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# “Hope isn’t actually lost yet”: A reflexive thematic analysis exploring young people’s views and feelings towards climate change

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## Abstract

The psychological wellbeing impacts of climate change awareness are becoming increasingly recognised (Baker et al., 2021; Lawrance et al., 2021). Climate change has recently been highlighted as a significant issue and source of distress for children and young people (Hickman et al., 2021; Martin et al., 2022; Vergunst & Berry, 2022). However, the emerging evidence base is narrow and largely comprised of survey data. Rich and detailed accounts of children and young people's responses to climate change (Ojala et al., 2021) and their views regarding related support are limited (Baker et al., 2021; Martin et al., 2022). Therefore, this study sought to answer two research questions: 'what are the views, feelings, and experiences of young people concerned about climate change?' and 'what do young people perceive as helpful and unhelpful in supporting their climate change concerns?'

A qualitative methodology was adopted, and semi-structured interviews were carried out with five 16- and 17-year-olds who identified as being concerned about climate change. Reflexive thematic analysis generated three main themes: 'This is really difficult'; 'On the other hand, positive change can happen'; and 'Strategic ways forward'. Interpretations suggested participants found the reality of the climate threat difficult and experienced a range of associated challenging emotions. However, most young people remained hopeful for the future and felt change could come with improved education and leadership. A number of influences were identified that supported the management of their climate change concerns: education focusing on empowerment; opportunities to take meaningful action; seeing climate care and compassion in people, systems, and organisations; adults as role models; opportunities for discussion; and connecting with other likeminded people. These influences highlighted implications for education settings, Educational Psychologists, Local Authorities, and government. Conclusions are discussed in relation to existing research and literature and the limitations of the study are described.

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# Abbreviations

| | |
|---|---|
| BACP | British Association for Counselling and Psychotherapy |
| BERA | British Educational Research Association |
| BPS | British Psychological Society |
| CYP | Children and young people |
| DfE | Department for Education |
| EP | Educational psychologist |
| EPS | Educational Psychology Service |
| ERIC | Education Resources Information Center |
| GCSE | General Certificate of Secondary Education |
| GDPR | General data protection regulation |
| IPA | Interpretative phenomenological analysis |
| IPCC | Intergovernmental Panel on Climate Change |
| LA | Local Authority |
| SLR | Systematic literature review |
| TA | Thematic analysis |
| TEP | Trainee educational psychologist |
| UK | United Kingdom |
| UNDP | United Nations Development Programme |
| UNESCO | The United Nations Educational, Scientific and Cultural Organization |
| UNICEF | United Nations International Children's Emergency Fund |
| USA | United States of America |
| WoE | Weight of Evidence |

# Chapter 1. Introduction

## 1.1 Rationale and aims of the study

Children and young people (CYP) are identified as being particularly vulnerable to the direct, indirect, and vicarious impacts of climate change (Sanson et al., 2019; Vergunst & Berry, 2022). Yet the majority of research exploring the psychological wellbeing impacts of climate change awareness has largely focused on the adult population (Burke et al., 2018; Léger-Goodes et al., 2022; Martin et al., 2022). Recent surveys (Save the Children, 2022; Votes for Schools, 2021) and developing evidence (Gislason et al., 2021; Vergunst & Berry, 2022), have indicated that climate change is an important issue for many CYP, and concepts including “climate change worry” and “eco-anxiety” are increasingly prevalent in the media and public discourse (Ojala et al., 2021). However, a deeper understanding of CYP’s experiences of such emotions and perceptions is lacking (Ojala et al., 2021), and little is known about their views concerning how they would like to be supported with their climate change thoughts and emotions (Baker et al., 2021; Martin et al., 2022). Consequently, there is a need to explore the views of CYP in the UK who are concerned about climate change alongside developing an understanding of how educational communities, including educational psychologists (EPs), can enhance supportive practice. By listening to the voices of CYP, it is hoped that this study will strengthen climate change concern understanding and provision.

## 1.2 Research approach

The researcher carried out semi-structured interviews with five 16- and 17-year-olds who identified as being concerned about climate change. Themes from the interviews were generated from patterns across the data using a reflexive thematic analysis (TA) approach (Braun & Clarke, 2022). An integral aspect of reflexive TA is the recognition of the centrality of the researcher at all stages of the study. The researcher is asked to continuously critique and

evaluate how their own context, values, feelings, and experiences may impact the research process (Braun & Clarke, 2022; Finlay, 2002; Terry & Hayfield, 2020). To support this, the researcher outlines their personal and professional interest (1.3) within the research area and provides a statement of positionality (1.4). Extracts of reflexive logs, kept as part of a research diary, feature throughout the study, demonstrating the researcher's reflections and considerations regarding their position within the research. Researcher reflexivity is further discussed in chapter 3, section 3.8.

## 1.3 Personal and professional interest

The researcher has held an interest in climate change and environmental issues since childhood. With the increase in youth climate movements and headlines indicating that climate change concern is having an impact on CYP's wellbeing (Gregory, 2021), the researcher was motivated to explore this area further. Supporting CYP's social, emotional, and mental health is a key aspect of the researcher's role as a trainee educational psychologist (TEP). However, there is currently a lack of support and guidance for EPs and educational staff in supporting children's wellbeing in relation to climate change.

As a TEP, the researcher instigated a climate change working group within their placement Local Authority (LA) Educational Psychology Service (EPS), established links with the LA climate change team, and is a member of the Climate Concerns and Educational Psychology Interest Group, comprised of EPs and TEPs across England and Wales.

The researcher believes that it is their moral and ethical responsibility, as both an adult, and as a TEP, to act in the face of climate change. Respect for the living world is mentioned as part of the ethical principle of responsibility within the British Psychological Society's (BPS) code of ethics and conduct (BPS, 2021a), suggesting that caring for the environment is perceived as ethical

practice for psychologists. Further, UNICEF (2015) state that children will “bear the brunt of climate change” and that “climate change will make existing inequalities even worse” (p.8). As a practitioner committed to promoting social justice and prioritising children’s interests, it seems imperative to be working in a way that recognises and addresses climate change’s predicted significant and unequal impact on younger generations (UNICEF, 2015). Whilst part of this action concerns the researcher taking steps to reduce their contribution to climate change through efforts both personally and professionally (such as reducing energy use and booking school visits in close proximity to minimise travel), carrying out research to gain young people’s views is a further way to address this responsibility. Appealing to educational and developmental psychologists, Allen (2020, p.1) captures the researcher’s views, “those of us working in this field need to seize the chance, perhaps the *only* chance, to make an important difference where we can”.

## 1.4 Statement of positionality

As described previously, the researcher has a longstanding interest in climate change and environmental concerns. While recognising the anthropogenic nature of climate change, the researcher attempts to minimise their environmental impacts by making climate-friendly lifestyle choices including using renewable energy and eating a plant-based diet. The researcher has participated in climate activism and recognises the need for collective action in addressing climate change challenges.

The researcher has experienced a range of feelings in relation to the environment and climate change including frustration at large-scale inaction, bewilderment at others’ apathy, hope as concern across society became more visible, and more recently, sadness and despair at the diminishing window of opportunity for meaningful action. The researcher’s engagement with climate change issues over the years has ebbed and flowed, with periods of disavowal, sandwiched between a strong desire to make a difference. These experiences

led the researcher to feel great empathy towards CYP who experience high levels of climate change concern.

Climate change is viewed as a political issue by the researcher who is critical of the failure of successive governments to prioritise the issue and take effective mitigation and adaptation action. It is recognised that these views will have influenced the direction of research.

The researcher recognises their own privilege and position in this study as a 43-year-old white British middle-class female with opportunities and resources to actively engage with climate movements and take personal climate-friendly actions. This includes having sufficient disposable funds to afford to travel by train to climate protests and demonstrations and having free time to attend local environment groups, talks, and events. The lack of representation within the climate movement is well documented, with the cause often portrayed as being white and middle class (Lastoweckyi, 2021). Again, the researcher is aware of their privilege and how they have felt comfortable entering predominantly white spaces.

Maintaining a commitment to reducing the environmental impact of the study has been important to the researcher. This included limiting the amount of printing onto paper, using recycled paper, and utilising public transport to travel to and from interviews.

The researcher also has a professional interest in strengths-based approaches (Bozic, 2013; Masten, 2019) and often integrates theories from positive psychology (Seligman, 1991, 1996) into their practice. They recognise that this interest will have helped to shape the research.

## 1.5 Climate change terminology

As the understanding and discourse around rising global temperatures has changed over time, the language used to describe this phenomenon has evolved. A brief overview of some key terminology is provided with an explanation of the terms adopted within this study.

*Global warming* was first used as a term in the 1970s and referred to the increases in global temperatures within the past 100-200 years caused by a rise in greenhouse gases. The term *climate change* became widespread following the creation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 (Sekhar, 2023). Climate change combined global warming with other observable changes to climate patterns, including extreme weather events while encompassing regional differences in long-term impacts. The term became popularised by the Republican party in the USA in the early 2000s, as climate change was perceived to be less frightening and catastrophic to the public than global warming (Bhutto, 2023; Mulkerrins, 2021), highlighting how the issue has been politicised. The term may be inadequate in reflecting the severity of the threat, as Bhutto (2023, para.8), writing about the recent devastating floods in Pakistan, describes, “climate change is such a soft word for the horrors that await us”.

In recent years, the term *climate crisis*, has become increasingly common and some argue reflects the urgency of climate change (Zeldin-O'Neill, 2019). Similarly, the term *climate emergency* signals a need for immediate action. Allen (2020) suggests that current terminology fails to acknowledge the role of human activity in causing the issue and proposes using the terms “anthropogenic climate change” or “human-induced climate change”.

Throughout the study, the term climate change is predominantly used to discuss the current global situation. This reflects the language used in much of the literature and aligns with IPCC terminology.

# Chapter 2. Literature review

## 2.1 Introduction to chapter

This chapter begins with a discussion regarding the concept of climate change at a global and UK level, including its relevance to CYP. A description of climate education within England follows before focusing on research and literature exploring adults' and children's emotional responses to climate change. The chapter then discusses findings concerning CYP's voice in relation to climate change before exploring three psychological theories with potential relevance to climate change concerns. Finally, the chapter presents a systematic literature review (SLR) of global research exploring CYP's views and feelings concerning the issue and outlines the rationale for the current research.

## 2.2 Climate change

Climate change is viewed as one of the greatest challenges of our time (United Nations, n.d.-a), with some describing it as the largest issue currently facing humankind (Davis & Challenger, 2009). Climate change can be described as long-term changes in weather patterns and temperatures (United Nations, n.d.-b) leading to increased intensity and frequency of extreme weather- and climate-related events and disasters (Costello et al., 2009). Severe droughts and water shortages, biodiversity decline, rising sea levels, flooding, heatwaves, and intense fires are some of the consequences of such changes

(IPCC, 2023). These events impact and threaten the lives and livelihoods of billions of people globally (IPCC, 2023).

While some changes to weather patterns may be natural, the anthropogenic nature of climate change is acknowledged within the scientific community (Lynas et al., 2021). Scientists agree that the rapid and widespread changes in the climate we experience today are primarily influenced by human activities such as the release of the greenhouse gas, carbon dioxide, during the burning of fossil fuels (United Nations, n.d.-b).

Although historically the global north[1] has contributed the most to current climate change, it is the global south that is disproportionately affected and more vulnerable to its impacts (Sanson & Bellemo, 2021; Vergunst & Berry, 2022). Climate change consequences are experienced differently by different nations, areas, communities, and social groups, with the most disadvantaged being more severely impacted (Levy & Patz, 2015; Nakat, 2023).

Despite decades of stark warnings from climate scientists and historic international agreements, (United Nations, 2015), current global actions remain inadequate to meet the existential threat of climate change (Burke et al., 2018; IPCC, 2023). Recent attention has focused on limiting the rise in global average temperatures to below 1.5 degrees Celsius above pre-industrial levels, the threshold many scientists agree would lead to irreversible damage if reached (IPCC, 2023). The sixth report from the IPCC (2023) stated if immediate and drastic action is taken to reduce greenhouse gas emissions,

[1] *The concept of global north and global south describes grouping countries by socio-economic and political characteristics. Developed countries are considered as being within the global north, with developing countries forming the global south (Glow Scotland, 2021).*

global warming could still be slowed but the window of opportunity is about to close.

*Reflexive log*

*When considering researching children's emotional responses to climate change, I was conscious of the fact that despite climate change impacts being felt more severely in countries in the global south, most research is being carried out in the global north. This led me to question whether we needed more WEIRD (Western, Educated, Industrialised, Rich, and Democratic) research within this topic and how I was contributing to the lack of diversity and representation within the climate change literature.*

## 2.3 Climate change in the UK

Whilst not experiencing the most severe consequences of climate change as observed in some global regions, impacts are still being felt within the UK, with the nation having experienced its' ten hottest years on record since 2003 (Met Office, 2023). Recent record-breaking heatwaves, wildfires, and drought significantly impacted health, infrastructure, agriculture, food production, and ecosystems (Climate Change Committee, 2023). Met office projections (Met Office, n.d.) suggest the UK will continue to see hotter and drier summers, warmer and wetter winters, and more regular extreme weather events. Sea level rises and coastal erosion, along with loss of species' habitats resulting in threats of extinction have also been recorded (Climate Change Committee, 2023).

Reflecting the global picture of variation in individual's vulnerability to climate change, research indicates disparities within the UK, with effects felt more

strongly by disadvantaged communities, implicating it as a social justice issue (Carbon Disclosure Project, 2023; Joseph Rowntree Foundation, 2014).

As direct impacts of climate change are felt more severely in other regions and countries around the world, indirect effects, including disrupted supply chains, climate migration, security threats, and impacts on finance industries, are likely to be felt within the UK (Nicholls & Kebede, 2012).

Although currently, the UK is not experiencing the severe and drastic climate-related events observed in some global regions, news and social media coverage enable such catastrophic events to be experienced vicariously (Léger-Goodes et al., 2022; Sanson et al., 2019), with information evoking a range of feelings including anger, sadness, worry, and despair (Maran & Begotti, 2021).

## 2.4 Climate change and CYP

CYP in the UK have grown up with the threat and reality of climate change as a constant backdrop. The UK government's commitment to climate change action and the creation of the IPCC in 1988 both took place before todays' CYP were born. With the effects of climate change expected to continue to increase in the future, children are at a greater risk than their parents of experiencing climate-related challenges such as disruption to infrastructure, malnutrition, and displacement (UNICEF, 2015). Disadvantaged children and their families are already more vulnerable to such risks due to reduced resources for coping and recovery (Benevolenza & DeRigne, 2019; UNICEF, 2015). For example, areas prone to severe flooding often intersect with high levels of poverty and deprivation and reduced access to basic services such as water and sanitation (UNICEF, 2015).

Due to their physiological immaturity, children have an increased risk to the physical health impacts of climate change such as disease, illness, and the onset of allergies (Garcia & Sheehan, 2016; Pacheco, 2020). Growing research indicating widespread worry about climate change in children suggests they will need support to manage and respond to these concerns (Burke et al., 2018).

## 2.5 Climate change education in schools in England

As an important issue that will affect their lives, CYP have a right to learn about climate change (Burke et al., 2018). Strengthening global climate education was a clear aim within the Paris Agreement (United Nations, 2015), highlighting the crucial role of climate education in enabling humankind to mitigate and adapt to climate change (Otto et al., 2020). However, an absence of climate change education in England has been noted (Greer et al., 2023), with only brief mentions of the issue in Geography and Science curriculums, and even then, only from key stage 3 onwards (Charlton-Perez, 2021). Furthermore, research suggests that school leavers have significant gaps in their climate change understanding (IPSOS, 2022). Taken together, these findings imply that UK climate change education as it stands is neither effective nor prioritised.

Promisingly, a recent government strategy (DfE, 2022) has identified climate education as a key area for action. As part of the proposals, the primary science curriculum aims to include a strong focus on nature, and new qualifications in natural history and environmental science will be introduced at GCSE and A-level, respectively. It is proposed that these changes will be supported by increased support, training, and resources for climate education, a welcome initiative as research by the youth-led Teach the Future campaign (2021) reported that seventy percent of over 7,000 UK teachers surveyed did not feel sufficiently trained to teach climate change.

Despite these reforms, the revised curriculum has been criticised for taking a narrow view of climate change (Dunlop & Rushton, 2022; Howard-Jones & Dillon, 2022), failing to explore issues such as social justice, and a lack of empowerment for young people (Howard-Jones & Dillon, 2022). This contrasts with the views of UK students and teachers who have argued for an action-oriented and empowering (BERA, 2021; Dunlop et al., 2022; Teach the Future, n.d.), cross-curricular climate education (BERA, 2021; Teach the Future, n.d.). Climate education research also highlights a need to focus on climate emotions (Baker et al., 2021; Dunlop & Rushton, 2022; Léger-Goodes et al., 2022), critical thinking, communication, and networking (BERA, 2021; Dunlop et al., 2022).

## 2.6 Emotional responses to climate change

While there is agreement and understanding of the impact of direct climate change events on physical health (Ma et al., 2022), the direct, indirect, and vicarious impact of climate change and discourse on adults' psychological wellbeing is becoming more widely recognised (Baker et al., 2021; Lawrance et al., 2021). The psychological and emotional toll of living through catastrophic climate related events including floods, drought, and extreme weather is increasingly documented (Cianconi et al., 2020; Clayton, 2020; Palinkas et al., 2020). Growing literature describes how indirect exposure to climate change and knowing about the imminent threats facing the planet can also lead adults to experience a range of challenging emotions including feelings of concern, anxiety, and loss (Cianconi et al., 2020; Clayton & Manning, 2018; Ma et al., 2022).

Surveys suggest that many adults in the UK are worried about climate change, although there are discrepancies regarding the extent and impact of such concern (BACP, 2020; Whitmarsh et al., 2022). Whitmarsh et al. (2022) noted that over three-quarters of those surveyed, which included people aged 16 and

over, were worried about climate change, with 46% identifying as “very” or “extremely” worried. Although high levels of concern were reported, only 4.6% felt that they were experiencing “climate anxiety” with higher figures being noted in the younger age groups and those with existing generalised anxiety. Many of those who experienced climate anxiety reported how this was a motivating factor for them to make pro-environmental behaviour changes to address climate change (Whitmarsh et al., 2022). Greater effects of climate change concern on UK adult’s wellbeing were noted in a survey by BACP (2020), as 55% of respondents agreed with the statement that climate change was having a negative impact on their mental health.

### 2.6.1 Terminology

In recent years, an increasing number of terms have been used to describe the feelings associated with the climate and planetary crises, including “eco-anxiety”, “solastalgia”, “eco-distress”, and “climate anxiety”, with many being used interchangeably. Appendix 1 summarises some of the common terms found within the literature.

While having the language to describe psychological responses associated with knowing about climate change can be helpful (Hickman, 2020), terms such as climate anxiety could have the misleading and inherent implication that these feelings are psychopathological and that the problem is located within the person (Sanson & Dubicka, 2022). Such a view could position climate anxiety as an illness to be “fixed” and the associated difficult feelings eradicated (Dodds, 2021; Lawton, 2019). On the contrary, many researchers and practitioners working within related fields view climate and eco-anxiety as a healthy and rational response to an existential threat (Crandon et al., 2022; Hickman, 2020; Verplanken & Roy, 2013).

It follows that climate anxiety should be viewed as something to be safely expressed and explored rather than removed (Dodds, 2021). A review of three studies with young adults in the USA and Europe noted differences in individual responses to global warming worry (Verplanken et al., 2020). Some participants found their worry to be unconstructive while many others noted benefits including the promotion of pro-environmental behaviour. The literature suggests that a degree of worry about climate change can be a helpful motivation, with Verlie et al. (2021, p.2) describing it as, “a valuable source of discomfort that can provide an important lens to help people re-evaluate what is important to them and find meaningful ways to inhabit the world.”

Hickman (2020) raises the possibility of reframing eco-anxiety to focus on the sense of connection, relationship, and love with the natural world by using terms such as *eco-compassion* and *eco-empathy*. These terms may more fully encompass the wider feelings experienced by some and could help to challenge the perception that such feelings need “fixing” (Hickman, 2020). While potentially supporting an individual’s acceptance and understanding of their climate related emotions (Hickman, 2020), it could be argued that this reframing ignores the severity and challenges associated with such feelings.

Throughout this study, adopted terms used by original authors are used when discussing their work. Similarly, when the views of young people are reported, the researcher adheres to the terminology used by the young people themselves.

*Reflexive log*

*Finding the right words to talk about the nature of my proposed research has been challenging. I have felt uncomfortable using the terms "eco- and climate anxiety". I felt that these located the problem within the person and pathologized a natural response to the threat facing humanity. I also noticed how "anxiety" suggested a narrow view of the climate emotions I was reading about and had myself experienced, leaving no space for anger, sadness, and hope. I wondered how my own experiences were influencing my response to the language used to talk about climate emotions. I felt more comfortable with the term "climate distress" as it could encompass a wider range of feelings. When I read Hickman's (2020) suggestion for a move towards terminology that acknowledges the care felt for the natural world, terms such as "eco-compassionate" sat well with me. However, when using such terms in discussion with others, I recognised the lack of shared understanding around such terms and how one could describe themselves as eco-compassionate without feeling upset or concerned about the climate. The focus of this study concerned young people who identified as being "concerned" about climate change, which I view as being different to those who identify or are identified as experiencing climate anxiety. Although I am still to find the appropriate words to discuss difficult climate related feelings, I remain reluctant to adopt eco- and climate anxiety.*

### 2.6.2 CYP's emotional responses to climate change

Research has indicated that the psychological wellbeing impacts of climate change may be felt more severely by CYP (Burke et al., 2018; Martin et al., 2022; Vergunst & Berry, 2022). This is not surprising given it is their futures

that are most at risk. It has been suggested that this increased vulnerability may be due to children's developing cognition skills, impacting their capacity to manage stress and uncertainty (Bartlett, 2008), while having minimal experience of coping with tension and uncertainty (Clayton et al., 2017). Children's dependency on adults and perceived lack of political and economic power may also contribute to heightened climate change-related emotions (Clayton et al., 2017; Martin et al., 2022).

