



# Mental Health and Our Changing Climate Children and Youth Report 2023



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## Special Thanks

Camalotte Foundation

Joseph and Susan Gatto

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Bonwood Social Investments

## Suggested Citation

Clayton, S., Manning, C. M., Hill, A. N., & Speiser, M. (2023). Mental Health and Our Changing Climate: Children and Youth Report 2023. Washington, D.C.: American Psychological Association and ecoAmerica

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# Contents

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<b>Opening Letter</b>	<b>4</b>
<b>Executive Summary</b>	<b>5</b>
<b>I. Context</b>	<b>8</b>
Youth Mental Health in Context of Today’s World	9
A Closer Look, Lise Van Susteren, MD	10
Mental, Physical, and Community Well-Being: Links to Inequity	11
A Closer Look, Adah Crandall	12
Impacts of Climate Change on Mental Health: An Overview	13
Inequities That Influence Children’s Mental Health	15
A Closer Look, Hannah Estrada	17
<b>II. Impacts</b>	<b>18</b>
Prenatal Impacts of Climate Change and Impacts on Infants	19
A Closer Look, Bruce Bekkar, MD and Santosh Pandipati, MD	20
Impacts of Climate Change on Children: Toddlers Through the Early Teen Years	21
A Closer Look, Britt Wray, PhD	24
Impacts of Climate Change on Youth and Young Adults	25
<b>III. Solutions</b>	<b>27</b>
Solutions: System-Wide	28
A Closer Look, Giselle Perez	29
Solutions: Community	30
A Closer Look, Jasilyn Charger	31
Solutions: School-Based, Health Professionals	32
A Closer Look, Aishah-Nyeta Brown	33
Solutions: Health Professional, Parents and Families	34
Resources for Parents, Caregivers, Mental Health Professionals, and Educators	36
<b>References</b>	<b>39</b>

## Methodology

Our approach was to search databases such as Google Scholar and Web of Science using combinations of keywords (e.g., “infants, mental health, heat” “infants, mental health, cognitive development”), pulling forward peer-reviewed literature, government and agency reports, and selected grey literature and translating it for a wider audience. The authors and editors applied their experience and judgment to select and rely upon source materials with evidence of quality and credibility. Because brevity was a goal, many valuable studies and publications could not be expressly discussed or referenced as part of this report. Further, new research is constantly being generated and published, building upon, and in some instances, refining and clarifying, the knowledge base.

## Why We Offer This Report

The American Psychological Association and ecoAmerica are pleased to offer this report, bringing forward recent and respected research on the impacts of climate change on children and youth, and guidance for response. This is a follow-on to our 2021 report, *Mental Health and Our Changing Climate: Impacts, Inequities, Responses*. Since that report appeared, concerns about the mental health impacts of climate change have grown among scientists, health professionals, policymakers, and the public, and the effects on children and youth are more pronounced.

Research on youth, climate, and mental health has accelerated, and many new findings have emerged. With this report, we aim to provide readers with information and guidance to understand and support children and youth, and take effective action. Indeed, now is the time to act. Climate change is a crisis, particularly for children and youth, who are among the most vulnerable. Recent studies confirm that our society must prepare for the increasing impacts of climate change on health and well-being, and move rapidly toward reducing the pollution that is causing our climate to change, prioritizing justice and equity throughout. Most Americans agree that we have a moral obligation to ensure a safe and healthy climate for children and future generations. We have the science to inform this work and the shared desire to move it forward. Nations, governments at all levels, organizations, communities, and individuals need to act today.

We thank the authors of the report and the many scientists, practitioners, advocates, and other professionals who contributed to the work presented here. Please join us in taking action to overcome the climate crisis, support children and youth, and ensure a future in which they can thrive.



Arthur C. Evans, Jr., PhD  
Chief Executive Officer  
American Psychological Association



Meighen Speiser  
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# Executive Summary

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*The intention of this report is to provide an overview of the intersection of climate change and children's and youth's mental health. The report aims to offer a synopsis of both impacts and responses, translating peer-reviewed research, agency reports, and other primary sources to help empower a wider audience with useful insights and guidance. It is intended for health and mental health professionals and institutions, climate and children's advocates and advocacy organizations, policymakers, youth, parents, educators, and other organizations or people interested in the topic. It is worth noting that there is a large body of literature in this field, particularly regarding child development, that goes beyond the scope of this report. While we dive into the impacts of climate change on children's and youth's mental health and describe potential responses, it's also important to acknowledge that the topic is complex, and more research needs to be done to fully understand this critical issue. The report's primary focus is the United States, but many findings will be relevant to other areas of the world. We hope this report adds to the work being done to bridge the gap between climate change and children's and youth's mental health and well-being, fostering a broader understanding and motivation to act.*

**Children and youth face a myriad of challenges today.** The impacts of climate change intersect with and compound other factors that threaten youth mental health, including child development, parental health, increasing rates of depression and suicide, racism, poverty, housing security, adequate nutrition, and access to medical care, as well as major societal issues like COVID-19, gun violence, social media, and much more.

The **acute impacts** of climate change, such as weather disasters, can cause trauma and post-traumatic stress disorder (PTSD) in the short term, and many longer-term mental health challenges in the absence of proper interventions. Extreme weather events make children vulnerable to mental health effects due to their dependence on parents and other caregivers and their lack of coping strategies compared to adults. The longer-term impacts of climate change, such as heat, drought, and poor air quality can increase the risk of anxiety, depression, bipolar disorder, cognitive function impairment, interpersonal aggression, and other mental health impacts.

**Research** into attitudes reveals that the perceived failure of governments to act on climate change is associated with distress among young people. Young people in the United States are more likely to be alarmed or concerned than their older counterparts.

Climate change deepens the existing **unequal burdens** faced by some children from communities that have been marginalized (because of race, economic status, etc.). Such communities are more likely to be exposed to extreme weather and have fewer personal and economic resources for coping. Vulnerable populations include Indigenous communities and communities of color, women, people living with disabilities, individuals with pre-existing mental health diagnoses, older adults, and outdoor workers. Children within these communities are more vulnerable because of their dependence on adults as caregivers.

**Prenatal impacts** of climate change can derail the normal development of physiological systems, cognitive abilities, and emotional skills in ways that are sometimes irreversible. Children exposed prenatally to weather disasters, high temperatures, air pollution, and maternal anxiety are at risk for a range of social, cognitive, psychiatric, and behavioral dysfunctions. The impacts on the fetus can include greater risk of developmental regression, anxiety or depressive disorder, ADHD, lower scores on activity and extraversion levels, and lower levels of self-control, as well as risk of psychiatric disorders later in life.

**Infants and children** are increasingly exposed to extreme weather, heat, air pollution, displacement, and news about climate change impacts. This can lead to anxiety, sleep troubles, PTSD, use of emergency room

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services, learning decrements, disrupted cognitive development, and major depressive disorder. Early issues can compound into more difficult-to-manage problems as the child ages.

**Adolescents and young people** are undergoing significant neural and cognitive development and learning skills that will shape their life trajectory. They are susceptible to the mental health effects of extreme weather, high temperatures, and the chronic and indirect impacts of climate change. They can be affected by disrupted schooling, family and financial stress, displacement, food insecurity, and understanding dire climate outlooks, which can result in impaired cognition, decision-making, and test performance, depression, strained social relationships, lower levels of self-control, climate anxiety, and suicide.

**Systems-level solutions** to tackle climate change, such as rapid transitions to clean energy and sustainable agriculture, are needed to reduce the mental health consequences of climate change on children. Climate policies need to prioritize the impact of systemic racism and environmental injustice. Policy and other systems-level changes are necessary to build community resilience, including meeting children's basic needs (adequate nutrition, clean water, stable housing, and safe schools), with special attention to vulnerable populations. Policies and programs that expand access to mental health care are needed to provide children and youth support as climate impacts increase.

**Community solutions**, including prevention and early detection, are critical. Climate action and resilience plans are needed and must include provisions for children and other vulnerable communities. Planning should recognize that the underlying social and environmental determinants of mental health (exposure to racism or gender-based violence, neighborhood safety, access to education, levels of income, etc.) intersect and worsen with climate change. Creating a safe environment for childhood

development should begin with engaging the community in planning, and will require bolstering both physical infrastructure (such as safe, resilient school buildings, cooling centers, and access to green space) and social infrastructure (such as leadership support, public education, and public health planning). Creating opportunities for young people to get involved will benefit their mental health, boost social connection and personal efficacy, and alleviate anxiety.

**Support from schools, teachers, caregivers, and peers** is essential. Many schools serve as sites for interventions after a disaster, but their capacity to prevent and address the mental health impacts of climate change could expand. This includes involving students and parents in ensuring accessible green space, upgrading to resilient and protective infrastructures, and modeling sustainability. Bolstering the social environment can help, including strengthening relationships with peers, teachers, and staff. Curricula on climate change is important, coupled with hands-on opportunities to protect the environment. Empowering children with information on their own actions can make a difference.

**Health care systems and professionals** can screen early and regularly for climate-related distress among children and youth, particularly after extreme weather. Regular pediatric medical assessments could include a question about climate-related concerns. After a disaster, lower-intensity interventions, such as a conversation with a mental health provider, may help children process emotions; stepped care models can be employed to meet the spike in need. For those requiring more significant help, cognitive behavioral therapy and eye-movement desensitization and reprocessing therapy have proven to be effective. Environmental-based interventions show promise for climate anxiety. Health professionals should develop basic climate literacy to bolster effective support.

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**Parental** support is a protective factor for young people’s mental and emotional well-being during a crisis. Parents who receive support for mental health are better able to manage their own anxiety and to support their children. Parents and families can help younger children to learn about climate change, manage their fears, find hope, and take age-appropriate action. Parents can help older children and adolescents by acknowledging their worry and encouraging them to learn more and join young people in climate action. Parents can also nurture children’s capacity for resilience, such as the ability to self-regulate emotions, persist in completing a task, have empathy, be flexible and creative, effectively work with others, directly address people in power, and speak in public.

A growing wealth of **resources** are available and offered at the end of this report.

