

Title: Young people's voices on climate anxiety, government betrayal and moral injury: a global phenomenon

Authors:

Caroline Hickman^{1*}, Elizabeth Marks^{1*}, Panu Pihkala², Susan Clayton³, R. Eric Lewandowski⁴, Elouise E .Mayall⁵, Britt Wray⁶, Catriona Mellor⁷, Lise van Susteren⁸

1 University of Bath, Claverton Down, BA2 7AY, UK

2 University of Helsinki, Vuorikatu 3, 00014 Helsinki, Finland

3 The College of Wooster, Wooster, OH, 44691 USA

4 NYU Langone Health, Department of Child and Adolescent Psychiatry, 1 Park Ave, New York, NY, 10016 USA

5 University of East Anglia, Norwich, Norfolk NR4 7TJ, UK

6 Stanford University, Stanford, CA 94305 USA and London School of Hygiene and Tropical Medicine, London WC1E 7HT, UK

7 Oxford Health NHS Foundation Trust, UK

8 Private practice

·Joint first authors

Key Words

Climate anxiety, eco-anxiety, climate crisis, children, young people, global, mental health, moral injury, government inaction.

Research in context panel

Evidence before this study

Previous studies have shown that psychological distress about climate change exists, with affective, cognitive, and behavioural dimensions. The direct impacts of climate change disproportionately burden children and young people, as they are developing psychologically, physically, socially, and neurologically. Emerging evidence suggests young people are also more burdened by the indirect impacts of climate change, for example climate anxiety, which affects psychosocial health and wellbeing, and may exacerbate pre-existing mental health problems in some children. Prior to starting this study, the authors conducted conceptually guided, targeted searches of the relatively limited existing literature on children's emotions in relation to climate change ("climate anxiety", "eco-anxiety" and "eco-distress") and psychological measures of climate anxiety, in English and Finnish. These searches and resulting publications inform this study. We also took into account recent legal reports relating to human rights and climate change.

Added value of this study

This is the largest and most international survey of climate anxiety in young people to date. It shows that the psychological (emotional, cognitive, social, and functional) burdens of climate change are profoundly affecting huge numbers of young people around the world. Furthermore, it is the first study to offer insight into how young people's perception of governments' responses to climate change is associated with their own emotional and psychological reactions. These reactions are reported by young people from a diverse set of countries with a range of incomes and differing levels of direct exposure to severe effects of climate change.

Implications of all the available evidence

Distress about climate change is associated with young people perceiving that they have no future, that humanity is doomed, that governments are failing to respond adequately, and with feelings of betrayal and abandonment by governments and adults. These are chronic stressors which will have significant, long-lasting and incremental negative implications on the mental health of children and young people. The failure of governments to adequately address climate change and the impact on younger generations potentially constitutes moral injury. Nations must respond to protect the mental health of children and young people by engaging in ethical, collective, policy-based action against climate change.

Introduction

Climate anxiety and eco-anxiety (distress relating to the climate and ecological crises) are increasing across society, as people become increasingly aware of the current and future global threats associated with our warming planet.¹ The climate crisis has significant long-term implications for physical and mental health as a result of acute and chronic environmental changes, from storms and wildfires to changing landscapes, and increasing temperatures.² The role played by climate anxiety is complex,³ with recognition that this is fundamentally based on constructive anxiety.¹ Although painful and distressing, climate anxiety is rational and does not imply mental illness. It can be seen as a “practical anxiety”¹ which sometimes leads people to reassess their behaviour in order to respond adequately to threats including uncertainty.⁴⁻⁶

Climate anxiety involves many emotions: worry,⁷ fear,⁸ anger,⁹ grief,¹ despair, guilt, and shame,¹⁰ as well as hope.¹¹ Complex and sometimes competing feelings regularly appear together and can fluctuate in response to personal and world events.^{12,13} These experiences have been argued to be understandable, congruent, and healthy responses to the threats we face, however their intensity and complexity can be experienced as an unremitting psychological stressor.¹³

Significant levels of climate-related distress are reported globally,¹⁴ with children and young people particularly vulnerable.¹⁵ A recent review found that children of present and future generations will bear an unacceptably high disease burden from climate change.¹⁶ Qualitative research since 2010 found that many children have pessimistic views of climate futures.¹⁷ Interviews conducted with children in various countries between 2016-2021^{3,12} found intense forms of climate and eco-anxiety. Parents and educators also report hearing great concern about climate change from young people.^{18,19} Quantitative research on a global scale however is vital and missing, considering that contemporary children will live with the climate crisis for their whole lives. Climate anxiety can be understood through the stress-vulnerability model of health, explaining how chronic stressors increase risks of physical and mental health problems, particularly in the vulnerable.²⁰ Young people are vulnerable to developing mental health problems through multiple psychosocial risk factors, lack of services, and chronic stress.²¹ We urgently need new research on this emerging public health crisis, with support for children facing a future severely damaged by climate change.²²

The psychological stress of climate change is also grounded in relational factors; studies among children have demonstrated that they experience an additional layer of confusion, betrayal, and abandonment because of adult inaction towards climate change.^{23,3} Children are now turning to legal action based on government failure to protect ecosystems and their futures.¹⁴ Failure of governments to prevent harm from climate change could thus be argued to be a failure of ethical responsibility to care,²⁵ leading to moral injury (the distressing psychological aftermath experienced when one perpetrates and/or witnesses actions that violate moral or core beliefs),²⁶ including awareness of and/or failure to prevent harmful unethical behaviour. By endangering and harming fundamental human needs, the climate crisis is also a human rights issue. The distress of climate anxiety could be regarded as cruel, inhuman, degrading or torturous.²⁷ Research is required to understand the relationship between children and young people’s climate anxiety and their feelings about governmental response.

