

**Exploring Eco-Anxiety with Young Adolescents in Aotearoa, New Zealand: A Mixed
Method Study.**

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Health & Environmental Sciences

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Attestation of Authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

Jo Hathaway

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In memory of Samuel Gibson Hathaway.

Abstract

Increasing scientific evidence of environmental issues such as climate change, global warming and pollution indicates these events are impacting people both directly and indirectly, and young people are particularly vulnerable to these concerns. There is evidence these issues are bringing a weighty psychological burden across the globe and affecting mental health and wellbeing, particularly in the younger generation as they are faced with the realities of leading this future world in an altered state, as tomorrow's leaders and decision makers.

Using a mixed methods approach, data was collected from 47 participants through an online survey. Utilising the Hogg eco-anxiety scale (HEAS-13) and three open-ended questions, young adolescent participants were assessed about their concerns regarding environmental issues. While there were high levels of concern about their personal impact on the earth, the affective anxiety was at a relatively mild level, with most adolescents feeling some sort of concern on some days over a two week period.

It appears that young adolescents are moderately affected by eco-anxiety and environmental issues. They feel a sense of insignificance, anger about inaction, loss and grief, as well as concern about their personal impact on the planet. They also share a sense of hope that solutions and working together can make a difference. Findings indicate that those who are concerned about environmental issues may also be those who are the most active and engaged in pro-environmental behaviours. Ultimately, wellbeing and mental health of young adolescents is of utmost importance. The implications for health professionals are to assist adolescents to better conceptualise eco-anxiety and to provide them with ongoing support by building resilience and instilling a sense of hope in coping with global changes, while also supporting those experiencing more debilitating eco-anxiety that is impacting daily functioning.

KEYWORDS

Eco-anxiety, adolescent, climate change anxiety, environment, environmental issues

Introduction

Worldwide, people of all ages are becoming increasingly concerned about pervasive changes in our environment, due to the impact of ecological issues such as deforestation, ocean pollution and sedimentation, over-fishing and climate change (Ayanlade et al., 2020; Clayton and Manning, 2018; Dias et al., 2019; Hilmi et al., 2019; Sumaila & Tai, 2020). In 2007 the Intergovernmental Panel on Climate Change [IPCC] confirmed human emissions were the main cause of rising greenhouse gases over the last 50 years (0.8°C above pre-industrial levels), and projected a subsequent rise in future decades, to close to 1.5% (IPCC, 2022). Recently the United States Environmental Protection Agency [EPA] (n.d.), stated greenhouse gases increased the cumulative warming effect by 45 percent between 1990 to 2019. In Aotearoa New Zealand (NZ), 50% of people report being very or extremely concerned about the impact of waste, and one in three are worried about climate change (Ministry for the Environment, 2018). However this is not a new conundrum – over a decade ago Fritze and colleagues (2008) described the increasing impact of global warming and climate change on mental health and wellbeing. The current generation of young people are growing up with a mounting sense of concern and anxiety regarding these issues (Clayton & Karazsia, 2020).

Discussions are intensifying with increasing worldwide efforts and attention particularly spearheaded by young people. On 31 October 2018 Greta Thunberg gave her now famous speech at the ‘declaration of rebellion’ at Parliament Square in London. The following year an estimated one million children and young people participated in the worldwide school climate strikes to protest government inaction and express fear for their future. More and more young people are banding together in collective action as a means of buffering their anxiety about ecological issues, with rising awareness, engagement and activism (Fridays For Future, n.d.; Schwartz et al., 2022). Initial studies suggest that collective actions in fact attenuate the association between climate anxiety and psychological symptoms (Schwartz et al., 2022).

The IPCC (2022) states that rising global temperatures are an escalating threat not only to the health of our planet, but also to human wellbeing. Researchers argue that climate change is one of the grave issues of our time, presenting a threat to both physical and mental health (Clayton and Manning, 2018). Meanwhile, Albrecht (2011) suggested that as humans, our mental health and wellbeing are entwined with the patterns and rhythms of our home environment, and disruption to this can cause distress and “ecologically induced dread” (p. 50). In Aotearoa, this is akin to te ao Māori, and the indigenous view of the

intimate connections between living organisms, that is humans, animals and the environment (Harrison et al., 2020). Te Whare Tapa Whā is a commonly used Māori model of holistic wellbeing with four walls of the whareniui (house) representing taha tinana (physical wellbeing), taha hinengaro (mental and emotional wellbeing), taha wairua (spiritual wellbeing) and taha whānau (family and social wellbeing) all resting on the whenua (land; Durie, 1998). It is this interwoven connection with the whenua – the land and environment, that is of particular importance in te ao Māori and a vital foundation for wellbeing and health (McIntosh et al., 2021). According to Williams (2004) the whenua is considerably more than simply a resource, it is the embodiment of the past and a platform for future generations while, Rangiwai (2018) summarises “Ko au ko te taiao, ko te taiao ko au - I am the environment and the environment is me” (p. 638). Roberts et al., (1995) define the Māori view as ‘kin-centric’ whereby people and nature are connected parts of a united whole, not separate entities. With this in mind, it is imperative to acknowledge te taiao at the “heart of our identity as Kiwis”, and the effect that environmental issues have not only on our physical wellbeing, but psychologically (Ministry for the Environment, 2020, p. 49).

Direct, Indirect and Vicarious Impact

Mounting evidence suggests that negative psychological impacts are felt not only from direct personal experience of issues such as droughts, wildfires and flooding, but indirectly through awareness and acuity of concerns (e.g., Berry & Peel, 2015; Clayton & Karazsia, 2020; Helm et al., 2018; Hwong et al., 2022). It is increasingly evident that the impact of global environmental issues is linked with indirect psychological effects such as powerlessness, anxiety and depression (Clayton et al., 2017; Fritze et al., 2008; Hwong et al., 2022). Not only are these effects seen among adults, research increasingly demonstrates the psychological impact of climate issues on young people. Children and adolescents experience the threat of this global phenomenon in a different way than their parents and grandparents (Fritze et al., 2008). In 2019, New Zealand organisation Youth19 asked Secondary School students (aged 13 - 18) about the health and wellbeing of rangatahi in Aotearoa (Fleming et al., 2020a). Emotional wellbeing was measured using the 5-item World Health Organization Well-being Index (WHO-5; World Health Organization, 1998) and indicated that overall wellbeing declined from 76% to 69% of respondents, between 2012 and 2019. This decline in haurora hinengaro (youth emotional and mental health) is seen in other studies where, amongst other concerns, respondents frequently indicated concerns about the environment (Keyes et al., 2019; Lessof et al., 2016) and included comments such as the inability to be happy if the environment is sad, and fear that the earth will not last (Fleming et al., 2020b).

For many young people, their fears and concerns are driven not by direct experience of ecological issues but indirectly through media and social communication about these problems (Helm et al., 2018). This generation of adolescents have immediate access to explicit images of environmental degradation through the internet (for example flooding, wildfires, pollution). Lëger-Goodes et al., (2022) label these reactions vicarious, and the emotional impact of observing these can lead to angst or apathy in the face of insurmountable concerns (Doherty & Clayton, 2011; Helm et al., 2018; Stokols et al. 2009). Similarities have been drawn to the extensive psychological impact following concentrated media coverage of the September 11 US terrorist attacks (Doherty & Clayton, 2011; Marshall et al., 2007).

Psychological Impact

Eco-anxiety refers to the anxiety and distress associated with existing and anticipated ecological and environmental destruction, particularly climate change, and feelings of guilt or frustration at not being able to stop or fix it (Clayton et al., 2017; Pihkala, 2020). The Climate Psychology Alliance (2022) states that eco-anxiety involves intense mental, emotional, and/or somatic suffering in response to hazardous changes in the environment, while the APA and eco-America define it as a lingering fear of environmental catastrophe (Clayton et al., 2017). Eco-anxiety is a legitimate response to the realities of climate change and broader environmental conditions (Coffey et al., 2021). Clayton (2018) suggests although grief, anger and hopelessness are associated with climate distress, eco-anxiety encapsulates the sense of concern and worry. Hickman (2020) argues eco-anxiety is more than merely a reaction to the reality of environmental threats, it is the fused relationship between the comprehension that we are simultaneously causing the threat, while inadequately acting to reduce it. She suggests we are concurrently instrumental and powerless. This may explain why indirect experiences, associated with perceptions of ecological demise, can produce cognitive dissonance and distress at an emotional, psychological and spiritual level in young people (Burke et al., 2018; Ojala, 2012). In addressing the interface between psychology and global climate change, the APA Task Force queried the difference between realistic concern and pathological anxiety, and what signifies an appropriate amount of worry (Swim et al., 2011). In the Diagnostic and Statistical Manual of Mental Disorders, Text Revision (DSM-5-TR; APA, 2022), anxiety is described as an expectation of an ensuing threat, while fear is the emotional response to an actual impending danger, and excessive amounts of either can become clinically maladaptive and lead to a diagnosable anxiety disorder.

Hickman et al. (2021) suggest eco-anxiety is complex and rational but does not imply illness, a perspective supported by Anxiety NZ (n.d.) who concur that eco-anxiety is not a diagnosable condition (Léger-Goodes et al., 2022; Pihkala, 2020). This is because eco-anxiety signifies a logical response to a valid and genuine threat. Thus, eco-anxiety is not a diagnosis in the DSM-5-TR, but may contribute to excessive and uncontrollable worries about the future and world events as part of a Generalised Anxiety Disorder (GAD). Pihkala (2018) suggests it can be challenging to distinguish eco-anxiety from other anxieties as difficult emotions are often interwoven together. For example, an adolescent may primarily feel unhappy if experiencing friendship difficulties, however behind these emotions might be a backdrop of anxiety about the state of the environment. Indeed it is rational to be concerned, but to have excessive fear or to experience difficulty in controlling worry that affects functioning, and causes significant distress or impairment, may meet the criteria for GAD. Pihkala (2021, p.120) suggests “the psychological weight of the ecological crisis can be so great that people lose their capability to act, and their wellbeing decreases”. While environmental concern is a common experience for many, research has shown that the rates of such worry vary. For example, the APA survey (2018) revealed young people voiced more concern about climate change than adults (APA, 2018; Clayton & Karazsia, 2020). Personal connection to the natural world for spiritual or personal reasons may mean individuals feel loss and damage of environmental issues more strongly. An Australian study by Dean et al. (2018) concurred with widespread evidence about the health benefits of experiencing nature (e.g. Berman et al., 2012; Fuller et al., 2007). However they also found that people with pro-environmental attitudes towards conservation reported more symptoms of depression, anxiety and stress, and hypothesised that those with extensive environmental concerns may have increased distress due to global environmental deterioration (Dean et al., 2018).

Similarly, direct exposure to climate change issues due to geographical location may increase vulnerability, with considerable evidence for the link between global climate change and mental health (Berry et al., 2018, Doherty & Clayton, 2011; Pihkala, 2021). Increasing occurrences and severity of life-threatening weather events, and natural disasters such as hurricanes and floods, result in disturbances including physical injury; psychological distress such as posttraumatic stress disorder (PTSD) and anxiety; property damage and displacement (Morganstein & Ursano, 2020). Similarly slow insidious variations, for example rising temperatures, drought and heat stress, can also have significant mental health consequences (Palinkas & Wong, 2020). Children are particularly vulnerable to direct effects and often have stronger reactions with symptoms such as sleep disorders, depression and PTSD (Clayton, 2020; Hrabok, 2020; Palinkas & Wong, 2020). For example, Yelland et al.

(2010) reported moderate to severe symptoms of PTSD following the Australian bushfires in 2005.