In addition to findings from peer-reviewed research, this report contains first-hand accounts describing the lived experiences from affected young people, as well as adults who are working alongside them in allyship. Adah Crandall describes the terror she felt in middle school as she breathed toxic air, and how she and other youth climate activists are missing their childhoods to write testimony, plan strikes, and make up for leaders’ inaction. Hannah Estrada shares the complexity of anxiety she and others from marginalized communities feel — that they have reached their emotional capacity when it comes to violence, chaos, and death that are all rooted in the same exploitative and oppressive system — and how Youth Vs. Apocalypse works to advocate against all forms of injustice. Giselle Perez recounts the multiple climate impacts she’s lived through at only 17 years old, and how her concern for weak emissions reduction goals and the disturbing lack of resources led her to advocate for school district funding to support youth mental health after climate disasters. Jasilyn Charger shares how they started organizing at a young age, enveloped by a toxic environment, including oil-contaminated soil and mass suicides in

their Cheyenne River Sioux tribe. Despite grief and fear, they joined with other disadvantaged BIPOC (Black, Indigenous, and people of color) youth to demand change, in touch with their deep connection to the Earth and fighting against inherited problems they didn’t create. Aishah-Nyeta Brown expresses how her deep connection to nature led her to engage in creative storytelling to help others foster a deeper understanding, grapple with anxiety and grief, and find strength and hope in collective action. Dr. Van Susteren, who provided expert testimony in *Held v. State of Montana*, describes the psychological harm children experience that is aggravated by the knowledge that the government is failing to take sufficient action (and rather perpetuating fossil fuels) despite repeated and dire warnings. Drs. Bekkar and Pandipati describe the mounting evidence of impacts of climate change on fetal nervous system development, including neurologic damage, that can lead to a breadth of mental disorders and impairments. Dr. Wray discusses the rise of youth activism and the moral injury they feel as they shoulder responsibilities so early in life. She warns that adults’ idolization of children’s and youth advocacy efforts can make them feel abandoned and betrayed, and calls for intergenerational care, including supporting each other, taking young people’s pain seriously, and joining with them in action on climate solutions.

# I. CONTEXT



# Youth Mental Health in Context of Today's World

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*Children and youth face a myriad of challenges in today's world. As outlined in Bronfenbrenner's Ecological Systems theory, there are multiple levels that influence child development from those at the individual to family and societal levels, each interacting with each other, shaping the child. The impacts of climate change intersect with, and compound these and other factors that threaten youth mental health. This chapter highlights a few of many other major influences in the lives of today's youth and the implications for their mental health and well-being.*

Children's and youth's mental health are of growing concern. In 2018, suicide was the second leading cause of death for young people between ages 10-24 (American Academy of Pediatrics, 2021). Feelings of sadness and hopelessness increased by roughly 40% among young people in the 10 years leading up to the spread of COVID-19 (Centers for Disease Control and Prevention, 2020). And, about 5% more young people in 2020 (aged 12-17) reported having a major depressive episode within the past year than in 2019 (Child and Adolescent Mental Health Coalition, 2023).

Children's mental health can be shaped by their family and household health. Parental well-being and support can influence a child's mental health outcomes (Du et al., 2022) and even act as a protective factor for their mental health (Andrade et al., 2023; Sanson et al., 2018).

The COVID-19 pandemic impacted the mental well-being of young people. Pew Research found that during the pandemic, 58% of young adults faced high levels of psychological distress (Pew Research Center, 2022). A Centers for Disease Control and Prevention report showed that 37% of high school students reported regular mental health struggles at that time (Jones et al., 2022). Given the growing mental health effects among young people, the American Academy of Pediatrics, the American Academy of Child and Adolescent Psychiatry, and the Children's Hospital Association released a joint declaration of a National Emergency in Child and Adolescent Mental Health in 2021 (American Academy of Pediatrics, 2021).

In understanding how youth mental health has changed over time, it's critical to recognize that discrimination and racism influence the mental health outcomes of children and youth of color. For example, the suicide rate among young people of color aged 10-24 grew between 2018-2021, particularly among non-Hispanic Black youth, at 36.6% (from 8.2 to 11.2 per 100,000 youth). During the same years, the suicide rate among White young people of the same age decreased by 3.9% (Stone et al., 2023). Shepherd et al. found that for children between 5 and 10 years of age, direct exposure to discrimination was associated with double the risk of developing a mental health issue, such as anxiety, depression, low self-esteem, or suicide risk (2017). Racism deeply influences the health outcomes of children and is labeled as a social determinant of health, defined by the World Health Organization as "the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness" (The World Health Organization, 2013; American Academy of Pediatrics, 2019).

Factors such as poverty, housing security, adequate nutrition, and access to medical care all influence mental health and well-being and are known as social determinants of health (Marmot et al., 2008). It is important to consider the social determinants of health framework in recognizing the compounding elements impacting youth mental health today.

Other factors such as social media (Karim et al., 2020; American Psychological Association, 2023) and gun violence (Rowhani-Rahbar et al., 2019 in Kolbe, 2020) are having impacts on the mental health and well-being of children and youth, too. The full list of existing and emerging factors influencing the mental health of children and youth is too lengthy to cover in this report. However, the factors presented here offer context into the weight of issues they face, in addition to climate change.

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<sup>1</sup> For more on Bronfenbrenner's Ecological Systems Theory, his 1979 book is titled "The Ecology of Human Development: Experiments by Nature and Design."

## A CLOSER LOOK — An Edited Excerpt From My Expert Report In the Juliana and Held Cases

Lise Van Susteren, MD, General and Forensic Psychiatry, Climate Psychiatry Alliance



*Lise Van Susteren was retained by the plaintiffs in both *Held v. State of Montana* and [Juliana v. the United States government](#) to provide expert testimony on the emotional harm that climate change causes young people and*

*the plaintiffs in these cases. As she has said, it seems unthinkable that children must now fight for survival by suing the government, but such is the extent of the damage and resultant deepening intergenerational injustice that is driving them to cry out for help in court.*

Our most vulnerable population, the world's children, are being harmed physically and psychologically by the climate crisis. With each day that sees no meaningful action, the suffering expands and deepens.

The psychological harm from the climate crisis is aggravated by the knowledge that government — state and federal — is failing to take sufficient action to address it. In some instances, despite repeated and ever more anguished warnings by scientists, government is not only failing to take action, but it is proposing and endorsing policies that make it worse. And yet among the most basic tenets of good government — based on the social contract — turns on a fundamental principle: government has legitimate authority over us in matters of the public domain *in exchange for maintaining our safety*. The state's disavowal of this responsibility when it comes to policies on fossil fuels, is a betrayal to all of us and specifically the young plaintiffs in *Held vs the State of Montana*. It is betrayal of a most damaging sort: “institutional betrayal” — for it not only deprives the public of the expected protection from the perpetrators of the climate crisis and

abandons us to suffer the consequences — it brings about a particularly pernicious disillusionment that government can't be trusted. It erodes our confidence in government institutions. The *sine qua non* of stable society is trust in government institutions.

Children are especially sensitive and vulnerable to the emotional toll of climate disruption. Special protection is needed for them to feel and be safe. For some, the focus of their lives will now be on running for the safety of higher ground — both figuratively and literally.

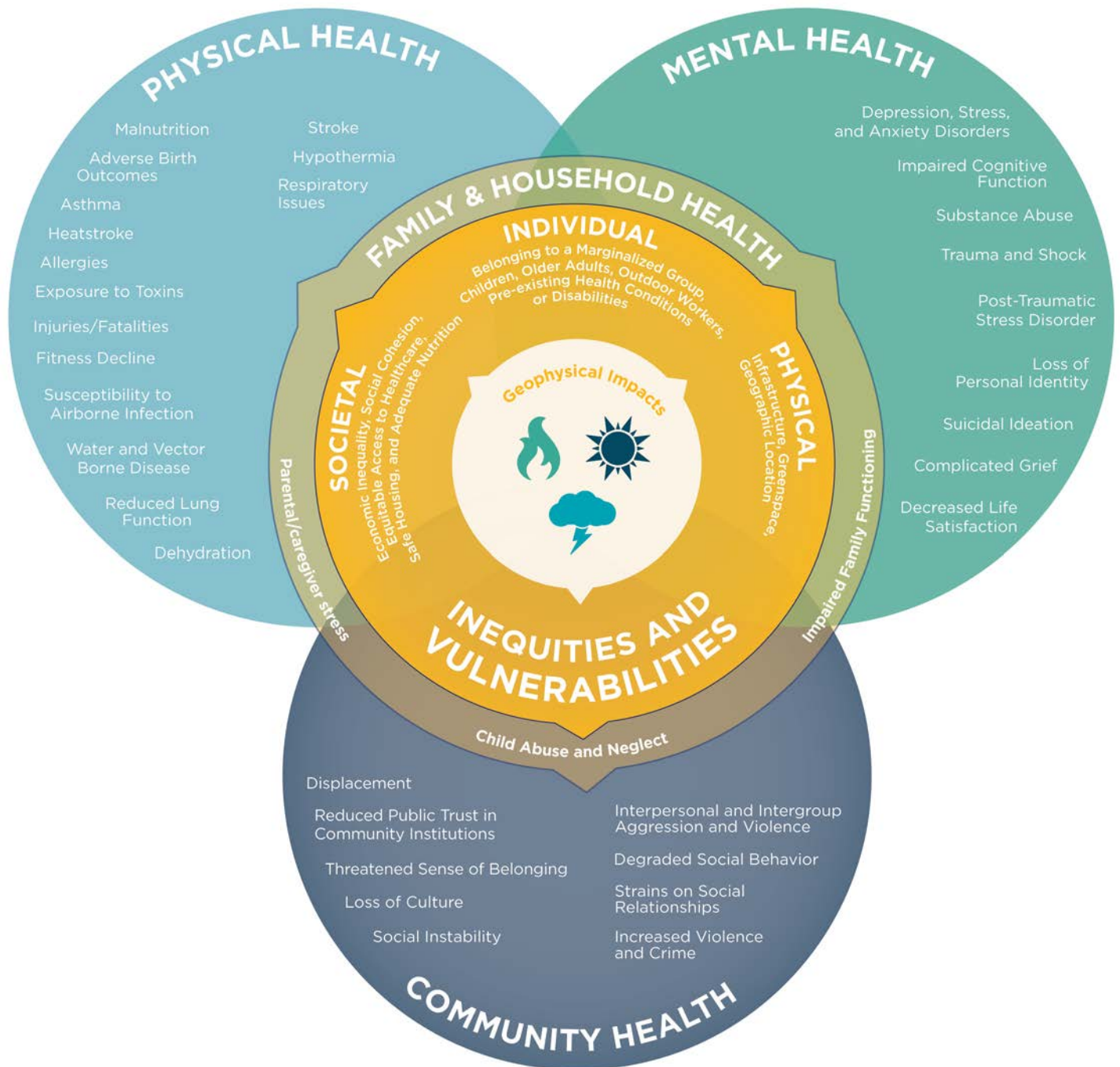
Many children, including the plaintiffs in these two cases, are not only deeply distressed about the day-to-day conditions of the global climate crisis, but they are unable to shake loose their worries about the future. They are realistic. They are keenly aware that the window of opportunity to stop the worst impacts of climate change is closing despite the reassurances many adults around them may offer.

In the aftermath of disasters linked to climate disruption, how children “carry on” is determined by their background, current mental state, basic personality, and life experiences. The nature of a severe climate event itself always factors into the psychological impacts. The intensity of the feeling of powerlessness; the merciless character of the event; the pace, the degree of damage, and the number of victims will all work together to determine the extent of the psychological injury. The cumulative toll of repeated exposures will be especially challenging to surmount.

With their declarations in both *Held* and *Juliana*, the plaintiffs explicitly tell us of the traumatizing effects of the federal and state governments' actions perpetuating fossil fuel-based energy systems. No one can honestly say there is no monster under the bed or hiding in the closet.