Although research remains limited, there is mounting interest in how climate change awareness may impact CYP emotionally. Recent surveys have captured children's climate change views and provide an indication of the scale of CYP's related distress (BBC, 2020; Save the Children, 2022; Votes for Schools, 2021). A Votes for Schools survey (2021) of 46,045 children (mainly in the UK) aged between 4 and 18 years highlighted that 95% were concerned about climate change, and 73.5% thought that climate change would affect their rights. A further 89% felt that not enough is being done to address the issue. Findings from a UK BBC (2020) Newsround survey with 2,000 children aged 8 to 16 years provided further evidence that CYP recognise climate change as a concerning and serious issue as 73% of respondents shared that they were worried about the state of the planet. Climate change awareness affected some respondents' daily lives, and 17% disclosed that it had impacted their sleeping and eating behaviours. Additionally, young people have expressed feeling pressure and responsibility to "solve" climate change (Hickman, 2020; Young, 2019).

A longitudinal study with over 2,000 adolescents in Australia stated that 37% of participants had "high persistent" or "moderate" worry in relation to climate change (Sciberras & Fernando, 2022). Climate change worry, alongside hope has also been noted amongst children and adolescents in several Swedish studies (Ojala, 2012b, 2012c, 2013). In addition to worry, the majority of the 50 10- to 12-year-olds participating in Strife's (2012) interviews in the USA discussed feeling fear, anger, and sadness. Further, a small group of 32

educators surveyed in Australia perceived their students to be experiencing a range of emotions in relation to climate change including overwhelm, hopelessness, frustration, and anxiety (Verlie et al., 2021), although it is important to recognise that young people did not participate in the study and that these emotions were not necessarily named or identified by the children themselves. Further research indicates how young people's climate emotions are not solely in response to the threat of climate change, but also concern others' inaction and lack of care (Diffey et al., 2022; Hickman, 2020).

While providing an indication of young people's climate concerns, there are challenges to generalising findings from Australia, Sweden, and the USA to a UK context due to potential variations in how climate change is viewed across communities and differences in how climate change impacts are being experienced. For example, Australia has seen an increase in extreme weather over recent years (Readfearn, 2022), so it is important to consider how these experiences may have influenced children's worries.

In the UK, the impact of challenging climate emotions is being felt by mental health professionals: a 2020 survey indicated that over half of child and adolescent psychiatrists in England had seen CYP distressed about climate change (The Royal College of Psychiatrists, 2020). Halstead et al. (2021) detailed the emotional journey of an 11-year-old climate activist and co-author in the UK, who described feelings of anxiety, fear, sadness, frustration, and despair. Alongside challenging emotions, the activist also experienced more welcomed feelings of hope, self-belief, and empowerment (Halstead et al., 2021). This finding may link with Nicholsen's (2002) understanding of "binocular vision". Nicholsen (2002) applied Bion's (1984) binocular vision term, originally used as a way to describe a person's contrasting perspectives of the same situation, to environmental issues. This stance enables us to see the gravity and scale of the climate emergency whilst also recognising the significant work taking place to mitigate climate change impacts (Pihkala, 2018).

Utilising social-ecological systems theory (Bronfenbrenner, 1996), which posits that development is influenced by the interaction of a child's various systemic contexts, Crandon et al. (2022) theorised that influences at all levels of a child's social-ecological system may impact their climate change worries. Micro-systemic (family, peers) influences could include the nature of climate change discussion within a child's family, with suggestions that providing negative information without support may magnify fears (Crandon et al., 2022; Field & Lawson, 2008). The way climate change is framed and taught at school could influence the child's concerns at the level of the meso-system (school, community), with a lack of quality teaching leaving the child ill-equipped to know how to take action, contributing to feelings of helplessness (Crandon et al., 2022). At the exo-systemic level (government, media), the child may experience a sense of despair as they scroll through constant coverage of global environmental destruction (O'Brien et al., 2018). While the influence of a child's chrono-system is not explored by Crandon et al. (2022), it seems important to consider how changes and continuities over time may impact levels of climate worry. For example, within the UK, a rise in mental health difficulties in CYP was noted during the global pandemic (Nuffield Trust, 2022; Richard et al., 2023), and research has suggested that levels of anxiety in school-aged children have since remained high (DfE, 2023). The reasons underlying children's elevated mental health difficulties post-pandemic are not clear and could relate to an increased vulnerability to anxiety, the impact of distressing world events such as the Russia-Ukraine war, or the stressors associated with the current cost-of-living crisis.

While some have suggested that the global pandemic (Spisak et al., 2022) and the Russia-Ukraine war (Dickie & James, 2022) have overshadowed climate change, it is not clear whether climate change worry in CYP has been impacted by such events. However, the literature describing significant climate change worry is based on studies conducted before, during, and after the pandemic, suggesting that even at a time of competing issues, children's concerns about climate change remain. Further, one online UK study investigated 16- to 24-year-old's responses to the pandemic and climate change and noted that,

while the pandemic disrupted many aspects of young people's lives and caused upset, greater distress was experienced in relation to climate change (Lawrance et al., 2022).

Although emerging evidence suggests that many children around the world are concerned about climate change with some of these experiencing associated challenging emotions, it is important to note that CYP are not a homogenous group and variations exist in their emotional responses to climate change (Ojala, 2021). Earlier research indicates that some young people have little interest or concern regarding climate change (Hibberd & Nguyen, 2013), while others minimise the seriousness of climate change (Corner et al., 2015). However, these studies are 8 and 10 years old and it could be argued that climate change has become more visible in recent years and therefore, the studies may not reflect today's picture.

It is also likely that children's experiences and responses to climate change awareness will vary at different stages of their development (Burke et al., 2018; Sanson et al., 2018; Vergunst & Berry, 2022). Burke et. al (2018) suggested that older children and adolescents are more vulnerable to challenging emotional responses than younger children and adults, due to their increased awareness but limited control over their climate actions.

## 2.7 CYP's voice and climate change

The Convention on the Rights of the Child (UNICEF, 1989) describes how all children have a right to have their views heard and taken seriously. While there is consensus that climate change is an issue that has significant bearing on the futures of CYP, findings suggest they are not consistently listened to and involved in decision-making within this issue (Currie & Deschênes, 2016). Two recent surveys, one in the UK (BBC, 2020) and the other predominantly UK-based (Votes for Schools, 2021), highlighted a sense of CYP "not being

listened to" in relation to climate change. Hickman (2020) described an increase in children raising concerns about feeling "dismissed and belittled" (p.413) when they attempted to talk about their climate worries with adults, alongside uncertainty about who they could safely talk to about the issue. Creating a space for dialogue was found to be a source of emotional support for a group of young people in a Welsh school (Togneri, 2022). Moreover, research in Australia, using a self-selected sample of parents and educators, found that while most participants were willing to talk to children about climate change, they lacked confidence in knowing how to approach the issue in an honest, yet sensitive and hopeful manner (Baker et al., 2021).

The widespread Fridays for Future global school strikes gave many young people a voice (albeit temporarily) and an opportunity to share their climate change opinions and demand action from political leaders. Globally, as many as 6 million young people and their supporters joined the September 2019 action, with estimates of over 300,000 across the UK (Taylor et al., 2019). While being positioned by many as environmental "saviours" within climate change (Sanson et al., 2019), CYP also faced criticism for joining the movement and expressing their right to protest and speak out (Hickman, 2020; O'Hare, 2022). Hickman (2020) described a "backlash" against children's voices and attempts to silence their views on climate change.

## 2.8. Theoretical insights regarding climate change concerns

Applying psychological theories to CYP's climate concerns may help to develop understanding and provide implications for support. The following section outlines three related theories (coping, hope, and self-determination), drawing heavily from positive psychology, and describes how these may relate to existing research.

### 2.8.1. Coping theories and climate change concerns

Coping theories may be a useful approach to view CYP's responses to climate change. Coping is concerned with the cognitive or behavioural strategies we use to help manage a range of psychological threats or stressors (Lazarus & Folkman, 1984; Ojala, 2012b). Climate change concern and related difficult feelings are responses to a real and current threat, therefore, rather than use approaches which aim to reduce the perception of threats, such as cognitive behavioural therapy (Clayton, 2020), supporting CYP to feel more able to cope with the challenge seems important (Burke et al., 2018; Diffey et al., 2022; Pihkala, 2022a).

Lazarus and Folkman's (1984) cognitive theory of stress and coping identifies two main approaches to coping: problem-focused and emotion-focused. Problem-focused coping concentrates on ways to manage or change the problem or stressor (Lazarus & Folkman, 1984). In relation to the challenge of climate change, this could involve people researching ways to lessen their climate change impact or adopting daily practical pro-environmental behaviours (Ojala, 2013). Problem-focused strategies are often seen as a constructive way to manage stress and have been positively related to wellbeing (Clarke, 2006; Lazarus & Folkman, 1984). However, in some situations, particularly with largely uncontrollable issues, problem-focused coping has been linked to heightened stress and reduced well-being (Heyman et al., 2010).

Rather than addressing the problem itself, emotion-focused coping uses strategies to reduce or remove the difficult feelings associated with the problem (Lazarus & Folkman, 1984). In relation to climate change, such emotion-focused strategies could involve avoiding the issue by turning off the news, distancing oneself from the problem, and even denying its existence (Ojala, 2013), which mirror many of the psychological barriers to climate change mitigation within the literature (Gifford, 2011). The research exploring

emotion-focused coping on wellbeing is mixed, with one study indicating that this style of coping is useful when facing uncontrollable problems (Landis et al., 2007), although another warns that over-reliance can negatively impact wellbeing (Frydenberg, 2008).

Pihkala (2023) highlights that although emotion-focused coping strategies fail to tackle the underlying problem, they are always needed with existential issues such as climate change. He emphasises the importance of distancing in coping, distinguishing between distancing that supports self-care and the more ethically problematic disavowal (Pihkala, 2022b). Weintrobe (2013) posits that climate denial and disavowal may be linked to climate anxiety and although potentially helpful in the short-term, could lead to greater distress and anxiety over time.

Lazarus and Folkman's (1984) early work on coping has faced criticism for oversimplifying the distinction between coping styles and ignoring the potential overlap across the two strategies (Stanisławski, 2019). Park and Folkman (1997) extended the theory and included a third coping style, meaning-focused, for issues that cannot be solved immediately or need longer term committed action, which suggest its applicability to climate change. Meaning-focused coping aims to activate positive emotions rather than reduce or remove negative ones (Park & Folkman, 1997). The strategy involves drawing on values, beliefs, and existential goals to support coping and wellbeing in challenging situations and includes activities such as benefit and meaning finding, reordering priorities, and revising goals (Folkman, 2008). Meaning-focused coping realistically acknowledges the stress or threat but seeks reasons for optimism and purpose (Folkman, 2008; Wray, 2022). In a climate change context, meaning-focused coping involves the activation of positive emotions such as hope and trust in others and could include perceiving that societal climate change awareness is on the rise or that there will be greater action when the effects of climate change are more visible (Ojala, 2012b, 2012c, 2013).

#### 2.8.1.1 Climate change coping research

Ojala (2012b, 2012c, 2013) has extensively researched how Swedish CYP cope with climate change using these three transactional styles of coping. Studies indicated that when young people adopted problem-focused coping and concentrated primarily on individual climate actions, they may be more likely to experience heightened distress (Ojala, 2012b, 2012c, 2013), a finding supported by Clayton (2020). It may be that the scale and complexity of climate change renders it an overwhelming issue so that typically helpful coping strategies become ineffective (Ma et al., 2022). The impact of daily actions and pro-environmental behaviour changes are hard to observe, therefore, the problem doesn't appear to reduce, which could potentially add further stress.

However, when problem-focused coping was accompanied by meaning-focused coping strategies, young people's wellbeing increased (Ojala, 2012b, 2013). Studies also supported a link between meaning-focused strategies and improved levels of environmental self-efficacy (Ojala, 2013) and wellbeing (Ojala, 2012b, 2013). Ojala (2012b, 2012c) described how the ability for positive reappraisal within meaning-focused coping may act as a "buffer" to the distress and worry induced by problem-focused coping. Age differences in children's meaning-focused coping strategies have been observed: more trust was placed in scientists and less positive reappraisal was used by 11- to 12-year-olds than older children (Ojala, 2012c). Ojala (2022) speculated that this difference may be due to the complex cognitive abilities required to be able to recognise the positives alongside the negatives.

Interestingly, emotion-focused coping, by way of de-emphasising the seriousness of climate change, was found to link to lower levels of distress amongst a study of 293 12-year olds (Ojala, 2012b), highlighting its potential use in helping to regulate emotions. However, participants were also less likely to engage in pro-environmental behaviour and take action to help mitigate

climate change, drawing attention to the implications of relying on a coping strategy based on climate change denial, disavowal, or minimisation.

#### 2.8.1.2 Coping influences

While personal coping styles appear to be crucial in supporting the management of challenging situations, it seems important to consider how wider factors may influence coping styles.

Reactions of parents and peers to climate change may influence how a young person copes with their climate change worries (Ojala & Bengtsson, 2019). Meaning and problem-focused coping strategies were used more frequently by late adolescents in Sweden who perceived communication by friends and parents as positive, respectful, and solution-focused (Ojala & Bengtsson, 2019). In contrast, when others' communication was perceived to be trivialising of difficult emotions, dismissive, and pessimistic, more emotion-focused strategies were adopted (Ojala & Bengtsson, 2019).

Diffey et al.'s (2022) paper summarises the views of 23 adolescents and young adults concerned about climate change. They hypothesised how seeing genuine commitment and binding action by leaders, having their feelings validated, emotional support in education, and access to non-judgmental spaces to share feelings, would all support their ability to cope.

#### 2.8.1.3 Coping theories and climate concerns summary

While it seems that a meaning-focused coping approach combined with some problem- and potentially emotion-focused strategies may support CYP in managing their climate concerns, the extent to which a strategy is constructive is complex and likely context- and person-dependent (Ojala, 2013).

Furthermore, the current literature within this field has predominantly been carried out in Sweden and by the same researcher, indicating that further research and understanding is needed to be able to apply such findings to a UK context.

*Reflexive log*

*Engaging with coping theories led me to look closely at my personal strategies for coping with the climate emergency. I reflected on how I now feel I draw on a balance of meaning and problem-focused strategies, but I can recall times when problem-focused coping took prominence. I can relate to literature describing how an over-emphasis on personal actions can contribute to greater stress and recall how constantly seeking to reduce my environmental impact became difficult to manage and led to feelings of guilt at times when I didn't keep up with my expectations.*

### 2.8.2 Hope and hope theories in the face of climate change

#### 2.8.2.1 Defining hope

Hope has been shown to have an association with psychological wellbeing (Snyder et al., 1991) and our ability to cope with stressors and challenges (Barnum et al., 1998). With reports of CYP feeling a sense of hopelessness and pessimism regarding climate change (Stevenson & Peterson, 2016; Verlie et al., 2021), developing our understanding of how climate change hope can be built and sustained is crucial (Lueck, 2007; Ojala, 2023; Stevenson & Peterson, 2016).

Definitions of hope can vary, but, there appears to be consensus that this goes beyond simply wishing for an outcome (Lueck, 2007) and is different to optimism (Li & Monroe, 2018; Verlie, 2019). While optimism is a positive thought pattern that things will be alright (Verlie, 2019), hope is the process of setting goals with the belief that they can be pursued (Li & Monroe, 2018). Lazarus (1999) defines hope as consisting of both emotional and cognitive components. Accordingly, hope is perceived as an emotion that is connected to a cognitive appraisal pattern of wishing for "relief from a negative situation, or for the realization of a positive outcome when the odds do not greatly favor it" (Lazarus, 1991, p.282). Therefore, hope has a crucial role in supporting our ability to cope with challenging situations by looking towards solutions (Lazarus, 1999).

Snyder's (2000) hope theory connects hope with action. Accordingly, hope is perceived as combining a positive future goal with both agency (the belief in the ability to engage in solutions) and pathways (different ways to achieve goals) thinking.

#### 2.8.2.2 Climate change hope

Climate change hope is becoming an increasingly popular construct within much of the climate change discourse and non-academic writing (Macy & Johnstone, 2022). Despite its recent rise in popularity, it is not yet a well understood concept and related research is in its infancy (Li and Monroe, 2019).

Nevertheless, Snyder's (2000) view of hope may provide a helpful framework for thinking about climate change concerns. As the combined perceptions that individuals alone cannot make a meaningful difference (i.e. lack of agency) and existing climate solutions are inadequate (i.e. lack of pathways), are common within the narrative of climate hopelessness (van Zomeren et al.,

2010), Stevenson and Peterson (2016) suggest the connected aspects of agency and pathways in hope may act as an antidote to climate despair. The scope of climate change can result in the view that individual actions won't make a difference (Li & Monroe, 2019), and therefore lead to a lack of agency, possibly contributing to feelings of helplessness. By supporting a sense of agency and pathways thinking, hope, rather than pessimism and despair, may be promoted.

Snyder's (2000) emphasis on the role of agency within hope connects with Bandura's (2006) theory of human agency describing three distinct modes, individual, proxy, and collective. Individual agency describes the influence people have on matters within their control (Bandura, 2006). In relation to climate change this could include reducing their carbon emissions by taking public transport rather than driving or taking steps to reduce their consumption (Koskela & Paloniemi, 2023). Proxy agency concerns acting through others who are more able to secure the desired outcomes (Bandura, 2006) such as lobbying local politicians (Koskela & Paloniemi, 2023). The third mode, collective agency, describes people getting together to combine their resources, skills, and knowledge (Bandura, 2006), and could take place at a family, organisational, or international level (Koskela & Paloniemi, 2023).

Research indicated that knowledge of personal climate-friendly actions (Ojala, 2012a), a belief in their ability to take meaningful action (Li & Monroe, 2019), and learning about solutions (Li & Monroe, 2019; Togneri, 2022), supported young people's climate hope, providing some support for hope theory in the context of climate change. If agency can promote hope, it seems important to explore ways in which young people's climate agency can be developed. Interviews with eight students who attended the Youth Climate Strikes in Poland, highlighted how their sense of agency was supported through climate activism engagement (Budziszewska & Głód, 2021), suggesting the significance of knowing about and participating in action.

It is important to recognise that the work of Lazarus (1991) and Snyder (2000) was originally developed to focus on individual and often health-related issues, rather than global climate change and may have limitations when being applied in such a context. In response, Ojala (2012a, 2015) developed a definition of climate change hope, as captured by the Hope Concerning Climate Change Scale for adolescents. This describes climate hope as being comprised of three aspects: trust in our own ability to influence climate change problems, trust in others to do so, and positive reappraisal (thinking differently about climate change and activating hope). Trust in our own ability connects with Snyder's (2000) focus on agency as discussed earlier. Trust in others' ability and a desire to take meaningful action was noted to foster American high school students' sense of climate hope (Li & Monroe, 2019), providing some support for Ojala's (2012) description of climate related hope. Moreover, Ojala (2012c) also noted how hope across participants from late childhood to early adulthood was predominantly evoked through meaning-focused coping strategies, aligning with the positive reappraisal aspect of hope.

#### 2.8.2.2.1 Types of climate hope

Researching hope with Swedish senior high school students, Ojala (2015) identified two kinds of climate change hope: constructive and denial-based. Constructive hope is based on the belief that action will be taken to address climate change, whereas hope based on denial de-emphasises the seriousness of the threat and may involve climate scepticism (Ojala, 2012a, 2015). Hope type was found to be related to Swedish high school students' perceptions of teachers' climate change responses and communication style (Ojala, 2015). Greater constructive hope was noted in students who viewed their teachers as accepting and respectful of their challenging climate emotions while maintaining a positive, solution-oriented outlook (Ojala, 2015). Denial-based hope was expressed more frequently by students who felt that their teachers failed to take their difficult climate feelings seriously and viewed societal problems negatively (Ojala, 2015).

Similar concepts to constructive hope have been explored in non-academic writing and within work with adults (Macy & Johnstone, 2022). The concept of active hope, developed to support work around environmental issues including climate change, describes an ongoing practice where people become active participants in bringing about their hopes (Macy & Johnstone, 2022).

#### 2.8.2.2.2 Limitations of hope

While literature suggests that constructive hope may provide support in coping with climate change (Ojala, 2012a, 2012c, 2017, 2023) some have expressed caution about placing too much emphasis on the concept, warning against the potential for developing unrealistic optimism (McGeer, 2004; Ojala, 2017) and highlighting the need to ensure an exploration of the full range of climate feelings (Chapman et al., 2017; Todd, 2020). Furthermore, hope is a complex and multidimensional concept (Li & Monroe, 2018) and its relationship with climate change needs further study.

### 2.8.2.3 Hope theory and climate concerns summary

Few studies have yet to explore the notion of climate change hope and its potential role in supporting climate change concerns within both adult and CYP populations. Similar to the climate coping theory evidence base, existing research has focused on young people in Sweden and has been conducted by the same researcher, suggesting the need for further investigation. Nevertheless, it seems important to consider and explore how hope can be fostered to help people move beyond despair and powerlessness to a position where they feel able to take meaningful action and contribute to climate solutions.