Some studies indicate a gender difference in climate anxiety, with women experiencing significantly higher rates than men (Searle & Gow, 2010; Wullenkord et al., 2021). However, Clayton and Karazia (2020) found a gender difference in pro-environmental behaviour (PEB), rather than in anxiety levels. Likewise Zelezny et al. (2000) recounted greater participation by women in PEB, rationalised by the propensity to be more oriented toward others and more socially responsible. In contrast Heeren et al., (2022) agree that women may be more emotionally vulnerable to climate change however suggest that this may be to do with women's higher aptitude at recognising and recording their feelings. Alternatively, the World Health Organization (2014) and IPCC (2022) suggest that this increased vulnerability may be due to perceived gender roles and lack of power.

In their study of individuals' psychological adaptation to climate change, Helm et al. (2018) suggest the impact of environmental issues across the globe forces us to accommodate a new reality, with a link between mental health, psychological adaptation and PEBs. Utilising social-cognitive theory and the value-belief-norm theory (Stern, 2000) they examined three forms of environmental value orientations in adults – biospheric, social-altruistic and egoistic, and their influence on coping behaviours and stress. Their research concludes that biospheric individuals (those who have a higher concern for plants, animals and nature) tend to experience more ecological stress and engage in ecological coping strategies such as changing their lifestyle to preserve natural resources and energy. However, those who are egoistically-motivated (concerned about oneself, life and or health) did not perceive ecological stress or engage in ecological coping. In contrast individuals more concerned for future generations, their country and others (social-altruistic) engage in ecological coping strategies however did not perceive ecological stress. Thus they suggest those with higher biospheric concerns are more likely to engage in PEBs for example, recycling, conserving resources and minimising waste. Yet, Stern (2000) suggests individuals may have aspects of all three of these values and are more likely to engage in PEBs under two conditions – firstly if they believe environmental concerns might cause adverse consequences to their valued object/s, and secondly if they believe they can reduce the threat.

This effect on mental health was acknowledged by the New Zealand Psychological Society in 2014, with the creation of the Climate Psychology Taskforce to assist psychologists in tackling this growing issue. In response to increasing concerns the

Australian Psychological Society [APS] website contains numerous documents based on psychological strategies to help provide information about climate change distress and encourages the use of practical tools, such as balancing action with reflection, cultivating hope, engaging with nature and acting personally and collectively (APS, n.d.). Similarly Schwartz et al., (2022) suggest existential and third-wave cognitive-behavioural therapies such as Acceptance and Commitment Therapy (ACT) may be suitable with their focus on acceptance and values. Furthermore advocates of utilising nature and ecotherapy suggest engaging in nature and environmental conservation as an appropriate approach (Doherty & Chen, 2016).

Young Adolescents' Concerns

It is becoming increasingly apparent that young people are concerned about the state of the environment and what will become of their future. Young adolescence is a formative age for the emergence of values and ideas and determining cultural orientation and worldview (Vollebergh et al., 2001). It involves a shift in cognitive style from concrete to formal operational ideas about one's place in the world, involving more sophisticated abstract thinking and a shift from childhood into becoming an active adult participant in the world (Sortino, 2020). This is also the age of increased rates of generalised anxiety which may increasingly incorporate concerns about the environment (Beesdo et al., 2009; Kessler et al., 2005; Sanson et al., 2019). Searle and Gow (2010) conclude that younger children are more likely to have discussions regarding climate change than their parents and grandparents and thus have the potential for greater fears and vulnerability. Additionally, Stevenson and Peterson (2015) suggest adolescents experience less control, either perceived or actual, over their collaborative and individual activities. There is clearly increased awareness and exposure for this generation of young people as children face a future dominated by this issue.

Research in Aotearoa NZ identified climate anxiety is a common occurrence among older adolescents and young adults, with 6 out of 10 experiencing it at least sometimes (McBride, 2022). A large-scale survey by Hickman et al. (2021) of 10000 young people (aged 16-25) across ten countries revealed 59% were 'very' or 'extremely' worried about climate change and 84% were at least 'moderately' worried. A small survey of 7-25 year olds in Australia found nearly 90% were worried about climate change (Chiw & Ling, 2019), while another Australian survey of nearly 1500 young people aged 10 -24 (Australian Institute for Disaster Resilience [AIDR], 2020) indicates 78% are concerned or extremely concerned about climate change. This online survey included 27 questions

about disaster risk, climate change, natural hazards and priorities for action by policy makers, and was co-designed by young people and Australian/Asia-Pacific organisations working with young people. However, there was no major focus on the prevalence of anxiety symptoms rather than these specific topics of concern.

Aims and Hypotheses

To date, little research has been conducted to consider eco-anxiety explicitly within the young adolescent age range (11 to 14 years) using a specific eco-anxiety scale, at a time when they are increasingly vulnerable to anxiety and concerns about broader world issues. The purpose of this study was to explore the prevalence and nature of eco-anxiety among young adolescents in Aotearoa, NZ and to examine their thoughts and concerns as well as their coping responses. Consistent with prior research (Clayton & Karazsia, 2020; Hickman et al., 2021; ReachOut 2019; Searle & Gow, 2010), this study expected to find a moderate level of anxiety across our sample, with the aim of further exploring the nature of young adolescents' concerns and the quality of their experiences.

Mixed Methods Research

The methodology for this study is mixed methods research (MMR). According to Johnson et al. (2007) MMR involves collecting both quantitative and qualitative data and combining both of these research approaches to achieve a comprehensive and extensive exploration. The reflexive thematic analysis is guided by the interpretivist or social constructionist paradigm, that reality is socially constructed and subjective and there can be multiple viewpoints of the same constructed concept (Mertens, 2019). This theory also posits the researcher and participants interact in research and meaning-making by understanding the participants' lived experience from a phenomenological point of view, that is their own subjective experience (Schwandt, 2000).

In summary, the aim of this study is to explore the prevalence of eco-anxiety among young adolescents in New Zealand, using mixed methods. It aims to investigate young adolescents' thoughts, feelings and concerns about environmental issues and whether they utilise behavioural responses to manage their concerns and other aspects that help deal with their worries. This will help inform practices for psychologists working with this age group in the future and assist them to better conceptualise eco-anxiety and support their younger clients.

Methods

Recruitment and Procedure

Recruitment took place over three months and included close attention to ethical considerations of research with children and young people (Alderson & Morrow, 2020). Extensive consultation was undertaken with the primary researcher's supervisors, colleagues and ethics advisor regarding the best way to approach anonymous research in schools.

Following approval from Auckland University of Technology Ethics Committee [AUTECH] (approval number 22/100, May 24, 2022) principals from three different deciles (2, 5 and 10) were emailed to inform them about the project (see Appendix A and B). Following a low response rate more schools were contacted via email and follow up phone calls. No participants received any form of compensation however participating schools were given a koha (book from the researcher's family) in gratitude for sharing the invitation. Social media posts were also used to invite participants, along with individual emails to teachers (see Appendix C).

After schools agreed to participate, information about the research was distributed to Year 7 and 8 parents through school emails or newsletters, including a link to the survey. The first page of the online survey provided a detailed participant information sheet (PIS), where participants were informed about the purpose of the study, duration, procedure, rights to withdraw, confidentiality and voluntary participation, along with the researcher's contact details (see Appendix D and E).

An online survey was chosen for a number of reasons including rapid distribution, convenience and anonymity, along with recognising the ease and comfort with which young adolescents communicate online. Purposive sampling of qualitative data was used to generate insight and understand participants' opinions, experiences, feelings and knowledge (Patton, 2002). In utilising social media there was an element of snowball sampling through sharing of the invitation post (Patton, 2002). We also wanted to reach a varied population by having representation from all parts of New Zealand. Attempts were made to attract a diverse range of respondents by contacting a significant number of lower decile schools in order to include under-represented groups (Braun & Clarke, 2013).

Participants

Participant-generated textual data was gathered by way of a self-administered survey published online through the software programme *Qualtrics*. Participants were intermediate school children in Aotearoa, New Zealand, In total, 47 responses were collected. Of 52 participants who began the survey, n = 5 did not answer any questions so were excluded as missing cases. From the total of 47 participants, 10 completed only the HEAS-13 questionnaire, while 37 also answered one or more of the three qualitative open ended questions. Data was collected between June and September, 2022.

The research design was sensitive to the needs and characteristics of the participants with the aim to collect data from low, middle and high decile schools to provide representation across demographic groups in Aotearoa. The participants in this study were year 7 and 8 students in Aotearoa, New Zealand, and aged between 11 and 14 years. The survey was open to year 7 and 8 students in Aotearoa, irrespective of disability, socio-economic status and ethnicity. Utmost respect was given to the vulnerability of the participants by protecting their privacy and maintaining confidentiality of their responses. The final sample size of 47 quantitative responses (including 37 qualitative answers) is considered appropriate for a study of this type (Braun & Clarke, 2013; Braun et al., 2021).

One of the sampling techniques to be used in this research was saturation which is a popular rationale for qualitative data collection, where repetitive answers signify no additional insights are being generated thus the survey can be closed (Bowen, 2008).

Measures

Demographic Questions

The survey included four demographic questions: age, gender, ethnicity and school (to assess decile and indicate socio-economic status).

The Hogg Eco-Anxiety Scale (HEAS-13)

The Hogg Eco-Anxiety Scale (HEAS-13) (Hogg et al., 2021) is a robust, brief and locally-developed measure of experiences of anxiety relating to the environment.

The participants in the original HEAS-13 were New Zealand and Australian university students older than the current sample, therefore it was necessary to adapt the wording for

use in this study of young adolescents (see Appendix F). Readability tools were utilised to develop age appropriate, simplified and engaging questions, ensuring the original meaning and concept of Hogg et al.'s survey was retained. Figures indicate only 56% of Year 8 students in NZ are meeting the curriculum reading level for their age group (Ministry of Education, 2021). Consequently the Flesch-Kincaid Grade Level test score of 5.3 for our adapted scale indicated a Grade 5 reading level or above, (NZ Year 6), ensuring the content was easy to comprehend for our target participants (Flesch, 1948).

The HEAS-13 is scored by calculating a mean for each participant for each subscale (Hogg et al., 2021). This allows the interpretation of the average frequency of each experience in the last fortnight (i.e. 0 = not at all, to 3 = nearly every day; Hogg et al., 2021). The HEAS-13 provides four subscales. The first comprises items 1-4 and is titled Affective symptoms (A), including items such as feeling nervous, anxious or on edge, not being able to stop or control worrying, worrying too much and feeling afraid. The second dimension (subscale 2) Rumination (R) incorporates items 5-7 and comprises being unable to stop thinking about environmental problems and loss. Subscale 3 (items 8-10) Behavioural symptoms (BS) encompasses difficulty sleeping, enjoying social situations, working or studying. Finally subscale 4 Anxiety about one's personal impact on the planet (API) consists of items 11-13 indicating feeling anxious about the impact of personal behaviours on the earth, feeling anxious about personal responsibility to help address environmental problems and feeling anxious that your personal behaviours will do little to help fix the problem. There were only two missing items in the dataset, and the average for the subscale was imputed in their place. Cronbach's alpha in the current study were 0.74 (Affect), 0.82 (Rumination), 0.71 (BS) and 0.89 (API) representing acceptable to good internal consistency. Hogg et al.'s (2021) psychometric testing established good to excellent consistency with $\alpha=0.92$ (Affect), 0.90 (R), 0.86 (BS) and 0.88 (API).

Open Ended Qualitative Questions

The research team developed three open-ended qualitative questions. These were carefully crafted to avoid closed, leading and judgemental questions to create a window into how the participants see the world (Braun & Clarke, 2006; Patton, 2002). There was no word count restriction on these sections. The qualitative questions were free-form and optional, and all questions were not dependent on answering the previous question. Participants answered quantitative questions before moving onto the qualitative section.

1. When you think about the environment what kind of thoughts do you have?

2. What actions if any, do you take when you think about the environment?
3. Is there anything else you would like to tell me about your thoughts, feelings and actions relating to the environment?