# Mental, Physical, and Community Well-Being: Links to Inequity

Physical health, mental health, and community well-being have an interconnected relationship. The following graphic highlights how climate change and inequities impact these aspects of well-being and how family and household health play a role in the health outcomes of children. Although stress is a normal part of everyone’s life, for young populations made vulnerable by social and economic circumstances, the stress of climate change takes a deeper toll. Individual physical and mental health outcomes are shaped not only by biology, but also by a range of social factors that intensify risk for some groups of people, such as educational opportunity, poverty, and access to safe housing. This graphic was adapted from the 2021 report, [Mental Health and Our Changing Climate](#).



## A CLOSER LOOK — Generation on Fire

*Adah Crandall, Organizer, Sunrise Movement*



My former middle school, Harriet Tubman, sits less than 50 feet from one of the busiest sections of the Interstate-5 freeway in North Portland. Every day, my peers and I breathed toxic diesel particulates, whether it was walking to school,

playing outside at recess, or waiting for the bus.

Terrified for our health and safety, Tubman students decided to take action: One rainy morning in the spring of 2019, twenty-five of us piled onto a school bus headed for the state capitol in Salem, Oregon, to lobby for a bill that would regulate diesel emissions in our state.

I remember sitting at a table in a chair too tall for my feet to touch the ground, anxiously rehearsing the words I would present to any legislator who'd take the time to listen. Our backpacks and sneakers were a stark contrast to the bureaucrats around us, but we didn't care. We knew that we had both the right and responsibility to be there, advocating for ourselves and our futures.

When the bill passed later that spring, it felt like a huge victory. It was, but it was just one victory in what felt like an overwhelming sea of losses. Despite our success in limiting future pollution, there was another major problem: The Oregon Department of Transportation plans to spend over \$800 million expanding the I-5 freeway, which would only increase pollution and carbon emissions.

As I've grown older, my perception of Portland as a sustainable city has crumbled. I feel betrayed by my leaders and by the adults around me who ensured me that everything was fine — that as a kid, the climate crisis wasn't something I needed to worry about. Now, red skies in the summer are the

norm. Countless crises rage outside our windows, yet the people in power offer nothing more than kind words and empty promises. Meanwhile, many of us are missing out on our childhoods to write testimony, plan strikes, and make up for our leaders' inaction.

As a teenage climate organizer, I am sick of being told that I'm inspiring. Placing the weight of the climate crisis on young people like me is not only unjust, it is a guarantee of failure for the movement. I don't just want people to be "inspired," I want them to join me. That is the only way we can meet the stakes necessary to stop the climate crisis.

# Impacts of Climate Change on Mental Health: An Overview

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*The mental health toll of our changing climate is growing, with impacts resulting from both acute events and long-term climate change. This section reviews ways climate change harms mental well-being (non-age specific) and covers how attitudes about climate change have shifted in the United States. This section was adapted and updated from [Mental Health and Our Changing Climate: Impact, Inequities, Responses](#).*

## Acute Events

Short-term or acute climate change events refer to severe weather or disasters such as wildfires, floods, hurricanes, and other extreme storms. Direct trauma from these events can occur in a number of ways, including injury, death of a loved one, damage or loss of property and pets, and disruption of livelihood (Neria & Shultz, 2012; Terpstra, 2011; Simpson et al., 2011). PTSD, anxiety, depression, and other poor mental health outcomes are all linked to disaster events.

Wildfire smoke is detrimental to respiratory health, and recent research has found it can greatly impact cognitive performance and processing in individuals who breathe in particulate matter (US Environmental Protection Agency [EPA], 2023b). A 2023 study found that 67% of the people directly exposed to California's deadly Camp Fire in 2018 experienced trauma and displayed cognitive deficits (Grennan et al., 2023).

High-category hurricanes have been shown to impact the mental health of survivors, too. Studies of Hurricane Katrina (2005) survivors in Mississippi and Louisiana found that at least one in six people met the diagnostic criteria for PTSD between one and three years after the storm (Galea et al., 2008; Kessler et al., 2008; Lowe et al., 2013). Nearly half (49%) of people in affected areas of Hurricane Katrina also developed a mood disorder or anxiety (Galea et al., 2008). Roughly 14.5% of residents in and around New York City experienced PTSD symptoms six months after Hurricane Sandy (2012) (Boscarino et al., 2014). Three months after Hurricane Harvey (2017), at least one in four residents in Houston experienced PTSD, and over 40% of those

displaced in Puerto Rico after Hurricane Maria had PTSD (Fitzpatrick, 2021; Scaramutti et al., 2019).

Floods are associated with an increased prevalence of anxiety disorders, PTSD, and depressive symptoms (Cruz et al., 2020; Mulchandani et al., 2020). In the immediate months after flooding, people may experience higher rates of PTSD than those in the general population (Cruz et al., 2020). In the long term, anxiety and depression have been shown to impact the quality of life for flood victims (Robin et al., 2020).

Even years after a disaster, people who experienced tangible loss, such as damage to their home, are at increased risk of psychological distress (Tapsell et al., 2002; Schwartz et al., 2017).

It's also important to note that extreme weather events make children vulnerable to mental health effects due to their dependence on parents and other caregivers and their lack of coping strategies compared with adults. Structures and systems that help advance childhood development, such as schooling and community support, are also at risk from severe weather. For example, 196,000 public school students had to switch schools after Hurricane Katrina, many missing out on school days in the interim (Kousky, 2016). Another study found that after Hurricane Katrina, children who were hit the hardest experienced less social support from family and peers (Banks & Weems, 2014). Among children who have lived through natural disasters, a lack of social support has been associated with greater post-traumatic stress (Lai et al., 2017).

And harm to mental health can, in turn, harm physical health. Psychological distress can result in increased inflammation and lowered or suppressed immune systems (Alderman et al., 2012; Simpson et al., 2011; Doppelt, 2016; Seiler et al., 2020), which are associated with a range of diseases (Shonkoff & Garner, 2012). As shown on page 11, physical, mental, and community-wide well-being are all closely linked.

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## Chronic, Ongoing Events

Some of the adverse impacts of climate change result from heat, drought, and poor air quality. The period between 2015-2022 was the hottest on record (World Meteorological Organization, 2023). **Heat** has a significant impact on physical and mental well-being. Increased heat has been linked to mood and anxiety disorders, schizophrenia, higher use of emergency mental health services, and higher rates of suicide (Mullins & White, 2019; Thompson et al., 2018; Lee et al., 2006; Kim et al., 2019; Liu et al., 2021). Research finds that as temperatures increase, interpersonal aggression increases. This may be a result of heat's impacts on arousal and irritability, lack of sleep, or its negative impact on cognitive function (Anderson, 2001; Anderson et al., 1995; Miles-Novelo & Anderson, 2019; Obrodavich et al., 2017; Cedeño Laurent et al., 2018; Pilcher et al., 2002).

Climate change is increasing the frequency, duration, and severity of **droughts** in many geographic regions. Droughts are associated with psychological distress such as anxiety and depression. A 2021 study found that people who experienced drought also experienced an increase in psychological distress in the 2.5-3 years after the drought (Luong, 2021). Farming communities are especially impacted by drought as it increases workload and uncertainty, while potentially decreasing the quality of crops. Around the world, farmer suicides are linked to prolonged drought (Hanigan et al., 2012; Ellis & Albrecht, 2017; Santos et al., 2021).

Last but not least, **burning fossil fuels** is the number one contributor to climate change and it also impacts the air we breathe by releasing pollutants that harm physical and mental health. Air pollution can increase the risk of anxiety, depression, schizophrenia, bipolar disorder, personality disorder, and use of mental health services, and impairs cognitive function and life satisfaction (Khan et al., 2019; Lowe et al., 2021; Lu, 2020; Brokamp et al., 2019). Air pollution has been associated with increased hospital emergency room visits for young people with mental health disorders (Szyszkowicz et al., 2020). Recent research points also

to the association between ambient air pollution and dementia risk (Wilker et al., 2023).

Refer to [\*Mental Health and Our Changing Climate: Impact, Inequities, Responses\*](#) for additional long-term impacts, including loss of personally important places, jobs, autonomy, and culture, and intergroup hostility and aggression.

## Climate Attitudes and Concerns

Research in 2021 revealed that the perceived failure of governments to take action on climate change is associated with distress among young people (Hickman et al., 2021). The lack of government action may be playing a role in pluralistic ignorance, in which individuals hold some belief but mistakenly assume others do not. In fact, the majority (72%) of Americans report feeling concerned about climate change but only 52% believe others around them are concerned (ecoAmerica, 2023).

Climate awareness and concern in the United States has grown over time. From 2012 to 2022, the percentage of Americans who were categorized as “alarmed” by Yale’s Global Warming’s Six Americas survey grew from 12% to 26% (Leiserowitz, 2023). Younger Americans including Generation Z and Millennials are more likely to be “alarmed” or “concerned” than their older counterparts (Ballew et al., 2023).

In 2022, nearly one-third (32%) of Americans reported feeling anxious when they think about global warming and nearly one-fourth (23%) reported feeling depressed (Leiserowitz et al., 2023b). In a time when action on the issue has increasing urgency, a recent survey found that over one-quarter (27%) of Americans try to avoid thinking about global warming and 15% avoid information about the issue. Also, approximately one in ten (11%) often has trouble stopping themselves from consuming bad news about global warming or seek social or emotional support from others who share their values about global warming to help them manage concerns about the issue (Leiserowitz et al., 2023b).

# Inequities That Influence Children’s Mental Health

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*Climate change deepens the existing unequal burdens faced by some children in the United States and around the world. Children from communities that have been marginalized (because of race, class/economic status, ability, etc.) are more likely to be exposed to climate impacts, such as extreme storms or heat, and/or have fewer personal and community economic resources for coping. This section describes some of the additional populations made more vulnerable to the mental health impacts of climate change, particularly impacts arising from disasters and their aftermath. It is important to note that none of these groups are homogeneous; the disproportionate impacts on individuals within these at-risk populations vary greatly depending on people’s exposure to multiple forms of discrimination and disparity. For example, the experiences of an Indigenous woman cannot be reduced to the experiences of women plus the experiences of an Indigenous person; the intersectional effects of these identities are likely multiplicative. Importantly, the climate threats faced by these communities often vary greatly. The following section was adapted and updated from [Mental Health and Our Changing Climate: Impact, Inequities, Responses](#).*

## **The Economically Disadvantaged**

Economically disadvantaged people are more likely to experience high levels of stress, depression, and anxiety after a disaster because they are more likely to live in risk-prone areas (Hallegatte et al., 2020), and lack of monetary resources makes it difficult to address potential risk factors in a home environment or to evacuate to safety as a disaster approaches. In the aftermath of a disaster, those with less money have less access to the material resources that help people cope (Benevolenza & DeRigne, 2019).