### 2.8.3 Self-determination theory and climate change concerns

Although not often discussed within the climate change literature, self-determination theory may be a further valuable model to develop an understanding of children's emotional wellbeing in relation to the issue. As a theory of motivation and personality, the self-determination framework describes how basic, universal, and innate psychological needs must be satisfied for humans to experience personal wellbeing and proactively manage threats and stressors (Deci & Ryan, 2000; Ryan & Deci, 2017). Deci and Ryan (2000) describe these essential needs as *autonomy, relatedness*, and *competence*. Autonomy relates to people's sense of self-determination achieved through feeling in control of their lives, behaviours, and goals, and can be supported through having choice and the ability to make decisions. Relatedness concerns a sense of belonging and connection with others, and is supported through caring, safe, and inclusive relationships. Competence describes feelings of efficacy, and concerns our knowledge, skills, and achievements in managing our lives and environment. When one or more of these psychological needs are impeded, wellbeing, along with motivation, is diminished (Deci & Ryan, 2000).

One study (Wullenkord et al., 2021) exploring anxiety and climate change surveyed German-speaking adults' sense of autonomy, relatedness, and competence using a Basic Psychological Needs Scale (Sheldon & Hilpert, 2012), developed in line with self-determination theory. Findings suggested that lower satisfaction of these basic psychological needs correlated with greater climate anxiety (Wullenkord et al., 2021). However, overall, climate anxiety was reported to be low amongst respondents and the researchers noted weaknesses in the climate anxiety scale adopted (Wullenkord et al., 2021).

#### 2.8.3.1 Autonomy, CYP, and climate change

Due to their age, CYP can be viewed as lacking climate autonomy, as they are largely reliant on their parents and unable to make many climate related decisions (Ojala, 2013). Viewing this through a lens of self-determination theory, having limited power over climate choices may affect CYP's sense of wellbeing. Powerlessness has been defined as "a lack of autonomy and participation", (Ashforth, 1989, p.207) and is noted in the emerging literature describing young people's climate related emotions (Diffey et al., 2022). Participatory research which explored environmental sustainability education indicated that feelings of powerlessness were heightened when young people lacked opportunities to participate in environmental decision-making within their educational settings (Dunlop & Rushton, 2022). This suggests that children's climate autonomy, and therefore wellbeing, may be supported by involvement in climate related decision-making.

#### 2.8.3.2 Relatedness, CYP, and climate change

According to self-determination theory, relatedness and belonging are basic needs that involve a sense of connection and support with others (Ryan & Deci, 2017). This suggests that it is vital for the wellbeing of those of us worried about climate change to be able to connect with other people holding similar concerns. The importance of connecting with likeminded others in supporting one young UK climate activist's identity and sense of belonging is captured by Halstead et al. (2021) when they described how her worry lessened when she was with other environmentalists. Similarly, collective processes and the associated sense of belonging these provided were found to be a source of support for young activists in Poland (Budziszewska & Głód, 2021), while young people in New Zealand (Nairn, 2019) felt a sense of relief at sharing the climate responsibility with others.

In contrast, the challenges related to holding different views and the subsequent disconnection and unrelatedness have also been recently discussed (Diffey et al., 2022; Eames et al., 2018). Young activists expressed the dilemma of opening up to family, friends, and colleagues due to the fear of responses from those with differing environmental views (Diffey et al., 2022).

#### 2.8.3.3 Competence, CYP, and climate change

Competence and efficacy, feeling capable and effective in one's actions, is the third basic need described in self-determination theory and is linked to our feeling of *self-efficacy*, the belief in our ability to succeed (Cook & Artino Jr, 2016). Bandura's (1997) self-efficacy theory, part of his wider social-cognitive theory (Bandura, 1986), posits self-efficacy as being the foundation of wellbeing, motivation, aspiration, and accomplishments. Accordingly, our functioning in life is affected by both our abilities and our perception of those abilities (Bandura, 1977, 1997), therefore, individuals and groups only tend to act to solve a problem when they believe that their individual or collective actions can make a difference (Bandura, 1997). Due to the immense scale and potentially overwhelming nature of climate change, it is understandable that many people may feel tackling climate change is beyond their abilities. In relation to climate change concerns, it follows, when viewed from a self-determination stance, that we need to feel that we know about and understand how our actions can make a difference to climate change, and that we are able and equipped to carry out these actions. Research suggests that these two criteria are not always fulfilled, with young people demanding a more empowering climate education as discussed in 2.5 (BERA, 2021; Dunlop et al., 2022; Teach the Future, n.d.).

Halstead et al. (2021) described how one climate activist showed high levels of self-efficacy as she recorded, "I believe in myself to make a difference and I know that what I am doing will make a change" (p.714). Engagement in climate action has been suggested as a way to promote young people's

climate self-efficacy (Sanson et al., 2019). Bandura and Cherry (2020) described how engaging in environmental youth projects ignited some children's climate self-efficacy and helped them to move from sadness and despair to feeling that they could make a meaningful difference.

The concept of self-efficacy within a climate change context is complex. Bandura (1997) highlights the crucial role of feedback within efficacy, with positive performance feedback strengthening feelings of efficacy. However, with an issue such as climate change, feedback is unlikely to be visible, measurable, or immediate, which may impact subsequent feelings of self-efficacy.

#### 2.8.3.4 Self-determination theory and climate concerns summary

Emerging findings indicate that self-determination theory may be a useful framework to understand children's climate concerns and highlight appropriate interventions to support their wellbeing. Self-determination theory, applied within a climate change concern context, suggests that CYP need to have some climate autonomy, experience relatedness with likeminded others, and have a sense of competence and efficacy in their abilities to make a difference. When climate change concerns are impacting wellbeing, it may be helpful to consider how each of these three basic psychological needs are being met and how they can be further enhanced. However, it is evident that further research is needed to explore the utility of self-determination theory within the context of climate concerns.

### 2.8.4 Limitations of theoretical insights

While the previously discussed theories with links to positive psychology may have potential utility in supporting understanding of CYP's climate concerns, the researcher recognises the limitations associated with the wider field. Early

positive psychology faced criticism for relying solely on positivist research (Friedman, 2008), attempting to reduce complex human phenomena to simple terms (Wong & Roy, 2017), and ignoring context and culture (Mead et al., 2019; Wong, 2016). However, developments within the field have now addressed some of these drawbacks (Wong & Roy, 2017) and positive psychology qualitative research exists (Friedman, 2008; Rippstein-Leuenberger et al., 2017). The researcher acknowledges the need for taking a holistic approach to understanding and supporting CYP and, if the theories described were thought to be applicable, would endorse integrating these into a wider approach such as the social-ecological systems framework (Bronfenbrenner, 1996).

## 2.9 Systematic Literature Review

### 2.9.1 Rationale for review and review question

As described within this chapter, recent surveys and emerging evidence indicate that many CYP are experiencing climate change related challenging thoughts and feelings. However, there is a lack of a deeper understanding about their experiences of such emotions and perceptions. A SLR was therefore carried out, utilising primary studies that focused on the voices of CYP and their views, feelings, and experiences in response to climate change. Systematic reviews are attempts to answer research questions by reviewing, collating, and synthesising a number of studies on a specific theme (Andrews, 2005).

The review question asks, "*What does the literature indicate about the views, feelings, and experiences of CYP in response to climate change?"*

### 2.9.2 Review process

The current SLR followed Gough's (2007) staged structure to systematic review completion, as shown on page 49 (Figure 2.1).

Prior to searching for studies, the reviewer formulated the review question and defined the inclusion criteria, as shown below in Table 2.1. As the review question explores children's views and experiences, relevant study designs could include qualitative studies such as interviews and focus groups, as well as quantitative studies including surveys and questionnaires, which gather information about people's views (Petticrew & Roberts, 2006).

Table 2.1 Inclusion and exclusion criteria for selected studies

| | Inclusion criteria | Exclusion criteria | Rationale |
|---|---|---|---|
| 1. Type of publication | Peer-reviewed and published study with full text accessible | Non-peer-reviewed journals, dissertations and other grey literature and studies | Ensures higher methodological quality, increasing trustworthiness of the research process |
| 2. Date of study | Study published between 2017 – 2022 (Later search included 2023) | Study published prior to 2017 | Ensures studies are recent and relevant |
| 3. Language | Study is published in the | Study is not published in the | Ensures the reviewer |

| | Inclusion criteria | Exclusion criteria | Rationale |
|---|---|---|---|
| | English language | English language | understands the study.<br>Accurate translation from original language is not needed. |
| 4. Type of study | Quantitative, qualitative, and mixed methods primary studies | Study is not a primary study | Ensures review includes relevant studies using first-hand data |
| 5. Participants | Study includes children up to 18 years old | Study does not include children under 18 years old.<br>Study includes people over 25.<br>Study solely includes the educators, parents and caregivers of children and young people | Review is exploring children and young people's views, feelings, and experiences |
| 6. Focus of study | Study incorporates the feelings, views and/or experiences of children and young people | Study solely concerns children's climate change awareness, understanding or behaviour without | Review question is exploring children and young people's views, feelings and experiences |

| | Inclusion criteria | Exclusion criteria | Rationale |
|---|---|---|---|
| | around climate change | exploring their views, feelings, or experiences | |

### 2.9.3 Literature search

A database search using SCOPUS, Web of Science, and Education Resources Information Center (ERIC) was conducted on 11th July 2022. ERIC was chosen for its education focus and SCOPUS and Web of Science were selected due to being multidisciplinary databases. To ensure that review findings were current, the database and soft searches were repeated on 6th April 2023.

Appendix 2 displays the search terms used. In accord with the review question, the main search categories included were climate change, children, and views, feelings, or experiences. Variations for each category were included due to the range of potential terms used to describe each one. The search terms were combined using “AND” in order to obtain a comprehensive and relevant literature search. Following preliminary scoping searches, a fourth term for university students was used and combined with “NOT” to limit studies to include young people under 18 years of age.

Database tools were utilised where possible to adapt the search to generate articles published in the English language and in peer reviewed journals, in line with the inclusion criteria. Searches were limited to keywords, abstract, or topic, depending on each database’s search options. Filters were applied to

limit the search publications by date, from 2017 to 2022, with the later search extending to 2023.

Further soft search strategies of reference chaining and a hand search of three relevant journals were conducted: *Journal of Environmental Psychology, Environment Education Research,* and a *Special Issue of Child and Adolescent Mental Health* focusing on climate change. Results from the initial database (*n* = 192) and soft searches (*n* = 15) were combined. Duplications led to the removal of 14 studies and 129 studies were removed after title screening primarily due to not meeting the inclusion criteria concerning the study's focus on the feelings, views and/or experiences of children and young people around climate change. Abstract screening using the inclusion and exclusion criteria resulted in the removal of a further 37 studies (Appendix 3). A full text review was conducted on the remaining 27 studies and 12 studies were removed in line with the exclusion criteria (Appendix 4). Figure 2.2 outlines the systematic literature search process. The 15 initial studies that met the inclusion criteria were selected for analysis and are detailed in Table 2.2.

The repeated search in April 2023 resulted in the identification of a further study meeting the inclusion criteria, totalling 16 studies in the final review. The 16th study was added to the table of studies (Table 2.2).

Figure 2.1 Stages of review (Gough, 2007)

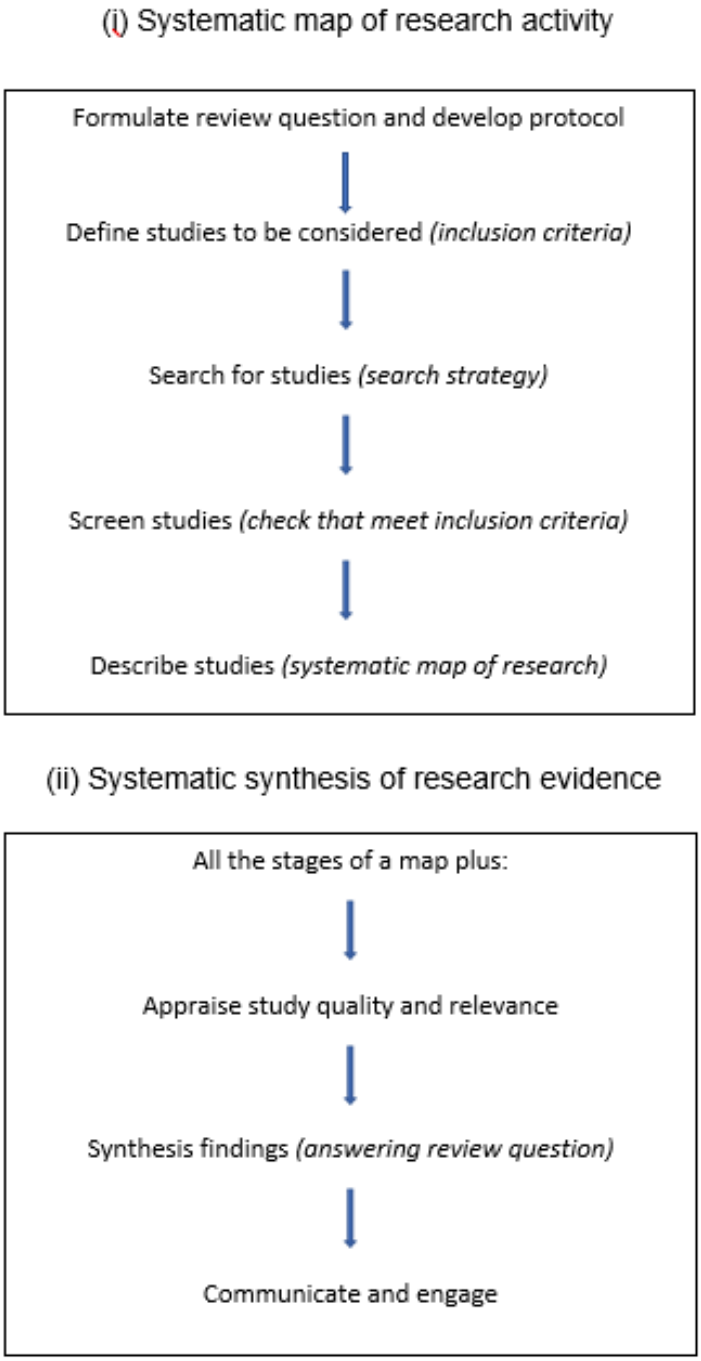


Figure 2.2 Flow diagram of the original literature search and screening process

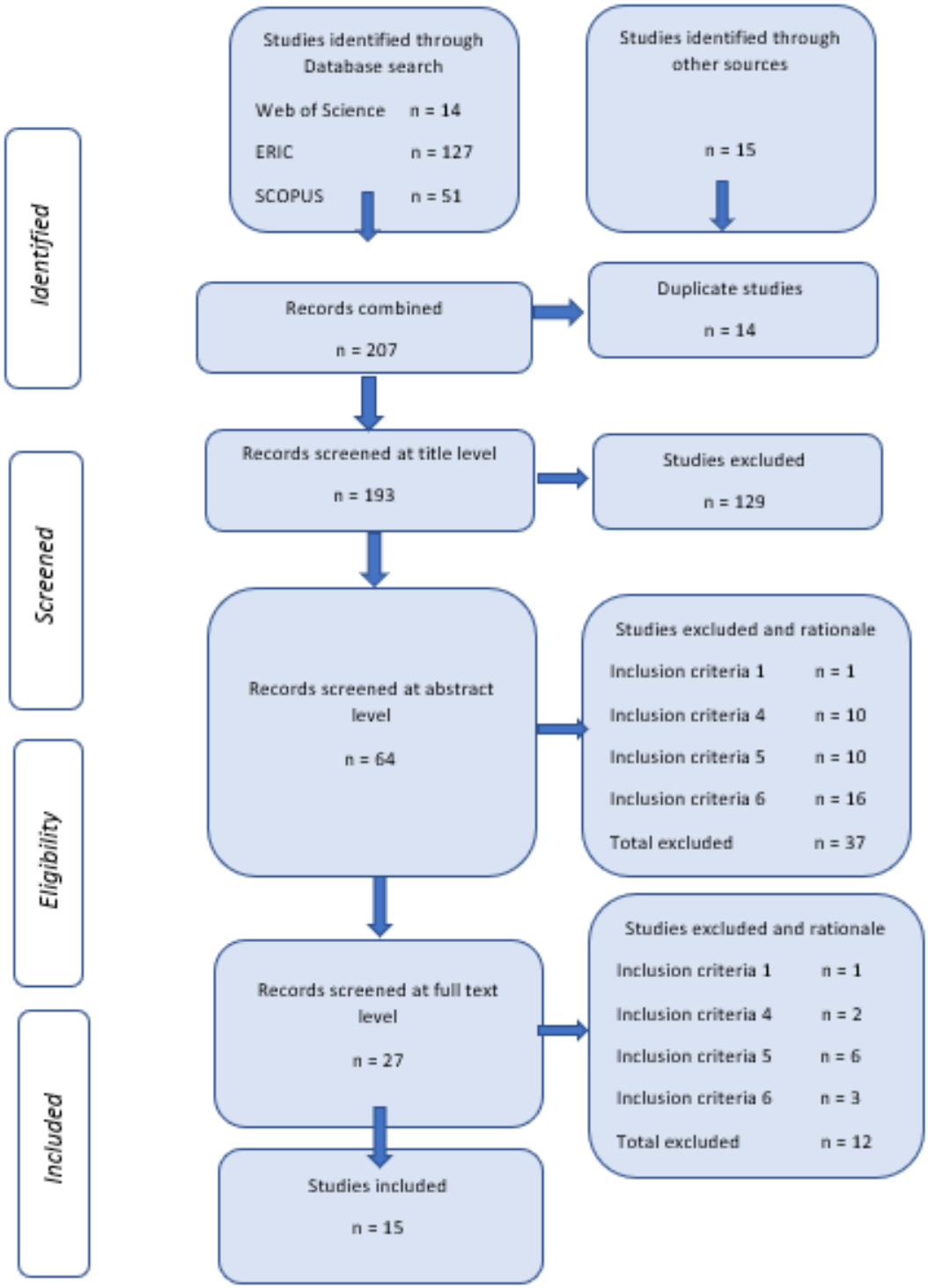


Table 2.2 Studies included in review

| Full study reference |
| --- |
| Harker-Schuch, I., Lade, S., Mills, F., & Colvin, R. (2020). Opinions of 12 to 13-year-olds in Austria and Australia on the concern, cause and imminence of climate change. *Ambio*, 50(3), 644–660. |
| Hermans, M., & Korhonen, J. (2017). Ninth graders and climate change: Attitudes towards consequences, views on mitigation, and predictors of willingness to act*. International Research in Geographical and Environmental Education,* 26(3), 223–239. |
| Herrick, I., Lawson, M. A., & Matewos, A. M. (2022). Through the eyes of a child: Exploring and engaging elementary students' climate conceptions through photovoice. *The Educational and Developmental Psychologist*, 39(1) |
| Hickman, C. Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *The Lancet. Planetary Health*, 5(12), e863–e873. |
| Karsgaard, C. & Davidson, D. (2021). Must we wait for youth to speak out before we listen? International youth perspectives and climate change education. *Educational Review* (Birmingham), ahead-of-print, 1–19. |
| Lawson, D. F, Stevenson, K. T., Peterson, M. N., Carrier, S. J., Seekamp, E., & Strnad, R. (2019). Evaluating climate change behaviors and concern in the family context. *Environmental Education Research*, 25(5), 678–690. |
| Littrell, M. Tayne, K., Okochi, C., Leckey, E., Gold, A. U., & Lynds, S. (2020). Student perspectives on climate change through place-based filmmaking*. Environmental Education Research*, 26(4), 594–610. |
| McDonald-Harker, C., Bassi, E. M., & Haney, T. J. (2022). “We need to do something about this”: Children and youth’s post-disaster views on climate change and environmental crisis. *Sociological Inquiry,* 92(1), 5–33. |
| Orlowski, P. (2020) Adolescent perspectives on climate change in an era of economic uncertainty: Eschewing neoliberalism in Nelson, British Columbia. *International Journal for Talent Development and Creativity*, 1(1-2), 29-46. |

| |
|---|
| Parry, S., McCarthy, S. R., & Clark, J. (2022). Young people's engagement with climate change issues through digital media – a content analysis. *Child and Adolescent Mental Health*, 27(1), 30–38. |
| Ratinen, I., & Uusiautti, S. (2020). Finnish students' knowledge of climate change mitigation and its connection to hope. *Sustainability*, 12(6), 2181. |
| Stevenson, K., Peterson, M. N., & Bondell, H. D. (2019). The influence of personal beliefs, friends, and family in building climate change concern among adolescents. *Environmental Education Research*, 25(6), 832–845. |
| Thompson, R., Fisher, H. L., Dewa, L. H., Hussain, T., Kabba, Z., & Toledano, M. B. (2022). Adolescents' thoughts and feelings about the local and global environment: A qualitative interview study. *Child and Adolescent Mental Health,* 27(1), 4–13. |
| Trott, C. (2020). Children's constructive climate change engagement: Empowering awareness, agency, and action. *Environmental Education Research*, 26(4), 532–554. |
| Trott, C. (2022). Climate change education for transformation: Exploring the affective and attitudinal dimensions of children's learning and action. *Environmental Education Research*, 28(7), 1023–1042. |
| Added in April 2023: |
| Finnegan, W. (2022). Educating for hope and action competence: A study of secondary school students and teachers in England*. Environmental Education Research*, volume-ahead of print, 1-20. |

## 2.9.4 Results

### 2.9.4.1 Quality Appraisal: Weight of Evidence

Gough's (2007) Weight of Evidence (WoE) framework was employed to assess the quality of each study. The WoE framework critically evaluates studies across three main dimensions: methodological quality (WoE A), methodological relevance (WoE B), and relevance to the review question (WoE C). WoE D, the average of the three weightings, was calculated to give an overall judgement of each study's quality of evidence in relation to the review question (Gough, 2007).