Data Analysis

The benefit of the mixed methods approach is in utilising strengths of each area, while limiting the weaknesses. During this parallel data gathering, students responded to both qualitative and quantitative questions within the same survey. After separate consideration of the thematic analysis and quantitative data, the results were then combined for interpretation, presenting a holistic view of the participants' thoughts about environmental issues. This along with triangulation of the qualitative data provides an enriched evaluation.

Quantitative Analysis

Quantitative analyses were conducted using Jamovi software (The Jamovi project, 2021), with all responses anonymous to protect participant privacy. The prevalence and severity of eco-anxiety symptoms were calculated. One sample t-tests were run to compare our sample means with previous samples, to ascertain whether our group are more or less anxious on the various dimensions.

Thematic Analysis

The three qualitative questions regarding the type of thoughts and feelings students have about the environment along with any actions they take, were analysed using reflexive Thematic Analysis (TA) to identify patterns of meaning in the data, through a spirit of questioning and interpretation (Terry et al., 2017). Braun and Clarke (2006; 2022) outline six clear-cut, repetitive phases to TA, soliciting reflexivity on the part of the researcher and a circular looping between the distinct stages. The objective is to look for meaning based patterns that enable the researcher to tell the best possible story from the data (Terry et al. 2017). Braun and Clarke (2014) suggest TA provides rich, multifaceted nuances of individual perspectives and experiences, utilising a systematic coding framework to recognise patterns related to the research question. It assumes that even within the same individual there can be "multiple versions of reality" all connected to the context within which they occur (Braun & Clarke, 2013, p. 3). Using TA allowed us to identify themes regarding young adolescents concerns about the environment as well as potential coping strategies, utilising *their* terminology and vocabulary to capture what was important to them (Braun et al., 2021). The

strength of analysis lies in time spent engaging with the data especially to identify any latent themes, along with focusing on the journey and process of TA rather than just seeing it as a destination (Braun & Clarke, 2022). Sound qualitative analysis involves analytic sensibility, that is the ability to venture beyond the obvious and discern links to wider psychological configurations and noteworthy results (Braun & Clarke, 2013).

Braun and Clarke (2022) suggest the writing of the TA process should be in the first person as it is a subjective process and influenced strongly by researcher bias, “the researcher should write in their own voice and tell *their* story” (p.176). Levitt et al., (2018) concur that qualitative reports are often “presented in a reflexive first-person style” (p. 28) and they encourage assessors to “learn to recognise whether reporting standards have been met regardless of the rhetorical style of the presentation” (p. 29). Therefore the following description of analysis will be reported in first person.

The theoretical assumption underpinning my research is the ontological stance of relativism, that is, reality is created by the interaction of society, culture and human action, and the responses are how my participants make sense of their reality (Braun & Clarke, 2022; Killam, 2013). This means that I believe reality is “dependent on the ways we come to know it”, as opposed to realism on the other end of the continuum, postulating one knowable truth (Braun & Clarke, 2013. p. 26). As a relativist, Braun and Clarke (2022) suggest my account of the data should convince the reader of the value of my “meaning-making and why it matters” (p. 175) and that the ‘truth’ is what has been created from the data, evidence and process. Correspondingly, Braun and Clarke (2022) also state “knowledge is contextually located and produced within relationships and interactions” (p. 176) as opposed to Tebes (2005) who describes realism as a “mind-independent truth” in a pre-social reality.

The data was analysed through the epistemology of social constructionism, whereby as the researcher I created and produced a reality, similar to the handiwork of a sculptor hewing their effigy, rather than an archaeologist who excavates to uncover their find. Therefore although repetition of specific data items was important, meaning and meaning-making carried significant weight in the process (Braun & Clarke, 2022). This is not to say that anything is permissible or that knowledge is simply made up or fabricated (Braun & Clarke, 2013)

The first phase of TA was familiarisation with the data by reading and re-reading responses, taking note of initial ideas and immersing myself in the data. I used both hard copies and an electronic spreadsheet to engage with responses and found the interchange

between physical paper and screen engendered fresh insights, awareness and appreciation of the data (Clinton, 2019). My first readings of the data were on the computer screen unhindered from note taking, purely absorbing the responses. Next I printed out the responses and read them line by line many times, alternating my starting point with different participants, and asked myself how does this response resonate with me. I spent time repeatedly engaging with the information and asking what the data meant by actively reading the words critically and analytically, looking for similarities and differences, and using my own subjectivity as an integral part of the TA approach (Braun & Clarke, 2013; Terry et al. 2017). I documented thoughts and responses to what was said.

The second phase was coding. Braun and Clarke (2013) suggest TA often uses a combination of both inductive and deductive approaches during coding and analysis. An inductive approach is driven by a 'bottom-up' method and the content of the data, while a deductive or top-down approach sees the researcher bringing concepts or ideas to the data. My approach combined these two methods however I was mainly driven by an inductive approach, guided by my overarching paradigmatic concept of social constructionism and interpretivism, whereby I allowed space for my own reflective interpretation of the data (Burr, 2015; Byrne, 2021).

Codes were generated by coding interesting features of the data methodically and systematically, and collating relevant data looking for overarching concepts and ideas, including reading in the opposite order to "ensure rigour" (Braun & Clarke, 2022). This involved looking for semantic meaning in the participants' responses and also for any latent deeper meaning through what was implied. Braun and Clarke (2013) suggest codes are broad-ranging, distinct and concise with good criterion, therefore I was aware I needed to produce codes that would stand alone if the data was taken away, evidencing an appropriate code. Similarly I was mindful it is also possible to create several codes from the same piece of data. Likewise if only one person makes the comment it is still important to code as an item, it might not be extracted into a theme, however it is still important. Braun and Clark (2022) stipulate coding and extracting themes are not the same.

Phases three to six

Phase three, involved generating potential candidate themes and collating coded data into them. This step was about creating a number of theme contenders that worked together to tell my overall story. I utilised the spreadsheet and highlighted codes into initial clusters of potential themes. I was very aware of not becoming too attached to any early themes, and

was willing to put them aside if necessary. Braun and Clarke (2022) often refer to TA using the concept of a sculptor who creates something using their skills and creativity. In this phase rather than searching for themes (similar to an archaeologist searching for extracting something that is buried) Braun and Clarke (2022) suggest generating themes is an “active and engaged process” (p. 78). I certainly experienced the active, creative process akin to a sculptor. I cut up my responses into strips of paper and then re-read my data set out loud to ensure I had not missed any codes and to confirm the trial themes embodied the data well, clustering into colour-coded groups on a table.

According to Braun and Clarke (2022) reflexivity is an integral part of the TA journey. This involved being regularly aware of my positionality, expectations and theoretical assumptions, and how they influenced what I noticed and was inclined towards including or excluding from the data (Braun & Clarke, 2022). I was very conscious of the intersection of my values and privileged social positioning i.e. white, middle-class heterosexual, and social marginality of being female. My worldview and ideologies stem from being raised in a right wing Christian family and although my views may be different now, these subtly impact who I am as a researcher. The ability to reflect on this and recognise how my assumptions might be influencing my research was an important aspect of my reflexive journal. I was also highly aware of my family involvement and vested interest in the marine education space and the influence of this on my perspectives, so I endeavoured to be open to different thoughts and experiences other than my own. This is where regular meetings and triangulation with my supervisors added nuance and a means to avoid bias.

I initially created four themes with two to three subthemes around the shared key concepts and following another meeting about theme conceptualisation, with some tweaking and input from my supervisors, I was ready to move onto phase four.

Braun and Clarke (2022) renamed their fourth phase “developing and reviewing themes” adding ‘developing’ to their original title in order to encourage people that this phase is not just for review, but for re-engagement with the data and to develop theme richness. I re-read the entire data set again for consistency with the coded extracts and explored if there was “scope for better pattern development” (Braun & Clarke, 2022. p. 97). I asked myself questions such as ‘does the theme express something important?, does it feel rich?, do I have enough to say about this theme?’. I was conscious of my research question and that my themes needed to unite around a central concept. It was during this

phase that I felt some data had not been captured so I added an extra theme bringing this to a total of five themes.

The fifth phase is to refine and define themes, and encompassed creating good names that conveyed the essence of the theme. This was a recursive process and involved another meeting with my supervisors to establish names that captured meaning patterns beyond a one word topic, and that would be eye catching for a reader who might just browse the abstract (Braun & Clarke, 2022). It was during this phase that I also created a heuristic model of a putiputi (flower) to help visually represent my themes as shown in Figure 1. A putiputi was chosen as a symbol of something in the natural world that is being metabolically affected by climate change (Borghini, 2019). Te Taiao is shown in the centre to display a Māori kin-centric world view of people and nature as connected parts of a whole (Roberts et al., 1995). The petals of the flower represent the adolescents' thoughts about environmental issues.

Finally the last phase of reflexive TA is the write up of findings with the main aim of allowing the participant's voice to be heard. It was my express aim to bring forth the participants' voice and allow their thoughts about environmental issues to have the most prominent position. The thematic analyses were completed prior to consideration of the HEAS-13 subscales.

Results

Demographics

Participants ranged in age from 11–14 years; $M = 12$ years and $SD = 0.74$ years. As shown in Table 1, 26 participants identified as female, 18 male, one non-binary and two others indicated 'prefer not to say'. The ethnic composition of the participant sample was: 76.6% NZ European, 8.5% Māori, 2.1% Niuean, 2.1% Chinese and 10.6% multiracial or other race. Socioeconomic status was indicated by the deciles of each participants' school. In New Zealand the school decile rating system measures the degree to which the school's students live in higher or lower socio-economic areas (New Zealand Government Te Kāwanatanga o Aotearoa (n.d.)), with a rating of 1 being the poorest communities and 10 being the wealthiest. Due to the anonymous nature of the survey, participating schools will not be listed. Over 30 different schools were invited to participate, ranging in decile from 1 to 10,

however schools that agreed to participate ranged from decile 4 to 10 with the majority (80.9%) of respondents from higher deciles of 8 and above.

Table 1

Sociodemographic Characteristics of Participants

Sample Characteristics	n	%
Age		
11	12	25.5
12	25	53.2
13	9	19.1
14	1	2.1
Gender		
Female	26	55.3
Male	18	38.3
Non-Binary	1	2.1
Prefer not to say	2	4.3
Ethnicity		
NZ European	36	76.6
Māori	4	8.5
Niuean	1	2.1
Chinese	1	2.1
Other	5	10.6
Decile		
Home school	1	2.1
Low 1-4	2	4.3
Middle 5-7	6	12.8
High 8-10	38	80.9

Quantitative Results

The average scores for the four eco-anxiety dimensions were between .32 and 1.1 (see Table 2), where a score of 1 indicates the participant reported experiencing symptoms ‘some days’ in the past fortnight out of a possible range of 0–3. The sample was highly skewed with the majority of respondents reporting low scores of 0–1 on average, with a few outliers. The skewness across the subscales ranged between .67 and 2.51, while the kurtosis scores were between -0.04 and 7.70. The distribution indicates low rates of anxiety symptoms across all domains.

The current sample of young adolescents reported significantly higher Ruminative (R) symptoms of eco-anxiety than a previous study of young NZ adults ($M=4.84$, $t(46)=p<.001$; Hogg et al., 2021). Similarly our sample reported significantly higher levels of Anxiety about their Personal Impact on the planet (API) ($M=4.64$, $t(46)=p<.001$; Hogg et al., 2021). Our sample was significantly lower on the Behavioural Symptom (BS) scale ($M=-3.31$, $t(46)=p<.01$; Hogg et al., 2021) indicating our participants were less impacted in their sleep, enjoyment of family situations and study, while Affective symptoms (A) were comparable to the previous sample ($M=0.50$, $t(46)=p>.05$); Hogg et al., 2021).