## **Communities of Color**

Historical and present-day discriminatory housing policies, such as redlining and racially restrictive covenants, mean that people of color are significantly more likely to live in areas more prone to the impacts of climate change. For example, formerly red-lined neighborhoods in the United States tend to have less tree cover, less green space, and more concrete, making

them significantly hotter than other areas (Hoffman, 2020; Schell et al., 2020). This not only increases heat risk but also deprives communities of the mental health buffer offered by urban green space (Hartig & Kahn, 2016). Furthermore, locations in which communities of color live have been disproportionately targeted for the siting of dangerous and polluting facilities such as toxic waste dumps, petrochemical plants, highways, and other sources of water and air pollution (Williams, 2018; Bullard, 2001). This increases the risk of neurological and other health complications from exposure to industrial pollution such as particulate matter (US Environmental Protection Agency [EPA], 2019; Johnston & Cushing, 2020). The risks of exposure increase during acute events like hurricanes and floods, as shown during Hurricane Harvey (Flores et al., 2021).

## **Indigenous Peoples**

For many Indigenous communities, climate change is an immediate physical threat. In Alaska, for example, some native communities have seen their villages vanish due to thawing permafrost, and others are facing that outcome in the near future (Chapin et al., 2014). Other Indigenous communities have already been displaced by eroding shorelines on the Gulf Coast (Tu & Lim, 2021). Along with the trauma of losing their homes, Indigenous communities are losing their ways of life because of climate change, as disrupted seasonal patterns or loss of sea ice make it difficult to continue culturally meaningful practices or gather traditional food (Rigby et al., 2011; Status of Tribes and Climate Change Working Group [STACCWG], 2021). Because Indigenous personal and cultural identity is often tied to the land through history as well as lived experience, Indigenous communities may experience greater threats to mental health (Cochran et al., 2013; Cunsolo Willox et al., 2012; Durkalec et al., 2015; Middleton et al., 2020; Voggesser et al., 2013, STACCWG, 2021). A systematic review of the research literature on Indigenous populations (Middleton et al., 2020) found that suicide, depression, and anxiety were linked to both acute and chronic weather events and associated

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changes in place attachment, culture, food security, and cultural practices.

### **Women**

Gender and gender norms play a large role in how climate change impacts are experienced (Alston, 2013). As gender roles differ across the globe, these impacts may vary from place to place or culture to culture. Overall, women are expected to experience greater effects from climate change, including mental health impacts (Chen et al., 2020; Hrabok et al., 2020). Generally, caregiving responsibilities are primarily delegated to women across the world, which can contribute to stress when those in their care, such as children, are impacted by climate change or consequences such as food insecurity or displacement (Evertsen & Van der Geest, 2019; Jost et al., 2016). Extreme weather events are associated with an increase in intimate partner violence against women (Wonders, 2018). Research indicates that high temperatures are associated with an increased risk of adverse birth outcomes (Giudice, 2020) and developmental problems in children, which can threaten pregnant women's and recent mothers' mental health (Rothschild & Haase, 2023).

### **People with Disabilities**

Disasters disproportionately affect people with disabilities due to structural impediments and disruption of services. For example, families of children with disabilities, forced to leave wheelchairs and other disability-related supplies behind when fleeing wildfires in California, reported a significant stress burden from the lack of disability support and services during their evacuation (Ducy & Stough, 2021). These experiences point to the need to include people with disabilities in community planning processes for disaster preparedness and decision-making (Gaskin et al., 2017; Kosanic et al., 2022).

### **Individuals with Pre-Existing Mental Health Diagnoses**

People, including youth, with pre-existing mental health problems are at particular risk from the effects of climate change. A 2021 study found that people with obsessive compulsive disorder experienced exacerbated symptoms in hot weather (Brierley et al.). A 2023 review reported that people with pre-existing mental health conditions are particularly vulnerable after floods (Woodland et al.). Pre-existing anxiety was associated with an increased risk of additional adverse mental health outcomes, including depression and PTSD, following flooding (Hetherington et al., 2013 as cited in Woodland et al., 2023). Those who need consistent mental health care are also vulnerable to the disruption in health services following extreme weather events (Stacy & D'Arcy, 2022 as cited in Woodland et al., 2023). Young people who are already struggling to cope with other stressors may find it challenging to cope with the additional climate-related impacts. In addition, some of the medications used to treat mental illness make people more susceptible to the effects of heat (Martin-Latry et al., 2007; Layton et al., 2020).

### **Additional Populations**

There is established and growing research that outdoor workers and older adults face increased vulnerability to the mental health impacts of climate change. Some examples include an increase in exposure to climate-related threats for outdoor workers and an interruption of care for older adults. These characteristics may not directly overlap with children. However, to the extent that these populations care for children or live in multi-generational households, there is potential for impact on the mental health and well-being of children in their care. For more information, see [\*Mental Health and Our Changing Climate: Impacts, Inequities, Responses\*](#).



## A CLOSER LOOK — There's More to Climate Anxiety Than the Warming World

*Hannah Estrada, Education and Organizing Coordinator, San Francisco Lead at Youth vs. Apocalypse, Secretary of the Board for GreenAction, and 2023 Youth Climate Leaders Of Color Cohort Member with the People's Climate Innovation Center*



Many of the young people I work with experience some form of climate anxiety. They also experience anxiety from other sources of chaos: gun violence, police violence, housing issues, a lack of access to food, a lack of

access to healthcare, and more. It's important to highlight that marginalized and oppressed youth are often focused on making it to the next week. It's important to highlight that the phenomenon of climate anxiety manifests differently across different socioeconomic and cultural backgrounds.

For instance, when I began organizing in the climate movement I didn't feel fear for the future. I felt anxious about the homelessness, addiction, neglect and abuse I experienced or witnessed. I felt anxious and angry about the millions of people of color and poor people who on top of dealing with the worst symptoms of an extractive system must also deal with pollution and climate disaster. But I never felt a heavy sense of doom and gloom about the climate crisis. This is not to say all poor people or all people of color do not feel climate anxiety. This is to say that there are many of us who have reached our emotional capacity when it comes to violence, chaos, and death. Though the many injustices we face are often seen as separate from the climate crisis, they are rooted in the same system that's produced it: an exploitative system oppressing certain groups to benefit others. It is in this root that Youth Vs Apocalypse (YVA), the group I learned to organize in, functions.

**At YVA we do not ask our fellow community members to push aside the pressing injustices they face. Instead, we ask that they bring them**

**to the table as symptoms of the root we are trying to pull out.** Thus, we do not see climate justice as simply ridding the Earth of climate change. Climate justice means migrant justice, justice for Black and Brown lives, housing justice, food justice, and so much more. By meeting our community members where they're at we have been able to make sure we have space to voice our unique issues and solutions. Many of our members, including myself, stayed involved because we finally had a space where we could advocate against all forms of violence we face. It's impossible to separate these different forms of violence, and as long as we ask marginalized and oppressed people to do so, we continue to replicate harm and oppress voices of those most impacted by this system.

# II. IMPACTS

# Prenatal Impacts of Climate Change and Impacts on Infants

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*The impacts of climate change on mental health can begin even before birth. This section examines the evidence of negative effects on the fetus and infants, and the mechanisms through which climate change can influence psychological well-being in this group.*

In many ways, the younger the child, the greater the potential for climate change to have negative impacts. As physiological systems, cognitive abilities, and emotional skills are developing, experiences and environmental conditions can derail normal development in ways that are sometimes irreversible. This is particularly apparent when considering the potential for prenatal impacts; both pregnant women and the developing fetus are particularly vulnerable to environmental stressors caused or exacerbated by the impacts of climate change (Ha, 2022). The developing brain is highly sensitive and is not immune to the effects of external events. Children who are prenatally exposed to environmental stressors are at risk for a range of cognitive, psychiatric, and behavioral dysfunction (Vergunst & Berry, 2022).

Several studies have looked at the impact of prenatal exposure to extreme weather events, which are becoming more common due to climate change. For example, individuals exposed to Hurricane Sandy while still in the womb were more likely to develop an anxiety disorder, depressive disorder, or attention-deficit/hyperactivity disorder later in life (Nomura et al., 2022); in another study, storm stress affected infant temperament, with those prenatally exposed to Sandy scoring lower on measures of activity level and extraversion (Buthmann et al., 2022). A study in Puerto Rico also found effects of prenatal exposure to Hurricane Maria, with exposed infants showing lower levels of self-control (Martinez, 2020).

Climate change is also associated with high temperatures and decreased air quality, both of which have a prenatal impact. Both phenomena are associated with an increased risk of pre-term birth, which in turn is linked to poorer cognitive development and risk of psychiatric disorders (van

Nieuwenhuizen et al., 2021; Tang & Di, 2022). These effects persist throughout the lifespan, affecting life outcomes among adults.

Both prenatal and postnatal exposure to air pollutants threaten cognitive abilities and mental health (Perera & Nadeau, 2022). Studies have found structural brain differences associated with exposure to air pollutants (Peterson et al., 2022). Separately, there is some evidence from a meta-analysis that maternal exposure to high temperatures increases the risk of psychiatric disorders in children, particularly schizophrenia (Puthota et al., 2022). However, the amount of research is limited. It is crucial, given the changing climate, for more studies to explore the impact of climate change on the prenatal brain.

After a child is born, they can experience climate change directly, although maternal stress due to environmental conditions continues to have an impact, primarily by negatively affecting mothers' behavior, warmth, responsiveness, and availability. The first year of life is crucial to cognitive, emotional, and social development (Vergunst & Berry, 2022); direct or indirect experiences of climate change, such as stress, food insecurity, or disease, may have profound impacts (Kidd et al., 2023). A key developmental priority of infants is to form a sense of stability and security that will influence their future trajectory, and an unstable environment can threaten this important foundation (Erikson, 1950; Morgan, 2010). A study of responses to a major storm in France found that 94% of children aged 0-5 presented at least one manifestation of acute stress, and many (about a third) showed developmental regression (Richez et al., 2022). Our understanding of these impacts could be strengthened with additional studies that explore the links between experiences of climate change during infancy and mental health effects.