WoE A was evaluated using the Mixed-Methods Appraisal Tool (MMAT) (Hong et al., 2018) due to its application to appraise qualitative, quantitative, and mixed methods research. Details of the tool can be found in Appendix 5 together with each study's ratings and completed protocols.

Assessment for WoE B and WoE C used criteria developed by the reviewer. The related criteria and ratings for these can be found in Appendices 6 and 7 respectively. Table 2.3 presents the summary WoE judgements for each of the 16 studies included in this review. Final judgements and overall quality appraisal are also discussed in section 2.9.5.1.

Table 2.3 WoE ratings for each study across all dimensions

| Study | WoE A Methodological quality | WoE B Methodological relevance | WoE C Relevance of evidence to review question | Overall WoE D Overall weighting |
|---|---|---|---|---|
| Harker-Schuh et al. (2020) | Some methodological flaws<br>Criteria partially met | Low | High | Medium |
| Hermans & Korhonen (2017) | Some methodological flaws<br>Criteria partially met | Low | High | Medium |
| Herrick et al. (2022) | Few methodological flaws<br>Criteria met | High | Medium | High |
| Hickman et al. (2021) | Few methodological flaws<br>Criteria met | Low | High | Medium |
| Karsgaard & Davidson (2021) | Few methodological flaws<br>Criteria met | Medium | Medium | Medium |
| Lawson et al. (2019) | Some methodological flaws<br>Criteria partially met | Low | Low | Low |
| Littrell et al. (2020) | Some methodological flaws<br>Criteria partially met | Medium | Medium | Medium |
| McDonald-Harker et al. (2022) | Few methodological flaws<br>Criteria met | High | Medium | High |

| Study | WoE A Methodological quality | WoE B Methodological relevance | WoE C Relevance of evidence to review question | Overall WoE D Overall weighting |
|---|---|---|---|---|
| Orlowski (2020) | Some methodological flaws<br>Criteria partially met | High | Medium | Medium |
| Parry et al. (2022) | Some methodological flaws<br>Criteria partially met | Medium | Low | Medium |
| Ratinen & Uusiautti (2020) | Some methodological flaws<br>Criteria partially met | Low | High | Medium |
| Stevenson et al. (2019) | Some methodological flaws<br>Criteria partially met | Low | Medium | Medium |
| Thompson et al. (2022) | Few methodological flaws<br>Criteria met | High | Medium | High |
| Trott (2020) | Some methodological flaws<br>Criteria partially met | High | Medium | Medium |
| Trott (2022) | Some methodological flaws<br>Criteria partially met | High | Medium | Medium |
| Added in April 2023: | | | | |

| Study | WoE A Methodological quality | WoE B Methodological relevance | WoE C Relevance of evidence to review question | Overall WoE D Overall weighting |
|---|---|---|---|---|
| Finnegan (2022) | Some methodological flaws Criteria partially met | Low | Low | Low |

The following section describes the findings from the 16 studies identified. Data from a total of four qualitative, seven quantitative, and five mixed method studies were analysed. Due to the variation in the types of studies identified, a results-based convergent synthesis design (Noyes et al., 2019) was adopted. As such, qualitative and quantitative data were analysed separately and then combined to form a summary.

#### 2.9.4.2 Qualitative data extraction

Key characteristics and data, including information regarding the participants, methodology, and relevant key findings/themes, were systematically extracted from each of the identified qualitative studies and are tabulated in Appendix 8. Relevant qualitative aspects of the mixed method studies were also included.

#### 2.9.4.3 Qualitative review

##### 2.9.4.3.1 Participants

Out of a review total of 13,082 participants, 207 were included in the four qualitative studies, with sample sizes ranging from 10 (Orlowski, 2020) to 99

(Karsgaard & Davidson, 2021). The majority involved older children at secondary or high school, with one study including participants aged from 5 to 17 years (McDonald-Harker et al., 2022). Two of the studies (Orlowski, 2020; Thompson et al., 2022) reported a higher number of females than males in the sample, while one noted an even gender representation (McDonald-Harker et al., 2022). No gender information was provided for one study (Karsgaard & Davidson, 2021).

A further 217 participants were included in the five mixed method studies, with sample sizes in the range of 22 to 55. Two studies noted a higher percentage of female than male participants (Littrell et al., 2020; Parry et al., 2022), one study included a higher percentage of males (Herrick et al., 2022), and the remaining two had similar numbers of male and female participants (2020, 2022). Ages of participants ranged from 10 to 25 years.

Participants in six studies self-selected to be part of the research and were aware of the study topic (Littrell et al., 2020; Orlowski, 2020; Parry et al., 2022; Thompson et al., 2022; Trott, 2020; Trott, 2022), with children in a further study either volunteering or being nominated by a teacher (Karsgaard & Davidson, 2021). Children in Herrick et al.'s (2022) study participated as part of their usual class at school and information about the recruitment process in the final study is lacking (McDonald-Harker et al., 2022).

#### 2.9.4.3.2 Data collection

All four qualitative studies and one mixed methods study (Herrick et al., 2022) used semi-structured interviews to collect data, and Karsgaard & Davidson (2021) also used student's blog assignments. Four of the mixed methods studies incorporated open-ended question into surveys (Herrick et al., 2022; Littrell et al., 2020; Parry et al., 2022; Trott, 2020) and Trott (2020, 2022) utilised focus groups.

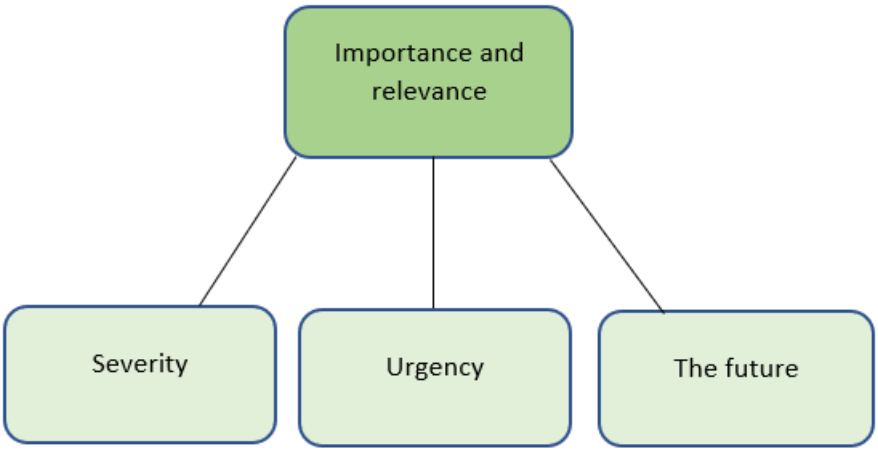
#### 2.9.4.3.3 Research settings

Two studies were based in Canada (McDonald-Harker et al., 2022; Orlowski, 2020), one study took place in the UK (Thompson et al., 2022), and the fourth (Karsgaard & Davidson, 2021) was carried out virtually across 13 countries (Brazil, Canada, China, Colombia, Ghana, India, Indonesia, Kenya, Mexico, Peru, Slovenia, the UK, and the USA). Mixed method studies took place in the USA (Herrick et al., 2022; Littrell et al., 2020; Trott, 2020; Trott, 2022) and the UK (Parry et al., 2022).

#### 2.9.4.3.4 Qualitative synthesis

Repeated reading of the "results" or "findings" sections with relevance to the review question, including quotes and extracts by CYP, led to the generation of sub-themes for each qualitative study. Sub-themes with shared concepts and common features were synthesised to form four cross-study themes: *Importance and relevance, Thoughts and feelings, Information, and Action, agency, and engagement*. Each theme is discussed below. Appendix 9 outlines the key themes, relevant sub-themes, related studies, and corresponding illustrative extracts.

#### *2.9.4.3.4.1 Theme 1: Importance and relevance*



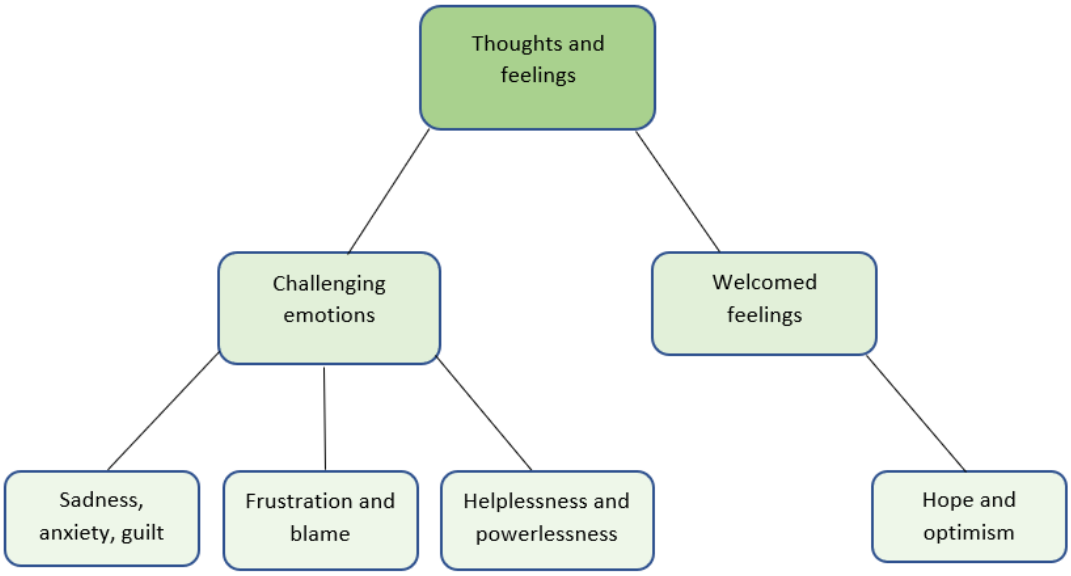

The issue of climate change was viewed as important and relevant by participants across all studies. Climate change's severe nature was raised in five studies. Participants in Littrell et al.'s (2020) study described the issue as "very important", "extreme" and "hazardous" (p.600). Further ideas expressed included how climate change could "drastically affect", and possibly "kill" our planet (Littrell et al., 2020, p.600). The concept of planetary destruction was shared by participants in further studies, "Climate change is gonna destroy the planet if we don't do anything about it" (Herrick et al., 2022, p.107) and, "If we don't act, the human species/planet will die" (Karsgaard & Davidson, 2021, p.12).

A sense of urgency and running out of time was evident in all studies as captured by one participant in Thompson et al.'s (2022) study, "There's a sense that the world is starting to become, not necessarily dying, but dying for us. As in we won't be able to live in it for much longer…" (p.9).

The sub-theme of *The future* featured in six of the studies (Herrick et al., 2022; Karsgaard & Davidson, 2021; McDonald-Harker et al., 2022; Orlowski, 2020; Thompson et al., 2022; Trott, 2022) with many children expressing concern

and uncertainty for their own future, that of the next generation, and for the planet.

#### *2.9.4.3.4.2 Theme 2: Thoughts and feelings*




The theme of *Thoughts and Feelings* was noticeable across eight of the nine studies (Herrick et al., 2022; Karsgaard & Davidson, 2021; McDonald-Harker et al., 2022; Orlowski, 2020; Parry et al., 2022; Thompson et al., 2022; Trott, 2020; Trott, 2022). Several studies explored the presence of difficult and challenging emotions (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022; Trott, 2022). Climate change was viewed as being sad and depressing (Parry et al., 2022; Thompson et al., 2022; Trott, 2022), with feelings of grief (Karsgaard & Davidson, 2021), fear (Karsgaard & Davidson, 2021; Trott, 2022), and anxiety (Parry et al., 2022; Trott, 2022) also shared by participants. Three studies noted how guilt and shame were commonly expressed (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022), as one participant described, “in some ways (I’m) ashamed to be human, looking at what we’re doing to our planet” (Parry et al., 2022, p.33). Feelings of guilt and shame were linked to participants’ wealth privilege and

consumerism (Karsgaard & Davidson, 2021), as well as a lack of action and living in an area with little climate impact (Thompson et al., 2022).

Participants in three studies (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022) communicated feelings of helplessness and powerlessness in taking steps to address climate change, with Karsgaard and Davidson (2021) noting this as one of the most common emotional responses within the group. Climate change was seen as being out of control and unstoppable, with participants feeling that they didn't know what they could do to help (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022). Participants' ages contributed to feeling helpless due to the lack of power connected with being a child (Thompson et al., 2022). The sense of being just one individual also influenced feelings of helplessness (Karsgaard & Davidson, 2021; Thompson et al., 2022).

Further difficult feelings expressed in some qualitative data were disappointment, frustration, blame, and criticism targeted at the inaction of others and societal structures (Parry et al., 2022; Trott, 2020; Trott, 2022), with specific blame directed at government, large companies, and older generations (Thompson et al., 2022).

While challenging and difficult feelings were the over-riding emotions across the majority of the studies, more welcomed feelings of hope (Herrick et al., 2022; Karsgaard & Davidson, 2021; Littrell et al., 2020; Orlowski, 2020; Thompson et al., 2022), passion, motivation (Thompson et al., 2022; Trott, 2022), solidarity (Karsgaard & Davidson, 2021; Thompson et al., 2022), and happiness (Trott, 2022) were also noted. In the studies by Trott (2022), Thompson et al. (2022), Littrell et al. (2020), and Herrick et al. (2022), such emotions were linked to action and having greater knowledge about how to take steps to help mitigate climate change impacts: "It makes me feel a bit more hopeful, you know if I've taken action as an individual, hopefully some

other people out there are doing the same and as a collective, it will have an impact" (Thompson et al., 2022, p.7). One participant in Trott's (2022) study shared, "it makes me happy because now I understand how to help the environment" (p.1035).

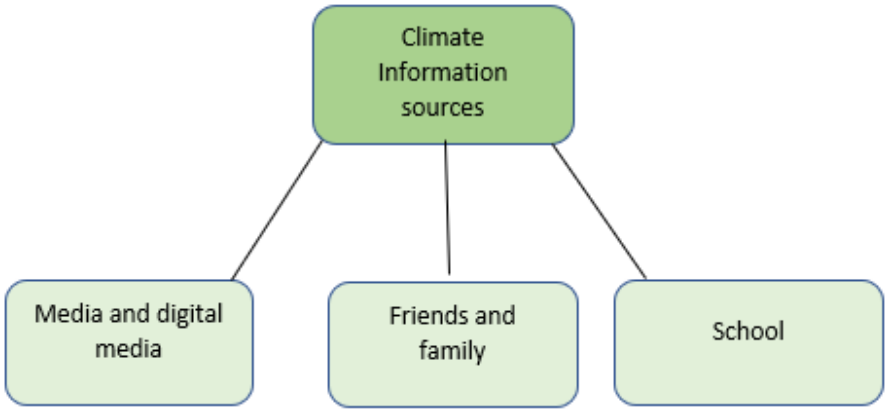
Hope versus despair was a dichotomy shared across two of the studies (Karsgaard & Davidson, 2021; Orlowski, 2020). In the study by Orlowski (2020), all participants expressed some level of hopefulness for climate change, while acknowledging that there would inevitably be some suffering.

A minority of participants in the Thompson et al. (2022) study indicated that they were hopeful for change, and they anticipated that the future would include increased awareness, action, and the prevention of a crisis, leading to a cleaner and more sustainable planet for future generations.

*Reflexive log*

*It's been hard to read the range and extent of challenging emotions CYP across the world are dealing with in response to climate change. I feel a sense of disappointment and guilt that my generation has failed to take adequate action and that we are now in the midst of a crisis. The feelings described by many participants resonate with my own emotional experiences. I'm finding that some of the CYP's quotes, particularly about their futures, are staying with me and I wonder how this will impact the development of the research.*

#### *2.9.4.3.4.3 Theme 3: Climate change information sources*




*Climate change information sources* were discussed in four studies (Orlowski, 2020; Parry et al., 2022; Thompson et al., 2022; Trott, 2020). Young people in Orlowski's (2020) and Thompson et al.'s (2022) studies gained related information from a range of sources, including mainstream media and news, social media, teachers/school, parents, and peers.

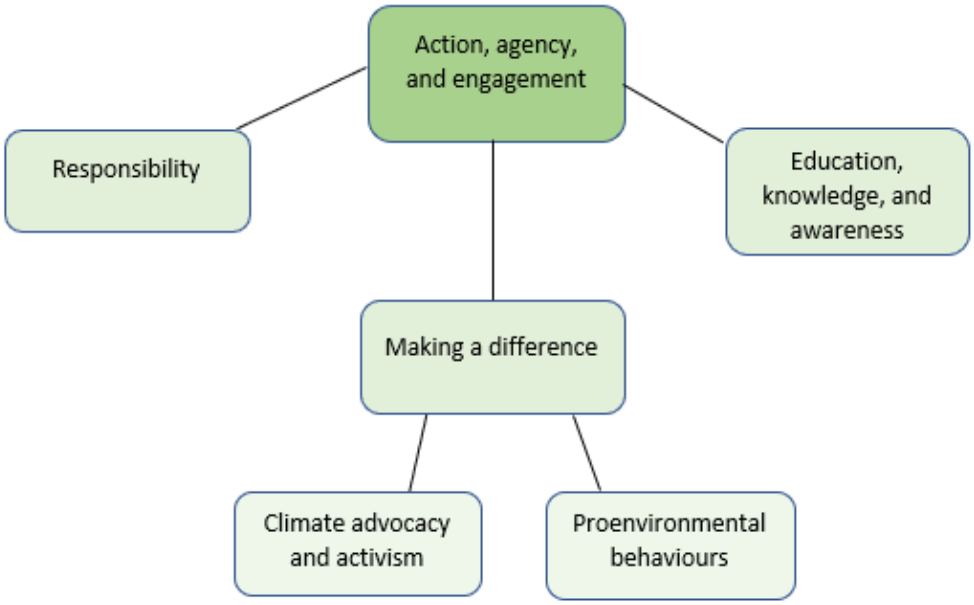
Parry et al. (2022) reported how participants felt social media was a helpful platform for sharing climate change information with one participant stating, "social media has made information and knowledge about climate change more accessible and simplified it down for everyone to understand" p.35). Participants expressed that social media could be utilised further to support people to engage with and take action to address climate change. They felt that emotive content and a focus on individual rather than collective action within climate coverage weren't helpful and exacerbated difficult feelings. However, they felt they had the skills to cope with this reporting and engagement didn't impact their overall mental health. While participants in two further studies (Orlowski, 2020; Thompson et al., 2022) reported drawing on social media and online news outlets for climate change information, they expressed a level of scepticism and also showed awareness in terms of critically appraising the content. There was a general sense of mistrust towards

the media and news in general by participants in Thompson et al.'s (2022) research, who often viewed it as negative and stressful.

Friends and family were the main source of climate change information in the Thompson et al. (2022) study. Similarly, Orlowski (2020) found that most participants named parents as their first stop for climate information.

School and teachers were noted as information sources in two studies (Orlowski, 2020; Trott, 2020) with participants in Orlowski's (2020) research expressing the highest levels of trust in information shared by teachers.

#### *2.9.4.3.4.4 Theme 4: Action, agency, and engagement*




Within the broader theme of *Action, agency, and engagement*, a sense of climate responsibility was shared by participants in four studies (Karsgaard & Davidson, 2021; Littrell et al., 2020; Parry et al., 2022; Thompson et al., 2022). One participant understood themselves as "the problem and [it] is our responsibility to become the solution" (Karsgaard & Davidson, 2021, p.10).

Different types of action that CYP took to address climate change featured in three studies. These included pro-environmental behaviours at both an individual and collective level (McDonald-Harker et al., 2022), climate advocacy (McDonald-Harker et al., 2022), activism (Thompson et al., 2022), and raising awareness (Herrick et al, 2022).

In contrast to feelings of helplessness and powerlessness discussed in theme two, climate agency featured in several studies (Herrick et al., 2022; Karsgaard & Davidson, 2021; Littrell et al., 2020; Parry et al., 2022; Thompson et al., 2022; Trott, 2020; Trott, 2022). Agency was often reportedly strengthened through climate change education. For example, following engagement in a climate change programme, children in Trott's (2022) research expressed increased confidence that they could contribute to the solution, "I feel like I can actually do something… about the environment and what's going on" (Trott, 2022, p.1035). Several studies explored how greater climate change knowledge and understanding supported participants to take climate mitigating action (Herrick et al., 2022; Littrell et al., 2020; McDonald-Harker et al., 2022; Trott, 2020; Trott, 2022). Agency and the ability to take meaningful action was also noted in studies that did not involve climate change education (Parry et al., 2022; Thompson et al., 2022). Participants in the research by Karsgaard and Davidson (2021) also communicated a sense of empowerment and agency from working alongside other committed and passionate people.

#### 2.9.4.4 Quantitative data extraction

Key characteristics and data, including information regarding the participants, methodology, measures, and relevant key findings/themes, were systematically extracted from each of the identified quantitative studies and are tabulated in Appendix 10. Relevant quantitative aspects of the mixed method studies were also included.

### 2.9.4.5 Quantitative review

#### 2.9.4.5.1 Participants

The quantitative studies included 13,082 participants in total, with sample sizes ranging from 182 to 10,000. Ages of participants varied from 11 to 25 years, with just one study including participants above the age of 18 (Hickman et al., 2021). Apart from Finnegan (2022), which reported that 67% of participants identified as female, studies had a relatively equal distribution of male and female participants.

Sample sizes in the mixed methods studies ranged from 34 to 55, totalling 195 participants. In these studies, ages ranged from 10 to 25 years, with just one study including participants above the age of 18 (Parry et al., 2022). Two of the mixed methods studies had a higher percentage of female participants than male, with female gender biases being noted at 60.5% (Littrell et al., 2020) and 75% (Parry et al., 2022).