This study aimed to better understand the feelings, thoughts and functional impacts associated with climate change among young people globally. It explores and discusses the relationships between climate-related distress, perceived government responses, and moral injury.

Methods

Study Design and Participants

Data were collected from 10,000 young people via the participant recruitment platform Kantar.

Participants were drawn from Kantar’s network, including their LifePoints online Research Panel (45

million people from 42 countries in 26 languages). The LifePoints panel is actively managed to maximise inclusivity and representativeness of samples and monitor validity and quality of responses. Participants were eligible if aged 16-25 years and living in one of the ten countries selected (see Table 1). These countries were chosen to reflect populations from the Global North and South, representing a range of cultures, incomes, climates, climate vulnerabilities, and exposure to differing intensities of climate-related events.

Panel members are reminded at regular intervals to complete surveys as part of their membership and to collect points. For this study, invitations to participate were available, stratified by region and age, between 18 May and 7 June 2021. Before accessing surveys, participants were informed of the survey length but not topic. A total of 15,543 people began the survey, 10,000 (68%) completed it. There was an even split in terms of gender (51% male, 49% female) and age group (49% aged 16-20; 51% aged 21-25 years). Data-quality tools removed fraudulent survey data. Data collection ended in each country once 1,000 complete, anonymised responses were obtained. The study was approved by the University of Bath Psychology Ethics Committee (#21-090).

Table 1: List of countries surveyed, geographical location and language used in survey

Country	Location	Language of survey
UK	Global North	English
Finland	Global North	Finnish
France	Global North	French
USA	Global North	English
Australia	Global North	English
Portugal	Global North	Portuguese
Brazil	Global South	Portuguese
India	Global South	English
Philippines	Global South	English
Nigeria	Global South	English

Measures

A survey was developed by eleven international experts in climate change emotions, clinical and environmental psychology, psychotherapy, psychiatry, human rights law, child and adolescent mental health, and young people with lived experience of climate anxiety. The group met weekly for two months (February - March 2021), reviewing existing climate anxiety measures, and evidence for the psychological impact on young people. Several of the main authors had recently completed and published articles with targeted literature searches into climate and eco-anxiety^{1,4,12} which were synthesized and used to generate survey items. These were discussed and refined iteratively, leading to eight broad questions about emotional, functional and psychological experiences related to climate change and governmental response. The survey was piloted with 17 young people, with resulting adjustments to language and scaling. The survey domains were: (see Supplementary material for individual questions).

1. Climate-related worry (level of worry about climate change).

2. Climate-related functional impact (feelings about climate change negatively affecting functioning).
3. Climate-related emotions (presence of 14 positive and negative key emotions about climate change).
4. Climate-related thoughts (presence of seven key negative thoughts about climate change).
5. Experience of being ignored or dismissed when talking about climate change.
6. Beliefs about government response to climate change (presence of nine positive and negative key beliefs).
7. Emotional impact of government response to climate change (presence and intensity of feelings related to reassurance and betrayal).

Items were developed to be clear and have appropriate equivalents in different cultures and languages, and were translated as required.

Statistical Analysis

Descriptive statistics were calculated for worry, climate-related functional impairment, climate-related emotions, negative thoughts about climate change, experience of having one's climate change concerns dismissed, and beliefs about and emotional impact of governmental responses to climate change. Differences amongst the countries were cautiously explored. Correlations were run to explore associations between climate-related distress, functioning, thoughts, beliefs, and feelings about government response.

To allow for comparison between constructs, relevant scales were made from items within each domain (climate-related thoughts, beliefs about government response, emotional impact of government response). Negative thoughts about climate change were summed to create an overall score (ranging from 0-7), based on evidence that people with higher levels of concern about climate change tend to report more negative thoughts.²⁸ Perceptions that government has failed to respond adequately were recorded and summed to create a variable 'Negative Beliefs about Government Response' (ranging from 9-18) with a higher score indicating more negative and less positive beliefs.

Emotional impacts of government response were split into two scales reflecting a positive or a negative emotional response. The *Reassurance Scale* was constructed from the mean of the four 'positive feelings' items scored on a 1-5 scale ("I am reassured by governments' action on climate change" and each of "When I think about how my government is or how other governments are responding to climate change I feel valued / protected / hopeful"). Cronbach's alpha was 0.82. The *Betrayal Scale* was constructed from the mean of the six 'negative feelings' items scored on a 1-5 scale ("When I think about how my government is or how other governments are responding to climate change I feel anguished / abandoned / afraid / angry / ashamed / belittled"). Cronbach's alpha was 0.89.