Table 2

Average subscale scores of the current and Hogg et al. (2021) samples

		Current study		Hogg et al. (2021)	
		Mean	SD	Mean	SD
Affective symptoms	(A)	.70	.58	.66	.79
Rumination	(R)	.82	.69	.33	.59
Behavioural symptoms	(BS)	.32	.60	.63	.80
Anxiety about personal impact	(API)	1.1	.85	.55	.72

Correlation tests (as shown in Table 3) were conducted between the results of each of the scales. Most of the four subscales are significantly correlated with one another, indicating children who experience one dimension, also experience others. The only exception to this was for the relationship between the anxiety about personal impact (API) and behavioural symptoms (BS).

Table 3*Correlations between subscales, based on Hogg et al. (2021)*

		Affect	Rumination	Behaviour	API
Affective Symptoms (Affect)	Pearson's r	—			
Rumination	Pearson's r	0.635 ***	—		
Behavioural Symptoms	Pearson's r	0.676 ***	0.595 ***	—	
Anxiety about personal impact (API)	Pearson's r	0.612 ***	0.593 ***	0.286	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Qualitative Results

Participants provided a total of 80 responses to the three open-ended questions on their thoughts about environmental issues (When you think about the environment what kind of thoughts do you have? What actions if any, do you take when you think about the environment? Is there anything else you would like to tell me about your thoughts, feelings and actions relating to the environment?). Thematic analysis generated five interlinked themes, represented in the heuristic device below (see figure 1). In addition, each main theme was categorised into a number of sub themes as shown in Table 4: (1) Insignificance: I feel too small; (2) Inaction: I feel angry; (3) Loss: I worry about it; (4) Solutions: I need to fix it; and (5) Inclusivity: Everyone needs to do something. This was a generative and iterative process involving much refining and improving over repeated analyses of the responses. The themes were not influenced by the quantitative questionnaire but generated through a reflexive practice of the adolescents free form answers. In order to develop a comprehensive understanding of the themes identified from participants responses, senior supervisors also analysed the themes to aid in triangulation. The themes and subthemes are discussed subsequently.

Figure 1

Note. Putiputi: representation of themes

Table 4

Summary of themes and sub themes

Theme	Sub themes
Insignificance: I feel too small	I can't do this alone It's overwhelming
Inaction: I feel angry	People are not doing enough
Loss: I worry about it	What we have already lost Fear of the future and what we could lose
Solutions: I need to fix it	Caretakers for future generations Take action and fix it, be proactive Make changes to care for our resources
Inclusivity: Everyone needs to do something	We can all make a difference Increase knowledge

Theme 1: Insignificance: I Feel Too Small

Many of the participants in this study articulated that they felt a low level of control over matters that are causing environmental decline, hence a state of helplessness. They voiced disquiet about not feeling enough in the face of insurmountable evidence and obstacles, thus the comments was broken down into two subthemes of 'I can't do this alone' and 'It's overwhelming'.

Subtheme 1: I Can't Do This Alone. Participants expressed a perception that thinking about environmental issues made them feel small, akin to a sense of powerlessness, and that on their own they could not help to make a difference. They expressed concern that by themselves they were not enough and were cognitively aware of their own limitations. These feelings of insignificance also included a sense of helplessness, hopelessness and disillusionment that the issue felt too big to deal with. One participant (participant 29, male, 11 years old) explained *"I want to help I don't feel like I can"*, while another (participant 39, female, 13 years old) said *"I feel that there isn't much that I alone can do to help"*. Similarly this 12 year old conveyed a sense of powerlessness:

"I think that people aren't doing enough to help the environment and that everyone says that if just one person picks up rubbish it will make a big change but that's not true, you need a whole bunch of people to do the work." (participant 45, Non-binary, 12 years old)

Subtheme 2: It's Overwhelming. Analogous to environmental guilt and the feeling that one should be doing more to help with environmental issues, participants conveyed a sense of the challenges being unmanageable and too hard to solve. Overwhelm can mean to feel overcome by a thought or feeling, in that it affects you strongly (Condon, 2014). They seemed to feel and carry the weight of the environmental problems of the planet and made comments of being affected by wanting to help but not seeing that they could do anything. One participant (participant 43, male, 13 years old,) said *"I feel scared for my future and want to do more to help but I feel like me trying to help won't do much"*. Similarly an 11 year old said *"I usually think that things are going to get worse and we need to fix it but I think we can't"* (participant 40, Male ,11).

Theme 2: Inaction: I Feel Angry

Various participants in this study communicated their frame of mind from a viewpoint of anger. They felt that on the whole, people around them were idle and avoiding any sense of

responsibility towards making a change. This feeling of inaction and anger was embodied in the subtheme 'People are not doing enough'.

Subtheme 1: People Are Not Doing Enough. Respondents conveyed feelings of anger that people were not doing anything to bring about solutions to the problems. This carried a sense of heaviness about the perceived lack of action along with the inertia and passivity they observed, as conveyed by participant 16 (female, 13 years old) *"I also get angry that no one is doing anything about it"*. Together with this was a latent sense that people's neglect had caused these issues *"I think that problems like this should not happen"* (participant 11, Female, 12 years old).

Anger was also expressed with the lack of action at putting rubbish in the correct place as expected, and disregard for keeping the environment clean: *"I'm angry when people litter"* (participant 35, Female, 12 years old). Similarly another participant felt upset at the non-intervention on behalf of certain types of species and inactivity of people to help them: *"I get annoyed that the cute animals get all of the help and things like invertebrates get practically nothing"* (participant 4, Male, 12 years old).

Theme 3: Loss: I Worry About It

Another strong theme came through respondents' grief, sadness and disquiet in their cognizance of changes that have already taken place across the globe, and potential vicissitudes to come. These sentiments were illustrated through the subthemes of 'What we have already lost' and 'Fear of the future and what we could lose'.

Subtheme 1: What we Have Already Lost. Participants were aware of what has already vanished from the planet and is extinct or dead *"I am quite concerned about biodiversity loss, climate change, over fishing and habitat destruction"* (participant 4, male, 12 years old) and portrayed a sense of worry about that loss: *"The environment is not going well"* (participant 27, Female, 12 years old).

They were concerned about damage and deterioration that has already occurred: *"I think about what losses we have had and what animals and plants we still have"* (participant 46, Female, 13 years old). *"I think of all the animals becoming extinct And all the rubbish just lying around on land and in the ocean"* (participant 38, Male, 11). This was also conveyed with a sense of 'if only' the situation could be different than what they were experiencing now: *"I wish less trees got cut down"* (participant 35, Female, 12 years old).

Subtheme 2: Fear of the Future and What we Could Lose. There was a very strong sense of worry about what the future might hold and subsequent loss. Several participants mentioned trepidation concerning an anticipatory fear of what might be lost with comments such as:

What if climate change can't be stopped? Will we lose lots of amazing animals?

(participant 10, Female, 12 years)

I get worried about how it is going to change and impact the future (participant 16, Female 13 years).

Several participants also expressed their concern for specific creatures and issues they worry about:

I think that global warming is going to cause a lot of problems like the icebergs melting and other stuff. As well as things like plastic being everywhere (participant 19, Female, 12 years).

I am concerned that marine life will be affected by all the rubbish that goes into the sea (participant 7, Male 11).

That people that comes after us won't have a world liveable for humans and animals. There won't be enough plants and very many species of animals as their habitats would have been destroyed (participant 19, Female, 12).

Where is all the rubbish going because we get rid of so much rubbish (participant 42, Female, 12).

While another stated they worry *"what the world will be like in the future, I worry that there won't be enough trees or bees"* (participant 34, Male ,12 years).

Several students stated they felt afraid and sad of potential depletion: *"I feel a little bit afraid of what might happen if we do nothing to stop what's happening to the environment"* (participant 33, Prefer not to say, 13 years). *"The environment is a nice place that I love and it's sad to think that it won't always be such a nice place if we don't do anything"* (participant 39, Female, 13 years). This fear of future loss embodied a desire for an alternative to happen, coupled with the suspicion it might not: *"I really wish we could do more about climate change and global warming. In a couple hundred years, the world will be past the point of no return"* (participant 19, Female, 12 years).

Theme 4: Solutions: I Need to Fix it

Participants felt a sense of duty to contribute to repairing, rebuilding and restoring the planet to its former splendour. This involved aspects identified in the following three subthemes, 'Caretakers for future generations', 'Take action and fix it, be proactive' and 'Make changes to care for our resources'.

Subtheme 1: Caretakers for future generations. A pervasive feeling of custodial responsibility for te taiao came through the responses, and a desire that the earth is cherished for their heirs. One participant worded it this way: "*we are the caretakers of the environment today for the future generations*" (participant 2, Female, 11 years). While another said: "*I think about how wonderful the natural environment is now and how beautiful it could be*" (participant 46, Female, 13 years).

Subtheme 2: Take Action and Fix it, be Proactive. This sense of protection was coupled with action about fixing the earth with several participants providing suggestions for what they could do:

I think about solutions to fix it (participant 46, Female, 13 years).

Recycling. Try not to litter (participant 1, Male, 12 years).

I plant trees, pickup rubbish from the beach and try use less plastic (participant 43, Male, 13 years).

I've stopped using single use plastic as much as I can and I try to use recycled or reusable plastic (participant 14, Female, 11 years).

Subtheme 3: Make Changes to Care for our Resources. These solutions included making personal lifestyle choices and consideration for use of the world's finite resources and included comments such as:

People should be more careful about what they are throwing away and if they are putting it in the right bin. Some people catch way too many fish and that impact(s) the environment too (participant 22, Female, 11 years).

Be careful how much paper and other resources you use (participant 36, Male, 13 years).

My family and I definitely do not litter and we pick up rubbish when we see it. We are very cautious about these things, we all care a lot for the environment (participant 33, Prefer not to say, 13 years).

Our gasoline pollutes the atmosphere. How long will it take for people to stop using petrol (participant 20, Male, 12 years).

While another participant expressed:

“I have tried to stop eating as much meat, and I have stopped eating sea food, especially fish like snappers. I try to walk or bike to close places. I don't buy useless plastic toys or things that have a lot of packaging”. (participant 46, Female, 13 years)

Theme 5: Inclusivity: Everyone Needs to Do Something

The final theme elucidates the idea that participants felt by working together, with everyone playing their part, change can transpire. This was expressed in two subthemes, ‘We can all make a difference’ and ‘Increase knowledge’.

Subtheme 1: We Can All Make a Difference. The final theme captured participants notions of unity and the magnitude for change if everyone works together. One participant summed it up like this:

“I think that if everyone does something, whether it's small like picking up rubbish when you see it, or going to a tree planting zone day, we can start to patch up what we have done to the environment” (participant 39, Female, 12 years).

While several others said:

I feel that it is everybody's responsibility to look after the environment like how mothers nurture their children (participant 2, Female, 11 years).

I think every human needs to do something to protect our planet (participant 7, Male, 11 years).

I want everyone to help save the world and fix what we have broken (participant 23, Female, 12 years).

Subtheme 2: Increase Knowledge. Several participants commented that enhancing knowledge might be another way they can contribute to being part of an all-encompassing group for change:

I think that the environment and nature are amazing and I would like to know more of what I can do to help stop climate change (participant 24, Female, 12 years).

A lot of learning about the environment, recycling, planting, reducing carbon emissions (participant 4, Male, 12 years).

Another participant was keen to: *“Learn more about what I can do to help”* (participant 7, Male, 11).

Mixed Methods Analysis

An attempt was made to compare the open ended responses of high scorers on the HEAS-13, with those who exhibited low scores. However there was insufficient data, in addition with too few reporting high scores and no consistent patterns or trends were apparent among this group. Nonetheless this pilot study gives an initial indicator of trends in the phenomena.