Participants in the study by Parry et al. (2022) self-selected to be part of the research and were aware of the nature of the topic. Respondents in the Hickman et al. (2021) survey also self-selected but they were not aware of the subject matter until they began the questionnaire, and 68% of participants completed it. The children in studies by Trott (2020, 2022) and Littrell et al. (2020) volunteered to be involved, and participants in Littrell et al.'s (2020) sample were already engaged in a summer school science programme, suggesting they may have had an existing interest in environmental issues. Children in the Lawson et al. (2019) study were only included if their parents opted to be part of the family research themselves, which resulted in a low response rate of 24.9%. Participants in the other studies were recruited through school with questionnaires being administered via lessons or after-school clubs by teachers or researchers.

#### 2.9.4.5.2 Settings

Two of the quantitative studies took place in the USA (Lawson et al., 2019; Stevenson et al., 2019), two were conducted in Finland (Harker-Schuch et al., 2020; Hermans & Korhonen, 2017; Ratinen & Uusiautti, 2020), while a further study was carried out in the UK (Finnegan, 2022). One study took place across two countries; Austria and Australia (Harker-Schuch et al., 2020), and the seventh study (Hickman et al., 2021) was carried out remotely across 10 countries (Australia, Brazil, Finland, France, India, Nigeria, Philippines, Portugal, the UK, and the USA). Settings of the mixed method studies included in the quantitative component of the review, included the USA (Littrell et al., 2020; Trott, 2020; Trott, 2022) and the UK (Parry et al., 2022).

#### 2.9.4.5.3 Data collection

All seven of the quantitative studies used questionnaires and surveys to collect data, with three studies administering the questions online (Finnegan, 2022; Hickman et al., 2021; Ratinen & Uusiautti, 2020). The majority of the questionnaires were administered in schools, with the exception of Hickman et al. (2021).

The four mixed methods studies also used questionnaires to collect data, with one being carried out online (Parry et al., 2022) and the others being administered in-person via after-school clubs (Trott, 2020; Trott, 2022) or a residential summer school (Littrell et al., 2020).

#### 2.9.4.5.4 Data measures

With the exceptions of Trott (2020; 2022) and Finnegan (2022), the studies utilised scales and measures developed specifically for the research. While

many of the researchers drew on published and previously used scales when creating the measures, their bespoke scales were not validated, potentially questioning the reliability and validity of findings. Ratinen and Uusiautti (2020) describe the reliability of their scale as being satisfactory and three researchers discussed the piloting and development processes when creating their questionnaires and scales (Hickman et al., 2021; Lawson et al., 2019; Stevenson et al., 2019).

#### 2.9.4.5.5 Quantitative analysis

A number of findings within the quantitative studies were identified by the reviewer through repeated reading of the “results” or “findings” sections which had relevance to the review question. Key findings across the studies were aggregated and organised into three topics: *Feelings; Importance and relevance; and Friends, family, and other people.* A discussion concerning each of the topics follows.

##### *2.9.4.5.5.1 Topic 1: Feelings*

The topic of *Feelings* regarding climate change featured in seven studies (Finnegan, 2022; Harker-Schuch et al., 2020; Hermans & Korhonen, 2017; Hickman et al., 2021; Lawson et al., 2019; Parry et al., 2022; Ratinen & Uusiautti, 2020). Worry was the prominent feeling noted, evident across four studies (Harker-Schuch et al., 2020; Hermans & Korhonen, 2017; Hickman et al., 2021; Lawson et al., 2019). The rates of worry varied and findings from Hickman et al. (2021) showed that 84% of respondents felt at least “moderately” worried with over half “very” or “extremely” worried. Similar levels were noted by Harker-Schuh et al. (2020) who found that over 80% of children in both Austria and Australia felt climate change was probably or definitely something that people should worry about. More moderate levels of worry were reported by respondents in the questionnaire by Hermans & Korhonen

(2017), as 55% of children agreed with the statement, “I am worried about its [climate change] consequences”. Contrasting results were found in the study by Lawson et al. (2019) who noted that, overall, children were found to be somewhat unconcerned about climate change, although the results indicated large variation in worry levels amongst participants.

Findings from Hickman et al. (2021) suggested that over half of the sample experienced challenging emotions regarding climate change, these included guilt, sadness, anger, powerlessness, helplessness, and anxiety. Feelings of distress were observed in all 10 countries and were often more pronounced in young people living in India and the Philippines, both countries that have already experienced extensive physical climate change impacts (Amnesty International UK, 2019). Difficult feelings related to thoughts about the uncertainty of their futures and indicated a pessimistic outlook: 75.5% of respondents agreed with the statement “the future is frightening” and 55.7% felt that “humanity was doomed”. Nearly 40% of participants expressed hesitancy to have children due to their uncertain future. Climate distress and anxiety were also associated with a perception of inadequate government response in addressing the threat. Anxiety concerning climate change was similarly reported by Parry et al. (2022), as 78% of participants expressed an increase in climate change anxiety specifically in response to social media coverage. Finnegan (2022) noted moderately high levels of distress in participants, including anxiety, worry, frustration, anger, and fear.

While the focus in the majority of the studies concerned difficult feelings, Ratinen & Uusiautti’s (2020) research centred around climate change hope and respondents reported relatively high constructive hope rather than denial hope. Children’s perceptions of hope were impacted by a sense of agency, empowerment, increased climate change knowledge, and a belief in environmental organisations (Ratinen & Uusiautti, 2020). Finnegan’s (2022) participants also reported moderately high levels of hope alongside feelings of distress, suggesting that the two feelings can coexist. A relationship between

students' hope and teacher communication style was noted, with higher levels reported when students perceived teachers as validating their difficult climate emotions and demonstrating a positive outlook (Finnegan, 2022). Although difficult feelings were prominent in the Hickman et al. (2021) study, 30.9% of respondents expressed some climate change optimism. Higher levels of optimism were reported in India and the Philippines, both countries that have experienced significant direct impacts of climate change (Amnesty International UK, 2019).

#### *2.9.4.5.5.2 Topic 2: Importance and relevance*

The *Importance and relevance* of climate change was a topic covered in seven studies (Harker-Schuch et al., 2020; Hermans & Korhonen, 2017; Hickman et al., 2021; Lawson et al., 2019; Littrell et al., 2020; Trott, 2020; Trott, 2022). Over 45% of respondents in the Hickman et al. (2021) study agreed with a statement that their daily life functioning was impacted by their climate change feelings.

The majority of children in one study felt climate change was happening now (Harker-Schuch et al., 2020). A further study found that most children perceived climate change as a risk and climate change mitigation was relevant (Hermans & Korhonen, 2017). Over half the participants felt the threat of climate change should be taken more seriously, and 68% stated it was harmful to humankind and nature (Hermans & Korhonen, 2017).

#### *2.9.4.5.5.3 Topic 3: Friends, family, and other people*

Two of the quantitative studies explored the influence of friends or family on children's climate change concern and behaviour (Lawson et al., 2019; Stevenson et al., 2019). Climate change concern was positively related to their

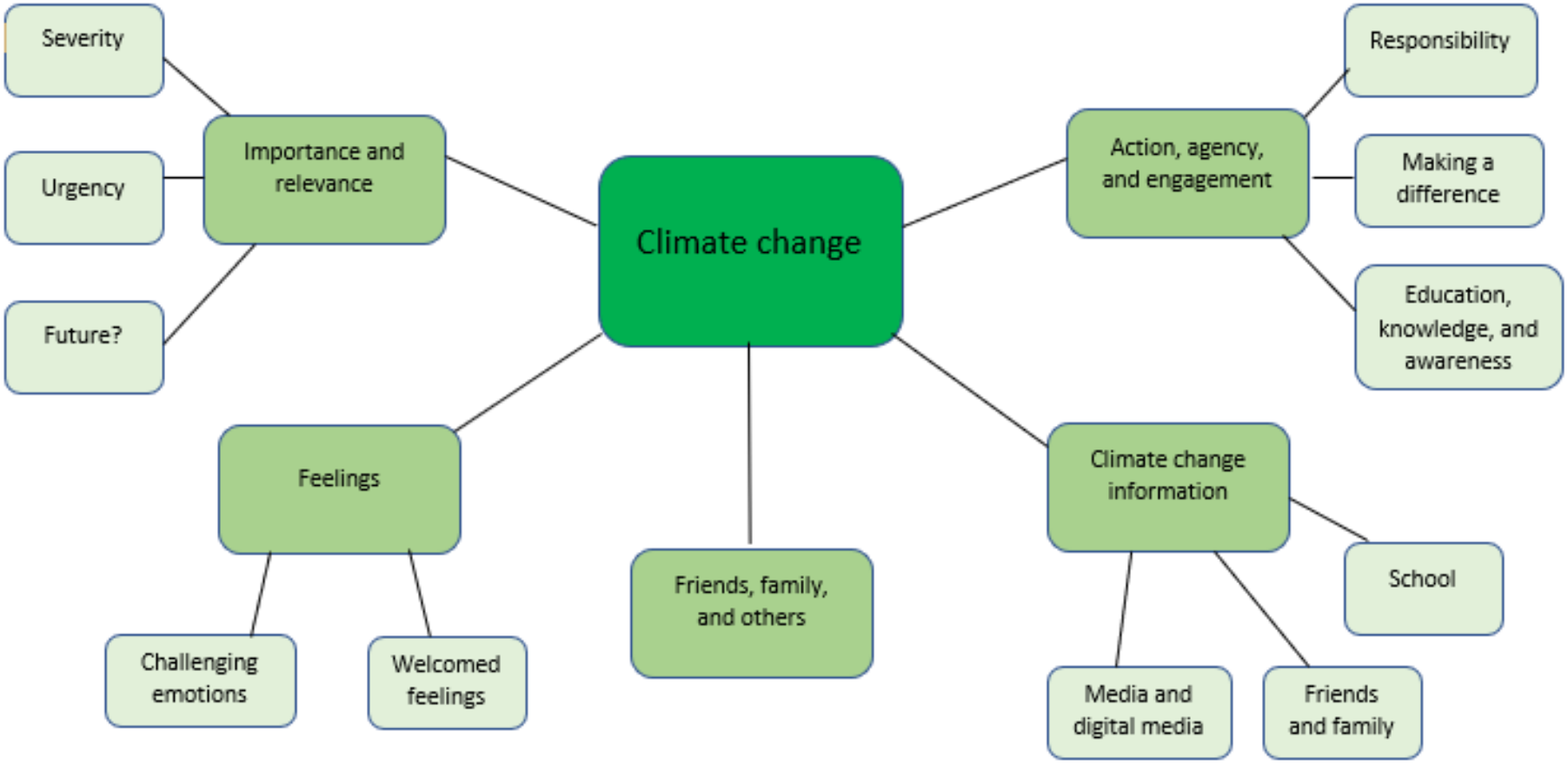
perceived acceptance of anthropogenic global warming amongst friends and family (Stevenson et al., 2019). Greater discussions about global warming with family and friends contributed to concern, and findings indicated a stronger association when discussions took place with family, rather than with friends. This impact of climate change conversations with family was also highlighted by Lawson et al. (2019), who reported that the frequency of family discussions concerning climate change was positively related to children's pro-environmental behaviours. Interestingly, the increased climate mitigation behaviours associated with climate discussions in the home were observed regardless of parental perceptions of the issue and occurred even when parents showed climate change apathy. However, parents' climate change concern was not positively related to a child's climate behaviour, suggesting that while parents have influence over their child's behaviours, adolescents are able to make decisions about their behaviour independently from their parents and based on their own concern.

Experiences of climate change conversation also featured in the survey by Hickman et al. (2021). While 41.9% of respondents disagreed with the statement, "When I try to talk about climate change other people have ignored or dismissed me", a sizable minority (39.3%) agreed and a further 18.8% noted that they didn't talk to other people about the issue, suggesting that talking about climate change may be difficult for some young people.

#### 2.9.4.6. Combined synthesis of qualitative and quantitative studies

The qualitative and quantitative aspects of this review provided a range of findings, with several shared themes emergent in the data. A diagram (figure 2.3) summarising the combined findings is presented on the following page.

Figure 2.3. Thematic map of the combined review synthesis



### 2.9.5 Summary

#### 2.9.5.1 Methodological quality and relevance

All the studies critiqued in this review either fully or partially met the criteria for methodological quality, which resulted in either a medium or high WoE A rating as shown in Table 2.3. The studies varied on their methodological and review question relevance, and assessments ranged from low to high on WoE B and C ratings. Three of the 16 studies received a high WoE D rating (Herrick et al., 2022; McDonald-Harker et al., 2022; Thompson et al., 2022), suggesting that appropriate and high-quality research answering the review question is scarce. This links with findings by Martin et al. (2022) and Hickman et al. (2021) describing a need for further in-depth studies within this field.

#### 2.9.5.2 The general picture

The current review aimed to explore the voices of CYP and their views, feelings, and experiences in response to climate change. Common themes identified in the review included: climate change as an important issue; the strong emotional connection many CYP have with the subject; engagement, including their own actions and feelings of agency; climate change information, including sources, their credibility, and their influence; and the role of others. While the majority of studies suggested that being informed about climate change supported CYP's sense of agency, empowerment, and ability to take action, one study (Hermans & Korhonen, 2017) did not identify a link between children's climate change knowledge and their climate behaviours.

A topic evident across many studies was CYP's perception of climate change as an important, relevant, and immediate issue that needed urgently addressing, with the exception of one study that reported low levels of climate

change concern. Such findings support the emerging literature of climate change as a key issue for many children (Save the Children, 2022; Votes for Schools, 2021).

A further key over-arching finding from this review concerns the emotional connection and response CYP experienced in relation to climate change. Data from both quantitative and qualitative studies illustrated the challenging emotions many children felt. The over-riding emotion described in many studies was a sense of worry, while a range of difficult emotions including sadness, anger, despair, guilt, anxiety, helplessness, fear, and grief also featured highly. Feelings of frustration and disappointment at the failings of others to act was also clear amongst both qualitative and quantitative studies. It is important to note that different measures of worry were used across the quantitative studies, with high levels of variation in worry observed between the studies.

Despite the strength of challenging emotions discussed above, a sense of hope and optimism for the future was also evident in some studies. Ratinen and Uusiautti (2020) found that hope was not based on denial or minimisation of climate change. Finnegan (2022) noted how hope existed alongside feelings of despair. Interestingly, one study (Hickman et al., 2021) reported higher levels of hope amongst participants based in countries experiencing pronounced direct climate change impacts. Without further research, it is not possible to look beyond the data for potential explanations of this observed difference, but it is important to show caution when comparing participants in different countries without an awareness of the cultural differences involved in language and meaning-making, particularly as interpretations of hope may differ across cultures (Averill & Sundararajan, 2005).

While there appears to be agreement that CYP are experiencing difficult emotions regarding climate change, much of the current literature is

quantitative in nature and captured children's views through questionnaires, several of which were based on novel scales developed specifically for the studies. Therefore, the review highlights the limited qualitative research in gaining a deeper insight and understanding of the impact of these emotional experiences on CYP. This finding supports that of Ojala et al. (2021) who argued that there is an urgent need for further studies focused on the emotional impact of climate change. As yet, research exploring influences that support and hinder CYP's climate-related feelings and the role adults can play within this, is limited. This connects with previous conclusions that there is a need for research exploring how educational communities can support CYP with emotional needs in response to climate change (Baker et al., 2021; Martin et al., 2022).

It is important to consider that participants in eight studies volunteered or self-selected to engage in the research. While one study utilised a blind survey (Hickman et al., 2021), participants in the remaining seven studies were aware of the research topic and it is possible that they came to the study with an existing interest in climate change issues, therefore impacting the generalisability of much of the research. A further study (McDonald-Harker et al., 2022) explored children's views following a local environmental disaster, again, questioning the extent to which findings can be generalised. The notion of representation within the review is also questionable, with a lack of random sampling across the studies. While two studies were international in nature, all participants in the Karsgaard and Davidson (2021) study and some participants in the Hickman et al. (2021) study were required to have some proficiency in English. Furthermore, questionnaire completion in the Hickman et al. (2021) study involved access to the Internet. These factors reduced the representativeness of the authors' findings to the population of each country.

Consideration of the context and setting of the research is also important as the impacts of climate change are experienced unequally within and across continents and countries, with some regions and communities being more

vulnerable to extreme weather events (Greenpeace, n.d.). In addition, climate change views and attitudes vary across countries. One recent poll indicated only 65% of the adult USA population believes in a climate emergency, compared to 81% of adults in the UK (UNDP, 2021). With six of the 16 studies included in the review originating from the USA, this raises questions about the transferability of results to the UK. Climate education within schools is also variable; recent findings having reported that only half of the national curricula in the world have reference to climate change (UNESCO, 2021). Studies suggest that emotional reactions in response to climate change are influenced by social norms and vary between different cultures (Kleres & Wettergren, 2017; Norgaard, 2011). Taken together, these findings highlight the challenges involved in generalising findings to a UK context. With only three of the 16 studies taking place fully within the UK (Finnegan, 2022; Parry et al., 2022; Thompson et al., 2022), the review identified that further UK-based research is therefore needed.

#### 2.9.5.3 Limitations

Despite the author taking measures to strengthen the quality of the current review, limitations remain. Firstly, the reviewer worked independently. It may be possible that another researcher would have extracted and interpreted the data differently and come to different conclusions regarding the methodological quality of each study (Andrews, 2005).

The restriction of included papers to published, English language, and peer-reviewed articles found on databases may have impacted the review's external validity by allowing a number of biases to affect the search results. These threats include publication, language, country, and database biases (Petticrew & Roberts, 2006). However, time and resources limited the widening of the search net with the reviewer prioritising thorough quality assessment over extensive searches and translation of studies (Egger et al., 2003). As this is

an emerging area of research, it may have been valuable to review grey literature, including theses.

### 2.9.6 Current research aims, rationale, and questions

While literature indicates that CYP are worried about climate change, the review has highlighted a need for qualitative research, both globally and within the UK, to explore feelings and views in more depth, while also focusing on the influences that support and hinder the management of their climate concerns. The current research aims to make a distinct contribution by exploring the views and experiences of CYP in the UK concerned about climate change to develop an understanding of how education staff and communities, including EPs, can enhance practice in supporting young people with feelings around climate change. Despite educational psychology having a necessary role in engaging with climate change issues (Allen, 2020; O'Hare, 2022), there is currently a lack of related published research within the field.

The review of the literature has led to the following research questions:

- What are the views, feelings, and experiences of young people concerned about climate change?
- What do young people perceive as helpful and unhelpful in supporting their climate change concerns?

# Chapter 3 Methodology

## 3.1 Introduction to chapter

This chapter explores the theoretical and philosophical assumptions underpinning the research before discussing the selected qualitative research and data generation methods adopted by the researcher. Information outlining the research design, participants, recruitment, and interview procedure follows. The chapter then provides a summary of the data analysis process before discussing ethical considerations and the role of researcher reflexivity.

## 3.2 Research questions

The research questions for the study are:

- What are the views, feelings, and experiences of young people concerned about climate change?

- What do young people perceive as helpful and unhelpful in supporting their climate change concerns?

## 3.3 Theoretical and philosophical considerations in research

Research methods are entwined with the researcher's beliefs and perceptions of the world (Moore, 2005). Researcher's philosophical assumptions about the nature of reality and knowledge underpin and guide the research approach (Mertens, 2015). Ontology concerns theories describing the nature of reality and being (Braun & Clarke, 2013; Tebes, 2005; Willig, 2013). Epistemology, closely connected to ontology (Braun & Clarke, 2022), relates to theories about the nature of knowledge and truth, the validity of knowledge, and how

knowledge is generated, acquired, or produced (Moore, 2005; Sewell, 2016; Tebes, 2005). Due to the fundamental nature of these assumptions, the researcher's ontological and epistemological positioning can influence all aspects of the study approach and design (Mertens, 2015). Therefore, it is crucial that researchers visibly consider and reflect upon their own assumptions and ontological and epistemological orientation underpinning their research (Willig, 2013).

### 3.3.1 Ontology

As described, ontology relates to the nature of reality and existence (Mertens, 2015; Willig, 2013). Ontological positions tend to be situated along a realism-relativism continuum (Willig, 2013). A realist ontology assumes the existence of one single, measurable, and true reality (Terry et al., 2017). Within this position, the truth discovered is thought to exist independently from the researchers' beliefs (Braun & Clarke, 2022; Maxwell, 2012; Tebes, 2005). Research underpinned by a realist ontology is generally quantitative in nature (Braun & Clarke, 2013). In contrast to realism, a relativist ontological stance proposes that reality is dependent on human practices, interpretations, and knowledge, and that it can vary across time and contexts (Braun & Clarke, 2013). Language, culture, and social factors influence our knowledge and beliefs (Braun & Clarke, 2022; Terry et al., 2017). Accordingly, multiple constructed realities exist and there is no single objective reality or truth that can be known (Terry et al., 2017). Researchers adopting a relativist ontology focus on individual's subjective experience and tend to value qualitative approaches that can provide rich data.

Critical realism combines a realist ontology with a relativist epistemology (Maxwell, 2012). Within this stance, it is assumed that there is a truth and reality, however individuals have different representations and interpretations of this reality due to their perspectives, experiences, and contexts (Maxwell,

2012; Terry et al., 2017). Critical realism acknowledges the mediating role that social, cultural, and language factors can have on individual's knowledge and perspectives (Braun & Clarke, 2022; Maxwell, 2012).

While a reality may exist independently of the researcher, it can only ever be understood imperfectly and subjectively (Terry et al., 2017). It follows that research findings and observations within critical realist research are not absolute but are probabilistic, partial, and heavily influenced by the researcher (Maxwell, 2012; Mertens, 2015; Pilgrim, 2014). Critical realism research often aims to improve current situations for the communities involved by drawing on transformative and emancipatory values (Egbo, 2005; Greenhill & Wilson, 2004; Houston, 2022).

