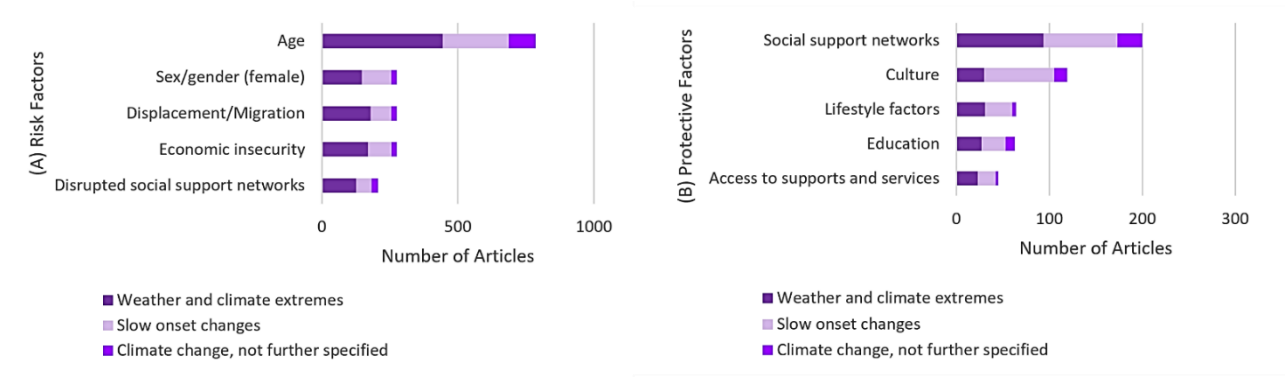

Figure 8. Five most reported factors that (A) increased and (B) decreased mental health risks, and their association with each climate hazard in the articles included in the scoping review on climate change and the mental health of children and young people.

2.3.3.2 Strategies to reduce climate change and mental health risks

Most articles mentioned or reported on coping/adaptation strategies and interventions (n = 181/235, 77.02%) to reduce climate change and mental health risks for children and young people. Strategies were most often institutional/regulatory in nature (n = 168/181, 92.82%) for all mental health risks, predominantly school programs/changes to curriculum (n = 88/181, 48.62%), enhancing community knowledge (n = 70/181, 38.67), and peer-to-peer support/activist groups (n = 55/181, 30.38%). Other reported institutional/regulatory strategies included involving young people in decision-making (n = 50/181, 27.62%), clinical therapeutic interventions (n = 47/181, 25.97%), disaster-preparedness (n = 42/181, 23.20%), and alternative education programs (n = 37/181; 20.44%). Just under half of the strategies mentioned in articles were individual behaviour changes (n = 113/235, 48.08%), with the majority being pro-environmental behaviour/activism (n = 47/113, 41.59%), problem-, meaning-, and emotional-focused coping (n = 40/113, 35.39%), and counselling/therapy (n = 18/113, 15.93%). Lastly, few

articles mentioned technological interventions (n = 24/235, 10.21%), the majority of which were social media campaigns (n = 11/24, 45.83%) (Figure 9).

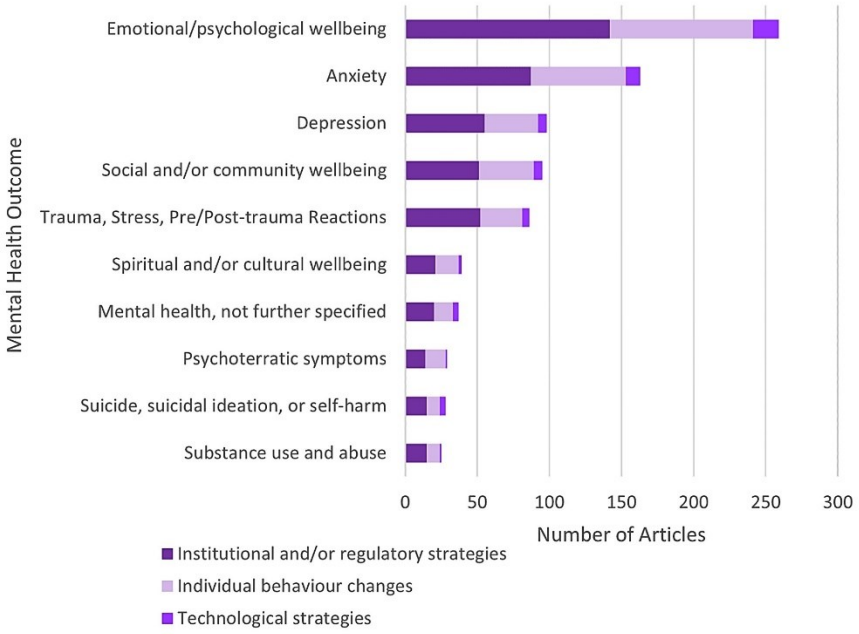

Figure 9. Type of protective strategy varied by mental health outcome in the articles included in the scoping review on climate change and the mental health of children and young people.

Our review identified that being of younger age, when there is still ongoing psychological and physiological development, a reliance on parents/caregivers, and a larger burden of exposure and consequences over their lifetime, increases the risk for climate-sensitive mental health outcomes (Figure 10). Economic status and displacement were also identified as factors that influence vulnerability of children and young people (Figure 10). There was little mention of the impact of LGBTQ+ identity (n = 4/235, 1.70%); living in an urban (n = 11/235, 4.68%), rural/remote (n = 18/235, 7.66%), or coastal community (n = 10/235, 4.25%); and ethnicity/race (n = 20/235, 8.51%) on climate-sensitive mental health outcomes for children and young people.

The most common age group reported in the included articles was adolescents ages 13-17 (n = 122/235, 51.91%), followed by young adults ages 18-29 (n = 104/235, 44.25%), and children ages 6-12 (n = 84/235, 35.74%). Adolescents were the most commonly reported age group for each mental health outcome, except for spiritual/cultural wellbeing and psychoterratic syndromes, which were most often associated with young adults (n = 13/26, 50%; n = 4/9,

44.44%) (Figure 10). The protective strategies most frequently mentioned in articles were school programs and changes to curriculum, enhancing community knowledge, and peer-to-peer support/activist groups (Figure 10). For example, recommendations to enhance community knowledge included: teaching communities psychological first-aid skills; developing mental health literacy and reducing stigma; participating in community projects; and offering accessible climate communication.

School programs and changes to educational curricula were recommended strategies for reducing the impact of climate-sensitive mental health outcomes for children and young people (Figure 10). Many articles discussed curriculum development, alternative or formal education-based programs, or how education (i.e., school-based intervention programs) can support students in coping with climate-related emotions (n = 101/235, 42.98%). Incorporating emotion-focused climate literacy (n = 41/101, 40.59%) and changes to curriculum (n = 41/101, 40.59%) were the most mentioned strategies. Teachers and educators were identified primarily as responsible for implementing these strategies (n = 70/101, 69.31%), but a limited number of articles mentioned resources and financial support for these initiatives (n = 21/101, 20.79%). implementing these strategies (n = 70/101, 69.31%).

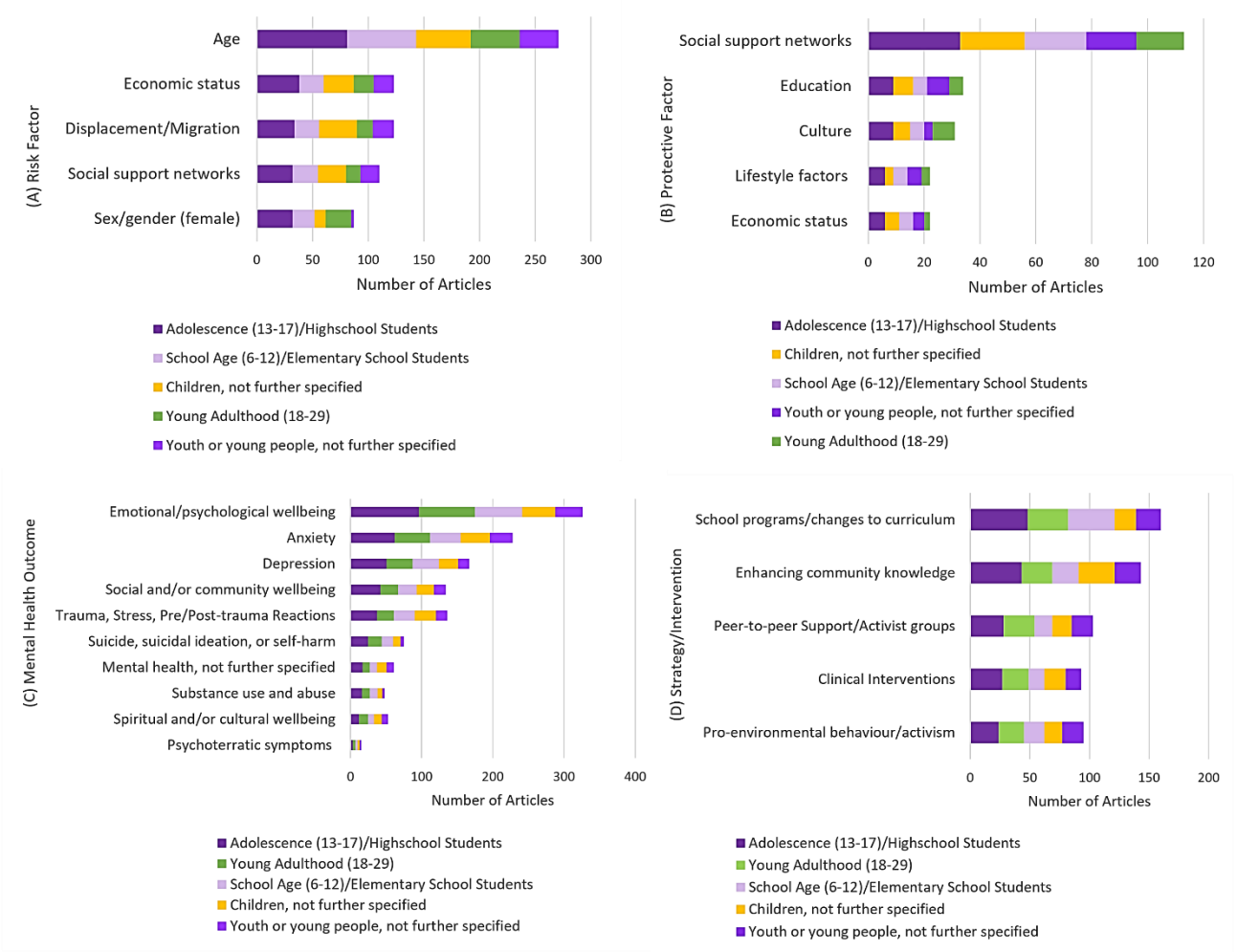

Figure 10. (A) Risk and (B) protective factors, (C) mental health outcomes, and (D) strategy/intervention varying by age group in the articles included in the scoping review on climate change and the mental health of children and young people.

Strategies/interventions reported in articles incorporated examples of meaning-focused coping; alternative forms of education; peer support groups; collective action and community support; adult mentorship; and school support that can be implemented to support children and young people (Table 4).

Table 4. Coping strategies/interventions reported in articles included in the scoping review on climate change and mental health among children and young people.

Strategy/Intervention	Definition	References
Meaning-focused coping	Without denying difficult emotions, there is an effort to activate positive feelings through positive re-appraisal (acknowledging the stressor but still being able to reverse their perspective), building trust in external sources (teachers, caregivers, societal actors, religion/spirituality), and finding ways to engage meaningfully in actions to address climate change.	(Barkin et al., 2021; Berse, 2017; Boykoff & Osnes, 2019; S. E. L. Burke et al., 2018; Chawla, 2020; Ojala, 2012a, 2013; Sanson et al., 2019)
Alternative forms of education	Place-, arts-, and narrative-based education, as well as comedy, music, and dance can be used to build community, resilience, agency, and encourage the expression and processing of emotions while communicating and evaluating complex concepts like climate change.	(Bentz, 2020; Hendersson & Wamsler, 2020; Malena-Chan, 2019; Osnes et al., 2019; Plummer et al., 2022; Prno et al., 2011; Sanson et al., 2019; Tai, 2018; Verlie, 2019)
Peer support groups	Formal and informal support groups wherein youth can connect, interact, debrief, process climate emotions, and learn effective coping strategies in a community setting.	(Carnie et al., 2011; Clayton & Karazsia, 2020; Crandon et al., 2022; Cunsolo Willox et al., 2012; Devonald et al., 2022; Frydenberg, 2020; Godsmark, 2020; Klocker et al., 2021; T. Ma et al., 2022; Udas et al., 2021; Verlie et al., 2021; Witt et al., 2022)
Collective action and community support	Collective action and engagement are important to increasing resilience, agency, and fostering a sense of belonging, connection, and hope, for example by participating in climate action with peers or via community events.	(Budziszewska & Kalwak, 2022; S. E. L. Burke et al., 2018; Chawla, 2020; Flanagan, 2022; Gislason et al., 2021; Nairn, 2019; Ojala, 2012b, 2017, 2022; Pihkala, 2020; Spyrou et al., 2022; Verlie, 2019)
Adult mentorship	Adults can limit the burden of coping with climate emotions on youth by mentoring and facilitating opportunities to express, validate, and normalize emotions, build community, and participate in recreational and pro-environmental activities.	(Budziszewska & Kalwak, 2022; Carnie et al., 2011; Kornbluh et al., 2022; MacKay et al., 2020; Pihkala, 2020; Sciberras & Fernando, 2022; Udas et al., 2021; Vandaele & Stalhammar, 2022; Verlie, 2019)
School support	Schools can provide resources for coping/psychoeducational skills, pastoral care, support groups, mental health resources, screening for mental health conditions, normalizing climate emotions, teaching stress reduction and grounding techniques.	(Carnie et al., 2011; Godsmark, 2020; Johannessen, 2022; Karaliuniene et al., 2022; Parry et al., 2022; Reiner & Haas-Howard, 2022; Vergunst & Berry, 2021)

2.4 Discussion

This systematic scoping review provided a comprehensive examination of the various climate change and mental health risks and coping strategies for children and young people reported in academic literature. Articles included in this review identified that children and young people are experiencing impacts to emotional/psychological wellbeing such as grief, anger, hopelessness, and distress; anxiety; and depression in response to climate change and

climate and weather extremes such as flooding, drought, temperature, and wildfires. Age, gender, displacement, economic insecurity, and disrupted social networks increase vulnerability to climate-sensitive mental health outcomes. Across all age groups, strong social support networks was the most frequently reported protective factor. Following social support, culture was most commonly reported as a protective factor for young adults, whereas education was most reported for children, and education and culture were both frequently reported for adolescents. Additionally, school programs and changes to curriculum, enhancing community knowledge, and peer-to-peer support/activist groups may be helpful in reducing climate change and mental health risks for children and young people.

The articles identified in our review largely focused on child and youth populations in the Global North, which is similar to trends in previously published climate change and health research writ large (i.e. for both physical and mental health and climate change trends) (Berrang-Ford et al., 2021; Harper et al., 2021; Rocque et al., 2021; Verner et al., 2016). The unbalanced focus of published literature on the Global North creates significant inequities in understanding and capturing potential responses for children and young people in other parts of the world where climate change is experienced deeply (Sharpe & Davison 2022; Epstein et al., 2020; Arpin et al., 2021). We identified research that examined climate change impacts on anxiety, depression, stress, grief, anger, frustration, helplessness, and sleeplessness, which were also identified in other reviews (Gislason et al., 2021; Hwong et al., 2022; Martin et al., 2022; van Nieuwenhuizen et al., 2021). However, we also identified literature that examined several underexplored outcomes, such as climate change links to bedwetting, anti-social behaviour, eating disorders, and attachment styles (Barkin et al., 2021; Canelón & Boland, 2020; Mambrey et al., 2019; Vineis, 2010). The ability to identify and understand the varying climate-sensitive outcomes among children and young people, including those that are currently underexplored, is essential for prompt intervention from those in supportive roles such as parents/caregivers, teachers, and mental health professionals.

Similar to climate change and child mental health research trends in low and middle income countries (Sharpe & Davison, 2022) and climate change and mental health research in adults (Aylward et al., 2022; Hwong et al., 2022), we found that the literature focused heavily on climate and weather extremes such as flooding and wildfires and the resulting impacts on mental health, whereas there was limited research on slow-onset changes such as changes to permafrost,

ocean conditions, and coastal erosion and how these impact the mental health of children and young people. Given that all climate hazards are expected to increase, and literature in our review identified that slow-onset changes particularly affect spiritual and cultural wellbeing and psychoterratic syndromes, this highlights an important area of research that is essential to the development of supports and strategies to protect the mental health and wellbeing of children and young people in varying cultural and geographic contexts. For example, in Kugluktuk, Nunavut, Canada, traditional knowledge camps connect youth and elders to transfer land-based knowledge and skills (Prno et al., 2011), which were also found to be protective factors for Inuit youth mental health in Nunatsiavut, Newfoundland and Labradaor, who are experiencing changes to ice conditions, wildlife, and vegetation (Petrasek MacDonald et al., 2015). This, therefore, demonstrates the importance of connecting to the land for spiritual and cultural wellbeing, and highlights the need for more research on the effects of slow-onset changes.

Our review synthesized literature that explored supports and strategies to increase the resilience of children and young people and protect them from negative mental health outcomes related to climate change. For example, we identified and synthesized articles that described school programs and changes to curriculum as key adaptation strategies. Teachers and educators were primarily identified in articles as being responsible for implementing education-focused changes to support students in coping with climate emotions; however, limited articles discussed resources and training for teachers and educators. Due to a lack of training and curricula, educators were described as being ill-prepared to teach about climate change; to acknowledge students' climate-related emotions and facilitate safe spaces for discussion; and to support students' mental health (J. Ma & Chen, 2023; Marks et al., 2023; Schatz, 2021; Shelemy et al., 2019). A lack of specificity in climate change curriculum and insufficient educational background places the responsibility on teachers, who have limited time, resources, and professional development opportunities, to incorporate extra material (J. Ma & Chen, 2023; Marks et al., 2023; Schatz, 2021). Without the necessary resources and training to guide educators on how to accurately and sensitively bring climate change into the classroom, children and young people miss an important opportunity to develop a climate-aware social support network. This is concerning for the immediate and long-term wellbeing of both students and educators, who are not prepared, nor have developed the skills, to handle climate-sensitive emotions and psychological reactions.

Research on supporting students' mental health in schools also documented an unmet demand for more training (Shelemy et al., 2019; Schatz, 2021). Research included teachers' calls for guidance on how to identify warning signs of mental health problems in students and practical strategies that can be implemented and easily adapted in the classroom (Shelemy et al., 2019). Additionally, teachers emphasized the need for clear communication with, and involvement from, both parents and mental health services in schools (Shelemy et al., 2019). Clearly, there is a disconnect between strategies outlined in literature and their implementation in the classroom. To repair this disconnect, institutions, educational departments, ministries of education, and provincial, state, and federal governments should invest in training programs and resources for students, staff, faculty, and instructors that offer evaluated, effective strategies to protect students' wellbeing (Marks et al., 2023; Schatz, 2021; Shelemy et al., 2019). Additionally, curricula should be context-specific, prioritizing local knowledge, resources, and experiences (J. Ma & Chen, 2023; Schatz, 2021). Research shows that there is an opportunity to support students with the mental health impacts of climate change in schools, and that the main actors—teachers—do not feel prepared to tackle this challenge. If teachers and educators are expected to support students with climate-sensitive mental health challenges, then a combined effort from researchers, educational institutions, governing bodies, parents, mental health professionals, and children and young people is required for teachers and educators to effectively implement strategies. Prioritizing training and curricula, with sufficient financial resources, will help students build their resilience and adaptive capacity to the worsening climate crisis.