Discussion

The purpose of this study was to explore the prevalence and nature of eco-anxiety among young adolescents in Aotearoa, NZ and to examine their thoughts and concerns about environmental issues as well as their coping responses. Similar to international evidence, the current sample reported experiencing 'some days' of eco-anxiety during the previous two weeks, and expressed feelings associated with a complex array of emotions (powerlessness, helplessness, anger, sadness, fear, guilt) (Burke et al., 2018; Ojala, 2015; Strife, 2012). It would seem from these results that participants are predominantly concerned about their own impact on the earth and their responsibility towards the planet, without experiencing as much anxiety.

This study echoes the recent findings of Whitmarsh and colleagues (2022), suggesting that while there are increasing levels of *concern* about climate issues across all age groups, general levels of *anxiety* are low. However, Whitmarsh et al. (2022) also reported that rates of anxiety are highest in people aged 30 and younger, consistent with the current study. It is interesting to note that a previous survey of young Australians, found levels of concern were higher in participants aged over 16 (80%) compared to those under age 12 (60%) who are nearer to the current target age group (ADIR, 2020). However, the ADIR study was not based on a validated scale of eco-anxiety, and instead asked about individuals' general concerns about the environment rather than specific behavioural or emotional symptoms. Concern and anxiety are on a continuum, concerns may lead to worry over time, and it is this persistent chronic worry that can lead to anxiety (APA, 2022).

In their investigation regarding habitual worry about global warming (as a particular feature of eco-anxiety), Verplanken et al. (2020) asked whether such worrying was beneficial and promoted PEBs, or was unconstructive. They concluded that for some individuals persistent worry about the warming climate was associated with internal dysfunction for example cognitive impairment, while for others it became part of their 'green' identity and

was a constructive reaction. The responses of the participants in this present study align with Verplanken and colleague's identification of three clusters of emotions; determination, anxiety and anger, mapping onto our themes of solutions and inclusivity, fear of loss, and anger. It would seem that for a majority of our participants this worry is leading to action as a means of coping with their mild levels of anxiety as seen by their lower scores and indications of solutions they are taking.

As proposed by Hickman et al. (2021), younger adolescents feel these feelings more deeply. The current study results concur with Hickman et al's (2021) inference that powerlessness impacts young people. This is seen in our theme of insignificance and feeling too small, alongside the anxiety they feel about their personal impact on the planet. It would also seem that those who feel this responsibility are those who are making choices for change, as seen through our participants' responses of actions they are taking to make a difference.

Our participants felt more anxious about their personal impact on the planet and responsibility to address and fix environmental problems. It appears that young adolescents are feeling troubled about their sense of responsibility and this is consistent with the themes appearing in the qualitative results. The results establish that adolescents are feeling a varied range of emotions. Overall the idea is that young adolescents who experience one of these factors experience the others. These dimensions within the Hogg Eco-Anxiety scale appear to echo the respondents' qualitative responses. For example, API relates also to the respondents' discussion of insignificance and solutions, and a strong sense of personal inadequacy which also came across convincingly in the qualitative themes. It is important to note that these associations were not premeditated, and the thematic analyses were completed prior to consideration of the HEAS-13 subscales.

The four subscales are largely inter-correlated indicating young adolescents who experience one dimension experience others, except for anxiety about personal impact (API) and behavioural symptoms (BS). Respondents' average scores indicate that most young adolescents experience some rumination but this does not seem to interfere with their behaviours such as sleeping, socialising or studying. However, they do feel concerned that their personal behaviours will do little to help fix the problem and are concerned with their personal responsibility to help address the issues. Our findings concurs with Hickman (2020) and reiterate the association between one's emotional response while acknowledging one's role in the causative issues of environmental events. In comparison to young adults (Hogg et al., 2021), the young adolescents in this current study find it harder to stop thinking about

losses to our environment as well as future and past environmental events. Results from our quantitative survey correspond with comments in the qualitative section regarding losses the world has already experienced. Hogg and colleagues (2021) demonstrated API (anxiety about one's personal impact) is an inimitable component of eco-anxiety with clear correlates and it was in this dimension that our respondents scored the highest.

In comparison to an Australian study of older participants (14 to 23 years) where the majority (80%) indicated they were 'somewhat' or 'very anxious' about climate change, and over 46% of that group, felt anxious on a weekly basis (ReachOut, 2019), the results for this group of students show mild anxiety (mean scores indicating experiencing dimensions of eco-anxiety for some days across a fortnight, Hogg et al., 2021), but significant levels of concern. The expectation was that the more anxious students might be the more active and engaged, however we saw something different. It would seem from our results that engagement, as indicated by choosing to participate in the survey and describing their PEBs indicates action. This concurs with Verplanken et al. (2020) who found that while for some people eco-anxiety may produce negative sensations and increase distress or denial responses, for others it can become part of a positive pro-environmental adaptive response. We would argue from our data that young adolescents who are interested and engaged are those who are the most motivated, active and vocal rather than anxious. Similarly, concurring with Helm et al., (2018) participants in our study displaying biospheric values (i.e. commenting about their concerns for plants, animals and nature), showed mild eco-anxiety and responded with strategies for ecological coping such as recycling, picking up rubbish, using less plastic and planting trees.

This pervasive feeling of powerlessness, feeling too small, alone and overwhelmed in participants in this study seems to indicate young people are dominated by feelings about their perceptions of control, regarding their individual and collective actions versus the actual control they have (Stevenson et al., 2014). The philosopher Blaise Pascal proposed that insignificance is the knowledge that one is subjugated by forces that transcend our inadequate influence (as cited in Clarke, 2022). Indeed it would seem that this group of young adolescents considered the problem too big to overcome and that they were too small. They also felt anger at peoples' destruction of the environment and their inaction to bring about change. Stanley and colleagues (2021) suggest that eco-anger may be a "healthy and adaptive form of expressive coping" (p. 4.), and their study showed that eco-anger plays a substantial factor in individuals efforts to mitigate environmental issues through individual action. In the same way concern akin to grief about prior environmental

losses and what could be lost in the future were ubiquitous, and equated to a strong sense of concern for the future of the planet.

Of significance was the marked resilience of our participants in their focus on solutions in contrast with the feelings of powerlessness. Most participants felt they were able to do small practical things in response to taking some form of action such as recycling or picking up rubbish. The distinct feeling of inclusivity seemed to bring a feeling of hope that with everyone ubiquitously working together change can happen. Hope is paramount to solving problems. According to Synder et al. (2002) hope, at its core, concerns thinking rather than emotions, based on an optimistic state of agency, pathways and goal planning. Abramson et al. (1978) expanded on Seligman's learned helplessness theory by looking at the attributions people make and how the story they tell themselves impacts their experience. We see this aspect of hope apparent in the responses from the young adolescents in this sample, with many examples of agency and goal-directed energy under the theme 'Solutions: I need to fix it'. Overall the participants appear to recognise their role in this story and that they can bring about small changes through actions they take, for example, reducing plastic use and putting rubbish in the correct places.

Treatment Implications

This study has implications for young people in improving our understanding of their eco-anxiety and for clinicians in terms of their assessment and planning process when working with young adolescents. This research will enable clinicians to look for these concerns in clients and help address those issues within therapy.

The themes of insignificance and the belief that one is too small to effect change, have implications for clinicians when screening and assessing their young clients. If a client were to express feelings of powerlessness, and appears overwhelmed and alone in their concerns, this may mean they are more prone to stress, anxiety and depression (Walding, 1991). However these concerns do not necessarily mean they are experiencing clinical levels of distress. The clinical implications of recognising that the origins of these feelings may come from concerns about the environment opens up different avenues when providing assessment and treatment such as encouraging positive action which is protective. Gunasiri et al., (2022) reported Australian young adults (18-24 year olds) expressed similar concerns to our cohort including analogous impacts of hopelessness, powerlessness and the feeling of voicelessness, akin to our finding of insignificance. Their recommendations to mental health professionals include encouraging engagement in climate action as well as

nature-based interventions to create positive mental health promotion to enable clients to feel more optimistic and in control.

Gunasiri and colleagues (2022) also suggest that personal resilience and a sense of agency help to foster wellbeing and mental health. This connects with the themes in this study, where young people focused on solutions and inclusivity. Young adolescents in our study want to be caretakers for the next generation, they want to be proactive, make changes to fix what has happened and make a difference. It would seem that taking action and acknowledging the power of inclusivity can evoke a sense of positive emotions such as hope. Fredrickson (2004), in her broaden and build theory, argues that positive emotions can build psychological resilience and broaden cognitive resources in the present moment and into the future. This has implications for the clinician in the treatment of a young adolescent faced with anxiety about the future of the planet, that by teaching psychological resilience the adolescent can build their cognitive resources by broadening their momentary thought-action repertoire and in turn build their own resources (Fredrickson, 2004). By the same token, Seligman's explanatory styles shape the link between optimism, wellbeing and hope (Gillham et al, 2001). It would seem that our participants sense hope in the wide-ranging notion that by working together collectively, change can happen. Hart (2013) suggests that playing a part in making a difference and having a sense of agency can offer psychological protection, while Schwartz et al. (2022) remind us that taking action can build agency and protect against feelings of helplessness and in fact attenuate the association between climate anxiety and psychological symptoms. We see this in our cohort of participants in their comments about taking action and fixing what is broken. Indeed further research indicates that feelings of empowerment and social support can develop from engaging in collective action and may be connected with increased mental health (Boehnke & Wong, 2011; Flanagan et al., 2007; Gorski, 2019). Sanson et al. (2019) conclude that playing an active role in climate change action can aid in adolescents feeling more resilient and in control.

Therefore, the findings of this study suggest that mental health workers have a responsibility to help adolescents build their capacity to cope and be resilient, with active coping and PEBs likely to be helpful strategies. These skills may go some way to ameliorate the conduit from concern to worry to anxiety. Therapy may also include galvanising hope and resilience through mindfulness skills. For example in conjunction with a University in the United Kingdom, Norfolk and Waveney Mind is offering mindfulness courses specifically to help relieve student's eco-anxiety (Norfolk and Waveney Mind, n.d.). This is a growing form of empirically based treatment aiding students to practice gratitude, kindness towards

themselves and others and be in the present moment. These skills have particular pertinence for young adolescents' grief about what the world has lost already and may lose in the future, as indicated in the themes reported here. Dallianis (2021) concurred in her scoping review that while not entirely clear, the most successful treatments were likely to be those evidence-based therapies used for depression, grief, anxiety and trauma, such as mindfulness, Cognitive Behavioural Therapy (CBT) and elements of positive psychology. She further deduced that similar modalities may also be effective such as ACT, Dialectical Behavioural Therapy (DBT) and Compassion Focused Therapy (Dallianis, 2021). Correspondingly, Guthrie (2022) corroborates that Acceptance and Commitment Therapy (ACT) is a fitting approach to address anxiety by accepting painful emotions without trying to alter or avoid them. Addressing elements of psychological flexibility with clients and enabling them to utilise cognitive defusion techniques, ACT therapists create new techniques to notice and accept feelings and change how clients respond to them. These could be beneficial in the treatment of young adolescents' who are feeling angry about the inaction of others as indicated in the themes of this study, and help them defuse from these thoughts and choose to take valued and helpful action.

In their scoping review of interventions for the treatment of eco-anxiety Baudon and Jackens (2021) found five prominent themes: fostering client's inner resilience, connecting clients with nature, joining groups to foster emotional connection and support, encouraging clients to take action, and clinician's education and inner work. They conclude it is just as necessary for practitioners to provide space for emotional expression as it is to encourage their clients into action. Indeed, Pikhala (2019) and Randall (2009) caution against impelling clients into action without attending to their enormous loss and grief.

A lack of clear guidelines for the treatment of eco-anxiety suggests that some therapists feel uncertain how to address it (Seaman, 2016). Davenport (2017) offers a clinician's guide for building emotional resilience in the face of climate change, and believes mental health practitioners will be instrumental in guiding interventions and programmes to assist people through this era. The current study contributes to research to help clinicians recognise the themes and concerns that their young adolescent clients may be feeling. Similarly Doherty and Clayton (2011) encourage psychologists to draw on their rich training and skills in order to address acute and chronic psychological impacts of environmental issues and employ interventions such as helping to create self-efficacy by promoting adaptation and long-term adjustment. This feeds into our theme of inclusivity and the recognition that clinicians can successfully aid adolescents in adjusting to and addressing eco-anxiety.