A critical realist ontological perspective underpins this study. While the researcher assumes that a truth and reality exist, they believe that individuals' understanding of that reality is shaped by experience, language, and cultural factors (Braun & Clarke, 2022; Maxwell, 2012). The researcher assumes that a natural world exists separate from human behaviour (Batel & Adams, 2016) and views both climate change and concern about climate change as real. However, they recognise that social, political, and cultural factors influence the human construction of climate change narratives and discourse (Adams, 2016; Huckle, 2004). Consequently our interpretation and representation of climate change will differ between individuals due to personal experiences, views, and wider socio-political and cultural contexts (Maxwell, 2012; Terry et al., 2017). The researcher's understanding and interpretation of climate change is described in chapter 1, enabling the reader to gain insight into the researcher's position within this subject. Accordingly, the researcher acknowledges that although a reality exists (CYP's perceptions, feelings, and experiences of climate change), an imperfect and approximation of this reality, shaped by the researcher's view and values can only ever be known. Furthermore, it is anticipated that the research will promote the voices of CYP concerned about

climate change and result in improving the understanding, support, and provision for such young people, in line with critical realist research.

### 3.3.2 Epistemology

As discussed previously, epistemology concerns the nature of knowledge, including what can be known and how it is produced (Braun & Clarke, 2022). Although entwined with ontology, the relationship is not causal. Epistemological positions tend to be of an objectivist or subjectivist nature (Lincoln et al., 2018).

An objectivist epistemology assumes that one objective truth can be known through the application of strict rules and thorough processes (Lincoln et al., 2018; Robson, 2011). Within this stance, the researcher is viewed as impartial and has no influence on the direction of the research, providing adherence to the rules (Mertens, 2015; Robson, 2011).

A subjectivist epistemology, on the other hand, posits that a true external reality can never be directly known as everyone has their own subjective understanding of that reality, which may differ from others' understanding and experience (Rehman & Alharthi, 2016). Subjectivism is concerned with the different ways that individuals perceive, understand, and make sense of events experienced (Lincoln et al., 2018; Rehman & Alharthi, 2016). Within this orientation, the researcher seeks to understand the world from the viewpoint of those living in it (Mertens, 2015). The influence of social, cultural, and historical experiences and contexts on an individual's world view and interpretations of events is recognised within this stance (Burr, 2015). Knowledge generated through research is thought to be influenced by the researcher's values and approaches (Grix, 2004; Rehman & Alharthi, 2016), with an emphasis on the interactive relationship between the researcher and

participants in shaping knowledge and meaning (Creswell & Creswell, 2018; Mertens, 2015).

In the current research, the participants' thoughts, feelings, and experiences in relation to climate change, along with the researcher's own interpretations of these, are perceived to be subjective and shaped by individuals' constructs. The notion of seeking one objective truth is rejected and does not align with the researcher's views. Subjectivism's recognition of the influence of the researcher's experiences and assumptions on the research process is consistent with the researcher's values, therefore, the current study assumes a subjectivist epistemology. Further epistemological positions including constructionism (Burr, 2015; Willig & Stainton Rogers, 2017) and transformative (Mertens et al., 2009; Mertens, 2007) were explored by the researcher. Information outlining each positions' central features and considerations within the current study is presented in Appendix 11.

## 3.4 Selecting a qualitative research method

As the research aimed to explore the views and experiences of CYP, it adopted an exploratory, qualitative approach to support the gaining of rich and deep detail (Mertens, 2015; Robson, 2011).

Several qualitative research approaches were considered during the development of the research design. These included interpretative phenomenological analysis (IPA) (Smith et al., 2009), grounded theory (Charmaz, 2006), and reflexive thematic analysis (TA) (Braun & Clarke, 2022). A table outlining the appropriateness of each approach to the research aims can be found in Appendix 12. Reflexive TA was thought to be the most suitable research method and was therefore adopted by the researcher. Rationale for this research decision can be found in section 3.4.2

### 3.4.1 Thematic analysis and reflexive thematic analysis

Thematic analysis is a qualitative analysis approach used to explore and interpret patterns of meaning across data (Braun & Clarke, 2022). It is a highly flexible method of data analysis that can be used within both realist and relatvist ontological positions (Braun & Clarke, 2006), although such theoretical frameworks will influence the type of TA adopted and the research outcomes. Three main types of TA have been identified (Braun & Clarke, 2021b, 2022): coding reliability, codebook, and reflexive.

Coding reliability TA describes a process whereby themes are identified using a predetermined set of codes forming a codebook. This process often follows a deductive approach where codes are developed through previous theory and research, although it does have flexibly to be used more inductively (Braun & Clarke, 2021c). Coding reliability TA often aligns with positivist notions of objectivity and reliability and involves multiple coders working independently with a focus on inter-rater reliability (Braun & Clarke, 2022).

Codebook TA, such as template analysis and framework analysis, describes techniques where themes are created by the researcher (Braun & Clarke, 2021c). Thus, the researcher's subjectivity is acknowledged and valued. Some themes can be predetermined from existing literature but are open to refinement and development during the process (Braun & Clarke, 2022). Codebook TA can be used by single researchers as well as groups. When multiple researchers are involved, they will code and compare their findings, but inter-rater reliability is not sought.

In contrast, reflexive TA is a more organic process and does not involve using a codebook, with codes and themes being generated later in the analysis (Braun & Clarke, 2021c). Reflexive TA has theoretical flexibility so the researcher's ontological and epistemological position influence and guide how

the method is applied, while following established guidelines (Braun & Clarke, 2021a). As the name suggests, reflexivity is crucial to this approach as the researcher and their subjectivity is perceived as central and active within the research (Braun & Clarke, 2021d; Terry & Hayfield, 2020).

While TA can bring rich and complex insights (Braun & Clarke, 2006), the method has faced criticism, and some limitations and confusion concerning its utilisation remain (Braun & Clarke, 2019). The theoretical flexibility of the approach can lead to inconsistencies between the researcher's espoused theoretical approach and the actual analysis (Nowell et al., 2017; Terry et al., 2017). Although several variations of TA exist, often with significant differences, researchers can lack transparency about which type of approach they are using and why, leading to confusion and misalignment (Braun & Clarke, 2019). TA's rigour and trustworthiness has also been questioned due to the lack of prescriptive steps (Nowell et al., 2017). Such areas of ambiguity, leading to variation in how TA has been adopted by researchers, have been addressed in recent publications by Braun and Clarke (2019, 2021a, 2021d, 2022) who have provided additional information and guidance, including an evaluation tool, to support the researcher in carefully considering their deliberate use of TA, including quality, type, and their own assumptions.

### 3.4.2 Rationale for using reflexive thematic analysis

Reflexive TA was chosen as the most appropriate method of analysis to meet the aims of the research and support the exploration and generation of patterns within the perceptions, feelings, and experiences of participants. While having theoretical flexibility, reflexive TA is compatible within the critical realist ontology and the subjectivist epistemology adopted by the researcher. Furthermore, the method's emphasis on the researcher's subjectivity and the subsequent need for them to question and critique their engagement and

influence throughout the analytic process, aligned with the researcher's values and assumptions (Braun & Clarke, 2021c).

## 3.5 Data generation method

### 3.5.1 Identifying an appropriate method

Semi-structured interviews were utilised in this study to generate data. Semi-structured interviews can allow for a flexible exploration of participant's experiences and perceptions (Mertens, 2015). While the interviews are guided by a pre-determined schedule to ensure focus remains on the research question(s), the researcher can flexibly respond and adapt in line with participants' responses. The exploratory and open-ended questioning adopted within a semi-structured interview allows participants to share first-hand experiences, perceptions, and feelings, eliciting rich and full accounts of how they see and make sense of the world (Magnusson & Marecek, 2015). Smith and Osborn (2008) describe how participants are positioned as "experiential experts" within a semi-structured interview and must be "allowed maximum opportunity to tell their own story" (p.59). Further data generation methods were also considered by the researcher, including focus groups (Wilkinson, 2008) and surveys (Robson, 2011). The appropriateness of these approaches to the research aims are outlined in a table in Appendix 13.

While having many advantages, semi-structured interviews can pose some challenges to the qualitative researcher and they have been criticised for issues concerning their generalisability (Diefenbach, 2009) and the potential for unconscious bias by the interviewer (Potter & Hepburn, 2005).

### 3.5.2 Rationale for using semi-structured interviews

The researcher felt that semi-structured interviews were well suited to the research aims and the researcher's position due to their flexible nature, focus on gaining individual detailed and complex data (Braun & Clarke, 2022), positioning of participants as experts (Smith & Osborn, 2008), and compatibility with reflexive TA (Braun & Clarke, 2022).

Although semi-structured interviews have been critiqued for the possibility of interviewer bias and their idiographic nature leading to a lack of generalisability (Diefenbach, 2009), in line with reflexive TA the researcher acknowledges and explores their influence within the interview process and is not aiming for generalisability.

Further details of the semi-structured interviews, including information regarding the development of the interview schedule and the interview procedure can be found in section 3.6.3.

## 3.6 Research design

### 3.6.1 Introduction to section

The following section outlines how participants were sampled and recruited before describing how the interview schedule was developed along with details of the interview procedure. An overview of the data analysis process using reflexive TA then follows.

## 3.6.2 Research participants and setting

### 3.6.2.1 Context

The research took place in a metropolitan borough within the north of England. The borough has 119 schools including 25 secondary schools. The area was directly impacted by floods in 2007 and 2019. The council declared a climate emergency in 2019 and has set area-wide carbon emissions to reach net zero by 2040. The school selected for the present study serves an area containing pockets of both affluence and deprivation and is largely in line with the national average of pupils receiving pupil premium funding. The school does not currently facilitate any climate, environmental, or eco-council groups for students and staff.

### 3.6.2.2 Participants

The researcher originally aimed to gain the views of 14- to 16-year-olds with some level of climate change concern. Adolescents were selected as it is thought this age group are old enough to understand the science of climate change and tend to have an increasing awareness of abstract values such as justice and responsibility (Vergunst & Berry, 2022). The researcher felt it may be supportive for the participants to have experienced some direct teaching of the phenomenon and, therefore, focused the study on young people within key stage 4 as climate change features within the key stage 3 geography curriculum.

Following recruitment attempts and discussions with school staff, it was felt that young people aged 16 to 18 years would be an appropriate age range for the study. As literature review findings had revealed a lack of UK research concerning climate change with CYP across the age ranges, alongside suggestions that late adolescents may be more vulnerable to climate-related

worries (Ojala, 2013), the researcher was confident that the change of participant age would not impact the relevance and importance of the research. A purposive sampling approach was adopted, and participants self-selected to engage in the study based on information shared with them through gatekeepers (teachers). It was expected that between six and eight participants would be recruited.

#### 3.5.2.3 Recruitment

Headteachers at secondary schools within the LA where the researcher was on placement as a TEP were approached through a recruitment email and information sheet briefly outlining the study. Following expressions of interest, the researcher met with staff members online to further explain the study and provide an opportunity for staff to ask questions. This discussion included the requirement for school pastoral systems to ensure the wellbeing of participants would be supported.

One school chose to proceed with the research and further discussions were held concerning the participant inclusion and exclusion criteria (see 3.6.2.4). The school was provided with a poster and script to explain the research to students, along with participant and parent/carer information sheets, participant and parent/carer consent forms, general data protection regulation (GDPR) sheets, interview schedules, and information sheets for any students who volunteered but did not meet the inclusion criteria. Staff members shared information about the study with students in an assembly. All recruitment, information and consent sheets can be found in Appendix 14. Students interested in taking part in the study were directed to an identified staff member that checked eligibility in terms of the inclusion and exclusion criteria and shared the information and consent sheets. School staff were made aware that students and their parents/carers could contact the researcher directly with any questions.

#### 3.6.2.4 Participant sampling criteria

Inclusion and exclusion sampling criteria were applied throughout the recruitment process. The following criteria was used to recruit participants:

- All participants must identify as having some level of concern about climate change.
- All participants must be aged between 16 and 18 years.
- All participants must have good conversations skills and be verbally able to talk about their experiences, perspectives, and feelings.
- All participants must not be experiencing extreme psychological distress nor accessing or awaiting external mental health support. This criterion was included to reduce the risk of causing any additional emotional harm to participants, as outlined in the study's ethical considerations discussed in section 3.7.4.

#### 3.6.2.5 Final sample

A total of five participants from within one secondary school took part in the study. The final sample comprised of three females and two males, aged between 16 and 17 years. Each participant was provided with a pseudonym to protect their anonymity. Pseudonyms have also been used for any other information, including people and place names, that could potentially be used to identify the participants.

#### 3.6.2.6 Stakeholder engagement

The research was approved by the researcher's host EPS. The LA had recently declared a Climate Emergency and had added climate change to the council's improvement strategy. Therefore, it was felt that the proposed

research aligned with current LA priorities. The University of Nottingham was also identified as a stakeholder as the research was carried out as part of the researcher's doctorate in applied educational psychology training. Further stakeholders included the host school, the parents/carers of participants, and the young people themselves. Young people as participants are explicitly affected by the study and influence the research outcomes and implications.

## 3.6.3 Data generation

### 3.6.3.1 Developing the interview schedule

The interview schedule was informed by existing literature regarding CYP's views about climate change, including research reviewed in the SLR. Guidance by Robson (2011) and Magnusson and Maracek (2015) supported the development of the design and sequence of interview questions. The schedule followed a rapport building introduction with a warm-up question before going into the main body of the interview and ending with cool-down questions (Robson, 2011). More sensitive questions, where participants were asked to talk about their feelings in relation to climate change, were included towards the later part of the interview (Magnusson & Marecek, 2015). Probes and follow up questions were planned to support the gaining of greater depth, detail, and understanding (Rubin & Rubin, 2012). Participants were asked about their understanding and interest in climate change, their experiences of talking with others about the issue, past and current feelings relating to climate change, the impact of these feelings, their thoughts about what helps and hinders the management of their climate change concerns, and their hopes for the future. Open-ended questions were used to support the facilitation and exploration of participants' views and experiences (Silverman, 2011).

*Reflexive log*

*When constructing the interview schedule, I noticed how I was avoiding using the term "climate crisis" within the questions and that I was opting for "climate change". Although climate crisis is a term I use in my usual conversations, I am cautious using the term when talking to young people. To me, it is important to name the current situation as a "crisis" so that it can be responded to as such. However, I also feel that crisis can have more of an impact than "change" and may be seen as evoking a heightened response. With the wellbeing of the participants in mind, I am eager to reduce any feelings of discomfort or distress and so have made the choice to use the more palatable term climate change during the interview and across recruitment information, and therefore, throughout all aspects of the research.*

Although questions were planned in sequence, it was expected that the order of questions asked, and the use of follow-up questions and prompts would be used flexibly in response to participants' answers to support a conversational style. The schedule (Appendix 15) was revised through discussions with the researcher's supervisor and two informal pilot interviews that enabled the researcher to reflect on the language used and the sequence of questions (Mertens, 2015). After the initial two interviews, the researcher reviewed the interview guide, following guidance by Braun and Clarke (2013), leading to minor adaptations (Appendix 16).

### 3.6.3.2 Interview procedure

All interviews were carried out in-person in a room located within the participants' school and familiar to them. Prior to starting the interviews, the researcher introduced themselves and their role and engaged in problem-free talk with the hope that this would help to put participants at ease and begin rapport building (Braun & Clarke, 2013). Research aims were explained, and the researcher talked through the consent form before verbal consent was sought (see verbal consent script, Appendix 17). Participants were asked if they wanted to ask any questions about the research and reminded about their right to withdraw. An outline of the interview schedule was discussed with participants. Plans were agreed in case participants became distressed. Participants were informed that the interview would begin, and the voice recorder was switched on. Interviews lasted between 30 and 45 minutes and were guided by a semi-structured interview schedule. Participants were given time at the end of the interview to talk about any further contributions or remaining thoughts. The voice recorder was switched off at the conclusion of the interview. The researcher read a verbal debrief script (Appendix 18) and provided each participant with a written debrief sheet for themselves (Appendix 19) and their parents/carers (Appendix 20), which included sources of information and support. Participants were reminded of their right to withdraw and thanked for their participation. Throughout the interviews, the researcher strived to show non-judgemental interest through their verbal and non-verbal responses (Braun & Clarke, 2013).

Interviews were audio recorded and stored in a password protected file until being transcribed and played back to check accuracy. Potential identifiable information, such as events and names of people and places, were anonymised during interview transcription following guidance from Braun and Clarke (2013).

*Reflexive log*

*I questioned to what extent I managed to stay neutral throughout the interviews today. While attempting to stay impartial, it was difficult to hide my agreement at several points during interviews and although I tried not to verbally express my views or concur with participants, I wonder if my body language, including smiles and nods, may have revealed some of my feelings and therefore influenced subsequent responses.*

## 3.6.4 Data analysis

### 3.6.4.1 Reflexive thematic analysis

As described earlier, reflexive TA is a qualitative analysis method that involves developing, analysing, and interpreting patterns in data, whilst acknowledging and reflecting on the centrality of the researcher within this process (Braun & Clarke, 2022; Terry & Hayfield, 2020). Variations with reflexive TA exist in relation to theoretical positioning, qualitative framework, the focus of meaning, and the orientation to data (Braun & Clarke, 2022).

In terms of theoretical frameworks, reflexive TA can be used within both realist and relativist positions, although the aims of analysis will vary between the stances in accordance with their assumptions of reality (Braun & Clarke, 2022).

Variations relating to the qualitative framework utilised can range from experiential (capturing and exploring participants' views and understandings) to critical (interrogating meaning) (Braun & Clarke, 2022).

Further variations concern the coding's focus of meaning, which can vary across a spectrum from semantic (descriptive, surface, and participant-led) to latent (implicit, underlying, and researcher-led) (Braun & Clarke, 2006, 2021c; Byrne, 2022; Terry et al., 2017). Coding can move along the spectrum and a researcher may combine both semantic and latent codes (Braun & Clarke, 2022).

A final identified variation within different styles of reflexive TA concerns the approach to data coding, and to what extent an inductive (data-led) or deductive (theory- or researcher-led) orientation is adopted (Braun & Clarke, 2006, 2022). As with the focus of meaning, the level of induction or deduction can vary across a continuum and an analysis may have components of both orientations (Braun & Clarke, 2022).

In the current study, the researcher adopted a largely inductive and semantic approach to data orientation and analysis. Codes and themes came from the data in the interviews although it was recognised that familiarity with related literature could have influenced theme generation.

As previously described, the theoretical underpinnings of this research were critical realism and subjectivism. In line with such positioning an experiential orientation was taken and the researcher considered that the language used by participants reflected their reality and intentionally communicated their views and experiences (Terry et al., 2017). Accordingly, codes primarily captured the semantic, surface meaning of participants' accounts.

The researcher's role in shaping the data and analysis, from developing the interview schedule, asking interview questions, and interpreting data was acknowledged and interrogated throughout the research process.

### 3.6.4.2 Data analysis procedure

Braun and Clarke's (2022) guidance outlining a systematic six-phase process to data analysis was followed. The recursive and iterative phases facilitate the researcher's engagement with data that may move forwards and backwards between phases, rather than in a linear fashion (Terry & Hayfield, 2020).

To support the quality of the analysis, the researcher was guided by Braun and Clarke's (2022) '15-point checklist of criteria for a good TA process'. This helped to ensure the process was thorough, methodological, and reflexive.

#### 3.6.4.2.1 Phase 1: Familiarisation with the data

The initial phase as outlined by Braun and Clarke (2022) involves the researcher becoming immersed in the data, so they reach a deep familiarity with the contents of the dataset. Alongside immersion, the researcher is required to critically engage with the data and record their thoughts through note-making.

The researcher initially listened to the interview audio recordings before transcribing them, supporting the immersion process (Reissman, 1993). Transcription followed Braun and Clarke's (2013) notation system for orthographic transcription. At this stage, data was anonymised, and pseudonyms were applied to participants and any potentially identifiable information.

The researcher read and re-read transcripts several times (Braun & Clarke, 2006), using line by line inspection, including once while listening to the audio recording. Throughout the transcription and subsequent reading process, reflective notes (Appendix 21) regarding insights and analytic thoughts were

made. Printed hard copies were used to enable handwritten notes and comments to be made. To support active and critical engagement with the data during reading and note-making, the researcher asked themselves questions about the sense and meaning making of the data (Braun & Clarke, 2013).

A second note-making process was carried out systematically, which involved making notes regarding the full dataset, including thoughts about patterns, meaning, and researcher's questions (Braun & Clarke, 2022).

*Reflexive log*

*I need biophilia! I've been craving connection with nature, and I have tried to squeeze in as many breaks in green and blue spaces as possible. The work has felt emotionally heavy this week. I have particularly felt and re-felt the difficult emotions that the participants expressed in the interviews which has forced me to acknowledge and give attention to my own uncomfortable feelings concerning climate change. At times, I have felt consumed by the heavy burden of climate change which I think has driven my strong desire to connect with nature as I recognise this as a key aspect of my wellbeing support. I have reflected on how immersion with the data has elicited strong emotional reactions in myself and how this will have influenced my interpretations.*

#### 3.6.4.2.2 Phase 2: Coding

The coding phase of reflexive TA requires the researcher to work systematically with the data to identify meaningful, relevant, or interesting parts, which become codes (Braun & Clarke, 2022; Terry & Hayfield, 2020).

Code labels are then applied to these data parts or “segments” (Braun & Clarke, 2022). Coding goes beyond purely summarising the data by capturing the researcher’s perspective and interpretations of the dataset (Braun & Clarke, 2022).

The researcher systematically read through each interview transcription and inductively generated codes and code labels from the data. Codes were primarily generated at the semantic level, with codes aiming to capture participants’ meaning through the language used. At times, latent codes were also generated when the researcher perceived that a participant had implied meaning. Code labels were typed in a column next to interview data in a table in Microsoft Word. Columns were added to the table as further coding rounds were conducted.