## A CLOSER LOOK — Climate Change’s Impact on Neurodevelopment In Utero

Bruce Bekkar, MD, Fellow, *Climate for Health*, *ecoAmerica* and Co-host, *Green Docs Podcast*

Santosh Pandipati, MD, *Maternal-Fetal Medicine*, Chief Medical Officer and Co-Founder, *e-Lōvu Health*



There is mounting evidence that climate change is associated with a wide range of adverse birth outcomes. Globally, strong connections have been found between prematurity, low birth weight, stillbirth, and heat and air pollutants from fossil fuel combustion and wildfires.<sup>1,2</sup> Increased risk of birth defects, maternal hypertension, premature rupture of membranes (“water breaking” early), and fetal death are tied to these exposures as well as extreme weather events, changes in infectious disease, and reduced food and water quality.<sup>3</sup> Further harm to pregnancy is likely when prenatal care suffers due to infrastructure damage and/or the need to prioritize survival needs.<sup>4</sup>

The fetal nervous system is exquisitely vulnerable to injury due to its rapid growth and development during pregnancy, including from climate change-associated exposures. Prematurity and low birth weight, as described above, lead to higher rates of serious neurodevelopmental complications such as cerebral palsy, intraventricular hemorrhage (bleeding within the brain), periventricular leukomalacia (white matter brain injury), and retinopathy (damage to retinas in eyes) of prematurity.<sup>5</sup>

Exposure to disasters such as hurricanes, ice storms, flooding, and famine during pregnancy has been shown to increase the odds of autism spectrum disorder (ASD), attention deficit hyperactivity disorder, mood disorders, and schizophrenia in the offspring.<sup>6,7,8</sup> Abnormal neurologic outcomes may be due to changes

in the genetics of the baby that can lead to lifelong complications.<sup>6,7,9</sup> Additionally, maternal exposure to air pollution has been linked to thinner brain cortices which can inhibit neurodevelopment, impaired inhibitory control, cognitive impairment, and ASD.<sup>7,10</sup> **Thus, climate exposures during pregnancy may create intergenerational inequities in health outcomes.**

Climate change expands the range of disease-carrying insects, contributing to higher rates of vector-borne infections.<sup>11</sup> Some of these pathogens may harm the developing brain directly, such as Zika virus, a known cause of fetal microcephaly that leads to seizures, feeding problems, hearing loss, vision problems, and learning difficulties (ACOG). Malaria infection can damage the placenta, leading to fetal growth restriction, preeclampsia, and prematurity, and hence associated complications as explained above.<sup>8</sup>

The deposition of black carbon particles in placentas and brain tissue, from fossil fuel combustion and wildfires, poses significant harm to a developing fetus.<sup>12,13</sup> Heat exposure during pregnancy may heighten the risk of abruption (sudden placental separation), and resultant lowered oxygen delivery could certainly cause fetal neurologic damage.<sup>14</sup>

While the full range of fetal impacts linked to climate change is still unknown, we need to identify the most vulnerable windows of pregnancy, and determine which populations are most at risk.<sup>15</sup> Urgently, we must find cost-effective interventions that will prevent irreversible, life-long harm. As knowledge grows, we will be better able to advocate for effective policies and standards to prevent harmful exposures from occurring. For compelling ethical, moral, and economic reasons, we must prioritize these actions and give this and future generations a real chance to achieve their full potential.

References for this Closer Look are on page 47.

# Impacts of Climate Change on Children: Toddlers Through the Early Teen Years

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*Childhood is a time of rapid physiological and mental/emotional development, and what happens during these years can have an enduring impact on well-being. This section summarizes research findings on climate change and mental health from toddlerhood through early adolescence.*

Sensitivity to the impacts of climate change continues from infancy into childhood. Children are increasingly the victims of climate change-fueled extreme weather, and living through a natural disaster causes trauma and distress (Barkin et al., 2021; Sanson et al., 2019; van Nieuwenhuizen et al., 2021). Though a majority of children recover, a significant number face mental health struggles (Lai et al., 2017; Witt et al., 2022).

Living through an extreme weather event can be terrifying, particularly if a child faced injury or loss. Psychological distress and other symptoms may continue for an extended time. Four months after a flood in Australia, 22% of children in grades 3-12 scored in the “severe” range for post-traumatic stress symptoms (PTSS) (Poulsen et al., 2015), and surveys conducted with 353 children (average age 11.7 years) between three and seven months after Hurricane Katrina found that 20% reported near clinical levels of PTSS and 12% reported moderate post-traumatic stress along with at-risk levels of anxiety and depression symptoms (Lai et al., 2015). In a group of young Hurricane Ike survivors (average age 8.7 years), a significant number experienced sleep problems 15 months after the storm. Nearly half (49%) had trouble falling asleep and 39% reported trouble staying asleep (Lai et al., 2020). Among young survivors of a Canadian wildfire (grades 3 and 4), about 45% met the criteria for at least a partial PTSD diagnosis six months after the fire, and almost 28% still met these criteria at 12 months (Kulig et al., 2017).

During critical periods of development, adversity leaves a lasting effect on the brain (Nelson & Gabard-Durnam, 2020), which is one reason that childhood exposure to climate-driven trauma can have serious long-term impacts on well-being. Research indicates that approximately 35% of all mental disorders emerge before age 14 (Solmi et al., 2022). Early issues can compound into deeper, more

difficult-to-manage problems as a child ages (Vergunst & Berry, 2022). For example, children who exhibit PTSS may avoid support from others and thus put themselves into a cycle of worsening mental health (Lai et al., 2018). Cognitive development and learning are also disrupted by climate-driven events. Elementary school children in areas highly impacted by the 2009 bushfires in Australia fell behind in their academic performance, measured two years (grade 3) and four years (grade 5) later, compared with non-affected peers (Gibbs et al., 2019).

Being displaced from their home can be especially difficult for children. Displacement is often a result of proximity to a storm and significant danger, or because of complete loss of home and community, all of which increase the potential for mental health issues (Pfefferbaum et al., 2016). One study found that refugee children in Europe suffered substantially higher rates of mental health problems than in the general population (Kien et al., 2019). Displaced children who are separated from their families face even greater trauma and mental health burdens. The presence of parents or other important caregivers provides emotional support and a sense of security, which is important when the family has been forced to leave their home. Separation from caregivers puts children at increased risk of violence from strangers (Cerna-Turoff et al., 2021). Even the brief absence of parents during traumatic events can have long-term consequences for well-being. A study of children (mean age 8.4 years) who were separated from their parents after bushfires in Australia in 1983 found that, 28 years later, those who experienced a short time apart from parents were more likely to have an avoidant attachment style as adults (Bryant et al., 2017) — that is, an approach to relationships characterized by difficulty forming close bonds.

Children’s mental health after extreme events is connected to parents’ well-being (Lowe et al., 2013; Witting et al., 2021; Zacher et al., 2022). The children of mothers whose mental health was negatively impacted by Hurricane Katrina had poorer mental health outcomes 12 years later (Zacher et al., 2022). Parents and caregivers often struggle to regain their own emotional stability

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after extreme events, which impacts their ability to offer support to their children. Difficulty returning to “normal” family functioning was a major stress factor cited by families of children under 12 who were evacuated in a wildfire (Botey & Kulig, 2014), and parents who survived the 2009 Australian bushfires reported that the pressures they faced changed their parenting approach toward being more serious and less fun (Kosta et al., 2021). Economic and other pressures on parents can be extreme, and domestic violence and child abuse often spike after a disaster, increasing the traumatic risk to children (Parkinson & Zara, 2013). There is evidence from studies across the globe that disasters resulting in displacement and economic loss are associated with the risk of violence against children (Seddighi et al., 2021).

The chronic and ongoing effects of our changing climate also take a toll on children’s well-being. One study found that as summer temperatures rose in New York City, young people, including children ages 6 to 11, made more mental health-related emergency department and hospital visits. Non-Hispanic Black children as well as children covered by Medicaid were overrepresented in these mental health emergencies (Niu et al., 2023).

In addition to its effects on mental health, heat influences a child’s ability to learn. Park et al. (2021) found that hotter temperatures on school days had a significant negative effect on US student learning between third and eighth grades, particularly for math, and these effects were more pronounced for disadvantaged students. The EPA projects that a global temperature increase of 2°C is linked to decreases in learning by 4% compared with expected learning gains, and a global temperature increase of 4°C is linked to learning decrements of 7% (EPA, 2023a).

The increased temperatures of climate change are linked to higher levels of air pollution. Exposure to air pollution during childhood, such as nitrogen oxide and fine particulate matter, not only has potential negative impacts on neurological development in children (Xu et al., 2016) but is linked to later psychopathology such as major depressive disorder (Latham et al., 2021; Trombly, 2023).

As children move into late childhood, they are likely to encounter reports of climate change in the news and social media, in school lessons, and/or in everyday conversations. Compared with the research on adolescents and young adults, few studies have explored younger children’s responses to climate change (Martin et al., 2022; Léger-Goodes et al., 2022). One study found that 82% of fifth graders in Colorado (ages 10-11) felt concerned about environmental degradation and expressed sadness, fear, and anger (Strife, 2012). Other qualitative research suggests that young children feel a deep sense of concern about climate change’s effect on the planet and on their futures, and an urgent need for the world to take action (e.g., Pinto & Grove-White, 2020; Zummo et al., 2020).



## A CLOSER LOOK — Healing Moral Injury with Intergenerational Peer-Support

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Thanks to recent youth activism, as [millions of children and young people](#) have hit the streets, [challenged heads of state](#), [sued governments](#), and spoken in venues like the [World Economic Forum](#), young people

are being idolized by today's leaders as beacons of hope for solving the climate crisis. But, they are shouldering this responsibility often before they've left high school or figured out important aspects of their identity. Many are not old enough to vote, let alone take up power holding positions in politics or business where action on climate is needed most. This can make adults' idolization of them feel more like abandonment and betrayal than solidarity and respect.

[Recent research](#) suggests that young people worldwide may be experiencing profound [moral injury](#) as a result of our inadequate response to the climate crisis, interpreted as adults' lack of care to protect their futures. Moral injury refers to the sense of being caught up in a system that is violating one's sense of right and wrong.

According to the World Health Organization, [no country is adequately protecting children's health](#). When youth witness the failure of institutions to protect, betrayal can wreak havoc. In the long run, institutional betrayal can create pragmatic harm, leading to illness, death, inequality, and economic ruin. In the short term, it stokes psychological harm, leading to emotional and physical distress, and more pragmatic harm. Fortunately, this vicious cycle may be stopped by [institutional courage](#), institutional efforts to seek the truth and engage in moral action, despite the costs associated with

doing so. It is the utmost expression of care that youth deserve from powerholders on the climate, made all the more significant because it carries a powerful healing effect for climate distress.

My colleagues and I reimagined this dynamic on an interpersonal level, studying the impact of intergenerational care. We hypothesized that if distressed youth could be brought into meaningful dialogue about their lived experiences with other similar youth, as well as with empathetic elders who want to improve outcomes, supportive coping and acting would follow. With the help of community facilitators, we recruited small groups of youth (aged 16-28 years) and elders (60+ years) in New Orleans (USA), Lagos (Nigeria), and London (UK).

We co-designed and supported intragenerational dialogues (i.e. youth meeting with other youth in a peer-support setting, and elders doing the same) and intergenerational dialogues (i.e. youth meeting with elders) and are currently analyzing the data.

We intend to mobilize the knowledge about how the climate crisis is affecting young people emotionally and psychologically, how communities can come together to support each other, and take shared ownership over their own well-being in context and how to seed ideas for action through peer-support dialogues.

We have an opportunity to help each other navigate change and catalyze action for a more just and equitable world. We owe it to young people to take their pain seriously via intergenerationally supportive conversations that address the institutional betrayal and moral injury; to let them know that the climate crisis is not theirs alone to solve.