We report aggregate results for all respondents, and results by country. These are offered as an overview of the global nature of the findings, whilst recognizing that such results are not globally representative, as sample sizes were the same for each country, not weighted by population size. Due to the size of the sample and number of comparisons, we only report findings that are significant at the $p \leq .001$ level. All analyses were conducted using SPSS version 27.

Results

Climate-change related feelings, thoughts, functioning and dismissal

Respondents across all countries reported a significant amount of worry, with close to 60% saying they felt "very" or "extremely" worried about climate change (mean of 3.7 on a 1-5 scale; SD = 1.66). Over 45% said their feelings about climate change negatively affected their daily lives. These varied by country, but levels were high across the board (Figure 1). Countries expressing more worry and a greater

impact on functioning tended to be poorer, in the Global South, and more directly impacted by climate change; in the Global North, Portugal (which had dramatic increases in wildfires since 2017) showed the highest level of worry.

<INSERT FIG 1 HERE> Bar chart showing percentage of sample reporting negative impact on functioning from climate change and differing levels of worry about climate change. By whole sample (n=10,000), and by country (n=1000 per country)

Many endorsed a range of negative emotions, with over 50% of respondents saying they had felt afraid, sad, anxious, angry, powerless, helpless, and/or guilty (Figure 2). The emotions least often reported were optimism and indifference. Respondents endorsed a range of negative thoughts, with 77% saying the future was frightening (Figure 3). Among those who said they talked with others about climate change (81.2% of the sample), almost half (48.4%) reported that other people had ignored or dismissed them. Results for thoughts and feelings about climate change varied significantly by country but were strikingly present in all populations (Table 2,3 and 4).

<INSERT FIGURE 2 and FIGURE 3 HERE>

Figure 2: Percentage (%) of whole sample (n=10,000) reporting specific emotions in relation to climate change

Figure 3: Percentage (%) of whole sample (n=10,000) reporting specific negative beliefs about climate change

Table 2 Percentages (%) of whole sample, and by country of negative thoughts about climate change and beliefs about government response about climate change. (n=1000 per country)

Thoughts about climate change	All countries	Australia	Brazil	France	Finland	India	Nigeria	Philippines	Portugal	UK	USA
People have failed to care for planet	83	81	92	77	75	86	76	93	89	80	78
Future is frightening	75	76	86	74	56	80	70	92	81	72	68
Humanity is doomed	56	50	67	48	43	74	42	73	62	51	46
Less opportunity than parents	55	57	50	61	42	67	49	70	54	53	44
Most valued will be destroyed	55	52	64	45	43	69	54	74	59	47	42
Family security will be threatened	52	48	65	50	30	65	55	77	52	39	35
Hesitant to have children	39	43	48	37	42	41	23	47	37	38	36

Table 3: Percentages (%) of whole sample, and by country of beliefs about government response about climate change. (n=1000 per country)

Thoughts about government response	All countries	Australia	Brazil	France	Finland	India	Nigeria	Philippines	Portugal	UK	USA
Failing young people	65	67	79	55	47	71	64	68	69	65	63
Lying about impact of actions taken	64	66	78	58	54	67	66	69	62	61	62
Dismissing people' distress	60	64	80	57	48	59	58	53	65	58	59
Betraying me/future generations	58	59	77	49	46	66	55	56	62	57	56
Acting in line with climate science	36	33	22	28	38	53	40	52	38	32	28
Protecting me, planet & future gens	33	31	18	27	34	49	35	47	33	31	25
Can be trusted	31	30	22	23	34	51	31	40	32	28	21
Doing enough to avoid catastrophe	31	31	20	26	30	44	36	42	28	26	24

Taking concerns seriously enough	30	29	21	27	34	43	30	42	26	27	21
----------------------------------	----	----	----	----	----	----	----	----	----	----	----

Government-related beliefs and emotions

Participants tended to rate government response negatively (mean = 14.96, slightly over the midpoint of the 9-18 scale; SD = 2.57) (Figure 4). Over 60% of the sample disagreed with every positive statement and agreed with every negative statement (Tables 2 and 3), with significant differences among countries (Table 4). Across all countries, participants reported greater feelings of betrayal (mean = 2.7, SD = 1.0) than of reassurance (mean = 2.22, SD = .93), (Figure 5). Significant differences were found among countries (Table 4).

<INSERT FIGURE 4 and 5 HERE>

Figure 4: Percentage of sample reporting specific beliefs about government responses to climate change (n=10,000)

Figure 5: Mean scores of respondents on feelings of reassurance and of betrayal relating to government response to climate change across whole sample, and by country (n=1000 per country, error bars = SD).

Table 4: Significance tests for difference between countries for each key variable (worry, negative thoughts about climate change, negative beliefs about government response, reassurance, betrayal, impact on functioning).