Limitations

The limitations of this study are firstly, the limited sample size that means our results must be interpreted with caution but may indicate trends warranting further investigation. Similarly students had the choice to respond to our survey in their own time. Therefore we may have had an over-representation of those who are already interested or passionate about this topic, thus skewing the results. In regard to limited recruitment we may also have encountered barriers that prevent engagement such as busy parents who may not have seen our request for participants and may have overlooked the information or forgotten to pass it on to their child. Another disadvantage is the potential exclusion of vulnerable societal groups due to the renowned 'digital divide' (Braun et al., 2021; Van Deursen & Van Dijk, 2019). We attempted to mitigate this through contacting schools from a range of deciles, however we had no participants responding from the lowest deciles.

Conclusion

Worldwide, people are affected by environmental issues, particularly the climate crisis. While the most striking impacts of climate change involve physical displacement or the scarcity of physical necessities, there are also strong psychological impacts, and young people may be particularly vulnerable to these concerns. Using both quantitative and qualitative research methods, this study demonstrates that young adolescents are indeed affected by moderate levels of eco-anxiety and substantial concerns about environmental issues.

Ultimately the wellbeing and mental health of young adolescents is of utmost importance, and the implications for health professionals include supporting them in their response to environmental concerns, particularly if this anxiety becomes debilitating. Psychologists can help build young adolescents' hope and resilience for coping with increasing environmental concerns, by exploring the themes identified in this study.

Young people are feeling a sense of insignificance, anger about the inaction of others, loss and grief as well as concern about their personal impact on the planet. Despite these challenges, they also share a sense of hope that solutions and working together can make a difference.

Conflicts of interest

The primary researcher would like to declare that her family works in the marine education space in NZ.

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References

- Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: critique and reformulation. *Journal of abnormal psychology, 87*(1), 49.
- Albrecht, G. (2011). Chronic environmental change: Emerging 'psychoterratic'syndromes. In I. Weissbecker (Ed.), *Climate change and human well-being* (pp. 43–56). Springer. https://doi.org/10.1007/978-1-4419-9742-5_3
- Alderson, P., & Morrow, V. (2020). *The ethics of research with children and young people: A practical handbook*. Sage.
- American Psychological Association, & American Psychological Association. (2018). Stress in America: generation Z. *Stress in America Survey, 11*.
- American Psychiatric Association [APA]. (2022). *Diagnostic and statistical manual of mental disorders*, Text Revision (DSM-5-TR). American Psychiatric Publishing.
- Anxiety NZ (n.d.) Retrieved March 24, 2022 from <https://www.anxiety.org.nz/>
- Australian Institute for Disaster Resilience (AIDR). (n.d.) Retrieved March 24, 2022 from <https://www.aidr.org.au/media/7946/ourworldoursay-youth-survey-report-2020.pdf>
- Australian Psychological Society (APS). (n.d.). Retrieved November 3, 2022 from <https://psychology.org.au/getmedia/88ee1716-2604-44ce-b87a-ca0408dfaa12/climate-change-empowerment-handbook.pdf>
- Ayanlade, A., Sergi, C. M., Di Carlo, P., Ayanlade, O. S., & Agbalajobi, D. T. (2020). When climate turns nasty, what are recent and future implications? Ecological and human health review of climate change impacts. *Current Climate Change Reports, 6*(3), 55–65. <https://doi.org/10.1007/s40641-020-00158-8>
- Baudon, P., & Jachens, L. (2021). A scoping review of interventions for the treatment of Eco-Anxiety. *International journal of environmental research and public health, 18*(18), 9636. <https://doi.org/10.3390/ijerph18189636>
- Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: developmental issues and implications for DSM-V. *Psychiatric Clinics, 32*(3), 483–524. <https://doi.org/10.1016/j.psc.2009.06.002>
- Berman, M. G., Kross, E., Krpan, K. M., Askren, M. K., Burson, A., Deldin, P. J., ... & Jonides, J. (2012). Interacting with nature improves cognition and affect for individuals with depression. *Journal of affective disorders, 140*(3), 300–305. <https://doi.org/10.1016/j.jad.2012.03.012>
- Berry, H. L., & Peel, D. (2015). Worrying about climate change: is it responsible to promote public debate?. *BJPsych international, 12*(2), 31–32. <https://doi.org/10.1192/s2056474000000234>
- Berry, H. L., Waite, T. D., Dear, K. B., Capon, A. G., & Murray, V. (2018). The case for systems thinking about climate change and mental health. *Nature climate change, 8*(4), 282–290. <https://doi.org/10.1038/s41558-018-0102-4>

- Boehnke, K., & Wong, B. (2011). Adolescent political activism and long-term happiness: A 21-year longitudinal study on the development of Micro and macrosocial worries. *Personality and Social Psychology Bulletin*, 37(3), 435–447. <https://doi.org/10.1177/0146167210397553>
- Borghi, M., Perez de Souza, L., Yoshida, T., & Fernie, A. R. (2019). Flowers and climate change: a metabolic perspective. *New Phytologist*, 224(4), 1425–1441. <https://doi.org/10.1111/nph.16031>
- Bowen, G. A. (2008). Naturalistic inquiry and the saturation concept: a research note. *Qualitative Research*, 8(1), 137–152. <https://doi.org/10.1177/1468794107085301>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- Braun, V., & Clarke, V. (2014). What can “thematic analysis” offer health and wellbeing researchers?. *International journal of qualitative studies on health and well-being*, 9(1), 26152. <https://doi.org/10.3402/qhw.v9.26152>
- Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2021). The online survey as a qualitative research tool. *International Journal of Social Research Methodology*, 24(6), 641–654. <https://doi.org/10.1080/13645579.2020.1805550>
- Braun, V., & Clarke, V. (2022). *Thematic Analysis: A practical guide*. Sage.
- Burke, S. E., Sanson, A. V., & Van Hoorn, J. (2018). The psychological effects of climate change on children. *Current psychiatry reports*, 20(5), 1–8. <https://doi.org/10.1007/s11920-018-0896-9>
- Burr, V. (2015). *Social constructionism*. Routledge.
- Byrne, D. (2022). A worked example of Braun and Clarke’s approach to reflexive thematic analysis. *Quality & quantity*, 56(3), 1391–1412. <https://doi.org/10.1007/s11135-021-01182-y>
- Chiw, A. & Ling, H. S. (2019). *Young people of Australia and climate change: Perceptions and concerns. A report for Millennium Kids*. <https://www.millenniumkids.com.au/wp-content/uploads/2019/02/Young-People-and-Climate-Change.pdf>
- Clarke, D. (2007). The Stanford Encyclopedia of Philosophy (Summer 2011 Edition). Zalta, E. N. (Ed.). plato.stanford.edu. Retrieved November, 2, 2022 from <https://plato.stanford.edu/archives/sum2011/entries/pascal/>
- Clayton, S., Manning, C., Krygsman, K., & Speiser, M. (2017). *Mental health and our changing climate: impacts, implications, and guidance*. American Psychological Association, and eco-America. <https://www.apa.org/news/press/releases/2017/03/mental-health-climate.pdf>
- Clayton, S. (2018). Mental health risk and resilience among climate scientists. *Nature Climate Change*, 8(4), 260–261. <https://doi.org/10.1038/s41558-018-0123-z>

- Clayton, S., & Manning, C. (Eds.). (2018). *Psychology and climate change: Human perceptions, impacts, and responses*. Academic Press.
- Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of anxiety disorders*, 74, 102263. <https://doi.org/10.1016/j.janxdis.2020.102263>
- Clayton, S. and Karazsia, B. 2020. 'Development and Validation of a Measure of Climate Change Anxiety'. *Journal of Environmental Psychology*, Preproof online 30 April 2020. <https://doi.org/10.1016/j.jenvp.2020.101434>
- Climate Psychology Alliance (n.d.) Retrieved March 24, 2022 from <https://www.climatepsychologyalliance.org/handbook/451-eco-anxiety>
- Clinton, V. (2019). Reading from paper compared to screens: A systematic review and meta-analysis. *Journal of Research in Reading*, 42(2), 288–325.
- Coffey, Y., Bhullar, N., Durkin, J., Islam, M. S., & Usher, K. (2021). Understanding eco-anxiety: A systematic scoping review of current literature and identified knowledge gaps. *The Journal of Climate Change and Health*, 3, 100047. <https://doi.org/10.1016/j.joclim.2021.100047>
- Condon, B. B. (2014). The living experience of feeling overwhelmed: A Parse research study. *Nursing Science Quarterly*, 27(3), 216–225.
- Dailianis, A. (2021). Eco-anxiety: A Scoping Review Towards a Clinical Conceptualisation and Therapeutic Approach.
- Davenport, L. (2017). *Emotional resiliency in the era of climate change: A clinician's guide*. Jessica Kingsley Publishers.
- Dean, J. H., Shanahan, D. F., Bush, R., Gaston, K. J., Lin, B. B., Barber, E., ... & Fuller, R. A. (2018). Is nature relatedness associated with better mental and physical health?. *International journal of environmental research and public health*, 15(7), 1371. <https://doi.org/10.3390/ijerph15071371>
- Dias, Maria P., Rob Martin, Elizabeth J. Pearmain, Ian J. Burfield, Cleo Small, Richard A. Phillips, Oliver Yates, Ben Lascelles, Pablo Garcia Borboroglu, and John P. Croxall. "Threats to seabirds: a global assessment." *Biological Conservation* 237 (2019): 525–537. <https://doi.org/10.1016/j.biocon.2019.06.033>
- Doherty, T., & Chen, A. (2016). Improving human functioning: Ecotherapy and environmental health approaches. *Research methods for environmental psychology*, 323–343. <https://doi.org/10.1002/9781119162124.ch17>
- Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, 66(4), 265. <https://doi.org/10.1037/a0023141>
- Durie, M. (1998). *Whaiora: Maōri health development*. Oxford University Press.
- Flanagan, C. A., Syvertsen, A. K., & Stout, M. D. (2007). Civic Measurement Models: Tapping Adolescents' Civic Engagement. CIRCLE Working Paper 55. *Center for Information and Research on Civic Learning and Engagement (CIRCLE)*.
- Fleming, T., Ball, J, Kang, K., Sutcliffe, K, Lambert, M., Peiris-John, R., & Clark, T. (2020a). Youth19: Youth Voice Brief. The Youth19 Research Group, Victoria University of

Wellington & The University of Auckland.

<https://static1.squarespace.com/static/5bdbb75ccef37259122e59aa/t/5f3394a2654885030c051243/1597215912482/Youth19+Youth+Voice+Brief.pdf>

Fleming, T., Tiatia-Seath, J., Peiris-John, R., Sutcliffe, K., Archer, D., Bavin, L., Crengle, S., & Clark, T. (2020b). *Youth19 Rangatahi Smart Survey, Initial Findings: Hauora Hinengaro / Emotional and Mental Health*. The Youth19 Research Group, The University of Auckland and Victoria University of Wellington, New Zealand.
<https://static1.squarespace.com/static/5bdbb75ccef37259122e59aa/t/5f338e4cfb539d2246e9e5ce/1597214306382/Youth19+Mental+Health+Report.pdf>

Flesch, R. (1948). A new readability yardstick. *Journal of applied psychology*, 32(3), 221.

Fredrickson, B. L. (2004). The broaden–and–build theory of positive emotions. *Philosophical transactions of the royal society of London. Series B: Biological Sciences*, 359(1449), 1367–1377. <https://doi.org/10.1016/b978-0-08-097086-8.26086-8>

Fridays For Future (n.d.). Retrieved April 6, 2022 from <https://fridaysforfuture.org/>

Fritze, J. G., Blashki, G. A., Burke, S., & Wiseman, J. (2008). Hope, despair and transformation: Climate change and the promotion of mental health and wellbeing. *International journal of mental health systems*, 2(1), 1–10.