We also identified literature that explored the importance of peer-to-peer support (e.g., Chawla, 2020; Frydenberg, 2020; Godsmark, 2020; Heeren et al., 2022; Makenzie MacKay et al., 2020; Nairn, 2019; Osnes et al., 2019; Panu Pihkala, 2020; B Verlie, 2019). As an adaptation and mitigation strategy both within and outside of schools, literature in our review mentioned peer support as a protective factor for child and youth mental health and wellbeing. Peer support initiatives, group connection, community-based climate groups, community events, and activism are influential in building resilience (Longman et al., 2023). Community-oriented interventions, such as climate cafés and the Good Grief Network support groups, have been successful at validating students' emotions and fostering peer support (Pellitier et al., 2023). There is limited research on the effectiveness of peer support groups in improving mental health (Lyons et al., 2021); however, reviews have found that group peer support has benefits for personal recovery,

can improve self-efficacy and empowerment, and has a positive effect on quality of life and feelings of hope among individuals with mental health conditions (Bellamy et al., 2017; E. Burke et al., 2019; Lyons et al., 2021). The program included six weekly sessions led by a trained student volunteer, which focused on building mental health literacy, sharing self-care strategies, and generating behavioural change by setting implementation intentions (Byrom, 2018). Mental health impacts are expected to increase as climate change accelerates, and now is an important time to invest in peer support spaces as a climate change adaptation strategy that protects mental health. For example, universities can provide staff and resources to offer climate cafés, emotion-focused peer support spaces, (University of Guelph, 2023), and community groups can prioritize youth-led initiatives and opportunities to foster peer support among children and young people (Climate Psychology Alliance, 2023; Good Grief Network, 2023; Youth Climate Corps British Columbia, 2023).

Peer group support is a promising strategy; however, we found limited research on the effectiveness of different types of peer support spaces and the qualities of the spaces that make them helpful for children and young people. More research is needed to fully characterize and understand the potential of varying climate-aware peer support spaces. For example, future research can explore the benefits of drop-in spaces compared to multi-week programs; the role of mental health professionals in climate-focused peer support spaces; and what types of activities help foster relationships between youth, support them in sharing and honoring their climate emotions, and encourage meaningful action. Future studies should use experiential knowledge by researchers with lived experience of peer support, in addition to meta-analyses of randomized control trials to measure the effectiveness of different aspects of peer support spaces (Gillard, 2019). Research emphasizes that climate emotions are an expected response to the climate crisis (Hickman, 2020). Peer support interventions therefore should focus on relationships and community instead of reflecting a medical model of mental health in which individual change is prioritized by highlighting that there is something wrong that needs to be fixed (Gillard, 2019).

Education and peer support are two strategies to adapt and mitigate mental-health related harm related to climate change. These strategies are examples of mitigation and adaptation that complement one another and could work synergistically (Klein et al., 2007). Both strategies also highlight the importance and positive effect of relational interventions on climate-sensitive mental health outcomes for children and young people. Investing in these social and institutional

resources could advance climate change mitigation policies and increase adaptive capacity by addressing psychological barriers to change and increasing agency (Creutzig et al., 2022).
Our review is a comprehensive synthesis of academic literature on how children and youth are responding mentally and emotionally to climate change. However, there are some limitations of this review. The search strings were in English, and while there were no exclusion criteria based on language, relevant articles that did not have an English abstract, keywords, or full text may not have been captured. Additionally, due to time and resource restrictions, only articles written in English, Spanish, and Portuguese were included in the review based on reviewers' language fluency. This may have impacted the results of the review by not equally highlighting literature from countries where English, Spanish, and Portuguese are not predominantly spoken. Given that these countries are most likely within the Global South, this review could be missing information on climate change and the mental health of children and young people in some of the most vulnerable geographic locations. Additionally, the purpose of this scoping review was not to analyze the quality of research on climate-sensitive mental health outcomes for children and young people, and as such we cannot comment on the quality or rigor of the articles.

2.5 Conclusion

Children and young people have increased vulnerabilities to climate change and the consequent impacts on mental health and wellbeing. Research identified in our scoping review shows that age, economic instability, gender, and a lack of access to services and social support can influence the severity and frequency of these climate-sensitive outcomes. With climate and weather extremes and slow-onset changes expected to increase globally, acknowledging and understanding children and young people's emotional and psychological responses to climate change is imperative. Therefore, our review contributes a comprehensive analysis of climate-mental health research that explores how individual, community, and institutional-level strategies and programs, such as emotion-focused climate literacy and peer support spaces, can work together to provide youth with the resources and support needed to process these responses and envision a healthy future.

References

Albrecht, G. A. (2019). *Earth Emotions: New Words for a New World*. Cornell University Press.

Albrecht, G. A., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The Distress Caused by Environmental Change. *Australasian Psychiatry*, *15*, S95–S98. https://doi.org/10.1080/10398560701701288

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Aylward, B., Cunsolo, A., Vriezen, R., & Harper, S. L. (2022). Climate change is impacting mental health in North America: A systematic scoping review of the hazards, exposures, vulnerabilities, risks and responses. *International Review of Psychiatry*, *34*(1), 34–50. https://doi.org/10.1080/09540261.2022.2029368

Barkin, J. L., Buoli, M., Curry, C. L., von Esenwein, S. A., Upadhyay, S., Kearney, M. B., & Mach, K. (2021). Effects of extreme weather events on child mood and behavior. *Developmental Medicine and Child Neurology*, *63*(7), 785–790. https://doi.org/10.1111/dmcn.14856

Bellamy, C., Schmutte, T., & Davidson, L. (2017). An update on the growing evidence base for peer support. *Mental Health and Social Inclusion*, *21*(3), 161–167. https://doi.org/10.1108/MHSI-03-2017-0014

Benevolenza, M. A., & DeRigne, L. (2019). The impact of climate change and natural disasters on vulnerable populations: A systematic review of literature. *Journal of Human Behavior in the Social Environment*, *29*(2), 266–281. https://doi.org/10.1080/10911359.2018.1527739

Bentz, J. (2020). Learning about climate change in, with and through art. *Climatic Change*, *162*(3), 1595–1612. https://doi.org/10.1007/s10584-020-02804-4

Berberian, A. G., Gonzalez, D. J. X., & Cushing, L. J. (2022). Racial Disparities in Climate Change-Related Health Effects in the United States. *Current Environmental Health Reports*, *9*(3), 451–464. https://doi.org/10.1007/s40572-022-00360-w

Berrang-Ford, L., Sietsma, A. J., Callaghan, M., Minx, J. C., Scheelbeek, P. F. D., Haddaway, N. R., Haines, A., & Dangour, A. D. (2021). Systematic mapping of global research on climate and health: a machine learning review. *The Lancet Planetary Health*, *5*(8), e514–e525. https://doi.org/10.1016/S2542-5196(21)00179-0

Berry, H. L., Bowen, K., & Kjellstrom, T. (2010). Climate change and mental health: A causal pathways framework. *International Journal of Public Health*, *55*(2), 123–132. https://doi.org/10.1007/s00038-009-0112-0

Berse, K. (2017). Climate change from the lens of Malolos children: perception, impact and adaptation. *Disaster Prevention and Management*, *26*(2), 217–229. https://doi.org/10.1108/DPM-10-2016-0214

Boykoff, M., & Osnes, B. (2019). A Laughing matter? Confronting climate change through humor. *Political Geography*, *68*, 154–163. https://doi.org/10.1016/j.polgeo.2018.09.006

Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. *Handbook of Research Methods in Health Social Sciences*, 843–860. https://doi.org/10.1007/978-981-10-5251-4_103

Budziszewska, M., & Kalwak, W. (2022). Climate depression. Critical analysis of the concept. *Psychiatria Polska*, *56*(1), 171–182. https://doi.org/10.12740/PP/127900

Burke, E., Pyle, M., Machin, K., Varese, F., & Morrison, A. P. (2019). The Effects of Peer Support on Empowerment, Self-Efficacy, and Internalized Stigma: A Narrative Synthesis and Meta-Analysis. *Stigma and Health*, *4*(3), 337–356. https://doi.org/10.1037/sah0000148.supp

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/s11920-018-0896-9

Byrom, N. (2018). An evaluation of a peer support intervention for student mental health. *Journal of Mental Health*, *27*(3), 240–246. https://doi.org/10.1080/09638237.2018.1437605

Canelón, S. P., & Boland, M. R. (2020). A systematic literature review of factors affecting the timing of Menarche: The potential for climate change to impact women's health. *International Journal of Environmental Research and Public Health*, *17*(5). https://doi.org/10.3390/IJERPH17051703

Carnie, T.-L., Berry, H. L., Blinkhorn, S. A., & Hart, C. R. (2011). In their own words: Young people's mental health in drought-affected rural and remote NSW. *Australian Journal of Rural Health*, *19*(5), 244–248. https://doi.org/10.1111/j.1440-1584.2011.01224.x

Charlesworth Author Services. (2022). *Your point of view: Writing Perspective, Opinion and Commentary articles*. https://www.cwauthors.com/article/writing-perspective-opinion-and-commentary-articles

Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, *2*(3), 619–642. https://doi.org/10.1002/pan3.10128

Cissé, G., McLeman, R., Adams, H., Aldunce, P., Bowen, K., Campbell-Lendrum, D., Clayton, S., Ebi, K. L., Hess, J., Huang, C., Liu, Q., McGregor, G., Semenza, J., & Tirado, M. C. (2022). Health, Wellbeing, and the Changing Structure of Communities. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1041–1170). Cambridge University Press.

Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*, *69*. https://doi.org/10.1016/j.jenvp.2020.101434

Clayton, S., Manning, C. M., Krygsman, K., & Speiser, M. (2017). *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*.

Climate Psychology Alliance. (2023). *Youth Support Space*. Climate Psychology Alliance. https://www.climatepsychologyalliance.org/index.php/component/content/article/youth-support-programme?catid=14&Itemid=101

Crandon, T. J., Scott, J. G., Charlson, F. J., & Thomas, H. J. (2022). A social–ecological perspective on climate anxiety in children and adolescents. *Nature Climate Change*, *12*(2), 123–131. https://doi.org/10.1038/s41558-021-01251-y

Creutzig, F., Roy, J., Devine-Wright, P., Díaz-José, J., Geels, F. W., Grubler, A., Maïzi, N., Masanet, E., Mulugetta, Y., Onyige, C. D., Perkins, P. E., Sanches-Pereira, A., & Weber, E. U. (2022). Demand, Services and Social Aspects of Mitigation. In P. R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, & J. Malley (Eds.), *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 503–612). Cambridge University Press. https://doi.org/10.1017/9781009157926.007

Crisp, G. (2015). No Time For Games: Children's Health and Climate Change. *69th Western Australia State Environmental Health Conference*.

Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, *8*(4), 275–281. https://doi.org/10.1038/s41558-018-0092-2

Cunsolo Willox, A., Harper, S. L., Ford, J. D., Landman, K., Houle, K., & Edge, V. L. (2012). "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science and Medicine*, *75*(3), 538–547. https://doi.org/10.1016/J.SOCSCIMED.2012.03.043

Dawes, N., Franklin, R., McIver, L., & Obed, J. (2019). Post-disaster mental health servicing in Pacific Island communities: An integrative review. *International Journal of Disaster Risk Reduction*, *38*. https://doi.org/10.1016/J.IJDRR.2019.101225

Devonald, M., Vintges, J., & Jones, N. (2022). Supporting adolescent mental health in humanitarian settings: To what extent do interventions consider climate change and its intersectional impacts? *Intervention* , *20*(1), 81–97. https://doi.org/10.4103/intv.intv_31_21

Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, *66*(4), 265–276. https://doi.org/10.1037/a0023141

Ellis, N. R., & Albrecht, G. A. (2017). Climate change threats to family farmers' sense of place and mental wellbeing: A case study from the Western Australian Wheatbelt. *Social Science & Medicine*, *175*, 161–168. https://doi.org/10.1016/j.socscimed.2017.01.009

Flanagan, C. (2022). Commentary: Proactive practices to support youth coping with climate change - a commentary on Martin et al. (2021). *Child and Adolescent Mental Health*, *27*(1), 94–95. https://doi.org/10.1111/camh.12538

Frydenberg, E. (2020). My journey in coping research and practice: The impetus and the

relevance. *Educational and Developmental Psychologist*, *37*(1), 83–90. https://doi.org/10.1017/edp.2020.9

Gillard, S. (2019). Peer support in mental health services: where is the research taking us, and do we want to go there? *Journal of Mental Health*, *28*(4), 341–344. https://doi.org/10.1080/09638237.2019.1608935

Gislason, M. K., Kennedy, A. M., & Witham, S. M. (2021). The interplay between social and ecological determinants of mental health for children and youth in the climate crisis. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094573

Godsmark, C. N. (2020). Inspiring climate action without inducing climate despair. *The Lancet Planetary Health*, *4*(5), e169–e170. https://doi.org/10.1016/S2542-5196(20)30102-9

Good Grief Network. (2023). *GGN-Z*. https://www.goodgriefnetwork.org/teens/

Harper, S. L., Cunsolo, A., Babujee, A., Coggins, S., De Jongh, E., Rusnak, T., Wright, C. J., & Domínguez Aguilar, M. (2021). Trends and gaps in climate change and health research in North America. *Environmental Research*, *199*, 111205. https://doi.org/10.1016/j.envres.2021.111205

Harper, S. L., Cunsolo, A., & Clayton, S. (2022). Including mental health as part of climate change impacts and adaptation assessment: A critical advance in IPCC AR6. *PLOS Climate*, *1*(5), e0000033. https://doi.org/10.1371/journal.pclm.0000033

Heeren, A., Mouguiama-Daouda, C., & Contreras, A. (2022). On climate anxiety and the threat it may pose to daily life functioning and adaptation: a study among European and African French-speaking participants. *Climatic Change*, *173*(1–2). https://doi.org/10.1007/s10584-022-03402-2

Hendersson, H., & Wamsler, C. (2020). New stories for a more conscious, sustainable society: claiming authorship of the climate story. *Climatic Change*, *158*(3–4), 345–359. https://doi.org/10.1007/S10584-019-02599-Z

Hickman, C. (2020). We need to (find a way to) talk about … Eco-anxiety. *Journal of Social Work Practice*, *34*(4), 411–424. https://doi.org/10.1080/02650533.2020.1844166

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, *5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3

Hwong, A. R., Wang, M., Khan, H., Chagwedera, D. N., Grzenda, A., Doty, B., Benton, T., Alpert, J., Clarke, D., & Compton, W. M. (2022). Climate change and mental health research methods, gaps, and priorities: a scoping review. *The Lancet Planetary Health*, *6*(3), e281–e291. https://doi.org/10.1016/S2542-5196(22)00012-2

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte, P. Zhai, A. Priani, S. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. Matthews, T. Maycock, T.

Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009157896

IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009325844

Johannessen, C. T. (2022). Belonging to the World through Body, Trust, and Trinity: Climate Change and Pastoral Care with University Students. *Religions*, *13*(6), 527. https://doi.org/10.3390/rel13060527

Karaliuniene, R., Campana, A. M., Ori, D., de Filippis, R., Shoib, S., Saeed, F., Mohammed, M., Handuleh, J., Ransing, R., Codati, A., Pinto da Costa, M., Ojeahere, M., Orsolini, L., & Pereira-Sanchez, V. (2022). Effects of the Global Ecological Crisis on the Mental Health of Children and Adolescents: An International Perspective. *Psychiatria Danubina*, *34*(2), 296–298. https://doi.org/10.24869/psyd.2022.296

Klein, R., Huq, S., Denton, F., Downing, T., Richels, R., Robinson, J., & Toth, F. (2007). Inter-relationships between adaptation and mitigation. In M. Parry, O. Canziani, J. Palutikof, P. van der Linden, & C. Hanson (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 745–777). Cambridge University Press.

Klocker, N., Gillon, C., Gibbs, L., Atchison, J., & Waitt, G. (2021). Hope and grief in the human geography classroom. *Journal of Geography in Higher Education*. https://doi.org/10.1080/03098265.2021.1977915

Kornbluh, M., Withers, M. C., Ades, J., Grennan, G., & Mishra, J. (2022). Identifying protective socio-ecological factors for college students in California's deadliest wildfire. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2047706

Léger-Goodes, T., Malboeuf-Hurtubise, C., Mastine, T., Généreux, M., Paradis, P.-O., & Camden, C. (2022). Eco-anxiety in children: A scoping review of the mental health impacts of the awareness of climate change. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.872544

Longman, J., Braddon, M., Verlie, B., Schlosberg, D., Hampshire, L., Hawke, C., Noonan, A., & Saurman, E. (2023). Building resilience to the mental health impacts of climate change in rural Australia. *The Journal of Climate Change and Health*, *12*, 100240. https://doi.org/10.1016/j.joclim.2023.100240

Lyons, N., Cooper, C., & Lloyd-Evans, B. (2021). A systematic review and meta-analysis of group peer support interventions for people experiencing mental health conditions. *BMC Psychiatry*, *21*(1). https://doi.org/10.1186/s12888-021-03321-z

Ma, J., & Chen, Y. D. (2023). Essential but challenging climate change education in the Global South. *Nature Climate Change*. https://doi.org/10.1038/s41558-023-01839-6

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and

wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine*, *301*. https://doi.org/10.1016/j.socscimed.2022.114888

MacKay, M., Parlee, B., & Karsgaard, C. (2020). Youth engagement in climate change action: Case study on indigenous youth at COP24. *Sustainability (Switzerland)*, *12*(16). https://doi.org/10.3390/SU12166299

Malena-Chan, R. (2019). A narrative model for exploring climate change engagement among young community leaders. *Health Promotion and Chronic Disease Prevention in Canada*, *39*(4), 157–166. https://doi.org/10.24095/hpcdp.39.4.07

Mambrey, V., Wermuth, I., & Böse-O'Reilly, S. (2019). Extreme weather events and their impact on the mental health of children and adolescents. *Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz*, *62*(5), 599–604. https://doi.org/10.1007/S00103-019-02937-7

Mann, M., McMillan, J. E., Silver, E. J., & Stein, R. E. K. (2021). Children and Adolescents with Disabilities and Exposure to Disasters, Terrorism, and the COVID-19 Pandemic: a Scoping Review. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01295-z

Marks, E., Atkins, E., Garrett, J. K., Abrams, J. F., Shackleton, D., Hennessy, L., Mayall, E. E., Bennett, J., & Leach, I. (2023). Stories of hope created together: A pilot, school-based workshop for sharing eco-emotions and creating an actively hopeful vision of the future. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1076322

Martin, G., Reilly, K., Everitt, H., & Gilliland, J. A. (2022). Review: The impact of climate change awareness on children's mental well-being and negative emotions - a scoping review. *Child and Adolescent Mental Health*, *27*(1), 59–72. https://doi.org/https://dx.doi.org/10.1111/camh.12525

Martinez Garcia, D., & Sheehan, M. C. (2016). Extreme weather-driven disasters and children's health. *International Journal of Health Services*, *46*(1), 79–105. https://doi.org/10.1177/0020731415625254

Mayan, M. J. (2016). *Essentials of Qualitative Inquiry*. Routledge.