Criterion	F value	p value	Eta ²
Worry	F (9, 10420) = 84.98	p < .001	0.068
Reassurance	F (9, 9798) = 119.09	p < .001	0.099
Betrayal	F (9, 9636) = 53.01	p < .001	0.047
Negative thoughts about CC	F (9, 9484) = 103.57	p < .001	0.089
Negative beliefs about government response	F (9, 8804) = 62.94	p < .001	0.6
Impact on functioning	chi-square = 1289.9, df = 9	p < .001	

Correlations

Associations among variables were explored using correlations (Table 5). Notably, negative thoughts, worry about climate change, and impact on functioning, were all positively correlated and showed substantial correlations with feelings of betrayal and negative beliefs about government response. Feelings of reassurance were not significantly related to worry and showed a very low but significant correlation with negative thoughts. The reassurance scale possibly confounded people who were not worried about climate change and people who were worried but considered the governmental response adequate. Because the relationship between negative thoughts and betrayal could have reflected their relationship to worry, a partial correlation was calculated whilst holding the level of worry constant. The correlation remained significant at $r = .32$, $p < .001$, suggesting that feeling betrayed by the government is associated with an increased number of negative thoughts, even at a specific level of worry about climate change. Similarly, negative thoughts remained significantly correlated with a perception of government failure while holding worry constant, at $r = .19$, $p < .001$.

Table 5: Correlation matrix of the study variables.

	1	2	3	4	5	6
--	---	---	---	---	---	---

1. Worried about climate change	-					
2. Negative thoughts about climate change	0.48	-				
3. Negative beliefs about government response	0.21	0.26	-			
4. Feeling betrayed by government	0.43	0.47	0.36	-		
5. Feeling reassured by government	0.1(ns)	-0.04	-0.59	-0.02(ns)	-	
6. Negative functional impact	0.22	0.32	-0.1	0.25	0.21	-

Discussion

A large proportion of children and young people around the world report significant emotional distress and a wide range of painful, complex emotions (sad, afraid, angry, powerless, helpless, guilty, ashamed, despair, hurt, grief, depressed). Similarly, large numbers report experiencing some functional impact, and identify pessimistic beliefs about the future (people have failed to care for the planet; the future is frightening; humanity is doomed; they won't have access to the same opportunities their parents had; things they value will be destroyed; security is threatened; and they are hesitant to have children). These results reinforce findings of earlier empirical research and expand on these by demonstrating the extensive, global nature of this distress as well as impact on functioning. The findings show that distress appears to be greater when people believe that government response is inadequate. Climate distress is clearly evident both in countries that are already experiencing extensive physical impacts of climate change, and in countries where the direct impacts are still less severe.

Such high levels of distress, functional impact and feelings of betrayal will inevitably impact the mental health of children and young people. Climate anxiety may not constitute a mental illness, but the realities of climate change alongside governmental failures to act are chronic, long term and potentially inescapable stressors; conditions in which mental health problems will worsen. The stress-diathesis model of mental health²⁰ indicates that those likely to suffer most are those who are most vulnerable. As severe weather events linked with climate change persist, intensify, and accelerate, it follows that in the absence of mitigating factors the mental health impacts will follow the same pattern. We are already seeing increased severe climatic events that act as the precipitating and perpetuating factors of psychological distress; writing this in July 2021, numerous unprecedented weather events have occurred since our data collection (including the 'heat dome' and wildfires in the Pacific North-West, catastrophic storms and floods in Germany, Iran, and China, and heat records repeatedly broken in Northern Ireland and North America).

Factors known to protect against mental health problems include psychosocial resources, coping skills, and 'agency' to address and mitigate stressors. In the context of climate anxiety this would relate to having one's feelings and views heard, validated, respected, and acted upon, particularly by those in positions of power and upon whom we are dependent, accompanied by collective pro-environmental actions. However, this survey demonstrates that large numbers of young people globally regard governments as failing to acknowledge or act on the crisis in a coherent, urgent way, or respond to their alarm. This is experienced as betrayal and abandonment, not just of the individual but of young people and future generations generally. The results here reflect and expand upon the findings of an earlier interview study, where young people described their feelings about climate change as: "*Stranded by the Generational Gap: Frustrated by Unequal Power, Betrayed and Angry, Disillusioned with Authority, Drawing Battle Lines*".²⁴

Defences against the anxieties provoked by climate change have been well documented including dismissing, ignoring, disavowing, rationalising and negating the experiences of others. This behaviour of adults and governments could be seen as leading to a culture of ‘uncare’.²⁵ Thus, climate anxiety in children and young people should not be seen as simply caused by ecological disaster, it is also caused by more powerful ‘others’ (adults and governments) failing to act on the threats being faced. Our findings are in line with this argument and the proposal that injustice and moral injury are an important part of young people’s climate distress.²⁶ Young people’s awareness of climate change and the inaction of governments are seen here to be associated with negative psychological sequelae. Moral injury has been described as “*a sign of mental health, not disorder... a sign that one’s conscience is alive*”,^{25 p.241} yet it inflicts significant hurt and wounding as governments are transgressing fundamental moral beliefs about care, compassion, planetary health, and ecological belonging. This sense of the personal, collective and ecological perspective is summarised in the words of one 16-year-old: “*I think it’s different for young people. For us the destruction of the planet is personal*”.^{12 p.420}

Legal bodies recognise an intersection between human rights, climate change and climate anxiety. Subjecting young people to climate anxiety and moral injury can be regarded as cruel, inhuman, degrading, or even torturous.²⁹ This provides further understanding for the current phenomenon of climate criminology³⁰ where children and young people are voicing their concerns through legal cases as an attempt to have their distress legitimised and validated legally in the face of government inaction.