Following advice from Braun and Clarke (2022), the researcher initially carried out two coding series, with the second round being conducted in a different order. Repeating rounds of coding supports analytic insight and captures developments in the codes and code labels (Braun & Clarke, 2022). By changing the order of coding rounds, the researcher can gain a new outlook on the dataset (Braun & Clarke, 2022). After two coding series, the researcher reflected on the seemingly overwhelming number of codes and recognised that some codes were narrow and specific to single data extracts. The researcher conducted a third coding round, evolving, and broadening the scope of codes to enable more related data extracts to be captured (Appendix 22). This resulted in a more practicable number of codes.

#### 3.6.4.2.3 Phase 3: Generating initial themes

The third phase in reflexive TA involves the construction and development of potential themes across the dataset (Braun & Clarke, 2022; Byrne, 2022). While codes capture just one idea, themes capture several aspects of an idea

with a central organising concept (Braun & Clarke, 2022). Shared pattern meaning is identified by grouping codes that appear to share an idea or concept potentially related to the research question (Braun & Clarke, 2021c, 2022).

After revisiting data codes, the researcher clustered potentially connected codes together into tentative groups (Appendix 23), and then explored the patterns of meaning (Braun & Clarke, 2022). This involved ongoing revision and re-grouping of codes and clusters. Initial code clusters with a potential theme, known as candidate themes, were generated. The researcher found it helpful to print the codes, enabling them to be physically manipulated and sorted into groups, clusters, and tentative themes (Appendix 24). Unallocated codes that did not initially appear to fit into early themes were kept to one side in case of later pertinence as analysis developed. As this phase progressed, the researcher recognised a need to generate sub-themes for some features within the wider theme. Data extracts and codes for candidate themes and related sub-themes were collated into tables. See Appendix 25 for an example of one developing theme.

*Reflexive log*

*The subjective nature of theme development has really hit me today. I'm acutely conscious of the power that I hold as the researcher in creating themes and this feels both a huge responsibility and a privilege. I'm aware that I can view the same code in different lights on different days and how such choices will influence the direction of the research. This has led me to question if I am unconsciously trying to create patterns in the data to fit with my own assumptions and expectations. Am I over-emphasising some data and codes because they speak to me and connect with my own views? For example, I felt I may have wanted the idea of "distrusting the government" to have more significance than it perhaps does due to my personal beliefs about a government who make promising environmental claims while approving the opening of a new UK coal mine. Despite this challenge, I take some comfort in the thorough and recursive process of reflexive TA and being able to revisit the transcripts and review existing codes.*

#### 3.6.4.2.4 Phase 4: Developing and reviewing themes

The next phase of reflexive TA involves the development and review of themes through referring back to coded extracts and the full dataset to check the extent that candidate themes capture and explain the data (Braun & Clarke, 2022; Terry & Hayfield, 2020).

This was a particularly recursive phase where the researcher constantly reviewed clusters and candidate themes and revisited the original interview transcripts. Coded extracts were revisited and checked against each code and

tentative theme to ensure they were compatible with the theme's central organising concept. During this phase, potential themes were combined, divided, and sometimes rejected as new themes were developed. The researcher created hand-drawn thematic maps as part of this process which supported the consideration of the boundaries and relationships between themes (Appendix 26). Initially, the researcher attempted to generate themes for each research question separately, however, due to the interconnected nature of the questions, it seemed appropriate to treat the data as one data set.

*Reflexive log*

*I'm going around in circles! I recognise that I'm so consumed in the current themes that I find it hard to approach them flexibly and critically. I feel like I'm starting to become blinkered and unable to see other possible patterns and connections across the data. I'm going to take a few days away from the data with the hope that I have a slightly different perspective when I revisit it with fresh eyes.*

#### 3.6.4.2.5 Phase 5: Refining, defining, and naming themes

The fifth phase involves refining the analysis to ensure themes are clear and precise and have a strong central concept (Braun & Clarke, 2022). Analysis structure and flow are determined during this phase. As themes were adapted and refined, the researcher continued to create thematic maps and named each theme.

#### 3.6.4.2.5 Phase 6: Writing up

Writing is central to reflexive TA and should be embedded within the analytic process (Braun & Clarke, 2022). Writing up involves making final refinements to the analysis, defining its structure and detail, alongside telling an engaging, coherent, and convincing analytic story (Braun & Clarke, 2022).

During the writing up stage phase, the researcher returned to earlier phases and continued to reconsider and redefine themes to ensure they had clear boundaries and a central concept. Chapter 4 presents the reflexive TA data analysis, with a discussion of the researcher's understanding of each theme and relevant sub-themes. The chapter includes related data extracts from participant interviews to support the reader to understand the researcher's interpretations. When data extracts include material that the researcher perceived as lacking relevancy to the theme, such detail is removed and signalled with […].

## 3.7 Ethical considerations

The research was guided by The British Psychological Society's (BPS) Code of Human Research Ethics (2021b), the BPS Code of Ethics and Conduct (2021), and the Health and Care Professions Council Standards of Conduct, Performance and Ethics (2016). The University of Nottingham Research Ethics Committee granted ethical approval for the study (Appendix 27). A discussion of several key ethical considerations addressed within the research design follows.

### 3.7.1 Informed consent

The purpose of the research and what it entailed was fully explained to all participants through both verbal and written information (Appendix 14). Participants were provided with an interview outline before giving consent. Each participant was provided with opportunities to ask questions before, during, and after the interview process. Written and verbal consent was gained from all participants. Parents/carers of participants were provided with written information (Appendix 14) about the study and their written consent was gained prior to the interview process.

### 3.7.2 Confidentiality

All participants were given pseudonyms to preserve anonymity and confidentiality. During transcription, any other potentially identifiable information, such as people and place names, were removed or replaced with pseudonyms (Braun & Clarke, 2013). Audio recordings were stored securely and deleted after transcription and familiarisation. All data gathered, including consent forms and transcriptions, were stored securely and confidentially in password-protected folders on a secure, password-protected computer.

### 3.7.3 Right to withdraw

All participants were informed both verbally and in writing of their right to withdraw. They were notified that they could decline any of the interview questions. At the start and end of the interviews, participants were asked if they would like to continue in the research. During the interview debrief, the right to withdraw without justification and consequence was repeated to participants. They were informed that they could withdraw up to two weeks

following the date of the interview and that all associated data would be deleted and removed from the research.

### 3.7.4 Reducing harm

Due to the possibility that interviewing young people about their climate change concerns could raise some difficult feelings, several steps were taken to minimise these and their impact on participants. The interview schedule was devised to ensure that the final interview questions were not focused on feelings and included an emphasis on hope. Prior to beginning each interview, a plan was made with each participant about how to proceed if they became upset. A member of school staff was available during and after the interviews if the participants felt they needed further wellbeing support. The researcher's doctoral training in educational psychology included a focus on interpersonal skills and they were alert to participants showing signs that they may be feeling upset or distressed, such as changes in body language (Bourke & Loveridge, 2014). None of the participants showed indicators of emotional distress during the interviews and support following the interviews was not required. Inclusion criteria ensured that individuals known to be experiencing extreme psychological distress or accessing or awaiting external mental health support were excluded from the research. As part of the interview debrief, participants had an opportunity to explore any emotional responses or concerns raised during the interview. A debrief sheet (Appendix 19) was explained and provided to all participants that included signposting to relevant support services. A further debrief sheet (Appendix 20) was provided to participants' parents/carers.

During the interviews, some participants expressed a sense of helplessness in relation to climate change. The researcher used supportive questioning within the interview debrief to enable participants to recognise they had some agency, were already taking positive action, and had ideas of further action

they could take. One participant described themselves as “a terrible person” for wanting to travel via a plane despite the high carbon impact. Again, the researcher used interpersonal skills to support and reassure the participant.

Further measures taken to minimise harm to participants included conducting interviews in a familiar location and including time for problem-free talk before beginning to help participants feel at ease.

## 3.8 Reflexivity

Reflexivity describes an ongoing process integral to all stages of research wherein the researcher acknowledges and takes responsibility for their own subjectivity and situatedness in informing and shaping the study (Berger, 2015; Olmos-Vega et al., 2022). The researcher continuously critiques and evaluates how their own context, values, assumptions, and experiences, may impact the research process (Braun & Clarke, 2022; Finlay, 2002; Terry & Hayfield, 2020).

Researcher reflexivity in the current study was supported through the use of a research diary (Nadin & Cassell, 2006). This enabled the researcher to reflect, interrogate their responses, explore meanings, and consider how their own background, beliefs, and knowledge shaped aspects of the research process (Braun & Clarke, 2022). Reflexive logs within the diary were completed after each participant interview, throughout the analytic process, and at other points throughout the study, such as following research supervision. Extracts of the reflexive log are included throughout the paper. To demonstrate how the researcher interpreted data and reached conclusions, examples of raw data, analysed transcripts, and photographs demonstrating theme generation are included in the appendices.

The researcher outlined their personal and professional interest (1.3) for exploring the research aims, provided a statement of positionality (1.4), and described their own ontological and epistemological position (3.3) to ensure that their personal positionality was transparent to readers.

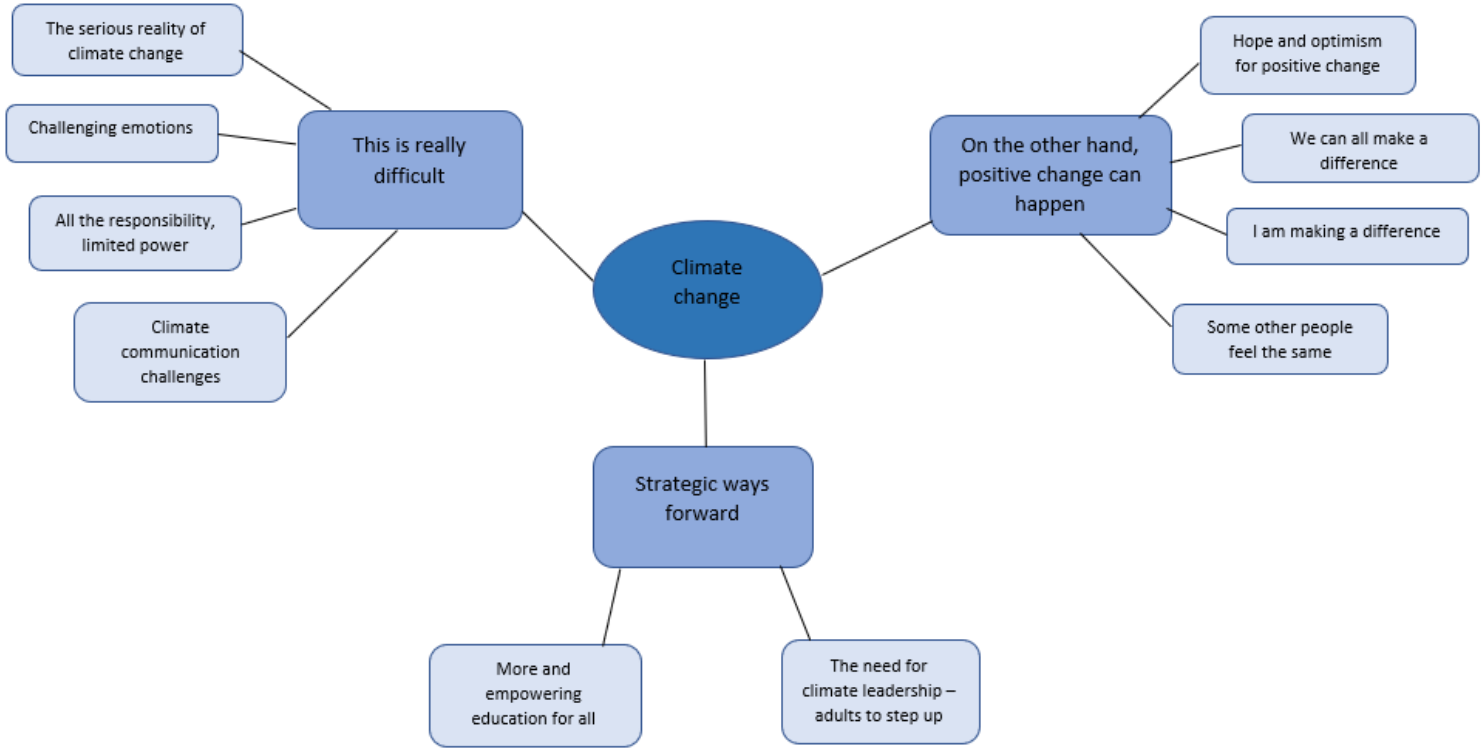
# Chapter 4: Analysis

## 4.1 Chapter introduction

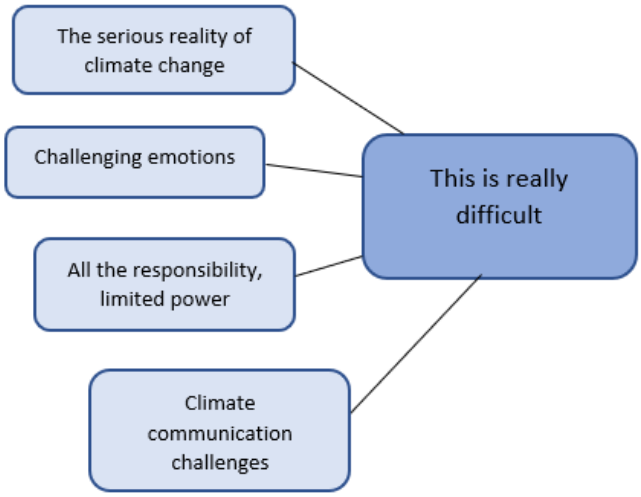
This chapter discusses the three main themes and 10 related sub-themes generated during reflexive TA. Due to the interconnected nature of the research questions, the chapter presents themes relating to both questions collectively, while chapter 5 addresses each question in turn. A thematic map is presented overleaf (Figure 4.1). Interpretations and discussions of each theme and related sub-themes alongside interview data extracts follow. Further details describing the analysis process and how themes were generated can be found in chapter 3.

## 4.2 Overview of themes

Figure 4.1 Thematic map of main themes and sub-themes



## 4.3. Theme 1: This is really difficult




This theme was built around the shared and enduring sense that climate change awareness and knowledge was challenging for participants. Within this theme, four sub-themes, each describing an aspect of the related challenges, were generated. These included the uncomfortable acknowledgement of the serious reality of climate change, the associated challenging emotions, the juxtaposition of holding responsibility to fix climate change while having limited power to make meaningful change, and climate change communication difficulties.

### 4.3.1 Sub-theme 1.1: The serious reality of climate change

This sub-theme lays the foundations for subsequent aspects within this theme and in many ways, the following themes. Participants unanimously discussed climate change as a current, real, and serious threat to the planet. Participants spoke about the impacts of a changing and unstable planet on weather and climate systems around the world including here in the UK. The degradation and destruction of the natural world was also described.

*George: "In general what I've heard about climate change is it's global warming, it's ice caps melting, it's the tonnes of rubbish in the ocean, anything that's helping destroying the environment."*

*Ava: "Like obviously those in all third world countries get more of the effects of, what is it? ((pause)) like tropical storms and things like that."*

*Oliver: "Like the last summer we've just had it was like 40-degree weather which was insane. I feel like later on in life this will become more of an average like temperature. Not just in summer maybe but spring."*

A sense of urgency and needing to act quickly to mitigate the impacts of climate change was shared between most participants. They spoke of the limited time remaining and alluded to climate tipping points, the critical thresholds that when crossed, can lead to large and likely permanent changes to the climate system.

*Ava: "… in the future if it just goes unchanged completely like the big proper factories and big producers of greenhouse gases, the amount of waste we produce, so on and so forth, it's only so long until like irreversible damage is going to be caused."*

*Emma: "We should take the opportunity to look after the planet while we still can."*

*Isobel: "…statistics about like carbon emissions or how like there's only like a certain amount of years left until like something drastic happens..."*

Isobel's use of the word "drastic" appeared to convey the significant and serious threat of climate change that she experiences. Despite the explicit need to act quickly, a sense that it was not too late to act was also felt in the participants' responses, illustrated by Emma's phrase "…while we still can".

Concern and compassion for wildlife was expressed by some participants who spoke about the impact on animals, suggesting they perceived climate change as an existential threat to animals.

> *Ava: "The effect of this is that the climate gets increasingly more unstable which increases the likelihood of species dying or migrating to other places where they're not usually meant to be."*

> *Emma: "I watch a lot of er, environmental like videos and documentaries about how lots of animals have had to like relocate and things like that."*

> *Isobel: "… like I said like the animals and stuff that are having to relocate and change and they're like dying."*

> *George: "… it's more when I see a nature documentary of whatever, and I see what's happening, when I want to make a change."*

Most participants acknowledged the anthropogenic nature of climate change, connecting the actions of humans and their contribution to greenhouse gas emissions to the changing climate.

> *Emma: "I guess just the way that erm the environment and the climate have been affected by, I don't know, I'd say mainly industrialisation and*

*the changes in the world and how that's affecting people and the planet."*

*George: "… they [COP26] want the UK to pay a load of money because we started the industrial revolution which was all the factories that kicked off the pollution in the first place […] I do like how they brought it up and said you need to solve some of this as well. You were a very, very big contributor […] to it."*

*Isobel: "… how our world's changing because of, just because of <u>us</u> really."*

Isobel's use of the term "us" when speaking about causing climate change possibly conveyed a sense of blame and responsibility, although it was not clear if this was felt personally or directed towards humankind more generally.

### 4.3.2 Sub-theme 1.2: Challenging emotions

Following on from sub-theme 1, the '*Challenging emotions'* sub-theme explores the difficult feelings of anger, frustration, sadness, anxiety, and guilt that participants experienced due to knowing about the reality and seriousness of climate change.

Most participants shared how the reality of climate change was constantly in their awareness and conscious, indicating that although they didn't think about the issue all of the time, they never really felt able to switch off from the topic.

*George: "Like I'm always aware of it."*

*Ava: "…but it still kind of keep it in mind."*

*Isobel: "I mean it's always at the back of my mind, as in like, just thinking about that."*

This highlights the pervasive and intrusive nature of participants' climate change thoughts and raises questions about the extent to which climate concerns may be impacting their daily lives.

Most participants described experiencing anger and frustration in relation to climate change. Participants spoke about annoyance at seeing a lack of care and concern by others including friends, peers, family members, and within the media. Noticing apathy and "uncare" in others who didn't appear to share a passion for the planet seemed difficult for participants to experience.

*Isobel: "Being in high school, there's a lot of people who don't take care […] I think, a lot of the times, we, we're quite selfish in that we don't really think about the future that much."*

*Emma: "Yeah, like it really frustrates me because my brother leaves his bedroom lights on all the time and me and my mum are constantly nagging him all the time."*

*Ava: "Actually there was one assembly about it that got me a bit upset because some people were laughing about it and I was like 'why the hell are you laughing about it?' It just shows how careless loads of people are."*

The frustration of seeing uncare by others was an idea frequently revisited by Ava.

> *Ava: "But I don't think people care that much. Like they fail to see the impact of it but it's like they can't be bothered to change. It kind of as well just makes me a bit annoyed, a bit upset."*

Some participants described frustration towards seeing climate negation and disavowal within the wider public.

> *Emma: "I guess just like, it annoys me when I see people like climate change deniers or when they say 'its not a big deal' or 'it doesn't exist', it's just frustrating that some people can be a bit close-minded and not aware of what's going on or want to be aware of what's going on."*

Emma's use of the language "or want to be aware" reflects a sense that she felt that some people in society are willingly ignorant and actively choose to look away from climate change.

Further frustration expressed by participants was connected to the length of time it is taking for climate action to be taken along with apparent inaction. This suggested some participants felt that climate change continues to be perceived as insignificant and of low priority.

> *Isobel: "I feel like maybe a bit like confused I'd say because I don't like understand why things couldn't have changed earlier. Like why like it's still taking like this long for like changes to happen?"*

*Ava: "I think it's just mainly when I get a bit upset about it when I'm like, it seems so hopeless cos all of this is happening and it's not happening fast enough, not enough is being done to try and restrict the climate change and the effects of it that are going to happen, already happening."*

*Emma: "I feel like at the moment, not a lot is being done."*

Much of Isobel's frustration was directed at large companies who demonstrated irresponsible environmental practices, involving highly wasteful behaviours, or intentionally limiting the life of products. She recognised the complexity of climate change-related issues and acknowledged the links with consumerism but expressed frustration and confusion about how this could be allowed to happen, implying that she felt greater accountability was required.

*Isobel: "I think, it, especially angry at the big [companies]. I mean there was this thing, like not that long ago and it was like all of the waste and the new products that [specific company] just throw in the bin, just all the returns that they don't give them to people who need them, they just throw them away completely, it's just like, why, why would you do that? […] And like, I mean companies such as [specific company] and stuff, they, I read something, and they purposefully make their phones you know worse. They make them so you have to get a new one. So it's just like, obviously they earn more money but it's just like a waste of all the materials."*

Feelings of anxiety and uncertainty about what the future may hold for the planet, themselves, and future generations were described by most participants. The use of the term "suffer" was frequently used when talking about what was to come, conveying a sense of forthcoming pain and difficulty

for either themselves or the following generations. A potential division was noted between generations with a sense that theirs would be the first to be seriously impacted by climate change.

> *Isobel: "I just think we should all, all care about it more because it's our planet and you know, our future generations that are going to have to suffer."*

> *Oliver: "I guess climate change is obviously something that is going to affect later generations especially like people my age erm, not so much my parents and they're getting older now and they er so they might not suffer like the full consequences of climate change…"*

For Emma, this anxiety contributed to her decision not to have children as she was uncertain what state the planet would be like for the next generation, suggesting she viewed climate change as a potential existential threat to Earth and humankind.