Middleton, J., Cunsolo, A., Jones-Bitton, A., Wright, C. J., & Harper, S. L. (2020). Indigenous mental health in a changing climate: A systematic scoping review of the global literature. *Environmental Research Letters*, *15*(5). https://doi.org/10.1088/1748-9326/ab68a9

Nairn, K. (2019). Learning from Young People Engaged in Climate Activism: The Potential of Collectivizing Despair and Hope. *Young*, *27*(5), 435–450. https://doi.org/10.1177/1103308818817603

Ojala, M. (2012a). Regulating worry, promoting hope: How do children, adolescents, and young adults cope with climate change? *International Journal of Environmental & Science Education*, *7*(4), 537–561. http://www.ijese.com/

Ojala, M. (2012b). How do children cope with global climate change? Coping strategies, engagement, and well-being. *Journal of Environmental Psychology*, *32*(3), 225–233. https://doi.org/10.1016/J.JENVP.2012.02.004

Ojala, M. (2013). Coping with climate change among adolescents: Implications for subjective well-being and environmental engagement. *Sustainability (Switzerland)*, *5*(5), 2191–2209. https://doi.org/10.3390/SU5052191

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. *Futures*, *94*, 76–84. https://doi.org/10.1016/J.FUTURES.2016.10.004

Ojala, M. (2022). Commentary: Climate change worry among adolescents-on the importance of going beyond the constructive-unconstructive dichotomy to explore coping efforts-a commentary on Sciberras and Fernando (2021). *Child and Adolescent Mental Health*, *27*(1), 89–91. https://doi.org/10.1111/camh.12530

Osnes, B., Boykoff, M., & Chandler, P. (2019). Good-natured comedy to enrich climate communication. *Comedy Studies*, *10*(2), 224–236. https://doi.org/10.1080/2040610X.2019.1623513

Parry, S., McCarthy, S. R., & Clark, J. (2022). Young people's engagement with climate change issues through digital media – a content analysis. *Child and Adolescent Mental Health*, *27*(1), 30–38. https://doi.org/10.1111/camh.12532

Pellitier, P. T., Ng, M., Castaneda, S. R., Moser, S. C., & Wray, B. D. (2023). Embracing climate emotions to advance higher education. *Nature Climate Change*. https://doi.org/10.1038/s41558-023-01838-7

Petrasek MacDonald, J., Cunsolo Willox, A., Ford, J. D., Shiwak, I., Wood, M., Wolfrey, C., Baikie, M., Andresen, A., Nochasak, N., Piercy, W., Flowers, J., Gear, D., Jacque, G., Jacque, H., Groves, M., & the Rigolet Inuit Community Government. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science and Medicine*, *141*, 133–141. https://doi.org/10.1016/J.SOCSCIMED.2015.07.017

Pihkala, P. (2018). Eco-Anxiety, Tragedy, and Hope: Psychological and Spiritual Dimensions of Climate Change. *Zygon®*, *53*(2), 545–569. https://doi.org/10.1111/zygo.12407

Pihkala, P. (2020). The Cost of Bearing Witness to the Environmental Crisis: Vicarious Traumatization and Dealing with Secondary Traumatic Stress among Environmental Researchers. *Social Epistemology*, *34*(1), 86–100. https://doi.org/10.1080/02691728.2019.1681560

Pihkala, P. (2022). Toward a Taxonomy of Climate Emotions. *Frontiers in Climate*, *3*. https://doi.org/10.3389/fclim.2021.738154

Plummer, N., Wilson, M., Yaneva-Toraman, I., McKenzie, C., Mitchell, S., Northover, P., Crowley, K., Edwards, T., & Richards, A. (2022). Recipes for Resilience: Engaging Caribbean Youth in Climate Action and Food Heritage through Stories and Song. *Sustainability*, *14*(14). https://doi.org/10.3390/su14148717

Prno, J., Bradshaw, B., Wandel, J., Pearce, T., Smit, B., & Tozer, L. (2011). Community vulnerability to climate change in the context of other exposure-sensitivities in Kugluktuk, Nunavut. *Polar Research*, *30*. https://doi.org/10.3402/POLAR.V30I0.7363

Reiner, K. L., & Haas-Howard, C. (2022). Essential Strategies for School Nurses to Move

Upstream in Support of Healthy Students and a Healthy Planet. *NASN School Nurse*, *37*(4), 217–222. https://doi.org/10.1177/1942602X221078342

Rocque, R. J., Beaudoin, C., Ndjaboue, R., Cameron, L., Poirier-Bergeron, L., Poulin-Rheault, R.-A., Fallon, C., Tricco, A. C., & Witteman, H. O. (2021). Health effects of climate change: an overview of systematic reviews. *BMJ Open*, *11*(6), e046333. https://doi.org/10.1136/bmjopen-2020-046333

Sanson, A. V., Van Hoorn, J., & Burke, S. E. L. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201–207. https://doi.org/10.1111/cdep.12342

Schatz, K. (2021). *Where We Stand: The Integration of Climate Change Education in Canadian Schools*. https://www.bccic.ca/wp-content/uploads/2021/11/FINAL-Climate-Change-Education-in-Canada.pdf

Sciberras, E., & Fernando, J. W. (2022). Climate change-related worry among Australian adolescents: an eight-year longitudinal study. *Child and Adolescent Mental Health*, *27*(1), 22–29. https://doi.org/10.1111/camh.12521

Seneviratne, S. I. ., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S., Wehner, M., & Zho, B. (2021). Weather and Climate Extreme Events in a Changing Climate. In V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. YelekçiR. Yu, & B. Zhou (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1513–1766). Cambridge University Press.

Sharpe, I., & Davison, C. M. (2022). A Scoping Review of Climate Change, Climate-Related Disasters, and Mental Disorders among Children in Lowand Middle-Income Countries. *International Journal of Environmental Research and Public Health*, *19*(5). https://doi.org/10.3390/ijerph19052896

Shelemy, L., Harvey, K., & Waite, P. (2019). Supporting students' mental health in schools: what do teachers want and need? *Emotional and Behavioural Difficulties*, *24*(1), 100–116. https://doi.org/10.1080/13632752.2019.1582742

Spyrou, S., Theodorou, E., & Christou, G. (2022). Crafting futures with hope: Young climate activists' imaginaries in an age of crisis and uncertainty. *Children & Society*, *36*(5), 731–746. https://doi.org/10.1111/chso.12529

Tai, J. A. (2018). Dancing climate on a high mountain. *Research in Dance Education*, *19*(3), 294–305. https://doi.org/10.1080/14647893.2018.1523381

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Udas, P. B., Fournier, B., Christianson, T., & Desbiens, S. (2021). What Can We Learn from Rural Youth in British Columbia, Canada? Environment and Climate Change-Issues and Solutions. *Sustainability*, *13*(24). https://doi.org/10.3390/su132413562

Uibel, D., Sharma, R., Piontkowski, D., Sheffield, P. E., & Clougherty, J. E. (2022). Association of ambient extreme heat with pediatric morbidity: a scoping review. *International Journal of Biometeorology*, *66*(8), 1683–1698. https://doi.org/10.1007/s00484-022-02310-5

United Nations Department of Economic and Social Affairs (UNDESA). (2013). *Definition of Youth*. https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf

University of Guelph. (2023). *UofG Climate Café*. Sustainability Office: Our Projects. https://www.uoguelph.ca/campussustainability/climatecafe

van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwong, A. R. (2021). The Effects of Climate Change on Child and Adolescent Mental Health: Clinical Considerations. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01296-y

Vandaele, M., & Stalhammar, S. (2022). "Hope dies, action begins?" The role of hope for proactive sustainability engagement among university students. *International Journal of Sustainability in Higher Education*, *23*(8), 272–289. https://doi.org/10.1108/IJSHE-11-2021-0463

Vergunst, F., & Berry, H. L. (2021). Climate Change and Children's Mental Health: A Developmental Perspective. *Clinical Psychological Science*, *10*(4), 767–785. https://doi.org/10.1177/21677026211040787

Verlie, B. (2019). Bearing worlds: learning to live-with climate change. *Environmental Education Research*, *25*(5), 751–766. https://doi.org/10.1080/13504622.2019.1637823

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education*, *37*(2), 132–146. https://doi.org/10.1017/aee.2020.34

Verner, G., Schütte, S., Knop, J., Sankoh, O., & Sauerborn, R. (2016). Health in climate change research from 1990 to 2014: positive trend, but still underperforming. *Global Health Action*, *9*(1), 30723. https://doi.org/10.3402/gha.v9.30723

Vineis, P. (2010). Climate change and the diversity of its health effects. *International Journal of Public Health*, *55*(2), 81–82. https://doi.org/10.1007/S00038-009-0092-0

Witt, A., Sachser, C., & Fegert, J. M. (2022). Scoping review on trauma and recovery in youth after natural disasters: what Europe can learn from natural disasters around the world. *European Child & Adolescent Psychiatry*. https://doi.org/10.1007/s00787-022-01983-y

Youth Climate Corps British Columbia. (2023). *Empowering Youth Voices & Actions*. Youth Climate Corps British Columbia. https://www.youthclimatecorps.com/youth-voices-ycc

Chapter Three: "Feeling your emotions is an act of rebellion:" How climate cafés across Canada support youth wellbeing during the climate crisis

Cooper, M.[1], Cunsolo, A.[2], Aylward, B.[1], Yamamoto, S.S.[1], Harper, S.L.[1]

[1]School of Public Health, University of Alberta, Edmonton, Canada

[2]School of Arctic and Subarctic Studies, Labrador Campus of Memorial University, Happy Valley-Goose Bay, Canada

Abstract

The profound impact of climate change on the emotional and psychological wellbeing of youth is becoming increasingly evident. Climate cafés are emerging as venues where youth can gather to discuss their thoughts and feelings about the climate crisis. This study explored youth experiences at climate cafés in Canada, aiming to characterize how climate cafés affect their emotional and psychological resilience in dealing with climate-related emotions. Semi-structured, conversation-style interviews were conducted with both youth attendees (ages 16-24) (n = 7) and facilitators of climate cafés (n = *10)*. Through thematic analysis, reframing activism emerged as an overarching theme along with three sub-themes: climate cafés as active-listening, action-free, and community building spaces. Participants described how climate cafés encourage shifting how they view climate activism from a focus on external actions to a practice that incorporates emotional processing and resilience building. As a designated space to share their thoughts and feelings around climate change, climate cafés were described as a space that promotes active-listening and community building; inspires vulnerability which can favourably lead to connection, empathy, and meaningfully engagement in climate action. Lastly, they have the ability to influence youths' beliefs of their own worthiness. Overall, youth attendees and facilitators concluded that climate cafés serve as a valuable resource for managing burnout and sustaining meaningful climate action. Ensuring the accessibility of feeling-centered healing spaces could aid youth in processing climate emotions and reducing the current and future impacts to their wellbeing.

Keywords: youth, climate change, emotional wellbeing, climate café, climate emotions, peer-support spaces

3.1 Introduction

The climate crisis is increasingly impacting the emotional and psychological wellbeing of youth (Gislason et al., 2021; Godden et al., 2021; T. Ma et al., 2022; Treble et al., 2023; van Nieuwenhuizen et al., 2021). These diverse responses include panic attacks, low moods, insomnia, loss of appetite, obsessive thinking, anger, guilt, helplessness, and existential dread, attachment disorders, difficulty regulating emotions, and trouble in school (S. E. L. Burke et al., 2018a; Gifford & Gifford, 2016; Martin et al., 2022; Wu et al., 2020). Climate change can be a chronic stressor which, while compounding other daily stressors, can lead to and worsen anxiety, depression, and substance use (Wu et al., 2020). Children and young people's stages of psychological and psychosocial development, in addition to their life-long exposure to climate change, puts them at risk of permanent alterations in brain functioning and an increase in mental illness in adulthood (S. E. L. Burke et al., 2018a; Sheth et al., 2017; Wu et al., 2020). For example, in Nunatsiavut, climate change has caused disruptions to land-based and cultural activities, knowledge transmission, community connection and identity for Inuit youth leading to feelings of worry, boredom, loneliness, isolation, restlessness, fear, sadness, anger, frustration, stress, anxiety, helplessness, and increases in alcohol and substance use (Petrasek MacDonald et al., 2015). Furthermore, in a survey among young people ages 16-25 living in Canada, fear, sadness, anxiousness, helplessness, and powerlessness were the most commonly self-reported climate emotions (Galway & Field, 2023). These feelings and impacts are disrupting daily functioning and contributing to negative outlooks about the future (Galway & Field, 2023).

Emerging research is demonstrating the importance of developing supports, programs, and resources to help young people cope with feelings about climate change. For example, in a Canadian survey, 25% of youth respondents indicated that being able to access emotional and mental health supports, including with health professionals, family, friends, or support groups, was very helpful for their overall health and resilience (Galway & Field, 2023). One strategy youth are accessing for coping with climate emotions and seeking emotional and mental health support is through climate cafés. Climate cafés are spaces where individuals can express thoughts and feelings about climate change in a safe space with like-minded people without offering advice or encouraging action. They are places to acknowledge and explore the various psychological and emotional reactions to the climate crisis.

In 2015, the first publicly recorded climate café was hosted by Climate Café ® Dunkeld and Birnam in Scotland. The design has since been replicated and adapted by organizations such as the Climate Psychology Alliance and many local climate organizations and universities across Europe, North America, and increasingly in other parts of the world. These gatherings, also referred to as climate circles and grief circles, have developed into active listening spaces that verbally and non-verbally support and confirm participants' experiences (Weger et al., 2014), can improve the emotional experience of people, and can support the development and/or strengthening of relationships (Kawamichi et al., 2015). Modeled after death cafés, which began in the UK as a space to talk about death and dying (Bryant, 2019; Haines, 2021), climate cafés exist to normalize topics that are considered taboo or difficult to talk about, such as the diverse and complex emotions connected to the climate crisis. Toolkits have been created for use in climate cafés, outlining and sharing strategies and resources to address and cope with climate anxiety, climate grief and other climate emotions. Compiled by psychotherapists, university groups, and graduate students, there is a particular emphasis on group activities and social support (Climate Therapy Alliance - Pacific Northwest, 2019; Leimbach et al., 2020; Wise, 2022; Wise et al., 2021; Wu, 2021).

Climate cafés are emerging as important spaces to support the overall mental health and wellness of participants dealing with various forms and levels of climate-related outcomes, and part of the overall available wellness supports. While other forms of mental health supports such as one-on-one counselling and psychotherapy are incredibly important to support people in the climate crisis, they will not fully meet the holistic and diverse needs of all those affected by the mental health impacts of climate change (Doppelt, 2020). Climate cafés, then, can be understood as a community-based strategy for addressing this gap in climate-related mental health care through peer-to-peer support to not only treat climate-related stress and trauma but also to prevent further impacts through encouraging healthy coping responses and developing individual and collective resilience. Across Canada, climate cafés and climate circles are increasingly being offered to address emotional responses to climate and environmental change. Community climate action groups, university sustainability offices and committees, and chaplains are facilitating these offerings, with many being led by volunteers and free of cost (Carbon Conversations Toronto, 2023; Collingwood Climate Action Team, 2023; Gelderman, 2022; Simon, 2022; University of Guelph, 2023).

Considering the increasing mental health burden of climate change on youth (S. E. L. Burke et al., 2018a; Crandon et al., 2022; Galway & Field, 2023; Martin et al., 2022), research is needed on the impact of interventions and coping strategies that could support youth in coping with climate emotions (S. E. L. Burke et al., 2018a; Hwong et al., 2022; Martin et al., 2022; Vergunst & Berry, 2021). Therefore, this research explored the potential of climate cafés to be an effective coping strategy for youth. Specific objectives included: (i) exploring youth experiences at climate cafés in Canada; and (ii) characterizing how climate cafés impact emotional and psychological resilience of youth and their ability to deal with various climate emotions.

3.2 Materials and methods

3.2.1 Data collection

Semi-structured, conversation-style interviews were conducted with youth aged 16-24 years old who have attended climate cafés, and climate café facilitators, in Canada. Participants were recruited through email and social media. Organizations that host climate cafés and facilitators were contacted and asked to share an informational letter describing the project with those who may be interested. Additionally, a snowballing approach was used and involved asking participants to share the study information with their communities and to connect the researcher with potential participants.

The interview guide included questions and prompts relating to the participants experience of climate emotions and climate cafés. We aimed to create a conversation-style interview, allowing freedom for the participant to share what they were comfortable with, and allow flexibility for the participant to lead the conversation in a particular direction depending on what was important to them. This worked well to create an open and comfortable environment. Each interview ranged from 60-to-90 minutes and was conducted over Zoom (recorded with permission) between May 2022 and May 2023. The interview guide was pretested for context and content. Interviews were conducted with 17 people, totalling about 18 hours of audio material. Participants identified as female (n=12), male (n=1), and non-binary (n=4). Youth (n=7) were all between the ages of 18 and 24, and facilitators (n=10) varied in age from youth to young adults and older adults. Participants were living in British Columbia, Alberta, Ontario, Quebec, and New Brunswick. All participants provided informed consent to participate. The

research protocol was approved by the research ethics boards at the University of Alberta and Memorial University.

3.2.2 Analysis

This thematic analysis included four iterative stages. First, written reflections of initial thoughts and responses during and after each interview were conducted. These reflective notes included information that was emphasized by participants, follow-up questions based on participant responses, and reflections on participant's body language and non-verbal forms of communication (Boeije, 2002; Charmaz, 2006). This was an important part of the analysis process that allowed the lead researcher to revisit what stood out to them in the immediate moments following the interview and approach the subsequent reviews of interview recordings and transcripts with a more grounded perspective. They also added depth and understanding to the interviews, helping to identify themes and insights as the interviews unfolded (Braun et al., 2019). Second, the Zoom recordings were transcribed by Otter.ai and each transcript was read and hand-checked by the lead researcher for errors against the original audio recordings. This stage further familiarized the lead researcher with the data. Thirdly, an iterative and inductive approach was taken in which the interviews were listened to and read multiple times as the researcher recorded key trends and ideas in the data related to the research question (Braun et al., 2019; Srivastava & Hopwood, 2009). Quotes that demonstrated these elements in the interviews were highlighted, collated, and sorted into potential themes. Then, throughout the process of refining the themes, the fourth iterative stage included revisiting and comparing transcripts to identify similarities, differences, patterns, and to look for any additional data that fit within the themes that may have been missed (Boeije, 2002; Braun et al., 2019). Throughout the research process, measures were incorporated to establish validity. These measures included the researcher's previous experience in the field (attending climate cafés and knowledge of climate-sensitive mental health outcomes), researcher reflexivity as described in the analysis and positionality, pilot testing the interview questions, the criterion of surprise from being open to unanticipated insights, feedback from conference presentations and co-authors, (Hayashi et al., 2019; Lub, 2015), and record keeping (i.e., audio files, transcripts, and researcher notes) (Lub, 2015).

3.3 Results

"It's a constant, continuous, heavy weight that I carry" — Reframing climate activism

Youth in this research shared that they have felt "*exhausted*," "*burnt out*," "*sad*," "*hopeless*," "*anxious*," "*frustrated*," "*angry*," "*guilty*," "*isolated*," "*lonely*," "*numb*," "*depressed*," and carry a sense of "*loss*" or "*nostalgia*" for their future and for current and anticipated environmental loss. However, they also reported feeling "*excited*," "*motivated*," "*determined*," "*loved*," "*safe*," "*empowered*," and "*supported*" by their community, particularly in climate cafés. Participants emphasized the importance of reframing climate activism to include actions that activate these positive feelings, acknowledge their climate emotions, and take care of their mental health to avoid burnout and sustain activism.

For example, one youth shared:

> "*Once I read a little more [about climate cafés] I realized this is something I had been coming to terms with on my own was just the importance of making action sustainable. And when I thought about a climate café from that perspective of like, people can only do the things if they take care of themselves long term, because we need to do things long term, then all of a sudden, I was like, oh, okay, I see how this fits in. It's not just about this moment, it's about taking care of yourself over time.*"

All the youth and facilitators interviewed participated in climate activism in various capacities, including professional, educational, and volunteering with local climate action and environmental organizations. However, some youth hesitated to call themselves activists because they did not feel like they performed enough action to earn that title. As one youth commented, "*it just feels like such a loaded word. I don't feel like I'm doing enough life changing things to be an activist…like, there are people who that is their life. And that's what they do. And I don't think that I am in that same category.*" Regardless of whether they referred to themselves as activists, many participants identified that there is a need and desire for activist spaces to attend to the "*constant, continuous, heavy weight*" of the climate crisis on young people. Throughout the interviews, participants described climate cafés as "*community building*," "*active listening*," and "*action-free spaces*" that help youth reframe climate activism. These qualities of a climate café are attending to climate emotions and the wellbeing of youth by offering a designated time and space talk about climate emotions, witness one another's experiences, and take a pause from action.