A complete understanding of climate anxiety in children and young people must encompass these relational, psychosocial, cultural, ethical, legal, and political factors. Current narratives risk individualising ‘the problem’ of climate anxiety, with suggestions that the best response is for the individual to ‘take action’.³ Our results suggest such action needs to be particularly taken by those in power. To protect the mental health and wellbeing of young people, those in power can act to reduce stress and distress by recognizing, understanding and validating the fears and pain of young people, acknowledging their rights and placing them at the centre of policy making.²¹ Before we can offer younger generations a message of hope, we must first acknowledge the obstacles that must be overcome.¹¹

Limitations of this study include the use of non-standardised measures to investigate complexity and nuance within the experience of climate anxiety and how people think and feel about government responses. Unfortunately, no appropriate standardised measures existed for our purposes. The construct of ‘climate anxiety’ itself is new and complex, with varying definitions across the literature. Although results demonstrate that many young people report difficult thoughts, emotions, and functional impairment related to climate change, we cannot indicate how severe this is in comparison to normative samples. We also wanted to keep the survey short in order to maximize the response rate. Without measures of mental health, these results cannot assess how or whether climate anxiety is affecting mental health outcomes in these populations. Other limitations arose from the use of an online polling company, where completion required IT and internet access, and sometimes the ability to speak English. Thus, although the samples should not be biased toward those who are especially concerned about climate change, they are not fully representative of the countries’ populations. We had equal sample sizes per country (rather than weighting by population size), limiting equivalence of representativeness by country and our confidence in cross-country comparisons. Finally, the polling company only provided data on gender defined as male or female, which fails to recognise the non-binary nature of gender. This study’s strengths include its large sample size, global population reach, novel and timely investigation into climate anxiety and perceived government response. It offers good representation within countries by using a polling company with proven inclusive participant selection and minimisation of respondent bias by not advertising the nature of a study (e.g. climate-related) in advance. We present the results as an initial attempt to quantify the global scale of the psychological impact of climate change and of inadequate government responses upon young people.

To conclude, children and young people around the world report climate anxiety and distress, related to both ecological destruction and inadequate government response. We argue that the failure of governments to adequately reduce, prevent, or mitigate climate change is contributing to psychological distress, moral injury and injustice. Climate change, climate anxiety and inadequate government responses to these are chronic stressors which will negatively affect mental health and wellbeing. This survey offers an overview; further, detailed research is required to explore the complexities and wide variety of climate feelings. To support mental health, public discourse should encourage the expression of feelings that 60% of young people in this survey have described as being ignored or dismissed. These feelings are important, and they indicate the care and empathy young people have for our world. As one young person said: *“I don’t want to die. But I don’t want to live in a world that doesn’t care about children and animals”*.^{12 p.420}

When our research team first read these results, we were moved by the scale of emotional and psychological effects of climate change upon the children of the world, and the number who reported feeling hopeless and frightened about the future of humanity. Whilst researchers do hope for ‘significant’ results, we wish that these results had not been quite so devastating. The global scale of this study is sufficient to warrant a warning to governments and adults around the world, and demands an urgent need for more in-depth research, greater responsiveness to children and young people’s concerns, and immediate action on climate change.

Data Sharing Statement

Individual, unidentified participant data that underlie these results will be made available, beginning three months and ending five years following article publication, to researchers who provide a methodologically sound proposal, to achieve aims in said approved proposal. Proposals should be directed to ruth@avaaz.org. In order to gain access, data requestors must sign a data access agreement.

Contributors

All authors contributed to the study design and conceptualisation: CH, EM, PP, SC, EL, EEM, BW, LS, CM. Literature searches were conducted by CH, PP and SC. Data was collected by Kantar. The underlying data were verified and analysed by SC, EL, EM. Article was drafted by CH, PP, EM, EL, SC, EEM, CM, BW. All authors revised and commented on the article and approved the final version.

Role of the funding source

The costs of the survey were funded by AVAAZ. They played no role in the writing of the manuscript to decision to submit it for publication or any other involvement. No author has been paid to write this article by any agency. All authors had full access to the full data in the study and accept responsibility to submit for publication

Conflict of Interest Statement

The costs of the survey/poll were funded by AVAAZ. No other payments were involved to individual authors or institutions. They played no role in the writing of the manuscript to decision to submit it for publication or any other involvement. No author has been paid to write this article by any agency. All authors had full access to the full data in the study and accept responsibility to submit for publication.