# Impacts of Climate Change on Youth and Young Adults

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*Today's young people are typically thinking about climate change in addition to experiencing it. This section describes the ways in which both experiences and perceptions of climate change are affecting their health and functioning, as well as decisions they are making that will affect their future.*

There is a great deal of concern about the ways in which climate change is affecting adolescents and young people (we consider this group to include older teenagers and young adults up to 24, as suggested by the World Health Organization, though studies vary in age range). As is true for younger children, they are susceptible to the mental health effects of extreme weather events and high temperatures. Not only are people of this age still undergoing significant neural and cognitive development, they are also learning the skills that will help to determine their life trajectory, including relationship and career success (Roisman et al., 2004). They can be powerfully affected by disrupted schooling, family stress, and other indirect impacts of climate change such as displacement, financial distress, and food insecurity.

Like other age groups, adolescents may show impaired cognitive performance due to heat waves (Park et al., 2021). For example, college students tend to demonstrate lower test performance when it is hot, if they are not protected by air conditioning (Laurent et al., 2018). Suicide may be a particular concern as temperatures continue to rise (Dey et al., 2022) given increasing rates of suicide among adolescents (Joseph et al., 2022) and links to high temperatures (Charlson et al., 2021). The extreme heat, weather, and adverse air quality caused by climate change often limits physical activity, with such negative consequences as increased rates of obesity and depression, and decreased cardiometabolic health (Bernard et al., 2021; van Sluijs et al., 2021). Although warmer winters might enable more outdoor activity that partially offsets the decrease in warm-weather activity, the reduced ability to engage in sports such as skiing, snowboarding, or sledding makes this possibility far from certain.

Adolescents are also developing their sense of themselves as individuals and as members of society. They are affected by social connections outside of the family and they are making decisions about their own family and career plans and developing lifestyle patterns that can affect the trajectory of their lives. Harsh and unpredictable environments, such as those characterized by extreme weather, drought, or high temperatures, seem to impair social relationships and decision-making (Evans, 2019). Research suggests that these climate conditions are associated with earlier maternal parenthood, unstable interpersonal relationships, and lower levels of self-control. In these unpredictable conditions, adolescents tend not to plan as far into the future (Evans, 2019), which is likely to have negative impacts on career and family planning.

Notably, this age group can be affected not only by direct experiences of climate change but also by their own worries and concerns about climate change (Hickman et al., 2021), which have been called eco-anxiety or climate anxiety (Clayton, 2020). Although worry about climate change is reasonable and rational, strong feelings of anxiety may threaten mental health (Ramadan et al., 2023). A rapidly growing body of research has demonstrated that climate anxiety, which has been defined through its ability to threaten cognitive-emotional functioning, for example by obsessive rumination about the topic, or behavioral functioning, such as the ability to complete work or to socialize (Clayton & Karazsia, 2020), is associated with psychological distress (Reyes et al., 2021), depression (Sciberras & Fernando, 2022; Schwartz et al., 2022), and reduced well-being (Kulcar et al., 2022).

Many research studies suggest that adolescents and young adults experience the highest levels of climate anxiety compared with adults in their 30s and above (Heeren et al., 2022; Patrick et al., 2022; Swim et al., 2022). Concerns about climate change may be exacerbated by feelings of disappointment and even betrayal associated with the inadequate responses of others. In a global survey of young people, Hickman et al. (2021) found that strikingly high percentages said

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they felt betrayed by the poor governmental response to climate change, and 40% said they felt dismissed or ignored when they tried to talk to other people about climate change. Furthermore, the fact that young people do not have the full rights, status, and financial resources of older adults may lead to a feeling of powerlessness that contributes to their anxiety.

It is important to place this in a context in which young people are engaging in significant levels of climate activism. Rather than trying to talk them out of entirely reasonable anxiety, young people should be provided with practical skills to guide an effective response. Emotional regulation can help people cope with extreme levels of anxiety, while taking action to address climate change seems to increase efficacy and optimism (Neas et al., 2022) and reduce the extent to which climate anxiety is associated with more serious mental health problems (Neas et al., 2022; Schwartz et al., 2022).

# III. SOLUTIONS

## Solutions: System-Wide

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*This section draws from the research literature exploring how to prevent and address the mental health impacts of climate change on children and young adults. Because the current research on interventions and other solutions is limited (Dooley et al., 2021), the range of possible solutions likely expands beyond what is reflected here.*

### **Systems-Level Recommendations**

Addressing the mental health consequences of climate change on children first requires that society take meaningful steps to decrease greenhouse gas emissions, including rapid transitions to clean energy, clean transportation, energy-efficient infrastructure, sustainable consumption, and regenerative agricultural practices to address climate change at its root. The Intergovernmental Panel on Climate Change (IPCC) Summary for Policymakers 2023 report offers information and guidance on the climate solutions required to maintain a habitable planet on the international, national, and subnational levels. Keeping warming to less than 1.5°C above pre-industrial levels will ultimately bring benefits to young people’s mental health and well-being. At the systems level, this will include policy changes that prioritize climate change solutions, like reducing greenhouse gas emissions and addressing the impact of systemic racism and its roots in white supremacy (Gardiner, 2020). Transitioning rapidly to a low-carbon economy, one that centers on environmental justice, is critical.

While recent U.S. policies put the country closer to a path toward the goals recommended in the IPCC report noted above, they are not enough. Until our net emissions of greenhouse gasses are eliminated, the impacts of climate change will continue to accelerate, as will the impacts on the mental health and well-being of children and youth. The financial risk of inaction is also worth noting: In the United States, it is estimated that costs arising from disasters and population displacement alone could grow to hundreds of billions of dollars annually by the end of the century (USGCRP, 2018). Investing in climate solutions now will not only save lives, support physical and mental health, and protect communities, but will save money (Kumar et al., 2023; Pigato, 2019).

Even with a rapid transition, many climate impacts are unavoidable. Preparing for the health consequences of climate change requires support from governments at the national, state, and local level. Weather information systems, personal and community resiliency planning and resources, disaster response systems, and infrastructure improvements are needed that are tailored to each community’s projected risks.

A number of policy and other systems-level changes are necessary to build community resilience and protect children’s mental health. These must emphasize meeting children’s basic needs, such as adequate nutrition, clean water, stable housing, and safe schools (e.g., Mah et al., 2020; Clemens et al., 2020). Young people’s well-being is built upon a foundation of stability, which is threatened by the climate crisis. Climate change will increasingly make it difficult for families to meet their children’s basic physical needs (i.e., food and shelter) as well as their psychological needs (i.e., safety and parental connection). Attention must be given to the needs of those targeted for marginalization because of racism, poverty, disability, LGBTQIA+ identity, etc. For example, marginalized youth living in urban areas may need special support to avoid the dangers of the urban heat island during heat waves (Niu et al., 2023).

Additionally, policies and programs that expand access to mental health care are needed to provide children and youth the support required to process trauma and other mental health challenges as they experience increasing climate impacts. Additional guidance for strengthening community resilience can be found in [\*Mental Health and Our Changing Climate: Impacts, Inequities, Response\*](#) (pages 55 - 61).

## A CLOSER LOOK — From Trauma to Legislation

Giselle Perez, Student Leader and Co-Author of H.Res.259



I am a youth climate advocate from Sonoma, California. Current climate models depict dire impacts of a rapidly warming climate in 2050, but we continue to experience significantly disruptive disasters

in our communities **right now**. The most vulnerable among us, children, the elderly, and those affected by existing systemic obstacles, are disproportionately affected by this crisis.

At only 17 years old I have lived through an array of climate change impacts including — perpetual drought, extreme heat, intense flooding, and destructive wildfires (often at the start of the school year). These disasters caused missed school days, displacement from my home, and deep anxiety among my peers and me. When we sought mental health support, we found a disturbing lack of resources and providers.

In January of 2021, I began working with a group of students from Schools For Climate Action, a nonpartisan, youth/adult campaign focused on incorporating youth voices into climate policy. We started by exploring research on the mental health effects of climate change on our generation. What we found was disheartening, but not surprising.

We used ecoAmerica's 2021 edition of their *Mental Health and Our Changing Climate* report to guide our research, and we found that as climate-related disasters continue to rise, more youth will be affected by increasing rates of stress and trauma directly through interruptions in schooling, disruptions in routine, separation from caregivers due to evacuations or displacement, and parental stress after disasters.

We turned this research — and much more — into *H.Res.259: Promoting youth mental health and well-being in a changing climate*, which seeks to commit Congress to supporting youth mental health after climate disasters through school district funding.

Climate change is a systemic issue and we need a systemic response including not only legislation, but also education on the topic. The lack of funding and support for climate change education is what spurred Schools for Climate Action to bring together a nationwide coalition of 200 students to collaborate on another resolution titled *H.Res.262: Supporting the teaching of climate change in schools*.

Having climate goals set for 2050 is extremely concerning for me, because in 2050 I will be 45 years old. Without the United States rising to the challenge of implementing bold, systemic, and just policies guided by the best available science, my future, and the future of my generation, is bleak. I am doing what I can to use my power for the systemic change needed, and I hope many millions more will join me.

# Solutions: Community

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## Community Solutions

Prevention and early detection are critical to addressing the mental health impacts of climate change on children’s mental health. Community-level solutions, such as climate action plans and climate resiliency or adaptation plans, must take into account that effective solutions include provisions for children and other vulnerable communities, put justice at their center, focus on prevention, and address the underlying social and environmental determinants of mental health, such as exposure to racism or gender-based violence, neighborhood safety, access to education, levels of income, and access to protected ecosystems (Fusar-Poli et al., 2021). Centering justice involves bolstering physical and social infrastructure (like safe school buildings, green space, and public education) to address the needs of all children, especially those most at risk, and for leaders and policymakers to engage the entire community in planning for the growing impacts of climate change, both acute and chronic.

### *Plan for disasters and heat*

It is critical that communities establish, revisit, and update local disaster preparedness plans with attention to growing climate-related risks. Involving young people in the planning will not only bring an important and often-overlooked perspective but is an opportunity to empower local youth and increase their sense of efficacy (Gibbs et al., 2021). Older youth can serve their community during the disaster planning and prevention phase, and they can take on responsibilities in the recovery phase of a disaster. Also growing increasingly important as a part of preparedness are community-level plans to address the risk of extreme heat (Hess et al., 2023) — for example, by designating buildings in an urban area that will serve as cooling stations for residents without air conditioning.

### *Increase access to green space*

Many studies suggest that spending time in natural spaces improves children’s well-being, and a systematic review found that access to green space is associated with many positive mental health outcomes, such as lower rates of ADHD diagnoses, fewer emotional problems, and lower

risk of internalizing disorders such as depression (Zare et al., 2022). The benefits of green space, which include stress relief, the opportunity for physical activity, and cleaner air (Zare et al., 2022), appear to be especially important for children from lower socioeconomic households and neighborhoods (Perez-Del-Pulgar et al., 2021). Giving children opportunities to engage with nature, for example, through nature-based playgrounds or gardens in schools or daycare settings, may be particularly helpful for the mental and emotional well-being of children who have faced trauma (Touloumakos & Barrable, 2020).