3.3.1 "*I don't know if it's going to get better*" — Climate cafés as honest, active listening spaces

Youth described how a dedicated space for sharing their own feelings about climate change removes the perception that they are burdening others, specifically family and friends, with their intense feelings. Additionally, they felt like they were releasing their friends from the responsibility of helping or trying to fix their feelings. As a youth participant explained, going to climate cafés to talk about climate emotions "*takes the pressure off… [you can] focus on the feelings and no one feels guilt about sharing those feelings and not having the solution*." Indeed, climate cafés were described as "*active*" or "*deep*" listening spaces, where youth can share how they are feeling without receiving advice or recommendations from their peers. One facilitator shared about how their facilitation style evolved over the course of their experience holding active listening spaces:

> "*I didn't really understand the power of the circle. I was still in workshop mode, and every time somebody said something I would comment or reflect. And then I started to realize that's really unnecessary in the circle. It doesn't have to be interactive. It can really just be people exploring for themselves and our role is just to listen and gather that for them.*"

This facilitation style creates a safe space to talk about how they are *really* feeling. For example, one youth explained how they filter what they share in an external activist space—such as protests, lobbying, environmental initiatives—compared to a climate café:

> "*So, if I was doing it for the public or media or a speech at City Hall or whatever, it's like you're telling a narrative. You have the story, and it's still real, but you're creating words around it to make it be impactful and make it feel important to people. So automatically, it's a little more polished and a little less raw…and so I feel like you're kind of performing…The vulnerability part would be like, 'I don't know if it's gonna get better.' Or being vulnerable saying 'I don't think that we're going to be able to do it'…I think with the climate café and it being real, it's just less of a story and more of just being, and feeling your feelings, and not [needing] it to have a purpose in your tale.*"

Another participant explained that "*it was really great to just go to the space and be listened to, and nobody would try to ask me questions or make me feel like I had to explain or justify why I was feeling a certain way.*" Some youth participants felt a pressure to believe in a positive outcome that they were not sure existed. This is not to say that they were not hopeful. Their hope was described as a responsibility to try for the possibility of a different outcome, regardless of whether they believe they will achieve it. Despite knowing differently, some youth still saw their

inner work, attending to their inner emotional landscapes, and the processing of their emotions as selfish: "*we have this idea that it's selfish because it is individual, but what if it's not?*"

Expressing, processing, and releasing emotion can happen through talking but also through "*breathwork*," "*movement*," "*silence*," "*poetry*," "*writing*," and "*visual arts*," which are all practices that can be integrated into a climate café. There was some concern expressed by participants around caring for the wellbeing of youth in these spaces where big emotions may come up that need to be navigated. In response to this concern, facilitators talked about the importance of having additional mental health resources available to young people. For example, one facilitator talked to a psychiatrist in advance, sharing her trepidation of not being clinically trained: "*I was worried that if it got like really big, like really big emotions, I don't have the skill sets for that…he assured me that it's super rare for that to happen, even in clinical practice.*"

3.3.2 "*I found my people*" — Community and collective care in climate cafés

Facilitators and youth emphasized the importance of fostering community as a "*climate solution,*" highlighting climate cafés as a tangible way to participate in this collective effort. As one youth commented: "*there's a community that's created in every moment you have one [climate café].*" Youth described feeling a pressure to constantly participate in external climate action such as protests, lobbying, conservation practices, and litter-clean up, and the guilt associated with not participating. Despite feeling this guilt, youth also recognized that focusing on individual action instead of relying on one another has detrimental effects on their mental health and climate activism. Youth acknowledged the prevailing individualistic nature of the systems they work within and countered this by intentionally building "*a community of climate activists.*" This focus on community was reported to have a positive impact on youth's view of climate activism. For example, one youth explained,

> "*I have learned that there is a point, even though there's all these terrible things happening [and] that could happen, there is still meaning and beauty and community. That's why it's so important. I love climate cafés. I love them so much.*"

Youth described relying on spaces, like climate cafés, which offer community care and space to sit with hard emotions, and they acknowledged the value of exploring their emotions within a group setting. Climate cafés were not only a time to share hard emotions, but also a time to share

stories of resilience, joy, and hope. Youth shared that climate grief is something to process in community, with other people who can relate to how you are feeling. Climate cafés were an opportunity to connect with oneself, others, and something greater (i.e., "*God,*" "*Love,*" "*the Universe*"). Witnessing one another's grief, and "*being able to feel heard and listened to is so valuable*" to youth's experience processing climate emotions. Participants also described that this environment acted as a container within which grief felt safe to be expressed. Facilitators emphasized the psychological need for grief to have a container, and they described climate cafés as providing this supportive, holding space. Multiple facilitators offered the assurance that if individuals are expressing an emotion in a climate café it is because "*their bodies feel safe too*" and youth can be reminded "*to trust that their bodies protect them.*" The facilitator (also called circle keepers or holders) plays a role in creating a space that feels safe to express emotions; however, "*everyone in that space is holding each other. Everyone's holding the space, not just one person.*" It was important to facilitators that youth were reminded to trust that they are held by the process, each other, and something bigger/outside themselves when participating in a climate café, to create a sense of safety.

Participants also emphasized that a climate café is not a clinical space; rather, "*it is a space to share, not space to fix*." While some youth had found climate-aware therapists to be helpful, others expressed that a peer-to-peer active listening space was desirable. In a peer-to-peer space youth did not feel like they were being "*diagnosed*" or "*fixed*." One youth shared how a non-clinical space can be helpful:

> "*I don't think climate cafés should be clinical. I think I like them being open. It could be more accepting that way as well. And you're more open to talk about anything, right? There's not like a set program, there's not set goals, it's just whatever comes to your mind, you're able to talk about and express and I think that's just beautiful in itself.*"

As a facilitator further explained, working with a therapist or psychologist "*creates this power dynamic and this sense of disconnection as well, of 'I don't feel that you're really in this with me',*" whereas in a climate café, "*we're just community members…it kind of gives people permission to make mistakes and get a little bit more vulnerable and just make ourselves seem like we're all humans working on this thing together.*" Additionally, one facilitator emphasized that "*we need the peer-to-peer environments to be able to manage the extent at which we expect to see emotional distress in these years that coming*."

3.3.3 "*The antidote to despair is purpose, not action*" — Climate cafés as action-free spaces

In the interviews, youth consistently shared beliefs about their self-worth. For example, youth shared feelings ranging from "*I am not good enough*" to "*I am not doing enough*" to "*it feels like it [my climate action] will never be enough.*" Attending an action-free space like a climate café offered respite from some of these thoughts. As one youth participant explained, "*it makes so much sense to me how [climate cafés] wouldn't include action because…it's removing the 'I am not doing enough. I'm not enough' [narrative]…it kind of shuts that part of that thinking away for a second.*" When that narrative "*shuts off*," even for a short time in a space like a climate café, this youth is able to see a distinction between activism and action. They viewed climate action as participation in external actions such as protesting and lobbying, whereas their activism included those external actions but also included emotional processing, creativity, and rest. Facilitators echoed this sentiment, stating that "*this work is radical…feeling your emotions is an act of rebellion*" and "*rest is literally making a radical statement about the current state of things and how unhealthy and how toxic it is*." However, there is a "*culture*" in activist spaces of "*go, go, go, work all the time, be up every hour of the night planning things*" that participants felt does not encourage rest. One youth described how they are impacted by this culture:

> "*I felt so guilty for going to bed early… why should I like take advantage of going to bed early when there's probably things that I could be helping people with but instead I'm sleeping, like, what? That's ridiculous, like, why should I feel guilty about sleeping and resting my body?*"

While youth indicated that they found community and support with fellow activists, youth also shared experiences of "*toxicity,*" "*abuse,*" "*passive aggressiveness,*" and "*people who use shame and guilt to get people involved*" in the activism. This discourse in the activist scene "*didn't help*" one youth who shared: "*I had to give absolutely everything of myself, or I felt like a piece of shit.*" External activism, including being arrested at protests, was described as being highly valued within these communities, but participants also shared that these actions, including the resulting police violence and abuse from counter-protesters, can take a toll on their mental health. For example, one youth shared their experience at climate strikes: "*when you're being faced with somebody that's threatening you or police who are literally pushing you to the ground and trying to arrest you and stuff, it's pretty traumatic.*" Despite traumatic experiences in external activism, youth still felt a responsibility to do everything they can. While some youth

experienced external pressure into constant action, others described an internal pressure. For example, one participant shared:

> "*You could do everything and still feel like not much is done in the grand scheme of things. So, it's waves of hope being inspired by other people, to hopelessness of like, 'what's the point'? You just get so burnt-out doing activism until you get to a point where it's like 'I don't know if I can do this anymore.' But then if I don't do it, who will? Yeah, so I really, really hurt myself.*"

To prevent this burnout in activism youth requested more "*discourse on healthy productivity*" in activist spaces. Youth provided examples, such as building relationships with their fellow activists through learning about climate emotions, processing their emotions together, participating in creative and community-based pursuits that brought them joy, and discovering how they can use their individual and collective skills to meaningfully engage in the climate movement. One youth acknowledged that:

> "*We do need to slow down if we're going to be thoughtful and reflective and have enough time to dream about other options that may not have been at the table, to invite other people to table to listen to each other. That slowing down might yield the things we need most.*"

However, along with this wisdom there was still hesitation. With the sense of urgency, youth shared that "*slowing down doesn't feel as worthwhile as doing something that is action-based*." When balancing activism with their other responsibilities, some youth did not feel like they had time or "*motivation*" for "*one more climate thing*" and that "*really having time and bandwidth for [climate cafés] is really hard too*" because going to a climate café after a long day of classes "*would make my day, which was already pretty long, longer…So it's really emotionally healing and I feel better, but I'm also so tired and want to go home*." Youth and facilitators shared that the motivation is also sometimes limited by a fear that "*once you start grieving it is kind of like a waterfall*" which is "*empowering*," but opening up to climate grief will result in a despair that will make participating in climate action, let alone "*functioning in daily life*," nearly impossible.

Despite the pressure of pushing aside emotions to continue participating in climate action, there was a consensus that to protect their wellbeing in the long-term, youth need to engage emotionally when they have the capacity to do so. Action alone is not enough, as one facilitator stressed:

> "*We hear a lot about the antidote to despair is action. We hear that, it's very popular to say that, and I actually totally disagree. It could be part of the answer, but I think it actually minimizes the feelings. It says: "Oh, that despair, you just go away. I'm gonna write a letter. I'm gonna plant a tree." Or whatever, and you actually haven't dealt with the despair, and it's the despair that's the problem, not the planting the tree or writing the letter that's needed… We need people to work through these emotions, face them so they can come out the other end, and then do what they need to do.*"

3.4 Discussion

Globally and within Canada, many children and young people have reported feeling ignored or dismissed when talking about climate change (Galway & Field, 2023; Hickman et al., 2021). In response to these feelings, climate cafés can provide a valuable space where youth feel their concerns and emotions about climate change are heard, understood, and validated. This type of support is crucial for promoting positive wellbeing among youth, as emotional invalidation can contribute to the development of mental health issues such as anxiety, depression, low self-esteem, an unstable sense of identity, self-doubt, mistrust, invalidating one's own feelings and experiences making it difficult to managing one's own emotions, reluctance to display vulnerability (Carrico & Litner, 2021; Tanasugarn, 2022), and feelings of isolation (Crandon et al., 2022). Unlike conversations with friends, family, or peers where youth felt like they were burdening others by sharing their feelings, climate cafés serve as a designated space for emotional processing. Further, as active-listening spaces, cafés do not require participants to respond, fix, or offer advice. By facilitating discussions about emotions related to climate change, climate justice, and ecological loss, we found that climate cafés create a platform for dialogue that is not always welcomed or encouraged in other spaces.

In this light, climate cafés offer a shared space for collective discussion and support and are a low-commitment and affordable opportunity for youth to participate in internal activism, especially those who struggle to prioritize emotional engagement and are unsure of how to start. Climate cafés are a space for youth to practice active listening and feel connected to other people and something beyond themselves. It is important to note that while they are healing spaces, climate cafés are not therapy, and it is not a requirement for facilitators to have a therapeutic or mental health background. There are, at times, climate trauma and heavier emotions that climate cafés are not equipped to contain or hold, and participants are directed towards alternative

supports, such as professional mental health specialists. Climate cafés can involve meditation, breathwork, and other forms of self-expression such as journaling and visual arts. They can also serve as a resource for connecting youth with other forms of climate-mental health care. This information gathered from conversations with participants can be considered when planning climate-focused feeling-centered spaces (Appendix A).

In our study, youth believed that climate cafés serve as spaces where their experiences are validated and normalized. Cafés support youth participants in confronting the guilt and shame many feel about experiencing emotions related to the climate crisis or taking time for self-care instead of solely focusing on climate action. These findings are consistent with research on how sustainability students relate to climate change, which concluded that feelings of guilt and shame stemming from privilege and unsustainable behaviours hinder vulnerability, making it difficult to engage emotionally with climate change (Hendersson & Wamsler, 2020). Experiencing authentic vulnerability is important because vulnerability is at the core of connection, love, empathy, and a sense of belonging, all of which hinge on the belief that you are worthy of these feelings. Shame, or the feeling that 'I'm not good enough', hinders vulnerability because shame is the fear of disconnection (Brown, 2010). In this context, an active listening space, such as a climate café, can normalize emotions and builds connection (Weger et al., 2014). By making space for imperfection, uncertainty, and 'seeing' one another, climate cafés encourage vulnerability and therefore connection, belonging, and a sense of worthiness that challenges shame. According to other scholars, without numbing vulnerability, one can remain open to love, joy, and creativity, and in the context of climate change, may allow people to continue to participate in climate activism and respond to climate change emotionally (Brown, 2010; Ray, 2020). This emotional processing is foundational for building emotional resilience and participating in climate activism, as our emotional skills influence our ability to respond to climate change and advance climate justice (Hickman, 2020; Ray, 2020).

Climate cafés serve to reframe activism by shifting the emphasis from solely external, action-oriented work to include internal action. According to Hickman (2020), giving attention to our inner relational and emotional landscapes can be understood as internal activism, and is an important component for strengthening mental health and resilience. Through internal activism, climate anxiety and grief experienced by youth can be both recognized and validated as a rational response to the climate crisis. Internal activism also provides the opportunity to take

needed breaks to heal, reflect, and rest. External activism or action (e.g., protests, lobbying, environmental initiatives) can be encouraged while acknowledging, understanding, and making space for the feelings of sadness, anger, guilt, grief, and distress that youth are experiencing (Hickman, 2020; cf. Ray, 2020; Wray, 2023). Youth in this research generally viewed climate *action* as participation in external activism such as protesting and lobbying. Climate *activism,* however, was broader, including those same external actions, as well as attention to their internal worlds. Attention to youths' internal worlds included emotional processing, creativity, and much needed rest, all of which were fostered at climate cafés. It was evident through our study that more external action, without paying attention to their inner emotions, was simply not changing how youth felt about themselves. External action alone was not helping them build resilience, nor was it increasing how hopeful they felt about the climate crisis; however, attending a climate café did increase hope and a sense of resilience.

A common narrative in climate-mental health literature is that action can be helpful to decrease climate despair and anxiety (often with the use of the phrase 'action is the antidote to anxiety') (Crandon et al., 2022; McGushin et al., 2022; Sanson et al., 2019; Sanson & Bellemo, 2021). This study, however, offers an alternative position and more nuanced understanding, in which *purpose* and feeling a *sense of purpose* in life is a protective factor for despair and anxiety. In interviews, *purpose* was described by participants as building community and connection, rest, meaningful engagement, writing a better narrative about the future, and accessing joy and creativity. Therefore, purpose is also connected to vulnerability, the willingness to be with uncertainty, and the ability and motivation to act even when a particular outcome is not promised or certain. Climate cafés bring people together for a purpose and to find purpose. Youth were aware that this internal action or internal activism, which involves navigating their inner emotional landscapes (Hickman, 2020), was essential in preventing burnout, building relationships, and continuing to participate in external action. However, even with this awareness it was difficult to prioritize. As youth and facilitators shared, slowing down, pausing, or taking a break from external action felt like the opposite of what the climate crisis requires. Many youth felt that we were running out of time, but as philosophers, psychologists, activists and writers affirm, slowing down is exactly what is needed to be truly present in our experience, which will only increase our capacity to continue showing up, participating, and engaging emotionally with the climate crisis (Akomolafe, 2019; Brach, 2012; Macy, 1995). Climate cafés, then, are one

such space that provide the opportunity to slow down and be present in emotions and experiences. The only downfall to climate cafés that participants mentioned was finding the time to attend these groups, and fit them into their already-busy schedules. But, once they did attend, participants could acknowledge how beneficial it was to set aside time to slow down, grieve, and process emotion in community.

Just like external climate action, engaging emotionally with the climate crisis is a collective endeavor (González-Hidalgo et al., 2022; Macy, 2020; Ray, 2020). Youth throughout this research expressed both the desire and need to process climate emotions, specifically ecological grief, in community. One youth saw the grief work as a way to build relationships, a form of being in relationship with each other and the world around them. While participants may be processing their individual feelings, they gain validation from sharing, witnessing, and being witnessed in their experience, which is healing because as bell hooks writes, "rarely, if ever, are any of us healed in isolation. Healing is an act of communion" (hooks, 1999). As this research demonstrates, climate cafés can provide a space for this communal healing. The focus on collective healing through climate cafés is important because it shifts the responsibility of processing climate emotion and healing burnout from the individual to the larger community (González-Hidalgo et al., 2022; Macy, 2020). Many of what one participant called "the inherent qualities" of the climate café space exist because of the relational aspect of climate cafés. Through facilitation, shared vulnerability, and meditation, participants found a safe space, relationship, and connection. Facilitators and youth talked about feeling held and supported in the space by the process, each other, and something bigger or outside of themselves. As participants expressed, in climate cafés, everyone is holding each other, and everyone is holding space. The relational aspect is also similar in death cafés, which were the model for climate cafés. These intimate conversations have brought participants comfort, joy, inspiration, and laughter as they found common ground in facing our mortality and talking about death (Stuart, 2021).

In a study of community-based emotional healing practices in Mexico, Colombia, and Spain, the authors argue that emotional processing is foundational to climate justice and radical transformation (González-Hidalgo et al., 2022). They share examples of collective environments created to explore and process emotions in relationship, and not as an individualized strategy. For youth in our study, these healing spaces provided an opportunity to collectively reflect on

individual and community trauma, violence, and stories, and listening to others generated empathy and an increased sense of community and solidarity. Participants developed communication and emotional regulation skills, increased emotional awareness, and healed familial and community bonds while reconnecting with themselves, each other, and their environments (González-Hidalgo et al., 2022). Within the intentional collective setting of a climate café, a space is created by the facilitators and participants, by opening and setting an intention for the space, inviting emotions, containing the emotions, building connection, and having a closing ritual. Within this space youth find the freedom of emotional expression and a feeling of ease from the continuous weight of living in the climate crisis.

To our knowledge this is the first study examining the experience of young people in climate cafés across Canada. It provides practical and tangible guidance for facilitating these spaces. As an insider researcher, my personal experience with, and understanding of, climate cafés potentially influenced by interpretation of the data. Given their knowledge of my background and the purpose of the study which they read in the information and consent forms, this could have influenced how participants answered questions. Additionally, it is possible that people with positive experiences at climate cafés were more likely to agree to participate. Future research could build on this study by measuring the effectiveness of climate-focused healing spaces for young people, specifically how to care for marginalized groups in these spaces.