REFERENCES

- 1 Pihkala P. Anxiety and the Ecological Crisis: An Analysis of Eco-Anxiety and Climate Anxiety. *Sustainability* 2020; **12**(19): 7836. <https://doi.org/10.3390/su12197836>.
- 2 Berry H, Bowen K, Kjellstrom T. Climate change and mental health: a causal pathways framework. *Int J Public Health* 2010; **55**: 123–32. <https://doi.org/10.1007/s00038-009-0112-0>.
- 3 Hickman C. We need to (find a way to) talk about ... Eco-anxiety. *Journal of Social Work Practice* 2020;**34**(4):411–24. <https://doi.org/10.1080/02650533.2020.1844166>.
- 4 Verplanken B, Marks E, Dobromir AI. On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming? *J Environ Psychol* 2020; **72**. <https://doi.org/10.1016/j.jenvp.2020.101528>.
- 5 Clayton SD, Karazsia BT. Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology* 2020; **69**; 101434. <https://doi.org/10.1016/j.jenvp.2020.101434>.
- 6 Hogg TL, Stanley SK, O'Brien LV, Wilson MS, Watsford CR. The Hogg Eco-Anxiety Scale: Development and Validation of a Multidimensional Scale. Preprint 2021.
- 7 Stewart AE. Psychometric Properties of the Climate Change Worry Scale. *International Journal of Environmental Research and Public Health* 2021; **18**(2): 494. <https://doi.org/10.3390/ijerph18020494>.
- 8 McQueen A. The Wages of Fear? Toward Fearing Well About Climate Change. In: Budolfson M, Macpherson T, Plunkett D, editors. *Philosophy and Climate Change*. London: Oxford University Press; 2021.
- 9 Stanley SK, Hogg TL, Leviston Z, Walker I. From anger to action: Differential impacts of eco-anxiety,eco-depression, and eco-anger on climate action and wellbeing. *The Journal of Climate Change and Health* 2021; **1**: 100003. <https://doi.org/10.1016/j.joclim.2021.100003>
- 10 Jensen T. *Ecologies of guilt in environmental rhetorics*. Cham: Palgrave Macmillan 2019.
- 11 Ojala M. Hope and anticipation in education for a sustainable future. *Futures* 2017; **94**: 76–84. <http://dx.doi.org/10.1016/j.futures.2016.10.004>.
- 12 Hickman C. Children and Climate Change: Exploring Children's Feelings About Climate Change Using Free Association Narrative Interview Methodology. In: Hoggett P, editor. *Climate Psychology: On Indifference to Disaster. Studies in the Psychosocial*. Cham: Palgrave Macmillan 2019. 41–59.
- 13 Pihkala P. Eco-anxiety and Environmental Education. *Sustainability* 2020; **12**(23): 10149. <https://doi.org/10.3390/su122310149>.

- 14 Susteren LV, Al-Delaimy WK. Psychological Impacts of Climate Change and Recommendations. In: Al-Delaimy WK, Ramanathan V, Sánchez Sorondo M, editors. *Health of People, Health of Planet and Our Responsibility: Climate Change, Air Pollution and Health*. Cham: Springer 2020. 177–92. <https://doi.org/10.1007/978-3-030-31125-4>.
- 15 Wu J, Snell G, Samji H. Climate anxiety in young people: a call to action. *The Lancet Planetary Health* 2020; **4**(10): E435–36. [https://doi.org/10.1016/S2542-5196\(20\)30223-0](https://doi.org/10.1016/S2542-5196(20)30223-0).
- 16 Helldén D, Andersson C, Nilsson M, Ebi KL, Friberg P, Alfvén T. Climate change and child health: a scoping review and an expanded conceptual framework. *The Lancet Planetary Health* 2021; **5**(3): e164–75. [https://doi.org/10.1016/S2542-5196\(20\)30274-6](https://doi.org/10.1016/S2542-5196(20)30274-6).
- 17 Strife SJ. Children's Environmental Concerns: Expressing Ecophobia. *The Journal of Environmental Education* 2012; **43**(1): 37–54. <https://doi.org/10.1080/00958964.2011.602131>.
- 18 Baker C, Clayton S, Bragg E. Educating for resilience: parent and teacher perceptions of children's emotional needs in response to climate change. *Environmental Education Research* 2021; **27**(5): 687–705. <https://doi.org/10.1080/13504622.2020.1828288>.
- 19 Verlie B, Clark E, Jarrett T, Supriyono E. Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education* 2020; **37**(2): 132–46. <https://doi.org/10.1017/ae.2020.34>.
- 20 Schneiderman N, Ironson G, Siegel SD. Stress and health: psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology* 2005; **1**: 607–28. <https://doi.org/10.1146/annurev.clinpsy.1.102803.144141>.
- 21 Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. *The Lancet* 2007; **369**(9569):1302-13.
- 22 Sanson AV, Judith Van Hoorn J, Burke SE. Responding to the Impacts of the Climate Crisis on Children and Youth. *Child Development Perspectives* 2019; **13**(4): 201–7. <https://doi.org/10.1111/cdep.12342>.
- 23 Jones CA, Davison A. Disempowering emotions: The role of educational experiences in social responses to climate change. *Geoforum* 2021; **118**: 190-200. <https://doi.org/10.1016/j.geoforum.2020.11.006>.
- 24 Salas RN, Jacobs W, Perera F. The case of Juliana v. US—Children and the health burdens of climate change. *New England Journal of Medicine* 2019 May 30; **380**(22): 2085-7. <https://doi.org/10.1056/NEJMp1905504>.
- 25 Weintrobe S. *Psychological Roots of the Climate Crisis: Neoliberal exceptionalism and the culture of uncare*. New York: Bloomsbury Academic; 2021.
- 26 Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, Villierme C, Walsh J, Maguen S. Moral injury: An integrative review. *Journal of Traumatic Stress* 2019; **32**(3):350-62.
- 27 Human Rights Act 1998.
- 28 Verplanken B, Roy D. “My worries are rational, climate change is not”: Habitual ecological worrying is an adaptive response. *PLoS One* 2013; **8**(9): e74708. <https://doi.org/10.1371/journal.pone.0074708>.