Fuller, R. A., Irvine, K. N., Devine-Wright, P., Warren, P. H., & Gaston, K. J. (2007). Psychological benefits of greenspace increase with biodiversity. *Biology letters*, 3(4), 390–394. <https://doi.org/10.1098/rsbl.2007.0149>

Gillham, J. E., Shatté, A. J., Reivich, K. J., & Seligman, M. E. (2001). Optimism, pessimism, and explanatory style.

Gorski, P. C. (2019). Fighting racism, battling burnout: Causes of activist burnout in US racial justice activists. *Ethnic and Racial Studies*, 42(5), 667–687.
<https://doi.org/10.1080/01419870.2018.1439981>

Gunasiri, H., Wang, Y., Watkins, E. M., Capetola, T., Henderson-Wilson, C., & Patrick, R. (2022). Hope, Coping and Eco-Anxiety: Young People’s Mental Health in a Climate-Impacted Australia. *International Journal of Environmental Research and Public Health*, 19(9), 5528. <https://doi.org/10.3390/ijerph19095528>

Guthrie, D. (2022). How I Learned to Stop Worrying and Love the Eco-Apocalypse: An Existential Approach to Accepting Eco-Anxiety. *Perspectives on Psychological Science*, <https://doi.org/10.1177/17456916221093613>

Harrison, S., Baker, M. G., Benschop, J., Death, R. G., French, N. P., Harmsworth, G., ... & Murdoch, D. R. (2020). One Health Aotearoa: a transdisciplinary initiative to improve human, animal and environmental health in New Zealand. *One Health Outlook*, 2(1), 1–6. <https://doi.org/10.1186/s42522-020-0011-0>

Hart, R. A. (2013). *Children's participation: The theory and practice of involving young citizens in community development and environmental care*. Routledge.

Helm, S. V., Pollitt, A., Barnett, M. A., Curran, M. A., & Craig, Z. R. (2018). Differentiating environmental concern in the context of psychological adaption to climate change.

Global Environmental Change, 48, 158–167.
<https://doi.org/10.1016/j.gloenvcha.2017.11.012>

- Heeren, A., Mouguiama-Daouda, C., & Contreras, A. (2022). On climate anxiety and the threat it may pose to daily life functioning and adaptation: A study among European and African French-speaking participants. *Climatic change*, 173(1), 1–17.
<https://doi.org/10.1007/s10584-022-03402-2>
- Hickman, C. (2020). We need to (find a way to) talk about... Eco-anxiety. *Journal of Social Work Practice*, 34(4), 411–424. <https://doi.org/10.1080/02650533.2020.1844166>
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., ... & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, 5(12), 863–873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Hilmi, N., Osborn, D., Acar, S., Bambridge, T., Chlous, F., Cinar, M., ... & Safa, A. (2019). Socio-economic tools to mitigate the impacts of ocean acidification on economies and communities reliant on coral reefs—a framework for prioritization. *Regional Studies in Marine Science*, 28, 100559. <https://doi.org/10.1016/j.rsma.2019.100559>
- Hogg, T.L., Stanley, S.K., O'Brien, L.V., Wilson, M.S., & Watsford, C.R. (2021). The Hogg Eco-Anxiety Scale: Development and validation of a multidimensional scale. *Global Environmental Change*, 71(102391), 1–10.
<https://doi.org/10.1016/j.gloenvcha.2021.102391>
- Hrabok, M., Delorme, A., & Agyapong, V. I. (2020). Threats to mental health and well-being associated with climate change. *Journal of Anxiety Disorders*, 76, 102295.
- Hwong, A. R., Wang, M., Khan, H., Chagwedera, D. N., Grzenda, A., Doty, B., ... & Compton, W. M. (2022). Climate change and mental health research methods, gaps, and priorities: a scoping review. *The Lancet Planetary Health*, 6(3), e281–e291.
[https://doi.org/10.1016/S2542-5196\(22\)00012-2](https://doi.org/10.1016/S2542-5196(22)00012-2)
- Intergovernmental Panel on Climate Change (IPCC) (2007): *Summary for Policymakers*. In *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC* [Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt KB, Tignor M, Miller HL (eds.)]. Cambridge University Press.
- IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. (in press). Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press.
- Johnson, B., Onwuegbuzie, A., Turner, L. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*. 1, 112–133.
<https://doi.10.1177/1558689806298224>
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*, 62(6), 593–602.

- Keyes, K. M., Gary, D., O'Malley, P. M., Hamilton, A., & Schulenberg, J. (2019). Recent increases in depressive symptoms among US adolescents: trends from 1991 to 2018. *Social psychiatry and psychiatric epidemiology*, 54(8), 987–996. <https://doi.org/10.1007/s00127-019-01697-8>
- Killam, L. (2013). *Research terminology simplified: Paradigms, axiology, ontology, epistemology and methodology*. Laura Killam.
- Léger-Goodes, T., Malboeuf-Hurtubise, C., Mastine, T., Généreux, M., Paradis, P. O., & Camden, C. (2022). Eco-anxiety in children: A scoping review of the mental health impacts of the awareness of climate change. *Frontiers in Psychology*, 13.
- Lessof, C., Ross, A., Brind, R., Bell, E., & Newton, S. (2016). *Longitudinal Study of Young People in England cohort 2: health and wellbeing at wave 2*. London: Department for Education.
- Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, 73(1), 26.
- Marshall, R. D., Bryant, R. A., Amsel, L., Suh, E. J., Cook, J. M., & Neria, Y. (2007). The psychology of ongoing threat: Relative risk appraisal, the September 11 attacks, and terrorism-related fears. *American Psychologist*, 62, 304–316. <https://doi.org/10.1037/0003-066X.62.4.304>
- McBride, S. (2022). *Climate Anxiety in Aotearoa Adolescents: A Mixed-Methods Exploration* (Doctoral dissertation, Open Access Te Herenga Waka-Victoria University of Wellington).
- McIntosh, J., Marques, B., & Mwipiko, R. (2021). Therapeutic Landscapes and Indigenous Culture: Māori Health Models in Aotearoa/New Zealand. In Spee, J., McMurray, A., McMillan, M. (Eds.), *Clan and Tribal Perspectives on Social, Economic and Environmental Sustainability*. Emerald Publishing Limited. (pp. 143–158). <https://doi.org/10.1108/978-1-78973-365-520211016>
- Mertens, D. M. (2019). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Sage.
- Ministry for the environment. (2018). Understanding New Zealanders' attitudes to the environment. Ministry for the Environment. <https://environment.govt.nz/facts-and-science/science-and-data/understanding-new-zealanders-attitudes-to-the-environment/>
- Ministry for the environment. (2020). *Our atmosphere and climate*. Retrieved April 6, 2022 from <https://environment.govt.nz/publications/our-atmosphere-and-climate-2020/chapter-4-climate-change-and-our-wellbeing/>
- Ministry of Education Te Tāhuhu o te Mātauranga. (2021). *How our education system is performing for literacy: Progress and achievement of New Zealand learners in English medium settings*. <https://assets.education.govt.nz/public/Literacy-and-Maths-strategy-development-in-2021/How-our-education-system-is-performing-for-Literacy.pdf>

- Morganstein, J. C., & Ursano, R. J. (2020). Ecological disasters and mental health: causes, consequences, and interventions. *Frontiers in psychiatry*, 11, 1. <https://doi.org/10.3389/fpsy.2020.00001>
- New Zealand Government Te Kāwanatanga o Aotearoa (n.d.). School zones, reviews and decile ratings. Retrieved September 28, 2022, from <https://www.govt.nz/browse/education/school-and-college/school-zones-reviews-and-decile-ratings/>
- Norfolk and Waveney Mind (n.d.). A new project has been launched to address rising climate anxiety in students at the University of East Anglia. <https://www.norfolkandwaveneymind.org.uk/getdoc/f0b1832d-8e7b-4cd3-a944-c64ae9ff5870/climate-change-don-t-let-doom-win,-project-tells>
- Ojala, M. (2012). Regulating Worry, Promoting Hope: How Do Children, Adolescents, and Young Adults Cope with Climate Change?. *International Journal of Environmental and Science Education*, 7(4), 537–561.
- Ojala, M. (2015). Hope in the face of climate change: Associations with environmental engagement and student perceptions of teachers' emotion communication style and future orientation. *The Journal of Environmental Education*, 46(3), 133–148.
- Palinkas, L. A., & Wong, M. (2020). Global climate change and mental health. *Current opinion in psychology*, 32, 12–16. <https://doi.org/10.1016/j.copsyc.2019.06.023>
- Patton, M. Q. (2002). *Qualitative research & evaluation methods*. Sage.
- Pihkala, P. (2018). Eco-anxiety, tragedy, and hope: psychological and spiritual dimensions of climate change. *Zygon* 53, 545–569. <https://doi.org/10.1111/zygo.12407>
- Pihkala, P. (2019). Climate Anxiety; MIELI Mental Health Finland: Helsinki, Finland.
- Pihkala, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Sustainability*, 12(19), 7836.
- Pihkala, P. (2021). Eco-anxiety. In Krieg, C and Toivanen, R. (Eds.), *Situating Sustainability: A Handbook of Contexts and Concepts*, 119–133. Helsinki University Press. <https://doi.org/10.33134/HUP-14-9>
- Pleeging, E., Burger, M., & van Exel, J. (2021). The relations between hope and subjective well-being: A literature overview and empirical analysis. *Applied Research in Quality of Life*, 16(3), 1019–1041.
- Qualtrics, 2005 (2022), USA
- Randall, R. (2009). Loss and climate change: The cost of parallel narratives. *Ecopsychology*, 1, 118–129.
- Rangiwai, B. (2018). Ko au ko te taiao, ko te taiao ko au – I am the environment and the environment is me: A Māori theology of the environment. *Te Kaharoa*, 11(1), 638–652. <https://doi.org/10.24135/tekaharoa.v11i1.241>
- ReachOut. (2019). New survey by ReachOut and Student Edge reveals number of students anxious about climate change. <https://about.au.reachout.com/blog/new-survey-by->

[reachout-and-student-edge-reveals-number-of-students-anxious-about-climate-change](#)

- Roberts, M., Norman, W., Minhinnick, N., Wihongi, D., & Kirkwood, C. (1995). Kaitiakitanga: Maori perspectives on conservation. (1995). *Pacific Conservation Biology*, 2(1), 7–20. <https://doi.org/10.1071/PC950007>
- R Core Team (2021). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer Software]. Retrieved from <https://cran.r-project.org>. (R packages retrieved from MRAN snapshot April, 1, 2021).
- Sanson, A. V., Van Hoorn, J., & Burke, S. E. (2019). Responding to the impacts of the climate crisis on children and youth. *Child Development Perspectives*, 13(4), 201–207. <https://doi.org/10.1111/cdep.12342>
- Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In *Handbook of qualitative research* (pp. 189–213). Sage.
- Schwartz, S. E., Benoit, L., Clayton, S., Parnes, M. F., Swenson, L., & Lowe, S. R. (2022). Climate change anxiety and mental health: Environmental activism as buffer. *Current Psychology*, 1–14.
- Seaman, E. B. (2016). Climate change on the therapist's couch: how mental health clinicians receive and respond to indirect psychological impacts of climate change in the therapeutic setting.
- Searle, K., & Gow, K. (2010). Do concerns about climate change lead to distress? *International Journal of Climate Change Strategies and Management*, 2(4), 362–379. <https://doi.org/10.1108/17568691011089891>
- Snyder, C. R., Rand, K. L., & Sigmon, D. R. (2002). Hope theory: A member of the positive psychology family.
- Sortino, D. P. (2020). *Brain changers: Major advances in children's learning and intelligence*. Rowman & Littlefield.
- Stanley, S. K., Hogg, T. L., Leviston, Z., & Walker, I. (2021). 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*, 1, 100003. <https://doi.org/10.1016/j.joclim.2021.100003>
- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407–424.
- Stevenson, K. T., Peterson, M. N., Bondell, H. D., Moore, S. E., & Carrier, S. J. (2014). Overcoming skepticism with education: interacting influences of worldview and climate change knowledge on perceived climate change risk among adolescents. *Climatic change*, 126(3), 293–304.
- Stevenson, K., & Peterson, N. (2015). Motivating action through fostering climate change hope and concern and avoiding despair among adolescents. *Sustainability*, 8(1), 6.