### *Create opportunities for young people to take collective climate action*

Young people are eager to see the world take positive steps for a greener, more equitable future. Community-level collective action has a host of benefits, such as forging local social connections, boosting personal efficacy, and witnessing tangible progress on real-world projects, all of which are likely to alleviate climate anxiety (Berry, 2021; Gislason et al., 2021). One study suggests that for young people (aged 18-35) struggling with anxiety about climate change, participating in climate activism may protect them from depression (Schwartz et al., 2022). Other studies have found some support for encouraging young people to engage in activism, to express their emotions, and to enhance their social connections, as ways to reduce their climate anxiety (Bingley et al., 2022). Young people, and the adults who care about them, have options: there are numerous organizations already making an impact to get involved in. Some of these organizations are provided in the resources chapter.

Getting involved in efforts that directly help others can increase young people’s resilience. In interviews conducted after the 2013 floods in Alberta, Canada, youth participants aged 5-17 reported increases in their own well-being by helping others in their community, particularly their peers. It distracted them from their own woes, gave them a sense of control, allowed them to practice decision-making and problem-solving, and increased their social connections (McDonald-Harker et al., 2021).

## A CLOSER LOOK — Mother Earth's Call to Stand and Use Our Voice

*Jasilyn Charger, Water Protector and Community Organizer from Eagle Butte, South Dakota*



I, Jace Charger (Jasilyn) started my community organizing at a young age. Like so many disadvantaged BIPOC youth in the country, I fell through the cracks. Despite living in a dangerous and toxic environment, I still had to grow and strive. But all things that grow in toxic environments are tainted by it. Like vegetation growing next to an oil field, contaminated soil stunts its growth.

The toxic environment that causes our climate to change forces youth to inherit problems they didn't create. The climate grief of our generation growing up not knowing what our future will look like — in an already uncertain world — results for many in depression.

In 2014 my community, the Cheyenne River Sioux tribe, suffered from mass suicides among our younger members. It was their fellow youth who courageously stood up and took the microphone to demand change, despite the grief and fear in their hearts.

Giving youth a voice is giving them power and a seat at the table. Climate change raised a banner we all can stand under. Youth see the intersectionality of native rights and environmental rights. Within this climate emergency, youth from across the globe are coming together to fight, raise awareness, and speak up — they are part of an awakening my people have prophecies about.

Our native connection to the land and our love for it was seen in 2016 in Standing Rock when news spread across the US about the Dakota Access Pipeline (DAPL). The youth participated in a run led by Bobbie Jean Three legs which started the Run for Our Lives campaign. This inspired thousands to flock to Standing Rock to aid our fight. When the pipeline finished in 2017, people took the fire that was lit in their hearts home with them. Grief has a way of staying with you so we held on to it, but we carried our lit torches forward and shone light on problems in our own lands. The spirit of No DAPL spread far and wide. The chant MNI WICONI (water is life) began to ripple through time telling the story of hope and planting the seeds of courage in us all.

After Standing Rock, I went home to protect my lands with the tools, lessons, and stories I learned. I began fighting the Keystone XL pipeline under the mentorship of women who had fought before me like Joye Bruan.

We had four different spills from the Keystone XL pipeline between 2010-2019. The community members affected by Keystone XL, from the Oceto Sakowin (seven council fires), have fought for many years to keep our lands safe for us and for animal life.

Because Native Americans have a deep connection to the Earth, we understand intersectionality — that native rights and environmental rights go hand in hand. We all hear the call of our Mother Earth. Climate grief is her line to the Earth telling us to stand and use our voice.

# Solutions: School-Based, Health Professionals

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## Support from Schools, Teachers, Caregivers, and Peers

In the context of climate change, schools and child care facilities are essential to children's well-being. Schools already play an important role in children's recovery after an extreme event, for many schools already serve as the site of interventions after a disaster (Lai et al., 2016). The capacity of schools and child care settings to prevent and address the mental health impacts of climate change, and to participate in the rapid reductions needed in greenhouse gas emissions, should be expanded.

### *The physical environment*

Many aspects of school and child care facilities' physical environment impact children's mental health and well-being, such as the amount of accessible green space. Schools can model environmental responsibility in their policies and actions, demonstrating to children that action is being taken and inviting them to take part in improving their school's green space, transportation options, energy systems, and climate footprint. This demonstrates that people working together can create real change, and may boost hope and efficacy (Sanson et al., 2019). School buildings also can offer protection against climate change events. For example, a 2019 study suggests that low-cost air sensors can help school administrators prepare for poor indoor air quality when distant wildfire smoke is present by alerting them to particulate matter levels (Kaduwela et al., 2019). Schools can consider using opaque curtains to keep classrooms cool when temperatures are high (Connecticut State Department of Health, 2023), reducing use of overhead lights or other electronics that produce heat, and other strategies.

### *The social environment*

The relationships that young people form at school, with their peers, teachers, and staff, are important because they provide social support (Barkin et al., 2021; Ma et al., 2022), which has been linked to lower rates of poor mental health, school adjustment issues, and risk behaviors (Bauer et al., 2021). Strong social support networks are a mental health protective factor for children after disasters (Lai et al., 2017), because,

for example, it increases the number of people they can turn to when they need a caring ear.

### *Curricula*

The climate changes and damages we are experiencing are likely to intensify over the coming decades, and some impacts will be permanent. To prepare them for this future, children need to learn the facts of climate change based on strong scientific consensus. School lessons about climate change do not have to be bleak, and can emphasize hope and efficacy (Baker et al., 2021). When children learn the sobering scientific facts about the climate crisis, their emotional well-being appears to be better when they believe that their own actions can make a difference and that their engagement with the issue can be a source of meaning and importance in their lives and their communities (e.g., Ratinen & Uusiautti, 2020; Baker et al., 2021). A study in Israel found that school lessons that explicitly promoted hope and engaged children in hands-on learning to protect the environment were not only linked to higher pro-environmental behavior from the children but to higher levels of satisfaction with their school experience (Kerret et al., 2020). And after-school programs that emphasized climate action also resulted in children feeling more empowered, motivated, and positively engaged (Trott, 2020; Trott, 2022).

## Solutions for Health Professionals

Health care systems should offer assessment screenings early and regularly, particularly after an extreme weather event, for otherwise many young children's climate-related distress may be missed, even by parents (e.g., Poulsen et al. 2015). The Bright Futures Periodicity Schedule recommends that pediatricians ask their patients about their emotions at well-child visits up to age 21 (Health Resources and Services Administration, 2023). Given the dynamic nature of PTSS in children, as well as other mental health issues, a meta-analysis suggests screenings should occur three months, six months, and one year after an extreme weather event (Witt et al., 2022). Catching potential problems and providing early intervention with younger children is especially



## A CLOSER LOOK — A Story can be Told, but can it be Heard?

*Aishah-Nyeta Brown, Social Media Manager; Good Energy Stories and Gen-Z Advisor, Climate Mental Health Network*



Ever since I can remember, I have been deeply connected to nature and felt a profound responsibility to protect it. This bond has guided me on a journey of environmental advocacy and activism, as I believed it was the only way to address

such a monumental issue. I started with small steps by attending local community events and joining grassroots organizations focused on climate action. These allowed me to delve deeper into the subject, expanding my understanding and fueling my determination to make a tangible difference.

However, it was a transformative trip to South Africa at the age of 17 that truly opened my eyes to the global impact of environmental degradation. I discovered that the consequences faced by communities there were not so different from those we experience in the United States. This experience intensified my passion for pursuing a more transdisciplinary approach to active environmental participation. Recognizing the power of storytelling, I turned to creativity as a means to amplify the messages of climate and mental health advocacy. Through my writing, photography, and visual arts, I sought to shed light on the interconnectedness between the environment and our well-being. By infusing creativity into these pressing issues, I aimed to engage a wider audience and ignite a sense of empathy and urgency.

Creative storytelling, I discovered, has the ability to spark conversations, evoke emotions, and inspire action. It serves as a bridge between scientific data and human experiences, fostering a deeper understanding of the impact of climate change on mental health.

As an American with a lineage tracing back to enslaved people who contributed to building this country, I often draw inspiration from the words of the Constitution that enshrine the rights to life, liberty, and the pursuit of happiness. Happiness, along with mental health and justice, is fundamental to our lives, deeply ingrained in the foundations of this nation.

In sharing our stories, we must remember the importance of emotions and their positive value. I aspire to convey a message of hope and empowerment, particularly to young individuals who may be grappling with climate anxiety, grief, or overwhelming emotions.

First and foremost, it is essential to remember that you are not alone. Many others share your concerns, and together we can create change. Take the time to process your emotions and seek healthy outlets for expression, such as art, writing, or engaging with supportive communities, whether online or in person. Surround yourself with like-minded individuals and join youth-led organizations to provide yourself with a sense of belonging and purpose. Engage in meaningful conversations to share experiences, exchange ideas, and find strength in collective action.

We hold the power to shape a better world for ourselves and future generations. While it is natural to experience sadness and grief, these emotions serve as reminders of our deep connection to the world around us. We can channel our feelings to fuel our determination and drive us to action for meaningful change.

Together, we can navigate the challenges ahead, embrace our collective resilience, and build a sustainable future filled with hope and possibility.

# Solutions: Health Professionals, Parents and Families

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important, as they are likely to manifest intense PTSD symptoms more quickly than older children (Kulig et al., 2017). To understand and address the climate distress of children who haven't been directly impacted by an extreme weather event, regular pediatric medical assessments could include a question about climate change-related concerns (Ramadan et al., 2023).

Most children do not need mental health treatment after an extreme event (and for some, it might be counterproductive (Pfefferbaum et al., 2017)), but many could benefit from a lower-intensity intervention (Palinkas et al., 2020), such as a conversation with a mental health provider about the emotions they may experience as a result of their trauma. Stepped-care models — which follow a hierarchy of interventions based on the intensity of treatment and needs of the patient — have been used to expand mental health care resources and offer appropriately scaled services to the wider community. Services range from low-intensity support for self-management to psychiatric care. Stepped-care models are particularly important to meet the spike in needed services after a disaster (McDermott & Cobham, 2014; Witt et al., 2022).

For those who need more significant help, a number of promising evidence-based interventions exist for treating the mental health impacts of extreme events (e.g. Palinkas et al., 2020). For example, cognitive behavioral therapy has proven effective for children and adolescents (Pfefferbaum et al., 2017; Palinkas et al., 2020; Gibbs et al., 2021), and so has eye-movement desensitization and reprocessing therapy (Gibbs et al., 2021). Unfortunately, when it comes to addressing the climate anxiety and other distress felt by young people who are aware of climate change but haven't been directly impacted, few clinical interventions have been developed or tested (Ramadan et al., 2023; van Nieuwenhuizen et al., 2021), though a small but growing number of climate-aware mental health providers take climate change into consideration as they assess clients and explore treatment options (Doherty et al., 2022).