29 Mavronicola N. 2021. *Torture, Inhumanity and Degradation Under Article 3 of the ECHR: Absolute Rights and Absolute Wrongs*. Oxford: Bloomsbury Publishing 2021.

30 White R. Imagining the Unthinkable: Climate Change, Ecocide and Children. In: Frauley J, editor. *C. Wright Mills and the Criminological Imagination: Prospects for Creative Inquiry*. New York: Routledge 2015. 219–40.

Preprint not peer reviewed

Abstract Summary

Background

Climate change has significant implications for the health and futures of children and young people, yet they have little power to limit its harm, making them vulnerable to increased climate anxiety. Qualitative studies show climate anxiety is associated with perceptions of inadequate action by adults and governments, feelings of betrayal, abandonment and moral injury. This study offers the first large-scale investigation of climate anxiety in children and young people globally and its relationship to government response.

Methods

We surveyed 10,000 young people (aged 16-25 years) in ten countries. Data were collected on their thoughts and feelings about climate change, and government response.

Findings

Respondents were worried about climate change (59% very or extremely worried, 84% at least moderately worried). Over 50% felt sad, anxious, angry, powerless, helpless, and guilty. Over 45% said their feelings about climate change negatively affected their daily life and functioning, and many reported a high number of negative thoughts about climate change. Respondents rated the governmental response to climate change negatively and reported greater feelings of betrayal than of reassurance. Correlations indicated that climate anxiety and distress were significantly related to perceived inadequate government response and associated feelings of betrayal.

Interpretation

Climate change and inadequate governmental responses are associated with climate anxiety and distress in many children and young people globally. These psychological stressors threaten health and wellbeing, and could be construed as morally injurious and unjust. There is an urgent need for increases in both research and government responsiveness.

Funding

The costs of the survey were funded by AVAAZ.

Table 1: List of countries surveyed, geographical location and language used in survey

Country	Location	Language of survey
UK	Global North	English
Finland	Global North	Finnish
France	Global North	French
USA	Global North	English
Australia	Global North	English
Portugal	Global North	Portuguese
Brazil	Global South	Portuguese
India	Global South	English
Philippines	Global South	English
Nigeria	Global South	English

Table 2 Percentages (%) of whole sample, and by country of negative thoughts about climate change and beliefs about government response about climate change. (n=1000 per country)

Thoughts about climate change	All countries	Australia	Brazil	France	Finland	India	Nigeria	Philippines	Portugal	UK	USA
People have failed to care for planet	83	81	92	77	75	86	76	93	89	80	78
Future is frightening	75	76	86	74	56	80	70	92	81	72	68
Humanity is doomed	56	50	67	48	43	74	42	73	62	51	46
Less opportunity than parents	55	57	50	61	42	67	49	70	54	53	44
Most valued will be destroyed	55	52	64	45	43	69	54	74	59	47	42
Family security will be threatened	52	48	65	50	30	65	55	77	52	39	35
Hesitant to have children	39	43	48	37	42	41	23	47	37	38	36

Table 3: Percentages (%) of whole sample, and by country of beliefs about government response about climate change. (n=1000 per country)

Thoughts about government response	All countries	Australia	Brazil	France	Finland	India	Nigeria	Philippines	Portugal	UK	USA
Failing young people	65	67	79	55	47	71	64	68	69	65	63
Lying about impact of actions taken	64	66	78	58	54	67	66	69	62	61	62
Dismissing people' distress	60	64	80	57	48	59	58	53	65	58	59
Betraying me/future generations	58	59	77	49	46	66	55	56	62	57	56
Acting in line with climate science	36	33	22	28	38	53	40	52	38	32	28
Protecting me, planet & future gens	33	31	18	27	34	49	35	47	33	31	25
Can be trusted	31	30	22	23	34	51	31	40	32	28	21
Doing enough to avoid catastrophe	31	31	20	26	30	44	36	42	28	26	24
Taking concerns seriously enough	30	29	21	27	34	43	30	42	26	27	21