3.5 Conclusion

An increase in awareness of, and empathy for, the impacts of climate change on the human and non-human world is giving rise to overwhelming climate emotions among youth (S. E. L. Burke et al., 2018a; Gifford & Gifford, 2016; Martin et al., 2022; Wu et al., 2020). Anxiety, grief, isolation, hopelessness, guilt, and a feeling that they are not doing enough to combat the climate crisis, impact the capacity of youth to participate in daily life and sustain their action and activism. Acknowledging these emotional responses as reasonable and providing spaces for youth to attend to their emotional experience and develop psychological resilience, is a critical strategy for coping with the climate crisis (Hickman, 2020; Ray, 2020). Climate cafés offer validation, emotional healing and can help youth activate positive feelings like joy, love, and creativity, and find purpose and meaning that eases their anxiety and despair. Investing in

this kind of non-clinical peer-support group, and expanding access to this time of group support, can benefit individual and collective wellbeing.

References

Akomolafe, B. (2019, August 17). *What climate collapse asks of us*. Bayo Akomolafe: Writings. https://www.bayoakomolafe.net/post/what-climate-collapse-asks-of-us

Boeije, H. (2002). A Purposeful Approach to the Constant Comparative Method in the Analysis of Qualitative Interviews. *Quality & Quantity*, *36*, 391–409. https://doi.org/10.1023/A:1020909529486

Brach, T. (2012, May 21). *The Sacred Pause*. Blog: Notes on Healing and Awakening. https://www.tarabrach.com/the-sacred-pause-2/

Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. *Handbook of Research Methods in Health Social Sciences*, 843–860. https://doi.org/10.1007/978-981-10-5251-4_103

Brown, B. (2010, December 23). The Power of Vulnerability. In *TED Talk*. https://brenebrown.com/videos/ted-talk-the-power-of-vulnerability/

Brown, M. R. G., Agyapong, V., Greenshaw, A. J., Cribben, I., Brett-MacLean, P., Drolet, J., Harker, C. M., Omeje, J., Mankowsi, M., Noble, S., Kitching, .T., & Silverstone, P. H. (2019). Significant PTSD and other mental health effects present 18 months after the fort mcmurray wildfire: Findings from 3,070 grades 7–12 students. *Frontiers in Psychiatry*, *10*. https://doi.org/10.3389/fpsyt.2019.00623

Bryant, A. (2019). *Climate Café International*. Climate & Mind. https://www.climateandmind.org/climate-cafe

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/s11920-018-0896-9

Carbon Conversations Toronto. (2023). *Climate Cafés*. https://www.carbonconversationsto.com/climate-cafes#:~:text=CCTO's Climate Café is,as you're comfortable with.

Carrico, B., & Litner, J. (2021, July 19). *What is Emotional Invalidation?* PsychCentral. https://psychcentral.com/health/reasons-you-and-others-invalidate-your-emotional-experience

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis* (1st ed.). Sage Publications.

Climate Therapy Alliance - Pacific Northwest. (2019). *Emotional Resilience Toolkit for Climate Work (Version 1.5)*. https://secureservercdn.net/198.71.233.109/vjx.f43.myftpupload.com/wp-content/uploads/2019/10/Emotional-Resilience-Toolkit-for-Climate-Work-v1.5-04Oct19-2.pdf

Collingwood Climate Action Team. (2023). *Climate Cafés*. https://www.collingwoodclimateaction.com/climate-cafes

Crandon, T. J., Scott, J. G., Charlson, F. J., & Thomas, H. J. (2022). A social–ecological perspective on climate anxiety in children and adolescents. *Nature Climate Change*, *12*(2), 123–131. https://doi.org/10.1038/s41558-021-01251-y

Doppelt, B. (2020). Building a Culture of Transformational Resilience in Organizations and Communities for Climate Traumas and Toxic Stresses. In *Building Transformational Resilience for Climate Traumas, Toxic Stresses*. https://climatereadiness.info/wp-content/uploads/2018/04/Buiding-A-Culture-of-Transformational-Resilience-in-Communities-4-3-18-.pdf

Galway, L. P., & Field, E. (2023). Climate emotions and anxiety among young people in Canada: A national survey and call to action. *The Journal of Climate Change and Health*, *9*, 100204. https://doi.org/10.1016/j.joclim.2023.100204

Gelderman, G. (2022). *Political and Climate Grief Circles*. Gabrielle Gelderman. https://gabriellegelderman.squarespace.com/upcomingevents

Gifford, E., & Gifford, R. (2016). The largely unacknowledged impact of climate change on mental health. *Bulletin of the Atomic Scientists*, *72*(5), 292–297. https://doi.org/10.1080/00963402.2016.1216505

Gislason, M. K., Kennedy, A. M., & Witham, S. M. (2021). The interplay between social and ecological determinants of mental health for children and youth in the climate crisis. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094573

Godden, N. ., Farrant, B. M., Yallup Farrant, J., Heyink, E., Carot Collins, E., Burgemeister, B., Tabeshfar, M., Barrow, J., West, M., Kieft, J., Rothwell, M., Leviston, Z., Bailey, S., Blaise, M., & Cooper, T. (2021). Climate change, activism, and supporting the mental health of children and young people: Perspectives from Western Australia. *Journal of Paediatrics and Child Health*, *57*(11), 1759–1764. https://doi.org/https://dx.doi.org/10.1111/jpc.15649

González-Hidalgo, M., Del Bene, D., Iniesta-Arandia, I., & Piñeiro, C. (2022). Emotional healing as part of environmental and climate justice processes: Frameworks and community-based experiences in times of environmental suffering. *Political Geography*, *98*, 102721. https://doi.org/10.1016/j.polgeo.2022.102721

Haines, G. (2021, September 6). Introducing 'climate cafés', where you drink tea and talk global warming. *Positive News*. https://www.positive.news/environment/climate-crisis-the-rise-of-the-climate-cafe/

Hayashi, P., Abib, G., & Hoppen, N. (2019). Validity in qualitative research: A processual approach. *Qualitative Report*, *24*(1), 98–112. https://doi.org/10.46743/2160-3715/2019.3443

Hendersson, H., & Wamsler, C. (2020). New stories for a more conscious, sustainable society: claiming authorship of the climate story. *Climatic Change*, *158*(3–4), 345–359. https://doi.org/10.1007/S10584-019-02599-Z

Hickman, C. (2020). We need to (find a way to) talk about … Eco-anxiety. *Journal of Social Work Practice*, *34*(4), 411–424. https://doi.org/10.1080/02650533.2020.1844166

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, *5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3

hooks, b. (1999). *All About Love: New Visions* (1st ed.). William Morrow Publishing.

Hwong, A. R., Wang, M., Khan, H., Chagwedera, D. N., Grzenda, A., Doty, B., Benton, T., Alpert, J., Clarke, D., & Compton, W. M. (2022). Climate change and mental health research methods, gaps, and priorities: a scoping review. *The Lancet Planetary Health*, *6*(3), e281–e291. https://doi.org/10.1016/S2542-5196(22)00012-2

Kawamichi, H., Yoshihara, K., Sasaki, A. T., Sugawara, S. K., Tanabe, H. C., Shinohara, R., Sugisawa, Y., Tokutake, K., Mochizuki, Y., Anme, T., & Sadato, N. (2015). Perceiving active listening activates the reward system and improves the impression of relevant experiences. *Social Neuroscience*, *10*(1), 16–26. https://doi.org/10.1080/17470919.2014.954732

Leimbach, T., Kent, J., Walker, J., & Allen, L. (2020). *Staying sane in the face of climate change and other dilemmas: A toolkit of emerging ideas to support emotional resilience, mental health and action*. https://www.uts.edu.au/sites/default/files/2022-12/Staying sane in the face of climate change.pdf

Lub, V. (2015). Validity in Qualitative Evaluation: Linking Purposes, Paradigms, and Perspectives. *International Journal of Qualitative Methods*, *14*(5), 1–8. https://doi.org/10.1177/1609406915621406

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine*, *301*. https://doi.org/10.1016/j.socscimed.2022.114888

Macy, J. (1995). Working Through Environmental Despair. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 240–260). Sierra Club Books.

Macy, J. (2020). *A Wild Love for the World: Joanna Macy and the Work of our Time* (S. Kaza (ed.); First Edit). Shambhala.

Martin, G., Reilly, K., Everitt, H., & Gilliland, J. A. (2022). Review: The impact of climate change awareness on children's mental well-being and negative emotions - a scoping review. *Child and Adolescent Mental Health*, *27*(1), 59–72.

https://doi.org/https://dx.doi.org/10.1111/camh.12525

McGushin, A., Gasparri, G., Graef, V., Ngendahayo, C., Timilsina, S., Bustreo, F., & Costello, A. (2022). Adolescent wellbeing and climate crisis: adolescents are responding, what about health professionals? *BMJ*, e071690. https://doi.org/10.1136/bmj-2022-071690

Petrasek MacDonald, J., Cunsolo Willox, A., Ford, J. D., Shiwak, I., Wood, M., Wolfrey, C., Baikie, M., Andresen, A., Nochasak, N., Piercy, W., Flowers, J., Gear, D., Jacque, G., Jacque, H., Groves, M., & the Rigolet Inuit Community Government. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science and Medicine*, *141*, 133–141. https://doi.org/10.1016/J.SOCSCIMED.2015.07.017

Ray, S. J. (2020). *A Field Guide to Climate Anxiety: How to Keep Your Cool on a Warming Planet* (1st ed.). University of California Press. https://doi.org/10.2307/j.ctvw1d67m

Sanson, A. V., & Bellemo, M. (2021). Children and youth in the climate crisis. *BJPsych Bulletin*, 1–5. https://doi.org/10.1192/BJB.2021.16

Sanson, A. V., Van Hoorn, J., & Burke, S. E. L. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201–207. https://doi.org/10.1111/cdep.12342

Sheth, C., McGlade, E., & Yurgelun-Todd, D. (2017). Chronic Stress in Adolescents and Its Neurobiological and Psychopathological Consequences: An RDoC Perspective. *Chronic Stress (Thousand Oaks)*, *1*(2470547017715645). https://doi.org/10.1177/2470547017715645

Simon, L. (2022). *The Youth Climate Circle*. One Resilient Earth. https://oneresilientearth.org/the-youth-climate-circle/

Srivastava, P., & Hopwood, N. (2009). A Practical Iterative Framework for Qualitative Data Analysis. *International Journal of Qualitative Methods*, *8*(1), 76–84. https://doi.org/10.1177/160940690900800107

Stuart, L. (2021). *Death Cafe Toronto: A Space to Talk About Life and Death*. Blog: Funerals, Death, and Dying. https://linda-stuart.ca/death-cafe-toronto-a-space-to-talk-about-life-and-death/

Tanasugarn, A. (2022, July 7). How Childhood Invalidation Affects Adult Well-Being. *Psychology Today*. https://www.psychologytoday.com/ca/blog/understanding-ptsd/202207/how-childhood-invalidation-affects-adult-well-being

Treble, M., Cosma, A., & Martin, G. (2023). Child and Adolescent Psychological Reactions to Climate Change: A Narrative Review Through an Existential Lens. In *Current Psychiatry Reports* (Vol. 25, Issue 8, pp. 357–363). Springer. https://doi.org/10.1007/s11920-023-01430-y

Udas, P. B., Fournier, B., Christianson, T., & Desbiens, S. (2021). What Can We Learn from Rural Youth in British Columbia, Canada? Environment and Climate Change-Issues and Solutions. *Sustainability*, *13*(24). https://doi.org/10.3390/su132413562

University of Guelph. (2023). *UofG Climate Café*. Sustainability Office: Our Projects. https://www.uoguelph.ca/campussustainability/climatecafe

van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwong, A. R. (2021). The Effects of Climate Change on Child and Adolescent Mental Health: Clinical Considerations. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01296-y

Vergunst, F., & Berry, H. L. (2021). Climate Change and Children's Mental Health: A Developmental Perspective. *Clinical Psychological Science*, *10*(4), 767–785. https://doi.org/10.1177/21677026211040787

Weger, H., Castle Bell, G., Minei, E. M., & Robinson, M. C. (2014). The Relative Effectiveness of Active Listening in Initial Interactions. *International Journal of Listening*, *28*(1), 13–31. https://doi.org/10.1080/10904018.2013.813234

Wise, M. (2022). *Climate Wellbeing Resource Kit*. https://ubcclimatehub.ca/project/climate-wellbeing-resource-kit/

Wise, M., Xie, M., & Anderson, L. (2021). *Climate Doom to Messy Hope: Climate Healing & Resilience - A Practical Handbook for Climate Educators and Community*. https://ubcclimatehub.ca/wp-content/uploads/2022/09/Climate-Doom-to-Messy-Hope-Handbook.pdf

Wray, B. (2023). *Generation dread : finding purpose in an age of climate anxiety*. The Experiment, LLC.

Wu, J. (2021). *Addressing and Coping with Climate Grief: A Toolkit for Group and Individual Use*. https://sustain.ubc.ca/sites/default/files/2020-077b_Climate Grief Toolkit _Wu_0.pdf

Wu, J., Snell, G., & Samji, H. (2020). Climate anxiety in young people: a call to action. *The Lancet Planetary Health*, *4*(10), e435–e436. https://doi.org/10.1016/S2542-5196(20)30223-0

Chapter Four: Discussion

4.1 Research objectives

Climate change can be an acute and chronic stressor that poses direct and indirect threats to mental health and wellbeing. For children and young people, this can affect them from their prenatal environment well into adulthood (Burke et al., 2018; Lafortune et al., 2021; Sheth et al., 2017; Wu et al., 2020). Exposure to acute climatic events (e.g. flooding, wildfires), chronic environmental changes (e.g. sea level rise, declining sea ice, drought), and increasing awareness of current and anticipated climate change (e.g. media, friends, family) can result in mental disorders, non-clinical mental health outcomes, and disruptions to life and wellbeing (Cissé et al., 2022; Gibson et al., 2020; Harper et al., 2022). In light of the current and imminent climatic changes (IPCC, 2021; Seneviratne et al., 2021) continuing to impact mental health, the objectives of this research were to:

1) synthesize evidence that has been published on (a) climate change and mental health risks for children and young people; (b) protective factors that enhance resilience to these risks; and (c) supports and coping strategies to increase the resilience of children and young people and reduce negative mental health outcomes related to climate change; and
2) explore young peoples' experiences at climate cafés in Canada and
3) characterize how climate cafés impact the emotional and psychological resilience of young people and their ability to deal with various climate emotions.

4.2 Summary of findings

4.2.1 Systematic review

Through our systematic review, data were extracted from 235 articles published between 2010 and 2022 that discussed the mental health impacts of climate change on children and young people (ages 6-29). Most of these articles were published between 2018 and 2022 and focused largely on populations in the global North. Most articles referred broadly to climate change, and the most frequently reported climate hazards were flooding, drought, temperature, and wildfires. The mental health outcomes reported most frequently from exposure to these climate hazards

were impacts to emotional/psychological wellbeing followed by anxiety and depression. This was exhibited across all age groups; however, the most common age groups reported in the included articles were adolescents ages 13-17, followed by young adults ages 18-29, and children ages 6-12. The most frequently cited factor that increased mental health risks for children and young people was age, followed by female gender, displacement, economic insecurity, and disrupted social support networks. Across all age groups, strong social support networks were the most frequently reported protective factor. Following social support, culture was commonly noted as a protective factor for young adults, whereas education was most cited for children, and education and culture were both frequently reported for adolescents. Coping/adaptation strategies and interventions disclosed in the literature were predominantly school programs/changes to curriculum, enhancing community knowledge, and peer-to-peer support/activist groups.

4.2.2 Qualitative study

Through semi-structured interviews with climate café facilitators (n = 10), and youth (n = 7), who have attended climate cafés, the qualitative study for this thesis examined the experience of youth in these peer support spaces, and how climate cafés can support youth in processing climate emotion. Our study identified that youth and facilitators want to process climate emotion in community and see attending to their inner emotions as essential to their activism, and even a form of activism itself. Climate cafés play a role in shifting their attention from action to feelings, providing an opportunity to reframe climate activism from solely action-oriented to a practice that incorporates processing emotion, rest, creativity, joy, finding purpose, and building community. Climate cafés were described as honest, active listening spaces where they could share how they were feeling without worrying that they were burdening others, having to explain or justify their feelings, or listen to solutions or ways to fix these feelings. There's a community that is created in a climate café. Everyone is holding space for each other and creating a container in which emotions felt safe to be expressed which encouraged vulnerability. Receiving validation for their emotional experiences which was beneficial to youth in building resilience and sustaining their activism.

4.2.3 Strengths and limitations

While our review is a comprehensive synthesis of academic literature on how children and youth are responding mentally and emotionally to climate change, the search strings were in English, and relevant articles that did not have an English abstract, keywords, or full text may not have been captured. Additionally, the purpose of this scoping review was not to analyze the quality of research on climate-sensitive mental health outcomes for children and young people, and as such we cannot comment on the quality or rigor of the articles. Lastly, having multiple authors extract and analyze data would benefit the congruity of results.

The qualitative study offers an in-depth view of the experience of youth and facilitators in climate cafés and is the first study to our knowledge on experiences in climate cafés in Canada. While literature on the mental health impacts of climate change on youth show similarities in the experiences of youth in Canada and youth globally (Hickman et al., 2021), there are still differences given the type, frequency, and extent of climate change events experienced in Canada. Additionally, while participants lived across Canada, I did not speak to participants in all provinces and territories, therefore, the results are not meant to be representative of the experience of all those living in Canada, for example, Indigenous communities in northern Canada.

4.3 Relevance of findings in broader literature

4.3.1 Social support and adult mentorship

Literature included in the review and the qualitative study both identified that social support is a mitigating factor for climate sensitive mental health outcomes (Galway & Field, 2023; Ma et al., 2022). This is supported in broader mental health research as well. For example, in a psychological research study, Chinese undergraduate students found that high social support mitigated the impact of stress on depression, whereas those with high stress and low social supported reported higher scores in depression (Wang et al., 2014). Similarly, in an evaluation of a group peer support program for university students experiencing mental health difficulties, significant improvements in wellbeing were seen among students who attended more than one session (Byrom, 2018).

When not provided with the opportunity to express, validate, and normalize emotions, and share vulnerability within organized group discussions (Verlie et al., 2021, p. 141) or structural initiatives, peers are forced to solely rely on one another for expressing and processing emotion (Vandaele & Stalhammar, 2022, p. 279). Therefore, "the role of committed and caring adults cannot be overemphasized" (Udas et al., 2021, p. 13). Parents/caregivers, teachers, friends, peer groups, and trusted adults can protect mental health and wellbeing by offering a community of support (Carnie et al., 2011; MacKay et al., 2020; Pihkala, 2024; Sciberras & Fernando, 2022), by participating with youth in educational programs, recreational activities, being a trusted support network and role model, and creating a sense of security, safety, and belonging (Kornbluh et al., 2022; Petrasek MacDonald et al., 2015). Parents and caregivers can help young people develop coping strategies, such as positive re-appraisal, by acknowledging and validating their feelings, identifying positive ways to cope with those emotions, and helping them shift away from catastrophic and black-and-white thinking to more helpful, positive, and hopeful narratives that encourage agency (Burke et al., 2018; Hickman, 2020; Ojala, 2013; Sanson et al., 2018). The emphasis of these approaches on connecting children and young people with their community and environment, fostering solidarity and agency, and encouraging the expression and processing of emotion can support meaning-focused coping (Ojala, 2013). Adults can provide the compassionate and safe spaces that are needed for young people to explore climate-related losses and experiences, for example, climate cafés (Pihkala, 2024).

Taking a collective approach to care can provide children and young people with the relationships and resources they need to thrive. In interviews with climate café facilitators and youth participants, it was expressed that youth wanted to process these emotions in community. Their wisdom is supported by the knowledge and experience of scholars, such as Joanna Macy, who emphasize that this work is meant to be done in groups and, in fact, cannot be done alone. Like the Work that Reconnects (Work That Reconnects Network, 2024), climate cafés are a relational practice, which has been found to sustain social and environmental work. In addition to these groups providing a source of support during continuous difficult news, "group or relational practice helps mitigate tendencies to isolation and powerlessness and generate creative responses to large-scale challenges" (Macy, 2020, p. 28). Collective care in the form of peer and community support is essential to protecting the wellbeing of children and youth from climate-sensitive mental health outcomes, as "the ability to grieve collectively various climate losses may

have a very important political aspect" (Pihkala, 2024, p. 7) These emotional and resiliency-building skills are required for both personal healing and participating in social change and climate justice work (Ray, 2020).