- Stokols, D., Misra, S., Runnerstrom, M. G., & Hipp, J. A. (2009). Psychology in an age of ecological crisis: From personal angst to collective action. *American Psychologist*, 64(3), 181. <https://doi.org/10.1037/a0014717>
- Strife, S. J. (2012). Children's environmental concerns: Expressing ecophobia. *The Journal of Environmental Education*, 43(1), 37–54. <https://doi.org/10.1080/00958964.2011.602131>
- Sumaila, U. R., & Tai, T. C. (2020). End overfishing and increase the resilience of the ocean to climate change. *Frontiers in Marine Science*, 7, 523. <https://doi.org/10.3389/fmars.2020.00523>
- Swim, J., Clayton, S., Doherty, T. J., et al (2011) Psychology and global climate change: addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's Task Force on the Interface Between Psychology and Global Climate Change. *American Psychologist*, 66, 181–193.
- Tebes, J. K. (2005). Community science, philosophy of science, and the practice of research. *American journal of community psychology*, 35(3-4), 213–230. <https://doi.org/10.1007/s10464-005-3399-x>
- Terry, G., Hayfield, N., Clarke, V., & Braun, V. (2017). Thematic analysis. *The SAGE handbook of qualitative research in psychology*, 2, 17–37.
- The jamovi project (2021). *Jamovi* (Version 2.2) [Computer Software]. Retrieved from <https://www.jamovi.org>
- United States Environmental Protection Agency [EPA] (n.d.). *Climate Change Indicators: Greenhouse Gases*. <https://www.epa.gov/climate-indicators/greenhouse-gases>
- Van Deursen, A. J., & Van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>
- Verplanken, B., Marks, E., & Dobromir, A. I. (2020). On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming?. *Journal of Environmental Psychology*, 72, 101528. <https://doi.org/10.1016/j.jenvp.2020.101528>
- Vollebergh, W. A., Iedema, J., & Raaijmakers, Q. A. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and Family*, 63(4), 1185–1198.
- Walding, M. F. (1991). Pain, anxiety and powerlessness. *Journal of Advanced Nursing*, 16(4), 388–397.
- Whitmarsh, L., Player, L., Jiongco, A., James, M., Williams, M., Marks, E., & Kennedy-Williams, P. (2022). Climate anxiety: What predicts it and how is it related to climate action?. *Journal of Environmental Psychology*, 83, 101866. <https://doi.org/10.1016/j.jenvp.2022.101866>
- Williams, J (2004). Papatūānuku: Attitudes to land. In T. M. Ka'ai, J. C. Moorfield, M. P. J. Reilly & S. Mosley (Eds.), *Ki te whaiiao: An introduction to Māori culture and society* (pp. 50–60). Pearson.

- World Health Organization. (1998). Wellbeing Measures in Primary Health Care/The Depcare Project: Report on a WHO Meeting. https://www.euro.who.int/data/assets/pdf_file/0016/130750/E60246.pdf
- World Health Organization (2014). <https://www.who.int/>
- Wullenkord, M. C., Tröger, J., Hamann, K. R., Loy, L. S., & Reese, G. (2021). Anxiety and climate change: A validation of the Climate Anxiety Scale in a German-speaking quota sample and an investigation of psychological correlates. *Climatic Change*, 168(3), 1–23. <https://doi.org/10.1007/s10584-021-03234-6>
- Yelland, C., Robinson, P., Lock, C., La Greca, A. M., Kokegei, B., Ridgway, V., & Lai, B. (2010). Bushfire impact on youth. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, 23(2), 274–277. <https://doi.org/10.1002/jts.20521>
- Zelezny, L. C., Chua, P. P., & Aldrich, C. (2000). New ways of thinking about environmentalism: Elaborating on gender differences in environmentalism. *Journal of Social Issues*, 56(3), 443–457. <https://doi.org/10.1111/0022-4537.00177>

Appendix A

12 May 2022

Amy Kercher
Faculty of Health and Environmental Sciences

Dear Amy

**Ethics Application: 22/100 Exploring eco-anxiety with 11-13 year olds in Aotearoa, New Zealand:
A multi-methods study.**

Thank you for submitting your application for ethical review. We are pleased to advise that the Auckland University of Technology Ethics Committee (AUTEC) approved your ethics application at their meeting on 2 May 2022, subject to:

1. Provision of separate information Sheets the Principal
2. Provision of an Information Sheet with the QR code for the parents/guardians so that they do not have to go and find it online;
3. Provision of an assurance that post analysis the data will be stored with the supervisor on AUT premises and not with the researcher. The researchers are referred to AUT's data storage guideline which can be found on the research ethics website.
4. In the Information Sheet name the business the researcher is affiliated with.

Please provide us with a response to the points raised in these conditions, indicating either how you have satisfied these points or proposing an alternative approach. AUTEC also requires copies of any altered documents, such as Information Sheets, surveys etc. You are not required to resubmit the application form again. Any changes to responses in the form required by the committee in their conditions may be included in a supporting memorandum.

Please note that the Committee is always willing to discuss with applicants the points that have been made. There may be information that has not been made available to the Committee, or aspects of the research may not have been fully understood.

Once your response is received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application. Full approval is not effective until all the conditions have been met. Data collection may not commence until full approval has been confirmed. If these conditions are not met within six months, your application may be closed and a new application will be required if you wish to continue with this research.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

We look forward to hearing from you,

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat

Auckland University of Technology Ethics Committee

Appendix B



Survey of young adolescents' thoughts about environmental issues.

May 2022

Kia ora *Principal's name*

My name is Jo Hathaway, I am completing my Masters in Health Science (Psychology) at AUT, and organising a research project to better understand young people's concerns about the environment. My aim is to survey 100 year 7 & 8 students through a quick online survey that will include brief questions about their feelings and thoughts regarding the environment. Their answers will enable us to understand and help young people in the future.

I would like to ask if your school might be willing to give your students the option to participate?

If you are agreeable we would ask to place the following details in your school newsletter or via an email (whichever is most convenient for your school). This will enable parents to pass on the information to their child as means of consent or choose to refuse and not pass on the link. The participant will then access our survey by using the QR code or the link to complete the survey. They will have two weeks to consider the invitation.

Further information is available on the survey webpage and the summary of the findings will be distributed to participating schools and published on an AUT website.

https://aut.au1.qualtrics.com/jfe/form/SV_bD9FPNVpmS6BuWG

The summary of the findings will be distributed to participating schools and published on an AUT website. I would also like to disclose that my family created the free online marine education resource Young Ocean Explorers www.youngoceanexplorers.com for teachers and children.

Thank you so much for your help and support.

Ngā mihi nui
Jo Hathaway

Appendix C

Online survey



*Hi, my name is Jo Hathaway and I am an AUT Masters student.
I would like to invite your child to take part in a brief, anonymous survey, to help us understand young people's concerns about the environment.
The results will help provide valuable information to support young people in the future.*

Please click here to read more:

https://aut.au1.qualtrics.com/jfe/form/SV_bd9FPNVpmS6BuWG

Appendix D



Survey of young adolescents' thoughts about environmental issues.

May 2022

Kia ora Parents/Caregivers

My name is Jo Hathaway, I am a Masters of Health Science (Psychology) student at AUT, and completing a research project to better understand young people's concerns about the environment. I would really appreciate it if you would allow your child to take part in a quick online survey - regardless of whether or not they seem to worry about the environment.

We will ask them some brief questions about their feelings and thoughts about the environment. Their answers will help us to understand and better help young people in the future.

If you agree for your child to participate, please ask your child to use the QR code or click the link below or contact the school to use a school computer, to open and complete the survey.

Participant information is available below and on the survey webpage.

The summary of the findings will be distributed to participating schools and published on an AUT website. I am also affiliated with the free online marine education resource Young Ocean Explorers.
www.youngoceanexplorers.com

Thank you so much for your help and support.

Ngā mihi nui
Jo

https://aut.au1.qualtrics.com/jfe/form/SV_bD9FPNVpmS6BuWG



Appendix E



Participant Information Sheet

Date Information Sheet Produced:

May 18, 2022

Project Title

A survey of young adolescents' thoughts about environmental issues.

An Invitation

You are invited to take part in a survey regarding your feelings and thoughts about environmental issues. My name is Jo Hathaway, I am a Masters of Health Science (Psychology) student at AUT, and doing a research project to better understand young people's concerns about the environment.

What is the purpose of this research?

To understand Year 7 and 8 students' thoughts and feelings about environmental issues. We hope to better understand what concerns or worries some young people might have, so we can work out how to better support and help young people in the future. The findings of this research may be used for academic publications and presentations.

How was I identified and why am I being invited to participate in this research?

We are inviting all year 7 and 8 students from your school to participate, as well as several other schools. Whether or not you have worries or concerns about the environment, we want to hear about your thoughts and ideas, which can help us to help others in the future. If you choose not to participate or don't want to finish the survey, this will not disadvantage you in any way. We will not collect names or contact information and will not notify your school or anyone else whether you choose to participate or not.

How do I agree to participate in this research?

If your parents have given you the QR code or web address to participate, they have agreed for you to do so. By clicking on the link and answering the survey questions, you indicate that you are willing to participate. Remember, we will not ask for your name or contact details and will not contact you at all after you participate.

What will happen in this research?

You will be asked to answer some questions about how you feel about the environment, both by ticking a box to indicate how much you agree with a statement, and also by adding some statements of your own if you like. It's ok if you choose not to fill in the form or complete the whole questionnaire.

What are the discomforts and risks, and how will these be alleviated?

If you have any worries or concerns after answering this survey, please talk with your parents, teacher or school counsellor.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the researcher, Jo Hathaway,

tzv3942@autuni.ac.nz

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, ethics@aut.ac.nz (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Jo Hathaway, tzv3942@autuni.ac.nz Amy Kercher, amy.kercher@aut.ac.nz

If you feel worried about anything that you have read or written in this survey please talk with your school counsellor, teacher, parents or call Youthline 0800 37 66 33 or text 234.

Approved by the Auckland University of Technology Ethics Committee on May 24th 2022 AUTEK Reference number 22/100

Appendix F

Adapted Hogg Eco-Anxiety Scale (HEAS-13)

“Over the last 2 weeks how often do the items on this list below describe your feelings about climate change and other environmental issues like global warming, ecological degradation, resource depletion, species extinction, ozone hole, pollution of the ocean, deforestation?”

- 1. I feel nervous, anxious or on edge*
- 2. I can't stop or control my worry*
- 3. I worry too much*
- 4. I feel afraid*
- 5. I can't stop thinking about future climate change and other environmental problems*
- 6. I can't stop thinking about past events related to climate change*
- 7. I can't stop thinking about losses in the environment*
- 8. I find it hard to sleep*
- 9. I find it hard to enjoy social situations with my family and friends*
- 10. I find it hard to study*
- 11. I feel anxious about the impact of my behaviours on the environment*
- 12. I feel anxious about my personal responsibility to help with environmental problems.*
- 13. I feel anxious that my behaviours won't do much to help or fix the problem.*

Response scale:

0 = not at all

1 = some days

2 = most days

3 = nearly every day