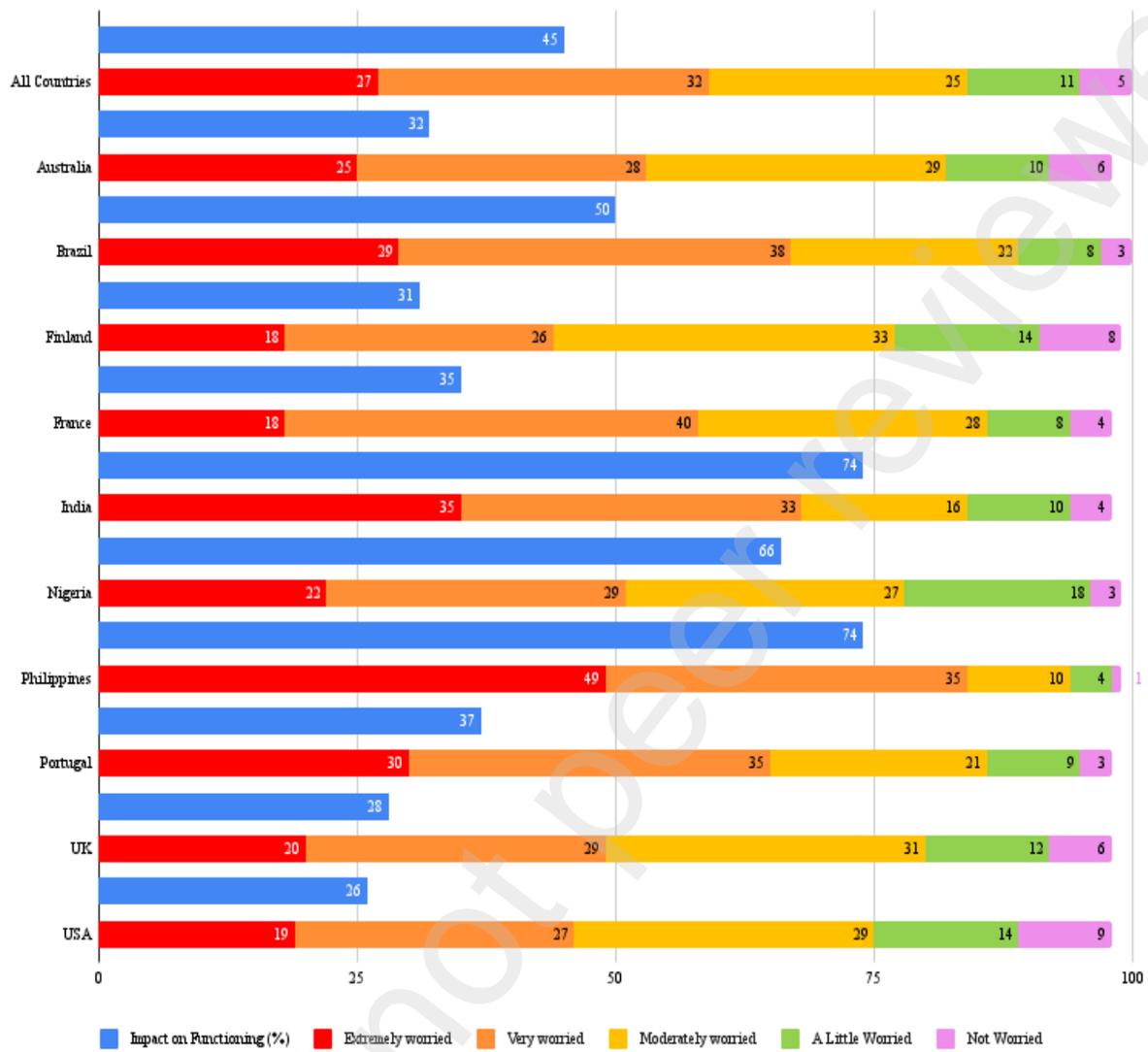
Table 4: Significance tests for difference between countries for each key variable (worry, negative thoughts about climate change, negative beliefs about government response, reassurance, betrayal, impact on functioning).

Criterion	F value	p value	Eta ²
Worry	F (9, 10420) = 84.98	p < .001	0.068
Reassurance	F (9, 9798) = 119.09	p < .001	0.099
Betrayal	F (9, 9636) = 53.01	p < .001	0.047
Negative thoughts about CC	F (9, 9484) = 103.57	p < .001	0.089
Negative beliefs about government response	F (9, 8804) = 62.94	p < .001	0.6
Impact on functioning	chi-square = 1289.9, df = 9	p < .001	

Table 5: Correlation matrix of the study variables.

	1	2	3	4	5	6
1. Worried about climate change	-					
2. Negative thoughts about climate change	0.48	-				
3. Negative beliefs about government response	0.21	0.26	-			
4. Feeling betrayed by government	0.43	0.47	0.36	-		
5. Feeling reassured by government	0.1(ns)	-0.04	-0.59	-0.02(ns)	-	
6. Negative functional impact	0.22	0.32	-0.1	0.25	0.21	-

Preprint not peer reviewed



Preprint not peer reviewed