4.3.2 Identity and activism

A theme arose in interviews around identity and feelings of self-worth. Multiple youth shared statements, such as "I am not good enough," and "I'm not doing enough." These sentiments or impacts to emotional and psychological wellbeing were identified in literature in the review as well, from feelings of helplessness to isolation and withdrawal (Mambrey et al., 2019; Threadgold, 2012). These feelings of inadequacy are shared by other environmentally active young people in the United States and Finland (Coppola & Pihkala, 2023). The external and internal pressure to solve the climate crisis is an untenable expectation that weighs heavily on young people. Part of the role of climate cafes can be to shift the aspiration to being "good-enough activists" (Loeb, 2014, as cited in Ray, 2020) to get out from underneath the thumb of cultural and societal systems that tell them they are not good enough, or worthy enough, or doing enough. This "attitude of inadequacy fuels capitalism" (Ray & Schmidt, 2023), and "the need for dramatic, visible action is a symptom of patriarchy" (Ray, 2020, p. 63). These systems influence how we attribute value to actions. There are certain actions, mostly those that are less visible and glamorous, that are not explicitly valued (Ray, 2020; Seymour, 2018), including community building, bearing witness to the climate crisis, disapproving of the status quo, attending meetings, and raising activist morale (Seymour, 2018). Therefore, attending a climate café is one of the actions that is not explicitly valued. In addition to cultural and societal systems influencing our beliefs, a sense of urgency can force us into more visible action over prioritizing some of these more implicitly valued activities (Ray, 2020). This was reflected in interviews where youth noted resistance to doing inner work and attending to their emotions from fear it would be too much or from struggling to prioritize the time for this work which they felt would take away from other responsibilities and activism. When urgency and identity or ego are motivating participation in climate activism, there is an invitation to re-evaluate. What could be helpful is to frame the distress one feels about the climate crisis as eco-empathy; feelings driven by care and compassion for people and the planet (Hickman, 2020). Hickman (2020) has found that these feelings have the potential to transform when welcomed and valued as eco-empathy.

Additionally, this act of reframing eco-anxiety and distress may motivate, rather than inhibit, action (Bright & Eames, 2022).

4.4 Future research

The research and understanding of the varying manifestations of climate-sensitive mental health outcomes, and the terms used to describe them, are constantly evolving and emerging (Pihkala, 2024). This dissertation highlights areas in which this future research can focus. As observed in our systematic review and qualitative study, identity can influence exposure to climate hazards and the severity of climate-sensitive mental health outcomes. The most vulnerable to both physical and mental health impacts include children and adolescents, the elderly, women and girls, Indigenous People, low-income and marginalized populations, and those with pre-existing mental, physical, and medical challenges (Cissé et al., 2022; Clayton, 2021; Clayton et al., 2017; Cunsolo Willox et al., 2015; Manning & Clayton, 2018; Sidun & Gibbons, 2023). Limited, but concerning, research identified in our review on how 2SLGBTQIA+ people experience climate-sensitive mental health outcomes (van Daalen et al., 2022; van Nieuwenhuizen et al., 2021), and the responses from gender queer youth in our qualitative study merits further research and consideration for the design and implementation of supports and services that include and affirm varying identities. Our review also identified limited research on certain mental health outcomes (e.g. psychoterratic syndromes, substance abuse, attachment disorders, bedwetting, and eating disorders) (Barkin et al., 2021; Canelón & Boland, 2020; Ellis & Albrecht, 2017; Mambrey et al., 2019; Vineis, 2010). Future research on these manifestations of emotional and psychological impacts is important for identifying, treating, and preventing potential long-lasting impacts for children and young people. Lastly, articles in our systematic review predominantly reported on past or current climate-mental health impacts, and only three articles presented future projected impacts. Therefore, this highlights an area that could be explored which may be helpful to mental health services, schools, and parents and caregivers in preparing for future climate-sensitive mental health outcomes and modes of prevention.

4.5 Conclusion

Anxiety, distress, substance use, isolation, grief, and solastalgia (Albrecht, 2019; Cissé et al., 2022; Cunsolo & Ellis, 2018; Hickman et al., 2021; Pihkala, 2022) are just some of the responses (Mercer, 2022) to the ways in which climate change is drastically impacting our social, economic, and physical environments. Increasing climate literacy, emotion-focused climate change curriculum, meaning-focused coping strategies and access to peer and social support, particularly spaces to process climate emotion in community, may be effective coping strategies that increase resilience. Supporting youth in fostering a sense of self worthiness and community, encouraging forms of activism that include rest and creativity, and validating their appropriate emotional and psychological responses to the climate crisis, is critical moving forward.

Part of the inspiration from this project came from my love of climate cafés. This experience gave me the opportunity to dig deeper into why. It also gave me the chance to hear other people's stories – their passion, love, grief, hope, or lack thereof. It was a gift, and it was incredibly challenging to hold at times. Hearing one youth after another say, 'I am not good enough,' only got more painful with each expression. Something we talked about in the Good Grief Network 10-step program I attended during this research was surrendering to or accepting the predicament of our time. I felt that sense of surrender almost being forced upon me after these interviews knowing that no matter how I analyzed or explained their pain, it is much too big and it is never going away, no matter how I tell their stories. My smallness was so evident in the encompassing vastness of their grief. And yet, I was given the opportunity to make connections, to remind other people and myself that we are not alone, and that is no small thing. This research also brought up my own climate emotions, grief that I discovered I partly used academia to try and drown out, the uncertainty about what my own future will look like, and the guilt that followed close behind knowing it is my privilege to still have a future to dream about and create. Part of that future is designing youth-focused peer support feeling spaces, like climate cafés, with some of the connections I made through this work. I hope to continue learning about and facilitating these healing spaces and I am thankful to this project for the inspiration and knowledge. I consistently found myself in awe of the wisdom of the youth I spoke to, their love for each other and the planet, and their commitment to showing up, whether or not they feel hopeful.

Lastly, I was reminded, yet again, that it is always important to listen. Crafted of phrases directly from participant interviews, this is what some young people have to say:

It is our entire life

It's a constant, continuous, heavy weight
Never ending layers of bad stuff
My brain is always thinking about it
I can't shut it off even when I want to

It is our entire life

Because I understand the reality we are facing
I don't think we're going to be able to do it
We don't have time for this
Hope is not a happy feeling

It is our entire life

You can say you are not doing well
Honest grief heals
I am angry
The people who love you let you down

It is our entire life

I feel guilty
Someone has it harder than me
I am not doing enough
I can't justify doing less

It is our entire life

I am not enough

We were all crying
I am not enough
We were all crying

It is our entire life

Loving rage
I have that in my elbows
Trust over hope
There's not another option I would prefer to head towards

It is our entire life

There is still meaning, and beauty, and community
Joy in being present
You don't have to be hopeful
Just show up

It is our entire life

References

Albrecht, G. A. (2019). *Earth Emotions: New Words for a New World*. Cornell University Press.

Barkin, J. L., Buoli, M., Curry, C. L., von Esenwein, S. A., Upadhyay, S., Kearney, M. B., & Mach, K. (2021). Effects of extreme weather events on child mood and behavior. *Developmental Medicine and Child Neurology*, *63*(7), 785–790. https://doi.org/10.1111/dmcn.14856

Bright, M. L., & Eames, C. (2022). From apathy through anxiety to action: emotions as motivators for youth climate strike leaders. *Australian Journal of Environmental Education*, *38*(1), 13–25. https://doi.org/10.1017/aee.2021.22

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/s11920-018-0896-9

Byrom, N. (2018). An evaluation of a peer support intervention for student mental health. *Journal of Mental Health*, *27*(3), 240–246. https://doi.org/10.1080/09638237.2018.1437605

Canelón, S. P., & Boland, M. R. (2020). A systematic literature review of factors affecting the timing of Menarche: The potential for climate change to impact women's health. *International Journal of Environmental Research and Public Health*, *17*(5). https://doi.org/10.3390/IJERPH17051703

Carnie, T.-L., Berry, H. L., Blinkhorn, S. A., & Hart, C. R. (2011). In their own words: Young people's mental health in drought-affected rural and remote NSW. *Australian Journal of Rural Health*, *19*(5), 244–248. https://doi.org/10.1111/j.1440-1584.2011.01224.x

Cissé, G., McLeman, R., Adams, H., Aldunce, P., Bowen, K., Campbell-Lendrum, D., Clayton, S., Ebi, K. L., Hess, J., Huang, C., Liu, Q., McGregor, G., Semenza, J., & Tirado, M. C. (2022). Health, Wellbeing, and the Changing Structure of Communities. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1041–1170). Cambridge University Press.

Clayton, S. (2021). Climate Change and Mental Health. *Current Environmental Health Reports*, *8*(1), 1–6. https://doi.org/10.1007/s40572-020-00303-3

Clayton, S., Manning, C. M., Krygsman, K., & Speiser, M. (2017). *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*.

Coppola, I., & Pihkala, P. (2023). Complex dynamics of climate emotions among environmentally active Finnish and American young people. *Frontiers in Political Science*, *4*. https://doi.org/10.3389/fpos.2022.1063741

Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, *8*(4), 275–281. https://doi.org/10.1038/s41558-018-0092-2

Cunsolo Willox, A., Stephenson, E., Allen, J., Bourque, F., Drossos, A., Elgarøy, S., Kral, M. J., Mauro, I., Moses, J., Pearce, T., MacDonald, J. P., & Wexler, L. (2015). Examining relationships between climate change and mental health in the Circumpolar North. *Regional Environmental Change*, *15*(1), 169–182. https://doi.org/10.1007/s10113-014-0630-z

Ellis, N. R., & Albrecht, G. A. (2017). Climate change threats to family farmers' sense of place and mental wellbeing: A case study from the Western Australian Wheatbelt. *Social Science & Medicine*, *175*, 161–168. https://doi.org/10.1016/j.socscimed.2017.01.009

Galway, L. P., & Field, E. (2023). Climate emotions and anxiety among young people in Canada: A national survey and call to action. *The Journal of Climate Change and Health*, *9*, 100204. https://doi.org/10.1016/j.joclim.2023.100204

Gibson, K. E., Barnett, J., Haslam, N., & Kaplan, I. (2020). The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders*, *73*. https://doi.org/10.1016/j.janxdis.2020.102237

Harper, S. L., Cunsolo, A., & Clayton, S. (2022). Including mental health as part of climate change impacts and adaptation assessment: A critical advance in IPCC AR6. *PLOS Climate*, *1*(5), e0000033. https://doi.org/10.1371/journal.pclm.0000033

Hickman, C. (2020). We need to (find a way to) talk about … Eco-anxiety. *Journal of Social Work Practice*, *34*(4), 411–424. https://doi.org/10.1080/02650533.2020.1844166

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, *5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte, P. Zhai, A. Priani, S. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. Matthews, T. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009157896

Kornbluh, M., Withers, M. C., Ades, J., Grennan, G., & Mishra, J. (2022). Identifying protective socio-ecological factors for college students in California's deadliest wildfire. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2047706

Lafortune, S., Laplante, D. P., Elgbeili, G., Li, X., Lebel, S., Dagenais, C., & King, S. (2021). Effect of natural disaster-related prenatal maternal stress on child development and health: A meta-analytic review. *International Journal of Environmental Research and Public Health*, *18*(16). https://doi.org/10.3390/ijerph18168332

Loeb, P. R. (2014). *The Impossible Will Take a Little While: Perseverance and Hope in Troubled Times* (P. R. Loeb (ed.)). Basic Books.

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine*, *301*. https://doi.org/10.1016/j.socscimed.2022.114888

MacKay, M., Parlee, B., & Karsgaard, C. (2020). Youth engagement in climate change action: Case study on indigenous youth at COP24. *Sustainability (Switzerland)*, *12*(16). https://doi.org/10.3390/SU12166299

Macy, J. (2020). *A Wild Love for the World: Joanna Macy and the Work of our Time* (S. Kaza (ed.); First Edit). Shambhala.

Mambrey, V., Wermuth, I., & Böse-O'Reilly, S. (2019). Extreme weather events and their impact on the mental health of children and adolescents. *Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz*, *62*(5), 599–604. https://doi.org/10.1007/S00103-019-02937-7

Manning, C., & Clayton, S. (2018). Threats to mental health and wellbeing associated with climate change. In *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 217–244). Elsevier. https://doi.org/10.1016/B978-0-12-813130-5.00009-6

Mercer, J. A. (2022). Children and Climate Anxiety: An Ecofeminist Practical Theological Perspective. *Religions*, *13*(4). https://doi.org/10.3390/rel13040302

Ojala, M. (2013). Coping with climate change among adolescents: Implications for subjective well-being and environmental engagement. *Sustainability (Switzerland)*, *5*(5), 2191–2209. https://doi.org/10.3390/SU5052191

Petrasek MacDonald, J., Cunsolo Willox, A., Ford, J. D., Shiwak, I., Wood, M., Wolfrey, C., Baikie, M., Andresen, A., Nochasak, N., Piercy, W., Flowers, J., Gear, D., Jacque, G., Jacque, H., Groves, M., & the Rigolet Inuit Community Government. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science and Medicine*, *141*, 133–141. https://doi.org/10.1016/J.SOCSCIMED.2015.07.017

Pihkala, P. (2022). Toward a Taxonomy of Climate Emotions. *Frontiers in Climate*, *3*. https://doi.org/10.3389/fclim.2021.738154

Pihkala, P. (2024). Climate Anxiety, Maturational Loss, and Adversarial Growth. *Psychoanalytic Study of the Child*, *00*(00), 1–20. https://doi.org/10.1080/00797308.2023.2287382

Ray, S. J. (2020). *A Field Guide to Climate Anxiety: How to Keep Your Cool on a Warming Planet* (1st ed.). University of California Press. https://doi.org/10.2307/j.ctvw1d67m

Ray, S. J., & Schmidt, L. (2023). *Eco-Anxiety Panelist Discussion*. University of California, Santa Barbara.

Sanson, A. V., Burke, S. E. L., & Van Hoorn, J. (2018). Climate Change: Implications for Parents and Parenting. *Parenting: Science & Practice*, *18*(3), 200–217. https://doi.org/10.1080/15295192.2018.1465307

Sciberras, E., & Fernando, J. W. (2022). Climate change-related worry among Australian adolescents: an eight-year longitudinal study. *Child and Adolescent Mental Health*, *27*(1), 22–29. https://doi.org/10.1111/camh.12521

Seneviratne, S. I. ., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S.,

Wehner, M., & Zho, B. (2021). Weather and Climate Extreme Events in a Changing Climate. In V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. YelekçiR. Yu, & B. Zhou (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1513–1766). Cambridge University Press.

Seymour, N. (2018). *Bad Environmentalism: Irony and Irreverence in the Ecological Age*. University of Minnesota Press.

Sheth, C., McGlade, E., & Yurgelun-Todd, D. (2017). Chronic Stress in Adolescents and Its Neurobiological and Psychopathological Consequences: An RDoC Perspective. *Chronic Stress (Thousand Oaks)*, *1*(2470547017715645). https://doi.org/10.1177/2470547017715645

Sidun, N. M., & Gibbons, J. L. (2023). Women, girls, and climate change: Human rights, vulnerabilities, and opportunities. *International Journal of Psychology*. https://doi.org/10.1002/ijop.12942

Threadgold, S. (2012). "I reckon my life will be easy, but my kids will be buggered": Ambivalence in young people's positive perceptions of individual futures and their visions of environmental collapse. *Journal of Youth Studies*, *15*(1), 17–32. https://doi.org/10.1080/13676261.2011.618490

Udas, P. B., Fournier, B., Christianson, T., & Desbiens, S. (2021). What Can We Learn from Rural Youth in British Columbia, Canada? Environment and Climate Change-Issues and Solutions. *Sustainability*, *13*(24). https://doi.org/10.3390/su132413562

van Daalen, K. R., Kallesoe, S. S., Davey, F., Dada, S., Jung, L., Singh, L., Issa, R., Emilian, C. A., Kuhn, I., Keygnaert, I., & Nilsson, M. (2022). Extreme events and gender-based violence: a mixed-methods systematic review. *The Lancet. Planetary Health*, *6*(6), e504–e523. https://doi.org/10.1016/S2542-5196(22)00088-2

van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwong, A. R. (2021). The Effects of Climate Change on Child and Adolescent Mental Health: Clinical Considerations. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01296-y

Vandaele, M., & Stalhammar, S. (2022). "Hope dies, action begins?" The role of hope for proactive sustainability engagement among university students. *International Journal of Sustainability in Higher Education*, *23*(8), 272–289. https://doi.org/10.1108/IJSHE-11-2021-0463

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education*, *37*(2), 132–146. https://doi.org/10.1017/aee.2020.34

Vineis, P. (2010). Climate change and the diversity of its health effects. *International Journal of Public Health*, *55*(2), 81–82. https://doi.org/10.1007/S00038-009-0092-0

Wang, X., Cai, L., Qian, J., & Peng, J. (2014). Social support moderates stress effects on

depression. *International Journal of Mental Health Systems*, *8*(41).

Work That Reconnects Network. (2024). *What is the Work that Reconnects?* https://workthatreconnects.org/what-is-the-work-that-reconnects/

Wu, J., Snell, G., & Samji, H. (2020). Climate anxiety in young people: a call to action. *The Lancet Planetary Health*, *4*(10), e435–e436. https://doi.org/10.1016/S2542-5196(20)30223-0

Bibliography

Akomolafe, B. (2019, August 17). *What climate collapse asks of us*. Bayo Akomolafe: Writings. https://www.bayoakomolafe.net/post/what-climate-collapse-asks-of-us

Albrecht, G. A. (2019). *Earth Emotions: New Words for a New World*. Cornell University Press.