## The Role of Parents and Families

A central source of support for children undergoing any stressful event is their immediate family. Parental support emerges in multiple studies as a protective factor for young people's mental and emotional well-being during a crisis (e.g., Andrade et al., 2023; Sanson et al., 2018), and children's well-being is heavily impacted by caregivers' own well-being. Those caring for children need support. By helping families meet their basic needs, well-functioning community services (such as psychological first aid; Brymer et al., 2006) and the availability of financial and other resources offers stability and helps shore up parents' capacity to support their children. Emotional support from caregivers may be lower when they face significant external worries (e.g., school closures, displacement, access to safe shelter, food, and water), as is often the case in the early stages of disaster recovery (Lai et al., 2018). Parents who receive support for mental health, and thus are better able to manage their own anxiety, are also better able to support their children (Sanson et al., 2018; Baker et al., 2021). If the mental health needs of parents are left unaddressed, they can negatively impact children's well-being many years into the future (Zacher et al., 2022).

Children need different kinds of support depending on their age. Younger children need guidance to learn about climate change, manage their fears, find hope, and take age-appropriate action (Sanson et al., 2018). Older children and adolescents need caregivers to acknowledge their worries, learn as much as they can about the climate crisis, and join others in taking action. Children of all ages increasingly encounter the topic of climate change in the media, through friends, or at school, and parents must be ready to hold realistic but positive discussions about the issue and not dismiss or diminish young people's concerns (Baker et al., 2021). Positive, involved parenting styles are linked to better youth mental health (Ma et al., 2022). According to young people's interview comments, important aspects of caregiver support during difficult times include engaging in meaningful conversations, allowing young

people to communicate their feelings, and offering reassurance (McDonald-Harker et al., 2021).

Parental influence also plays a role in whether children engage in healthy coping. A study of Swedish adolescents found that positive, solution-oriented messages from parents about climate change, especially from fathers, resulted in children using proactive, meaning-focused (reappraising the source of stress, finding hope and meaning), and problem-focused (addressing the cause of stress) coping strategies rather than emotion-focused coping (suppressing or distracting from the stressful feelings) (Ojala and Bengsston, 2019). Emotion-focused coping is connected to worse mental health outcomes in young people (Ma et al., 2022).

In addition to encouraging healthy coping, parents can aid their children in building their resilience as climate change advances (Sanson et al., 2019). Personal skills and characteristics such as the ability to self-regulate emotions, persist in completing a task, have empathy, and be flexible and creative help individuals function during hardship. Working effectively with others, especially during hard times, requires interpersonal skills such as conflict resolution and cooperation. Creating community-level change takes civic habits such as volunteering, being an active community member, learning to speak in public, and directly addressing people in power (Sanson et al., 2019). All of these skills must be learned and practiced, and parents can teach and model them.

## Framework for excellence in mental health and well-being

The framework for excellence in mental health is a guide for changemakers at every level of society who seek to improve mental health outcomes and promote well-being for millions of Americans.



Please note this was created for the general population and is not specific to children.



# Resources for Parents, Caregivers, Mental Health Professionals, and Educators

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*The array of resources to help individuals act on climate change and mental health continues to grow. This final section highlights some of these resources — primarily those that will help parents, caregivers, mental health professionals, and educators support children and young people in our changing climate. The resources below also aim to help individuals take action and get involved in solutions.*

## Parents and Caregivers

Parents and caregivers can educate themselves and work to support climate change action. They can talk to their children or teens about the issue and help them get connected to others who are doing work in this space. Research shows that people feel better about the issue when they take action (Schwartz et al., 2022). Parents and caregivers can help children and teens get involved in a local chapter of a climate advocacy or action group. They can provide young people with age-appropriate books and resources to help them understand climate change and what they can do about it. And it's important to be prepared for climate impacts where one lives. Disaster preparedness can play a large role in the outcome of a climate-related event. Finally, resources are below to help parents and caregivers take care of their mental well-being, too.

## Communication and Education Resources

- [ClimateKids](#) — NASA
- [A Guide for Parents About the Climate Crisis](#) — The Australian Psychological Society
- [Get Ready Book for Kids](#) — The Australian Red Cross
- [How to Talk with Children About Climate Change](#) — [healthychildren.org](#)
- [How to Talk to Young People About Climate Emotions](#) (Spanish version is available [here](#)) — Climate Mental Health Network
- [Talking with Children Before an Emergency](#) — The Australian Red Cross
- [Climate Just-the-Facts Talk Script for Elementary School Students](#) — Climate Mental Health Network

- [ECO Bookworms](#) — American Public Health Association
- [Parent & Education Toolkit](#) — Children's Environmental Health Network and American Public Health Association
- [Early Childhood Development Kits for Emergencies](#) — UNICEF
- [Sesame Workshop](#) — Ahlan Simsim, Sesame Street, and the International Rescue Committee
- [Climate Change Facts](#) — Science Moms

## Support Resources

- [Raising Children to Thrive in a Climate Changed World](#) — The Australian Psychological Society
- [Youth Support Space](#) — The Climate Psychology Alliance
- [Managing Climate Anxiety](#) — The Australian Red Cross
- [Affirmations for Climate Emotions](#) — Climate Mental Health Network
- [Early Childhood Development Action Network \(ECDAN\) Webinars](#) — ECDAN
- [Resilience Guide for Parents and Teachers](#) — American Psychological Association
- [Climate Change & Youth Mental Health](#) — See Change Institute, Climate Mental Health Network, The Global Fund for Mental Health, and Blue Shield of California

## Organizations to Get Involved In (or to help your teen get involved in)

- [350.org](#)
- [Citizens' Climate Lobby](#)
- [Climate Generation](#)
- [Climate Initiative](#)
- [Force of Nature](#)
- [Fridays for Future](#)
- [Future Coalition](#)
- [Our Children's Trust](#)
- [Power Shift Network](#)

- [Re-Earth Initiative](#)
- [Rewiring America](#)
- [Schools for Climate Action](#)
- [Students for Climate Action](#)
- [Sunrise Movement](#)
- [Third Act](#)
- [Youth Vs. Apocalypse](#)

## Books

- [Magination Press Children's Books](#), American Psychological Association
- [A Field Guide to Climate Anxiety](#), Sarah Jaquette Ray
- [Generation Dread](#), Britt Wray
- [Coco's Fire](#), Jeremy D. Wortzel, Lena K. Champlin, and the Group for the Advancement of Psychiatry Climate Committee
- [All the Feelings Under the Sun: How to Deal with Climate Change](#), Leslie Davenport
- [A Guide to Eco-Anxiety: How to Protect the Planet and Your Mental Health](#), Anouchka Grose
- [Emotional Inflammation](#), Lise Van Susteren
- [All We Can Save](#), Dr. Ayana Elizabeth Johnson and Dr. Katharine Wilkinson
- [Parenting In a Changing Climate](#), Elizabeth Bechard
- [Out of the Fires](#), Carrie Lara
- [Stress Less](#), Michael A. Tompkins

## Mental Health Professionals

Mental health professionals are in a unique spot to support children and young people as the world faces a changing climate. Fortunately, there are resources to help mental health professionals who want to familiarize themselves with the psychological impacts of climate change, learn about the connection, and build their toolbox of how to help. There are organizations and alliances that provide resources, lesson plans, and literature to help psychologists evaluate and support their patients. Other organizations

help build mental health professionals' capacity for engagement and advocacy.

## Organizations

- [American Geophysical Union](#), GeoHealth Section
- [Climate Change and Health Committee](#), American Association of Child & Adolescent Psychiatry
- Climate Change Psychology Advisory Group, American Psychological Association
- [Climate for Health](#)
- [Climate Psychiatry Alliance](#)
- [Climate Psychology Alliance](#)
- [Environment Member Section](#), American Public Health Association
- [Health Care Without Harm](#)
- [Maternal and Child Health Member Section](#), American Public Health Association
- [Medical Society Consortium on Climate and Health](#)
- [Mental Health Member Section](#), American Public Health Association
- [Science Moms](#)
- [See Change Institute](#)
- [Society for Environmental Population & Conservation Psychology](#), APA Division 34
- [Yale Program on Climate Change Communication](#)

## Literature/Psychology Practices

- [Climate Change & Anxiety Scale](#), Dr. Susan Clayton and Dr. Brian T. Karazsia
- [Climate Change Worry Scale](#), Dr. Alan E. Stewart
- [Clinical Psychology Responses to the Climate Crisis](#), Dr. Thomas Doherty, Dr. Amy Lykins, Dr. Nancy Piotrowski, Dr. Zoey Rogers, Dr. Derrick Sebree & Dr. Kristi White
- [Climate Change as a Social Determinant of Health](#), Dr. Maya Ragavan, Dr. Lucy Marcil, and Dr. Arvin Garg
- [Intergovernmental Panel on Climate Change](#)

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## Tools and Training

- [Effect of Disasters on Mental Health for Children and Adolescents](#) — Prepare Iowa
- [Addressing Climate Change Concerns in Practice](#) — American Psychological Association
- [Climate Ambassador Training](#) — Climate for Health
- [Climate Solutions for Your Workplace](#) — Climate for Health
- [Climate Solutions: Advocacy with Policy Makers](#) — Climate for Health
- [Hope, Health & Climate Change](#) — Howard Frumkin, DrPH, MPH, MD, Presents and UNC School of Medicine
- [Affirmations for Climate Emotions](#) — Climate Mental Health Network
- [Creative Arts Therapy](#) — Climate Mental Health Network
- [Climate and Health Youth Education Toolkit](#) — American Public Health Association

## Educators

Teachers and professors spend significant time with children and young people. They can support students by providing age-appropriate educational resources about climate change, teaching about the issue in their classroom, and engaging in effective communication. The following resources include class activities, lesson plans, answers to frequently asked questions, and books about climate change.

## For the Classroom

- [Climate Change and Mental Health: Class Activities](#) — Climate Cares Team, Imperial College of London's Institute for Global Health and Innovation and the Grantham Institute
- [Climate Change and Mental Health: A Teacher's Guide](#) — Climate Cares Team, Imperial College of London's Institute for Global Health and Innovation and the Grantham Institute
- [Taking Action & Self Care Worksheets](#) —

Climate Mental Health Network

- [Climate Change and Human Health Lesson Plan](#) — National Institute of Environmental Health Sciences

## Education for Teachers

- [Climate Anxiety: An Introduction for Teachers](#) — the Global Action Plan
- [Existential Toolkit for Climate Justice Educators](#)
- [Resilience Guide for Parents and Teachers](#) — American Psychological Association
- [Climate Change Resources for Educators and Students](#) — EPA
- [Teaching Climate](#) — Climate.gov

## Books

- [All the Feelings Under the Sun: How to Deal with Climate Change](#), Leslie Davenport
- [A Field Guide to Climate Anxiety](#), Dr. Sarah Jaquette Ray
- [Generation Dread](#), Dr. Britt Wray
- [Coco's Fire](#), Jeremy D. Wortzel, Lena K. Champlin, and the Group for the Advancement of Psychiatry Climate Committee
- [A Guide to Eco-Anxiety: How to Protect the Planet and Your Mental Health](#), Anouchka Grose
- [Emotional Inflammation](#), Dr. Lise Van Susteren
- [All We Can Save](#), Dr. Ayana Elizabeth Johnson and Dr. Katharine Wilkinson

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