Albrecht, G. A., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The Distress Caused by Environmental Change. *Australasian Psychiatry*, *15*, S95–S98. https://doi.org/10.1080/10398560701701288

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Arnout, B. A. (2023). An epidemiological study of mental health problems related to climate change: A procedural framework for mental health system workers. *Work*, *75*(3), 813–835. https://doi.org/10.3233/WOR-220040

Aylward, B., Cunsolo, A., Vriezen, R., & Harper, S. L. (2022). Climate change is impacting mental health in North America: A systematic scoping review of the hazards, exposures, vulnerabilities, risks and responses. *International Review of Psychiatry*, *34*(1), 34–50. https://doi.org/10.1080/09540261.2022.2029368

Barkin, J. L., Buoli, M., Curry, C. L., von Esenwein, S. A., Upadhyay, S., Kearney, M. B., & Mach, K. (2021). Effects of extreme weather events on child mood and behavior. *Developmental Medicine and Child Neurology*, *63*(7), 785–790. https://doi.org/10.1111/dmcn.14856

Bellamy, C., Schmutte, T., & Davidson, L. (2017). An update on the growing evidence base for peer support. *Mental Health and Social Inclusion*, *21*(3), 161–167. https://doi.org/10.1108/MHSI-03-2017-0014

Benevolenza, M. A., & DeRigne, L. (2019). The impact of climate change and natural disasters on vulnerable populations: A systematic review of literature. *Journal of Human Behavior in the Social Environment*, *29*(2), 266–281. https://doi.org/10.1080/10911359.2018.1527739

Bentz, J. (2020). Learning about climate change in, with and through art. *Climatic Change*, *162*(3), 1595–1612. https://doi.org/10.1007/s10584-020-02804-4

Berberian, A. G., Gonzalez, D. J. X., & Cushing, L. J. (2022). Racial Disparities in Climate Change-Related Health Effects in the United States. *Current Environmental Health Reports*, *9*(3), 451–464. https://doi.org/10.1007/s40572-022-00360-w

Berrang-Ford, L., Sietsma, A. J., Callaghan, M., Minx, J. C., Scheelbeek, P. F. D., Haddaway, N. R., Haines, A., & Dangour, A. D. (2021). Systematic mapping of global research on climate

and health: a machine learning review. *The Lancet Planetary Health*, *5*(8), e514–e525. https://doi.org/10.1016/S2542-5196(21)00179-0

Berry, H. L., Bowen, K., & Kjellstrom, T. (2010). Climate change and mental health: A causal pathways framework. *International Journal of Public Health*, *55*(2), 123–132. https://doi.org/10.1007/s00038-009-0112-0

Berse, K. (2017). Climate change from the lens of Malolos children: perception, impact and adaptation. *Disaster Prevention and Management*, *26*(2), 217–229. https://doi.org/10.1108/DPM-10-2016-0214

Boeije, H. (2002). A Purposeful Approach to the Constant Comparative Method in the Analysis of Qualitative Interviews. *Quality & Quantity*, *36*, 391–409. https://doi.org/10.1023/A:1020909529486

Boykoff, M., & Osnes, B. (2019). A Laughing matter? Confronting climate change through humor. *Political Geography*, *68*, 154–163. https://doi.org/10.1016/j.polgeo.2018.09.006

Brach, T. (2012, May 21). *The Sacred Pause*. Blog: Notes on Healing and Awakening. https://www.tarabrach.com/the-sacred-pause-2/

Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. *Handbook of Research Methods in Health Social Sciences*, 843–860. https://doi.org/10.1007/978-981-10-5251-4_103

Bright, M. L., & Eames, C. (2022). From apathy through anxiety to action: emotions as motivators for youth climate strike leaders. *Australian Journal of Environmental Education*, *38*(1), 13–25. https://doi.org/10.1017/aee.2021.22

Brown, B. (2010, December 23). The Power of Vulnerability. In *TED Talk*. https://brenebrown.com/videos/ted-talk-the-power-of-vulnerability/

Bryant, A. (2019). *Climate Café International*. Climate & Mind. https://www.climateandmind.org/climate-cafe

Budziszewska, M., & Kalwak, W. (2022). Climate depression. Critical analysis of the concept. *Psychiatria Polska*, *56*(1), 171–182. https://doi.org/10.12740/PP/127900

Burke, E., Pyle, M., Machin, K., Varese, F., & Morrison, A. P. (2019). The Effects of Peer Support on Empowerment, Self-Efficacy, and Internalized Stigma: A Narrative Synthesis and Meta-Analysis. *Stigma and Health*, *4*(3), 337–356. https://doi.org/10.1037/sah0000148.supp

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018a). The Psychological Effects of Climate Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/s11920-018-0896-9

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018b). The Psychological Effects of Climate

Change on Children. *Current Psychiatry Reports*, *20*(5). https://doi.org/10.1007/S11920-018-0896-9

Byrom, N. (2018). An evaluation of a peer support intervention for student mental health. *Journal of Mental Health*, *27*(3), 240–246. https://doi.org/10.1080/09638237.2018.1437605

Campbell-Lendrum, D., Neville, T., Schweizer, C., & Neira, M. (2023). Climate change and health: three grand challenges. *Nature Medicine*, *29*(7), 1631–1638. https://doi.org/10.1038/s41591-023-02438-w

Canelón, S. P., & Boland, M. R. (2020). A systematic literature review of factors affecting the timing of Menarche: The potential for climate change to impact women's health. *International Journal of Environmental Research and Public Health*, *17*(5). https://doi.org/10.3390/IJERPH17051703

Carbon Conversations Toronto. (2023). *Climate Cafés*. https://www.carbonconversationsto.com/climate-cafes#:~:text=CCTO's Climate Café is,as you're comfortable with.

Carnie, T.-L., Berry, H. L., Blinkhorn, S. A., & Hart, C. R. (2011). In their own words: Young people's mental health in drought-affected rural and remote NSW. *Australian Journal of Rural Health*, *19*(5), 244–248. https://doi.org/10.1111/j.1440-1584.2011.01224.x

Carrico, B., & Litner, J. (2021, July 19). *What is Emotional Invalidation?* PsychCentral. https://psychcentral.com/health/reasons-you-and-others-invalidate-your-emotional-experience

Charlesworth Author Services. (2022). *Your point of view: Writing Perspective, Opinion and Commentary articles*. https://www.cwauthors.com/article/writing-perspective-opinion-and-commentary-articles

Charlson, F., Ali, S., Benmarhnia, T., Pearl, M., Massazza, A., Augustinavicius, J., & Scott, J. G. (2021). Climate change and mental health: A scoping review. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094486

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis* (1st ed.). Sage Publications.

Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, *2*(3), 619–642. https://doi.org/10.1002/pan3.10128

Cianconi, P., Betrò, S., & Janiri, L. (2020). The Impact of Climate Change on Mental Health: A Systematic Descriptive Review. *Frontiers in Psychiatry*, *11*(March), 1–15. https://doi.org/10.3389/fpsyt.2020.00074

Cissé, G., McLeman, R., Adams, H., Aldunce, P., Bowen, K., Campbell-Lendrum, D., Clayton, S., Ebi, K. L., Hess, J., Huang, C., Liu, Q., McGregor, G., Semenza, J., & Tirado, M. C.

(2022). Health, Wellbeing, and the Changing Structure of Communities. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1041–1170). Cambridge University Press.

Clarke, S., & Hoggett, P. (2009). Researching beneath the surface: a psycho-social approach to research practice and method. In S. Clarke & P. Hoggett (Eds.), *Researching Beneath the Surface: Psycho-Social Research Methods in Practice* (1st ed., pp. 1–26). Routledge. https://doi.org/10.4324/9780429479564

Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders*, *74*, 102263. https://doi.org/10.1016/j.janxdis.2020.102263

Clayton, S. (2021). Climate Change and Mental Health. *Current Environmental Health Reports*, *8*(1), 1–6. https://doi.org/10.1007/s40572-020-00303-3

Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*, *69*. https://doi.org/10.1016/j.jenvp.2020.101434

Clayton, S., Manning, C. M., Hill, A. N., & Speiser, M. (2023). *Mental Health and Our Changing Climate: Children and Youth Report 2023*.

Clayton, S., Manning, C. M., Krygsman, K., & Speiser, M. (2017). *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*.

Climate Psychology Alliance. (2022). *Climate Cafés*. https://www.climatepsychologyalliance.org/index.php/component/content/article/climate-cafes?catid=13&Itemid=101

Climate Psychology Alliance. (2023). *Youth Support Space*. Climate Psychology Alliance. https://www.climatepsychologyalliance.org/index.php/component/content/article/youth-support-programme?catid=14&Itemid=101

Climate Therapy Alliance - Pacific Northwest. (2019). *Emotional Resilience Toolkit for Climate Work (Version 1.5)*. https://secureservercdn.net/198.71.233.109/vjx.f43.myftpupload.com/wp-content/uploads/2019/10/Emotional-Resilience-Toolkit-for-Climate-Work-v1.5-04Oct19-2.pdf

Collingwood Climate Action Team. (2023). *Climate Cafés*. https://www.collingwoodclimateaction.com/climate-cafes

Coppola, I., & Pihkala, P. (2023). Complex dynamics of climate emotions among environmentally active Finnish and American young people. *Frontiers in Political Science*, *4*. https://doi.org/10.3389/fpos.2022.1063741

Corvalan, C., Gray, B., Prats, E. V., Sena, A., Hanna, F., & Campbell-Lendrum, D. (2022). Mental health and the global climate crisis. *Epidemiology and Psychiatric Sciences*, *31*. https://doi.org/10.1017/S2045796022000361

Crandon, T. J., Scott, J. G., Charlson, F. J., & Thomas, H. J. (2022). A social–ecological perspective on climate anxiety in children and adolescents. *Nature Climate Change*, *12*(2), 123–131. https://doi.org/10.1038/s41558-021-01251-y

Creutzig, F., Roy, J., Devine-Wright, P., Díaz-José, J., Geels, F. W., Grubler, A., Maïzi, N., Masanet, E., Mulugetta, Y., Onyige, C. D., Perkins, P. E., Sanches-Pereira, A., & Weber, E. U. (2022). Demand, Services and Social Aspects of Mitigation. In P. R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, & J. Malley (Eds.), *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 503–612). Cambridge University Press. https://doi.org/10.1017/9781009157926.007

Crisp, G. (2015). No Time For Games: Children's Health and Climate Change. *69th Western Australia State Environmental Health Conference*.

Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, *8*(4), 275–281. https://doi.org/10.1038/s41558-018-0092-2

Cunsolo Willox, A., Harper, S. L., Ford, J. D., Landman, K., Houle, K., & Edge, V. L. (2012). "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science and Medicine*, *75*(3), 538–547. https://doi.org/10.1016/J.SOCSCIMED.2012.03.043

Cunsolo Willox, A., Stephenson, E., Allen, J., Bourque, F., Drossos, A., Elgarøy, S., Kral, M. J., Mauro, I., Moses, J., Pearce, T., MacDonald, J. P., & Wexler, L. (2015). Examining relationships between climate change and mental health in the Circumpolar North. *Regional Environmental Change*, *15*(1), 169–182. https://doi.org/10.1007/s10113-014-0630-z

Dawes, N., Franklin, R., McIver, L., & Obed, J. (2019). Post-disaster mental health servicing in Pacific Island communities: An integrative review. *International Journal of Disaster Risk Reduction*, *38*. https://doi.org/10.1016/J.IJDRR.2019.101225

Devonald, M., Vintges, J., & Jones, N. (2022). Supporting adolescent mental health in humanitarian settings: To what extent do interventions consider climate change and its intersectional impacts? *Intervention* , *20*(1), 81–97. https://doi.org/10.4103/intv.intv_31_21

Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, *66*(4), 265–276. https://doi.org/10.1037/a0023141

Doppelt, B. (2020). Building a Culture of Transformational Resilience in Organizations and Communities for Climate Traumas and Toxic Stresses. In *Building Transformational Resilience for Climate Traumas, Toxic Stresses*. https://climatereadiness.info/wp-

content/uploads/2018/04/Buiding-A-Culture-of-Transformational-Resilience-in-Communities-4-3-18-.pdf

Ebi, K. L., Vanos, J., Baldwin, J. W., Bell, J. E., Hondula, D. M., Errett, N. A., Hayes, K., Reid, C. E., Saha, S., Spector, J., & Berry, P. (2020). Extreme Weather and Climate Change: Population Health and Health System Implications. *Annual Review of Public Health*, *42*, 293–315. https://doi.org/10.1146/annurev-publhealth-012420-105026

Ellis, N. R., & Albrecht, G. A. (2017). Climate change threats to family farmers' sense of place and mental wellbeing: A case study from the Western Australian Wheatbelt. *Social Science & Medicine*, *175*, 161–168. https://doi.org/10.1016/j.socscimed.2017.01.009

Fernández-Giménez, M. E., Jennings, L. B., & Wilmer, H. (2018). Poetic inquiry as a research and engagement method in natural resource science. *Society & Natural Resources*, *32*(10), 1080–1109. https://doi.org/10.1080/08941920.2018.1486493

Flanagan, C. (2022). Commentary: Proactive practices to support youth coping with climate change - a commentary on Martin et al. (2021). *Child and Adolescent Mental Health*, *27*(1), 94–95. https://doi.org/10.1111/camh.12538

Frydenberg, E. (2020). My journey in coping research and practice: The impetus and the relevance. *Educational and Developmental Psychologist*, *37*(1), 83–90. https://doi.org/10.1017/edp.2020.9

Galway, L. P., & Field, E. (2023). Climate emotions and anxiety among young people in Canada: A national survey and call to action. *The Journal of Climate Change and Health*, *9*, 100204. https://doi.org/10.1016/j.joclim.2023.100204

Gelderman, G. (2022). *Political and Climate Grief Circles*. Gabrielle Gelderman. https://gabriellegelderman.squarespace.com/upcomingevents

Gibson, K. E., Barnett, J., Haslam, N., & Kaplan, I. (2020). The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders*, *73*. https://doi.org/10.1016/j.janxdis.2020.102237

Gifford, E., & Gifford, R. (2016). The largely unacknowledged impact of climate change on mental health. *Bulletin of the Atomic Scientists*, *72*(5), 292–297. https://doi.org/10.1080/00963402.2016.1216505

Gillard, S. (2019). Peer support in mental health services: where is the research taking us, and do we want to go there? *Journal of Mental Health*, *28*(4), 341–344. https://doi.org/10.1080/09638237.2019.1608935

Gislason, M. K., Kennedy, A. M., & Witham, S. M. (2021). The interplay between social and ecological determinants of mental health for children and youth in the climate crisis. *International Journal of Environmental Research and Public Health*, *18*(9). https://doi.org/10.3390/ijerph18094573

Godden, N. ., Farrant, B. M., Yallup Farrant, J., Heyink, E., Carot Collins, E., Burgemeister, B., Tabeshfar, M., Barrow, J., West, M., Kieft, J., Rothwell, M., Leviston, Z., Bailey, S., Blaise, M., & Cooper, T. (2021). Climate change, activism, and supporting the mental health of children and young people: Perspectives from Western Australia. *Journal of Paediatrics and Child Health*, *57*(11), 1759–1764. https://doi.org/https://dx.doi.org/10.1111/jpc.15649

Godsmark, C. N. (2020). Inspiring climate action without inducing climate despair. *The Lancet Planetary Health*, *4*(5), e169–e170. https://doi.org/10.1016/S2542-5196(20)30102-9

González-Hidalgo, M., Del Bene, D., Iniesta-Arandia, I., & Piñeiro, C. (2022). Emotional healing as part of environmental and climate justice processes: Frameworks and community-based experiences in times of environmental suffering. *Political Geography*, *98*, 102721. https://doi.org/10.1016/j.polgeo.2022.102721

Good Grief Network. (2023). *GGN-Z*. https://www.goodgriefnetwork.org/teens/

Haines, G. (2021, September 6). Introducing 'climate cafés', where you drink tea and talk global warming. *Positive News*. https://www.positive.news/environment/climate-crisis-the-rise-of-the-climate-cafe/

Harper, S. L., Cunsolo, A., Babujee, A., Coggins, S., De Jongh, E., Rusnak, T., Wright, C. J., & Domínguez Aguilar, M. (2021). Trends and gaps in climate change and health research in North America. *Environmental Research*, *199*, 111205. https://doi.org/10.1016/j.envres.2021.111205

Harper, S. L., Cunsolo, A., & Clayton, S. (2022). Including mental health as part of climate change impacts and adaptation assessment: A critical advance in IPCC AR6. *PLOS Climate*, *1*(5), e0000033. https://doi.org/10.1371/journal.pclm.0000033

Hayashi, P., Abib, G., & Hoppen, N. (2019). Validity in qualitative research: A processual approach. *Qualitative Report*, *24*(1), 98–112. https://doi.org/10.46743/2160-3715/2019.3443

Heeren, A., Mouguiama-Daouda, C., & Contreras, A. (2022). On climate anxiety and the threat it may pose to daily life functioning and adaptation: a study among European and African French-speaking participants. *Climatic Change*, *173*(1–2). https://doi.org/10.1007/s10584-022-03402-2

Hendersson, H., & Wamsler, C. (2020). New stories for a more conscious, sustainable society: claiming authorship of the climate story. *Climatic Change*, *158*(3–4), 345–359. https://doi.org/10.1007/S10584-019-02599-Z

Hickman, C. (2020). We need to (find a way to) talk about … Eco-anxiety. *Journal of Social Work Practice*, *34*(4), 411–424. https://doi.org/10.1080/02650533.2020.1844166

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet*

Planetary Health, *5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3

hooks, b. (1999). *All About Love: New Visions* (1st ed.). William Morrow Publishing.

Hwong, A. R., Wang, M., Khan, H., Chagwedera, D. N., Grzenda, A., Doty, B., Benton, T., Alpert, J., Clarke, D., & Compton, W. M. (2022). Climate change and mental health research methods, gaps, and priorities: a scoping review. *The Lancet Planetary Health*, *6*(3), e281–e291. https://doi.org/10.1016/S2542-5196(22)00012-2

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte, P. Zhai, A. Priani, S. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. Matthews, T. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009157896

IPCC. (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (eds.)). Cambridge University Press. https://doi.org/10.1017/9781009325844

Johannessen, C. T. (2022). Belonging to the World through Body, Trust, and Trinity: Climate Change and Pastoral Care with University Students. *Religions*, *13*(6), 527. https://doi.org/10.3390/rel13060527

Karaliuniene, R., Campana, A. M., Ori, D., de Filippis, R., Shoib, S., Saeed, F., Mohammed, M., Handuleh, J., Ransing, R., Codati, A., Pinto da Costa, M., Ojeahere, M., Orsolini, L., & Pereira-Sanchez, V. (2022). Effects of the Global Ecological Crisis on the Mental Health of Children and Adolescents: An International Perspective. *Psychiatria Danubina*, *34*(2), 296–298. https://doi.org/10.24869/psyd.2022.296

Kawamichi, H., Yoshihara, K., Sasaki, A. T., Sugawara, S. K., Tanabe, H. C., Shinohara, R., Sugisawa, Y., Tokutake, K., Mochizuki, Y., Anme, T., & Sadato, N. (2015). Perceiving active listening activates the reward system and improves the impression of relevant experiences. *Social Neuroscience*, *10*(1), 16–26. https://doi.org/10.1080/17470919.2014.954732

Klein, R., Huq, S., Denton, F., Downing, T., Richels, R., Robinson, J., & Toth, F. (2007). Inter-relationships between adaptation and mitigation. In M. Parry, O. Canziani, J. Palutikof, P. van der Linden, & C. Hanson (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 745–777). Cambridge University Press.

Klocker, N., Gillon, C., Gibbs, L., Atchison, J., & Waitt, G. (2021). Hope and grief in the human geography classroom. *Journal of Geography in Higher Education*. https://doi.org/10.1080/03098265.2021.1977915

Kornbluh, M., Withers, M. C., Ades, J., Grennan, G., & Mishra, J. (2022). Identifying protective socio-ecological factors for college students in California's deadliest wildfire. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2047706

Lafortune, S., Laplante, D. P., Elgbeili, G., Li, X., Lebel, S., Dagenais, C., & King, S. (2021). Effect of natural disaster-related prenatal maternal stress on child development and health: A meta-analytic review. *International Journal of Environmental Research and Public Health*, *18*(16). https://doi.org/10.3390/ijerph18168332

Leff, L. (1990, August 5). Ecology Carries Clout in Anne Arundel. *The Washington Post*. https://www.washingtonpost.com/archive/local/1990/08/05/ecology-carries-clout-in-anne-arundel/a01f0325-e1bf-4f25-b180-65bc4540ef0c/

Léger-Goodes, T., Malboeuf-Hurtubise, C., Mastine, T., Généreux, M., Paradis, P.-O., & Camden, C. (2022). Eco-anxiety in children: A scoping review of the mental health impacts of the awareness of climate change. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.872544

Leimbach, T., Kent, J., Walker, J., & Allen, L. (2020). *Staying sane in the face of climate change and other dilemmas: A toolkit of emerging ideas to support emotional resilience, mental health and action*. https://www.uts.edu.au/sites/default/files/2022-12/Staying sane in the face of climate change.pdf

Loeb, P. R. (2014). *The Impossible Will Take a Little While: Perseverance and Hope in Troubled Times* (P. R. Loeb (ed.)). Basic Books.

Longman, J., Braddon, M., Verlie, B., Schlosberg, D., Hampshire, L., Hawke, C., Noonan, A., & Saurman, E. (2023). Building resilience to the mental health impacts of climate change in rural Australia. *The Journal of Climate Change and Health*, *12*, 100240. https://doi.org/10.1016/j.joclim.2023.100240

Lub, V. (2015). Validity in Qualitative Evaluation: Linking Purposes, Paradigms, and Perspectives. *International Journal of Qualitative Methods*, *14*(5), 1–8. https://doi.org/10.1177/1609406915621406

Lyons, N., Cooper, C., & Lloyd-Evans, B. (2021). A systematic review and meta-analysis of group peer support interventions for people experiencing mental health conditions. *BMC Psychiatry*, *21*(1). https://doi.org/10.1186/s12888-021-03321-z

Ma, J., & Chen, Y. D. (2023). Essential but challenging climate change education in the Global South. *Nature Climate Change*. https://doi.org/10.1038/s41558-023-01839-6

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine*, *301*. https://doi.org/10.1016/j.socscimed.2022.114888

MacKay, M., Parlee, B., & Karsgaard, C. (2020). Youth engagement in climate change action: Case study on indigenous youth at COP24. *Sustainability (Switzerland)*, *12*(16).

https://doi.org/10.3390/SU12166299

Macy, J. (1995). Working Through Environmental Despair. In T. Roszak, M. E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 240–260). Sierra Club Books.

Macy, J. (2020). *A Wild Love for the World: Joanna Macy and the Work of our Time* (S. Kaza (ed.); First Edit). Shambhala.

Malena-Chan, R. (2019). A narrative model for exploring climate change engagement among young community leaders. *Health Promotion and Chronic Disease Prevention in Canada*, *39*(4), 157–166. https://doi.org/10.24095/hpcdp.39.4.07

Malena-Chan, Rachel. (2019). A narrative model for exploring climate change engagement among young community leaders. *Health Promotion and Chronic Disease Prevention in Canada*, *39*(4), 157–166. https://doi.org/10.24095/hpcdp.39.4.07

Mambrey, V., Wermuth, I., & Böse-O'Reilly, S. (2019). Extreme weather events and their impact on the mental health of children and adolescents. *Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz*, *62*(5), 599–604. https://doi.org/10.1007/S00103-019-02937-7

Mann, M., McMillan, J. E., Silver, E. J., & Stein, R. E. K. (2021). Children and Adolescents with Disabilities and Exposure to Disasters, Terrorism, and the COVID-19 Pandemic: a Scoping Review. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01295-z

Manning, C., & Clayton, S. (2018). Threats to mental health and wellbeing associated with climate change. In *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 217–244). Elsevier. https://doi.org/10.1016/B978-0-12-813130-5.00009-6

Marks, E., Atkins, E., Garrett, J. K., Abrams, J. F., Shackleton, D., Hennessy, L., Mayall, E. E., Bennett, J., & Leach, I. (2023). Stories of hope created together: A pilot, school-based workshop for sharing eco-emotions and creating an actively hopeful vision of the future. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1076322

Martin, G., Reilly, K., Everitt, H., & Gilliland, J. A. (2022). Review: The impact of climate change awareness on children's mental well-being and negative emotions - a scoping review. *Child and Adolescent Mental Health*, *27*(1), 59–72. https://doi.org/https://dx.doi.org/10.1111/camh.12525

Martinez Garcia, D., & Sheehan, M. C. (2016). Extreme weather-driven disasters and children's health. *International Journal of Health Services*, *46*(1), 79–105. https://doi.org/10.1177/0020731415625254

Mayan, M. J. (2016). *Essentials of Qualitative Inquiry*. Routledge.

McGushin, A., Gasparri, G., Graef, V., Ngendahayo, C., Timilsina, S., Bustreo, F., & Costello, A. (2022). Adolescent wellbeing and climate crisis: adolescents are responding, what about

health professionals? *BMJ*, e071690. https://doi.org/10.1136/bmj-2022-071690

Mercer, J. A. (2022). Children and Climate Anxiety: An Ecofeminist Practical Theological Perspective. *Religions*, *13*(4). https://doi.org/10.3390/rel13040302

Middleton, J., Cunsolo, A., Jones-Bitton, A., Wright, C. J., & Harper, S. L. (2020). Indigenous mental health in a changing climate: A systematic scoping review of the global literature. *Environmental Research Letters*, *15*(5). https://doi.org/10.1088/1748-9326/ab68a9

Nairn, K. (2019). Learning from Young People Engaged in Climate Activism: The Potential of Collectivizing Despair and Hope. *Young*, *27*(5), 435–450. https://doi.org/10.1177/1103308818817603

Ó Tuama, P. (2015). *In the Shelter: Finding a Home in the World*. Hodder & Stoughton.

Obradovich, N., Migliorini, R., Paulus, M. P., & Rahwan, I. (2018). Empirical evidence of mental health risks posed by climate change. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(43), 10953–10958. https://doi.org/10.1073/pnas.1801528115

Ojala, M. (2012a). Regulating worry, promoting hope: How do children, adolescents, and young adults cope with climate change? *International Journal of Environmental & Science Education*, *7*(4), 537–561. http://www.ijese.com/

Ojala, M. (2012b). How do children cope with global climate change? Coping strategies, engagement, and well-being. *Journal of Environmental Psychology*, *32*(3), 225–233. https://doi.org/10.1016/J.JENVP.2012.02.004

Ojala, M. (2013). Coping with climate change among adolescents: Implications for subjective well-being and environmental engagement. *Sustainability (Switzerland)*, *5*(5), 2191–2209. https://doi.org/10.3390/SU5052191

Ojala, M. (2015). Hope in the Face of Climate Change: Associations With Environmental Engagement and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation. *The Journal of Environmental Education*, *46*(3), 133–148. https://doi.org/10.1080/00958964.2015.1021662

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. *Futures*, *94*, 76–84. https://doi.org/10.1016/J.FUTURES.2016.10.004

Ojala, M. (2022a). Climate-change education and critical emotional awareness (CEA): Implications for teacher education. *Educational Philosophy and Theory*, *55*(10), 1109–1120. https://doi.org/10.1080/00131857.2022.2081150

Ojala, M. (2022b). Commentary: Climate change worry among adolescents-on the importance of going beyond the constructive-unconstructive dichotomy to explore coping efforts-a commentary on Sciberras and Fernando (2021). *Child and Adolescent Mental Health*, *27*(1), 89–91. https://doi.org/10.1111/camh.12530

Osnes, B., Boykoff, M., & Chandler, P. (2019). Good-natured comedy to enrich climate communication. *Comedy Studies*, *10*(2), 224–236. https://doi.org/10.1080/2040610X.2019.1623513

Parry, S., McCarthy, S. R., & Clark, J. (2022). Young people's engagement with climate change issues through digital media – a content analysis. *Child and Adolescent Mental Health*, *27*(1), 30–38. https://doi.org/10.1111/camh.12532

Pellitier, P. T., Ng, M., Castaneda, S. R., Moser, S. C., & Wray, B. D. (2023). Embracing climate emotions to advance higher education. *Nature Climate Change*. https://doi.org/10.1038/s41558-023-01838-7

Petrasek MacDonald, J., Cunsolo Willox, A., Ford, J. D., Shiwak, I., Wood, M., Wolfrey, C., Baikie, M., Andresen, A., Nochasak, N., Piercy, W., Flowers, J., Gear, D., Jacque, G., Jacque, H., Groves, M., & the Rigolet Inuit Community Government. (2015). Protective factors for mental health and well-being in a changing climate: Perspectives from Inuit youth in Nunatsiavut, Labrador. *Social Science and Medicine*, *141*, 133–141. https://doi.org/10.1016/J.SOCSCIMED.2015.07.017

Pihkala, P. (2018). Eco-Anxiety, Tragedy, and Hope: Psychological and Spiritual Dimensions of Climate Change. *Zygon®*, *53*(2), 545–569. https://doi.org/10.1111/zygo.12407

Pihkala, P. (2020). The Cost of Bearing Witness to the Environmental Crisis: Vicarious Traumatization and Dealing with Secondary Traumatic Stress among Environmental Researchers. *Social Epistemology*, *34*(1), 86–100. https://doi.org/10.1080/02691728.2019.1681560

Pihkala, P. (2022). Toward a Taxonomy of Climate Emotions. *Frontiers in Climate*, *3*. https://doi.org/10.3389/fclim.2021.738154

Pihkala, P. (2024). Climate Anxiety, Maturational Loss, and Adversarial Growth. *Psychoanalytic Study of the Child*, *00*(00), 1–20. https://doi.org/10.1080/00797308.2023.2287382

Plummer, N., Wilson, M., Yaneva-Toraman, I., McKenzie, C., Mitchell, S., Northover, P., Crowley, K., Edwards, T., & Richards, A. (2022). Recipes for Resilience: Engaging Caribbean Youth in Climate Action and Food Heritage through Stories and Song. *Sustainability*, *14*(14). https://doi.org/10.3390/su14148717

Prno, J., Bradshaw, B., Wandel, J., Pearce, T., Smit, B., & Tozer, L. (2011). Community vulnerability to climate change in the context of other exposure-sensitivities in Kugluktuk, Nunavut. *Polar Research*, *30*. https://doi.org/10.3402/POLAR.V30I0.7363

Ray, S. J. (2020). *A Field Guide to Climate Anxiety: How to Keep Your Cool on a Warming Planet* (1st ed.). University of California Press. https://doi.org/10.2307/j.ctvw1d67m

Ray, S. J., & Schmidt, L. (2023). *Eco-Anxiety Panelist Discussion*. University of California, Santa Barbara.

Reiner, K. L., & Haas-Howard, C. (2022). Essential Strategies for School Nurses to Move Upstream in Support of Healthy Students and a Healthy Planet. *NASN School Nurse*, *37*(4), 217–222. https://doi.org/10.1177/1942602X221078342

Rocque, R. J., Beaudoin, C., Ndjaboue, R., Cameron, L., Poirier-Bergeron, L., Poulin-Rheault, R.-A., Fallon, C., Tricco, A. C., & Witteman, H. O. (2021). Health effects of climate change: an overview of systematic reviews. *BMJ Open*, *11*(6), e046333. https://doi.org/10.1136/bmjopen-2020-046333

Sanson, A. V., & Bellemo, M. (2021). Children and youth in the climate crisis. *BJPsych Bulletin*, 1–5. https://doi.org/10.1192/BJB.2021.16

Sanson, A. V., Burke, S. E. L., & Van Hoorn, J. (2018). Climate Change: Implications for Parents and Parenting. *Parenting: Science & Practice*, *18*(3), 200–217. https://doi.org/10.1080/15295192.2018.1465307

Sanson, A. V., Van Hoorn, J., & Burke, S. E. L. (2019). Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives*, *13*(4), 201–207. https://doi.org/10.1111/cdep.12342

Schatz, K. (2021). *Where We Stand: The Integration of Climate Change Education in Canadian Schools*. https://www.bccic.ca/wp-content/uploads/2021/11/FINAL-Climate-Change-Education-in-Canada.pdf

Sciberras, E., & Fernando, J. W. (2022). Climate change-related worry among Australian adolescents: an eight-year longitudinal study. *Child and Adolescent Mental Health*, *27*(1), 22–29. https://doi.org/10.1111/camh.12521

Seneviratne, S. I. ., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S., Wehner, M., & Zho, B. (2021). Weather and Climate Extreme Events in a Changing Climate. In V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. YelekçiR. Yu, & B. Zhou (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 1513–1766). Cambridge University Press.

Seymour, N. (2018). *Bad Environmentalism: Irony and Irreverence in the Ecological Age*. University of Minnesota Press.

Sharpe, I., & Davison, C. M. (2022). A Scoping Review of Climate Change, Climate-Related Disasters, and Mental Disorders among Children in Lowand Middle-Income Countries. *International Journal of Environmental Research and Public Health*, *19*(5). https://doi.org/10.3390/ijerph19052896

Shelemy, L., Harvey, K., & Waite, P. (2019). Supporting students' mental health in schools: what do teachers want and need? *Emotional and Behavioural Difficulties*, *24*(1), 100–116.

https://doi.org/10.1080/13632752.2019.1582742

Sheth, C., McGlade, E., & Yurgelun-Todd, D. (2017). Chronic Stress in Adolescents and Its Neurobiological and Psychopathological Consequences: An RDoC Perspective. *Chronic Stress (Thousand Oaks)*, *1*(2470547017715645). https://doi.org/10.1177/2470547017715645

Sidun, N. M., & Gibbons, J. L. (2023). Women, girls, and climate change: Human rights, vulnerabilities, and opportunities. *International Journal of Psychology*. https://doi.org/10.1002/ijop.12942

Simon, L. (2022). *The Youth Climate Circle*. One Resilient Earth. https://oneresilientearth.org/the-youth-climate-circle/

Spyrou, S., Theodorou, E., & Christou, G. (2022). Crafting futures with hope: Young climate activists' imaginaries in an age of crisis and uncertainty. *Children & Society*, *36*(5), 731–746. https://doi.org/10.1111/chso.12529

Srivastava, P., & Hopwood, N. (2009). A Practical Iterative Framework for Qualitative Data Analysis. *International Journal of Qualitative Methods*, *8*(1), 76–84. https://doi.org/10.1177/160940690900800107

Tai, J. A. (2018). Dancing climate on a high mountain. *Research in Dance Education*, *19*(3), 294–305. https://doi.org/10.1080/14647893.2018.1523381

Tanasugarn, A. (2022, July 7). How Childhood Invalidation Affects Adult Well-Being. *Psychology Today*. https://www.psychologytoday.com/ca/blog/understanding-ptsd/202207/how-childhood-invalidation-affects-adult-well-being

Threadgold, S. (2012). "I reckon my life will be easy, but my kids will be buggered": Ambivalence in young people's positive perceptions of individual futures and their visions of environmental collapse. *Journal of Youth Studies*, *15*(1), 17–32. https://doi.org/10.1080/13676261.2011.618490

Treble, M., Cosma, A., & Martin, G. (2023). Child and Adolescent Psychological Reactions to Climate Change: A Narrative Review Through an Existential Lens. In *Current Psychiatry Reports* (Vol. 25, Issue 8, pp. 357–363). Springer. https://doi.org/10.1007/s11920-023-01430-y

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Udas, P. B., Fournier, B., Christianson, T., & Desbiens, S. (2021). What Can We Learn from Rural Youth in British Columbia, Canada? Environment and Climate Change-Issues and Solutions. *Sustainability*, *13*(24). https://doi.org/10.3390/su132413562

Uibel, D., Sharma, R., Piontkowski, D., Sheffield, P. E., & Clougherty, J. E. (2022). Association of ambient extreme heat with pediatric morbidity: a scoping review. *International Journal of Biometeorology*, *66*(8), 1683–1698. https://doi.org/10.1007/s00484-022-02310-5

United Nations Department of Economic and Social Affairs (UNDESA). (2013). *Definition of Youth*. https://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf

University of Guelph. (2023). *UofG Climate Café*. Sustainability Office: Our Projects. https://www.uoguelph.ca/campussustainability/climatecafe

van Daalen, K. R., Kallesoe, S. S., Davey, F., Dada, S., Jung, L., Singh, L., Issa, R., Emilian, C. A., Kuhn, I., Keygnaert, I., & Nilsson, M. (2022). Extreme events and gender-based violence: a mixed-methods systematic review. *The Lancet. Planetary Health*, *6*(6), e504–e523. https://doi.org/10.1016/S2542-5196(22)00088-2

van Nieuwenhuizen, A., Hudson, K., Chen, X., & Hwong, A. R. (2021). The Effects of Climate Change on Child and Adolescent Mental Health: Clinical Considerations. *Current Psychiatry Reports*, *23*(12). https://doi.org/10.1007/s11920-021-01296-y

Vandaele, M., & Stalhammar, S. (2022). "Hope dies, action begins?" The role of hope for proactive sustainability engagement among university students. *International Journal of Sustainability in Higher Education*, *23*(8), 272–289. https://doi.org/10.1108/IJSHE-11-2021-0463

Vergunst, F., & Berry, H. L. (2021). Climate Change and Children's Mental Health: A Developmental Perspective. *Clinical Psychological Science*, *10*(4), 767–785. https://doi.org/10.1177/21677026211040787

Verlie, B. (2019). Bearing worlds: learning to live-with climate change. *Environmental Education Research*, *25*(5), 751–766. https://doi.org/10.1080/13504622.2019.1637823

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021a). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education*, *37*(2), 132–146. https://doi.org/10.1017/aee.2020.34

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021b). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education*, *37*(2), 132–146. https://doi.org/10.1017/aee.2020.34

Verner, G., Schütte, S., Knop, J., Sankoh, O., & Sauerborn, R. (2016). Health in climate change research from 1990 to 2014: positive trend, but still underperforming. *Global Health Action*, *9*(1), 30723. https://doi.org/10.3402/gha.v9.30723

Vineis, P. (2010). Climate change and the diversity of its health effects. *International Journal of Public Health*, *55*(2), 81–82. https://doi.org/10.1007/S00038-009-0092-0

Wang, X., Cai, L., Qian, J., & Peng, J. (2014). Social support moderates stress effects on depression. *International Journal of Mental Health Systems*, *8*(41).

Weger, H., Castle Bell, G., Minei, E. M., & Robinson, M. C. (2014). The Relative Effectiveness of Active Listening in Initial Interactions. *International Journal of Listening*, *28*(1), 13–31. https://doi.org/10.1080/10904018.2013.813234

Wise, M. (2022). *Climate Wellbeing Resource Kit*. https://ubcclimatehub.ca/project/climate-wellbeing-resource-kit/

Wise, M., Xie, M., & Anderson, L. (2021). *Climate Doom to Messy Hope: Climate Healing & Resilience - A Practical Handbook for Climate Educators and Community*. https://ubcclimatehub.ca/wp-content/uploads/2022/09/Climate-Doom-to-Messy-Hope-Handbook.pdf

Witt, A., Sachser, C., & Fegert, J. M. (2022). Scoping review on trauma and recovery in youth after natural disasters: what Europe can learn from natural disasters around the world. *European Child & Adolescent Psychiatry*. https://doi.org/10.1007/s00787-022-01983-y

Work That Reconnects Network. (2024). *What is the Work that Reconnects?* https://workthatreconnects.org/what-is-the-work-that-reconnects/

Wray, B. (2023). *Generation dread : finding purpose in an age of climate anxiety*. The Experiment, LLC.

Wu, J. (2021). *Addressing and Coping with Climate Grief: A Toolkit for Group and Individual Use*. https://sustain.ubc.ca/sites/default/files/2020-077b_Climate Grief Toolkit _Wu_0.pdf

Wu, J., Snell, G., & Samji, H. (2020). Climate anxiety in young people: a call to action. *The Lancet Planetary Health*, *4*(10), e435–e436. https://doi.org/10.1016/S2542-5196(20)30223-0

Youth Climate Corps British Columbia. (2023). *Empowering Youth Voices & Actions*. Youth Climate Corps British Columbia. https://www.youthclimatecorps.com/youth-voices-ycc

Appendix 1: Considerations for planning climate cafés/circles

Planning

- Do your research: look at other models of healing circles, climate cafés, climate circles, etc.
- Adult mentorship: event planning, organizing, and facilitating takes a lot of time and work. Even within a space that is designed and implemented by young people, adult mentorship takes some of the onus off youth when adults are responsible for those aspect.
- Facilitator training is essential as well as facilitators/organizers attending multiple cafés/circles to experience what they are offering

Design

- Be intentional about the design and implementation which requires time and patience, asking for feedback, and being flexible
- Be responsive to the needs and desires of the young people they are serving
- Cater to their schedule(s), for example, hosting a café on a weekend for university students who express not wanting to attend after a long day of classes or considering drop-in cafés/cirlces
- Consider offering provisions
- Incorporate different avenues of expression (i.e. visual art)
- Consider who the offering is for: Some young people appreciated having a friend to go with or people they knew at the café/circle. For example, having a café/cirlcle for a community of students creates common ground and connection over shared experiences. A focus on youth voices is important, however, intergenerational cafés/circles were also beneficial.

Collaboration

- Connect with additional mental health services in order to provide support for young people outside of the café/circle
- Universities are a good place to host cafés/circles because they are accessible to young people and universities have access to resources (e.g., knowledgeable staff and faculty, funding).
- There is a growing network of climate cafés and facilitators – connect with each other!
- Offer paid positions for youth and young people when possible