> *Emma: "… sometimes there is a bit like a bit of, of anxiety about like 'if we don't change things now then what's going to happen?' I also think about the next generation, like I personally don't want children and I also think that part of that is because I feel like at some point if nothing gets done now then there won't be a planet for the next generation or a healthy planet, for the next generation."*

Emma's life expectations and thoughts about herself as a future adult appear to be significantly impacted by her understanding and concerns about climate change.

Further challenging feelings, including sadness, despair, guilt, and hopelessness were experienced by participants. Their difficult feelings were often linked to exposure to the reality of climate change through media or social media with participants recognising how watching documentaries and seeing or hearing news content and images, evoked such feelings, indicating their temporary nature.

> *Oliver: "I mean it is quite upsetting the fact that like the Earth's been around for I want to say millions, probably billions of years and its now become an issue within my lifetime."*

> *Ava: "But it's only maybe like when I like hear stuff about it that I get upset about it."*

> *Isobel: "I mean it's quite, you know, it's quite sad, especially, you know when you see a lot of images […] we don't really see it that much so we don't really think about it."*

Feelings of internal conflict and guilt were expressed by George as he talked about his hopes and plans for the future. He recognised the tension between his desire for living a life where he could travel the globe and drive his favourite car, and the damage this may cause to the environment. This appeared to create a dilemma between the ethical life he feels he should live and the life he would like to live and perhaps has seen previous generations enjoy. Similar to Emma's experience described earlier, this indicates that George perceives climate change impacting and possibly limiting his future opportunities and life expectations.

> *George: "I'm a terrible person, I want to go round different countries, explore the planet and that's planes, and planes aren't great."*

*George: "… cars are difficult for me cos I also very much like SUVs, it's my favourite car but I know it's terrible for the environment."*

Most participants shared feelings of mistrust in relation to climate change. Mistrust was directed towards media, social media, and the news, as well as the government's position on climate change. Some participants spoke about the importance of engaging critically with media and ensuring the sources they accessed were credible and trustworthy, recognising the presence of fake news and misinformation within the topic.

*George: "I feel like, I don't know how far they've [the government] gone along cos everything I read is a different story about it but erm getting rid of fossil fuels."*

*Emma: "… and making sure it's the right media and I'm not reading things that might not be entirely true, so, just like reading the news and making sure my sources are good, reliable sources […] I have to like know where I'm getting the information from and how reliable it is. But then also just kind of like fact checking, so looking at one source and then thinking 'ok but how does someone else portray this?' so trying to find something else written by someone else on the same topic."*

*Isobel: "I'd say that's [media climate coverage] like helpful but then there's also a lot of fake news out there so that like differentiating and knowing like what is like the real and the fake news."*

Isobel also spoke about mistrust in relation to greenwashing and the need to be cautious when hearing about individuals who espouse to being committed to addressing climate change and environmental issues.

*Isobel: "Yeah, I mean, there's always like videos and there's always like people that will be like 'oh I've just, like don't know, I've just made this big impact, you know like helping the environment' but then if you do like more further research into it that's you know a lie and they only did that to make themselves look good."*

While participants discussed the challenges of experiencing such difficult emotions when faced with the serious reality of climate change, one participant described how their climate change awareness and associated challenging feelings motivated them to act.

*George: "But the sad stories remind me that there's still more to be done."*

*George: "…seeing it just makes it worse and then, but it's things like that that they make me do, try and do more."*

Oliver expressed making a conscious effort to try and stay away from thinking about climate change and the related difficult feelings, suggesting he may be using avoidance to help him to cope with the reality of climate change.

*Oliver: "I don't, I don't really want to dwell on that that much."*

*Oliver: "I don't want it to get me down"*

### 4.3.3 Sub-theme 1.3: All the responsibility, limited power

This sub-theme describes the sense that most participants felt the weight of climate change on their shoulders, alongside a feeling that they lacked power to make meaningful change. Much of this felt responsibility appeared to come from societal expectations placed on younger people to solve the inherited issue alongside the perceived failure of previous generations to act effectively.

> *Emma: "I just feel like as the younger generation, I feel like we should really start thinking about what we can do to like amend the situation, like what maybe past generations haven't done."*

> *Oliver: "Like erm personally I feel like its […] mentioned to people my age because especially, I don't know, I feel like people understand we care, if you get me?"*

> *George: … cos older people, you can get them to change but like I don't think they see it as much of a big deal as young people would cos it's going to be, well, our world at some point, not theirs."*

Oliver spoke about how climate change was viewed as an issue for his own generation rather than a concern for his parents.

> *Oliver: "She, she [parent] understands that it's like more of an issue that I'll be facing so she doesn't like really dwell on it that much."*

These ideas indicate the perception that adults are not invested in or prioritising climate change because they feel it won't have a serious impact on

themselves, therefore, they are happy to leave the younger generations to clean up the mess. This reflects a view of adults as potentially selfish and gives further support to the idea of a division between generations due to the felt generational inequity of climate change impacts.

While feeling the responsibility of climate change, some participants simultaneously expressed feeling ill-equipped to tackle the issue and bring about meaningful change. They shared a sense of limited power, which described their relative lack of agency, self-efficacy, and perceived behavioural control. This appeared to be, in part, due to their age and position as children who are highly reliant and economically dependent on the adults in their lives, and therefore, have limited opportunities to make their own decisions about pro-environmental behaviour. Participants also shared a sense of lacking knowledge about what else they could do to make a difference.

> *Isobel: "Well, I, it's quite difficult because I think that I'm doing you know the best I can but then at the same then obviously you can always do more so I just wish, I don't know there was like more, a bigger way to make, making a bigger impact than just like recycling."*

> *George: "… as much as I want to do something, I don't know how much more I can do. Like I can do the things that I mentioned but like I can't drive so I can't drive an electric car or I can't er, I can't change if we are using natural gas or electricity or solar panels to run our house, that's not my decision. I can of course like suggest it, but I can't like change it."*

> *Oliver: "I'm really not sure what I can do right now."*

*Ava: "I feel like it's difficult to do more. There's only so much that's in our control, in our position to do."*

*Emma: "I'm not sure what else I can do."*

Participants' lack of power was also related to their sense of being just one individual. This suggests participants recognised a need for collective responsibility and action on a wide scale, including a need for large companies and industries to be more accountable for their impacts.

*George: "… most people say they want to make a difference, but, how much can you really do on your own? […] there's only so much a person can do."*

*Ava: "Obviously it's not just individuals it's the big companies affecting most of the like emissions that's produced and the things that are happening on like a grander scale, but if more people did certain things it would have more of an impact rather than just a few."*

*Isobel: "It's just, it's just like we can only do so much before it's like yeah, it's like those companies that like should do more than us, because obviously, they're you know, making a bigger impact."*

### 4.3.4 Sub-theme 1.4: Climate communication challenges

This sub-theme describes some of the challenges that participants described in relation to talking with others about climate change. These challenges included an apparent lack of real discussion and conversation about climate

change, as well as barriers to having meaningful and respectful conversations about the issue, including being dismissed, lacking “voice”, and the tension of holding a different view.

A shared idea throughout most of the interviews concerned the scarcity of climate change talk, which was noted amongst friends, family, work, and at school. While some participants mentioned talking to either family or friends about climate change, most expressed that it wasn’t a topic that was generally discussed.

> *Oliver: “It might be like the odd conversation about climate change. I can’t remember the last time we [friends] had a conversation about climate change, but it could erm come up…”*

> *Ava: “Not necessarily. We [friends] don’t usually talk about climate change.”*

> *George: “I don’t think that’s like the main topic that comes up [with friends].”*

> *Oliver: “…she’s [parent] never really that fussed about [talking about] it.”*

> *Isobel: “We don’t really like, talk about it much at school.”*

Isobel described how climate conversations were sometimes prompted by significant events featured within the media, suggesting that mainstream

media coverage of high-profile events made it more socially acceptable to talk about the issue.

> *Isobel: "I mean it occasionally, you know, gets brought up, if there's like a big event or a new erm you know, a new incident that's been released."*

Although climate change was a real concern and played on the mind of many participants, several did not seem to have opportunities to talk freely about the subject with family, friends, or adults at school, suggesting that they kept much of their difficult thoughts and feelings to themselves.

While there appeared to be a climate silence in aspects of many participants' lives, when they did attempt to talk to others about the topic, this was sometimes met with challenges. One participant drew on their experiences of not being taken seriously by some adults because of their age, implying a sense of being voiceless.

> *Emma: "I feel like sometimes, like depending on who it is, not like normally my family members but some people can be a bit dismissive. I feel like a lot of people look at the young generation and think, like 'oh they're just like young radical children and that they'll grow out of it', a bit dismissive sometimes."*

Emma's assumption of others' viewing her climate concerns as "radical" and something she will "grow out of it" reflects a sense of patronisation that she may have felt from adults, either directed at herself personally, or at young people more widely.

Linked to the sense of being voiceless, George spoke about his doubt on whether or not his friends would pay attention to him if he raised the topic of climate change.

> *George: "I could talk to all of them about climate change. Whether they will actually listen or not I don't know ((general laughter))."*

Similarly, Ava spoke about her lack of confidence in speaking up about the issue of recycling to work colleagues and she questioned whether they would listen to her. This view seemed to be partly based on her opinion of her colleagues as lacking care and concern for the climate.

> *Ava: "I don't feel that confident to be honest [raising the issue of recycling], because […] they'll probably say it's an inconvenience […] I think they'll just be, 'why do you care'?"*

These illustrations point to the possibility that participants may not be fully exposing their environmental passion and concern for climate change, perhaps due to fear of others' responses and for being seen to hold a different view.

The frustration of talking to family members who lacked perceived behavioural control or seemed to hold a fatalistic view of climate change was discussed by some participants.

> *Emma: "I've had like conversations with all my family members in my past and they've had that similar 'oh there's nothing we can do' outlook, like, like 'it's too late now to fix it', and I've tried to explain that there is things we can do …"*

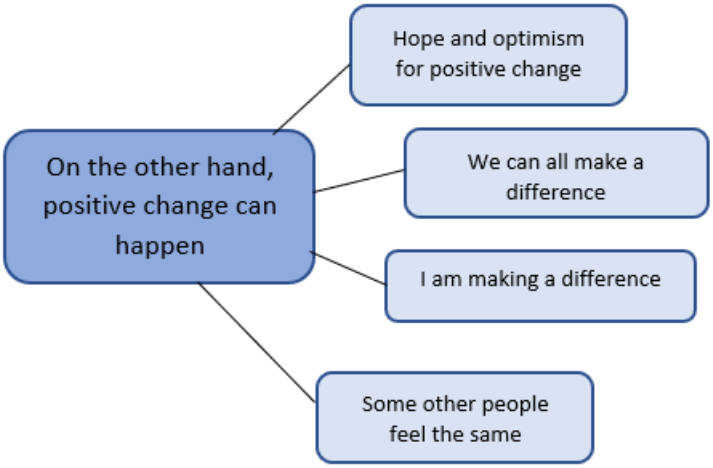
*Isobel: "It'd be like, they'd [family members] probably just say something like 'it's, it's been happening for so long'. Like they just don't really, they just don't see the point in like caring so much."*

Other participants spoke about the domestic tension when they had attempted to raise the issue with family members. For some, there was a sense of friction and division between generations, with the older generations being perceived as showing more apathy and uncare.

*Ava: "[…] I think they're [parent] just […] annoyed that I'm making such a fuss over it [recycling], but I think, 'well why not do it when I can?"*

These point to the difficulties participants experienced in trying to understand others' views and the sense of frustration they faced during conversations when they could not convince others to care or believe they could make a difference.

## 4.4 Theme 2: On the other hand, positive change can happen



In contrast to theme 1, which focused on the difficulties of knowing about climate change, theme 2 discusses the more optimistic aspects experienced by participants related to the notion that positive change can happen. This theme captures the sense that, although participants experienced challenging thoughts and emotions about climate change, for most, these feelings were transient and did not appear to completely dominate thinking, allowing space for a more positive outlook. The analysis of data for this theme sits across four sub-themes encompassing '*Hope and optimism for positive change', 'We can all make a difference', 'I am making a difference',* and '*Some other people feel the same'.*

### 4.4.1 Sub-theme 2.1: Hope and optimism for positive change

*'Hope and optimism for positive change'* explores participants' expression of positivity, hope, and optimism for addressing climate change and creating a brighter future. This sub-theme sets the scene for the following three sub-themes, with narratives of hope and optimism running through each aspect of the main theme.

> *George: "Like hope isn't actually lost yet."*

> *Emma: "Yeah, kind of open to the possibility of things changing and being quite optimistic."*

> *Ava: "I'm hopeful that more people will start to take action."*

For some, the current situation was viewed as an opportunity that needed to be grasped and their enthusiasm for wanting to be part of the solution was evident.

*George: "I like trying to make the differences."*

*Emma: "I guess I'm quite passionate about climate change and taking this opportunity to make a difference."*

*Ava: But I've […] wanted to do what I can.*

For George and Emma, this feeling of hope was motivated by the confidence and belief in the younger generation to take climate change seriously and bring about change.

*Emma: "I think it's the thought about, I feel like the younger generation are now more open about discussing climate change and what we can do."*

*George: "…it's young people, which is good [being involved in climate activism] I like that young people are trying to, cos, I feel like more change will come from young people."*

Oliver's sense of optimism appeared to stem from thinking that once more people have an improved understanding of climate change, they will be more likely to take appropriate action.

*Oliver: "… when people, once they actually understand what climate change is, they can actually sort like what they can do out to like limit the massive impact of climate change."*

Some participants connected their sense of optimism for positive change to learning about positive action being taken to address climate change. Participants felt reassured to know that many people were working on mitigation projects around the world. Some participants intentionally followed news sources with positive climate change stories.

> *Isobel: "I follow this like news page and it's about like you know, like good things that are happening towards the environment. Instead of seeing all these you know bad things it makes, it makes you happier […] and you know it makes you feel like happier in that sense, like things are you know, being done."*

> *George: "Sometimes it's like a news story of people that have gone out their way to, to do something."*

Later in the interview, George explained the impact of hearing about climate and ecological developments.

> *George: "The outlook on it I have is, positive stories, ((pause)), like reassure me that there are people actually doing something."*

Emma also discussed her experience of engaging with climate and environmental stories through news and social media.

> *Interviewer: "You've mentioned having mixed feelings about climate change. Can you tell me about the times you feel more optimistic?"*

*Emma: "I think it's just like, like reading things and whether that's good, like good developments."*

When asked about possible ways to support a young person with climate change concerns, Emma suggested that a person feeling worried and anxious could be supported by hearing about such positive news stories.

*Emma: "…if someone has like some anxiety about climate change then they should be able to have some like happier resources to access as well not just things about how bad the climate is, like the positives as well."*

Therefore, participants found it helpful to know about solutions as well as the problems. Being aware of others taking positive action to combat climate change seemed to support participants' sense of hope and reassurance. This appeared to support their wellbeing and ability to manage their concerns and difficult emotions.

*Reflexive log*

*Whilst coding and generating themes, I was conscious that I may be seeking out examples of hope and positivity within the data. Talking this through during a tutorial helped me to recognise that much of my approach to working as a TEP was underpinned by solution-focused principles and involved finding these glimmers of hope and possibilities that may be influencing my interpretation. Similarly, I noticed that in some respects I had been shying away from fully exploring the range of challenging emotions that participants had expressed. Working with my tutor enabled me to see how I was shaping the analysis and encouraged me to take a step back to embrace the range of feelings expressed by participants. I also reflected on the sense of hope and optimism I felt during and following the interviews fuelled by participants' passion and knowledge. I was aware that I wanted the analysis to reflect this positivity.*

### 4.4.2 Sub-theme 2.2: We can all make a difference

Participants talked about the importance of the small actions everyone can and should take to make a difference and help to reduce the effects of climate change, with participants seeing the issue as everyone's responsibility. This connected with the overall theme that positive change can happen by the implicit assumption, that if more people took such action, change would come, and humankind would be in a better position to mitigate and adapt to the impacts of climate change.

Participants discussed a range of pro-environmental behavioural changes which could potentially reduce carbon emissions, including recycling, reusing items, reducing energy use, changing diets, and utilising public transport. These actions tended to centre on personal actions, suggesting participants viewed much of the responsibility to mitigate climate change as resting with individuals.

> *Isobel: "… everyone can do their part, changing, like saving energy by turning off the lights, erm, yeah just like small things like that, obviously like recycling and just not using like excess things that we have to use."*

> *George: "… recycle is obviously quite a big one. If you recycle then you are doing something at least. And then I feel like consuming less meat might be helpful."*

> *Ava: "… focus on what you can do first and foremost. What's in your position to do, what can you do about taking transport, recycling, and your energy usage things like that."*

> *Emma: "It is possible to make a change if everybody really, ((pause)) participated."*

Some participants mentioned more collective approaches to acting against climate change, indicating the recognition of the importance of more coordinated and group action, perhaps in acknowledgement that climate change cannot be solved by individuals alone. This links with the sense, explored in sub-theme 1.3. (4.3.3) of one person being relatively powerless.

*Isobel: "[…] see if there's any like, I don't know, petitions or educate yourself more so if anyone comes to you you can talk about."*

*Ava: "But in terms of like, what if they were concerned about it as a whole if they might feel they want to do something bigger, like maybe, I don't know, I'm not big on making campaigns, but increasing awareness of it maybe, involving yourself in a charity, volunteering maybe."*

### 4.4.3 Sub-theme 2.3: I am making a difference

In contrast to participants' limited sense of power and climate self-efficacy explored in theme 1, participants simultaneously expressed having some sense of perceived behavioural control and self-efficacy in relation to climate change. On the surface this seems to suggest a conflict of views, however it appears that, despite feeling relatively powerless, participants still felt able to carry out actions that made a difference and helped to reduce their own climate change impacts within the small amount of control and influence they held. This sub-theme contributes to the wider theme of believing positive change can happen as participants viewed themselves as contributing to that upcoming change.

Participants discussed a range of ways they had changed their behaviour due to climate change concerns, indicating how climate change awareness had prompted them to consider and adapt their daily lifestyle choices. Similarly to sub-theme 1, these tended to focus on pro-environmental individual actions, furthering the assumption that participants felt a large part of the responsibility to mitigate climate change rests with individuals, including themselves.

These behaviours included recycling and being conscious of their water and energy use.

*Ava: "Well I always make sure if I'm not using a room I always just turn the light off […] and I don't like keeping the heating on if you don't need it on."*

*Emma: "I try to cut back on how much I use like electricity or like how long I spend in the shower."*

*George: "Like, I recycle at home."*

*Ava: "I think again like with recycling, I mean in our kitchen we have like different, different boxes that are for like different materials and I just carry on using that."*

Some participants talked about how their climate change concerns had influenced their diet and encouraged them to reduce or eliminate their meat consumption due to the high impact of meat on carbon emissions contributing to climate change.

*George: "… I can't become vegetarian, I like chicken too much. I try to cut down on like beef and pork cos I know they are quite big for $CO_2$."*

*Emma: "… because I'm vegetarian, so and I feel like most of the reason why I chose to be vegetarian was because of the climate, and because of how much, like agriculture affects climate."*

Isobel noted that she was mindful about contributing to food waste.

*Isobel: "… I think it makes me more [conscious about waste], I've got to eat everything or it just goes in the bin, otherwise."*

Participants talked about travel and how they made more effort to reduce their car use and increase their use of public transport as a way to lower their carbon emissions.

*Ava: "I don't want lifts in the car on short journeys cos it feels wasted."*

*Isobel: "I've been more conscious about travel especially, using public transport more such as like buses instead of like asking someone to give me ride in a car. It's just like a better use of energy if I were to get like public transport."*

George showed that he was thinking ahead to when he goes to university:

*George: "Thing is, when I'm at university, I'm probably not going to get a car. A) because they are expensive and B), cos they ruin the environment […] and if I did ever want to go into the city centre or wherever, I could probably find a bus. There's no, there's no like real reason for me to have a car."*

Additionally, participants described considering their retail behaviour and how they could make more climate-friendly choices when shopping.

*Ava: "I don't really like it when my mum buys me new clothes […] Recently I've wanted to get more into like charity shopping …"*

*Isobel: "… And I don't like, I don't like shop at like new, erm mainstream clothing brands, like everything I get is like second hand, I think it's just a lot more renew- renewable."*

*George: "So my notepads are all like eco-friendly."*

Some participants spoke about how they attempted to make a difference through raising awareness and talking to family and friends about the issue and the actions they can take to help reduce their impact on climate change.

*Emma: "I try, like at home I try and stress to like my mum and my brother about, like we need to recycle."*

*Isobel: "I like talk about it a lot with my family. Just to raise, like the concerns, especially with my little sister, just to like from an early age like make her aware that she needs to look after, look after her things so that she doesn't have to like, constantly get new things that will end up going in like landfill."*

Ava shared how she was considering other ways to help make a difference:

*Ava: "I could try and do, find a compost area, maybe make one of my own, find out what to do with it."*

For some, focusing on their own individual actions was a strategy to support them to cope with their challenging feelings associated with the reality of climate change. Knowing that they were making a difference and doing something to address climate change, helped to manage their concerns.

*Interviewer: "I was wondering what helps you to cope with those feelings and concerns around climate change?"*

*Isobel: "I think that I'm doing you know the best I can."*

*George: "This sounds really sad but sometimes I like making sure that all my rubbish has been sorted properly or something. Yeah, if it upsets me [climate change], then do something more to counter it."*

*Ava: "I suppose it's just mainly doing what I can."*

This suggests that while taking action supported them emotionally, participants may have been placing undue pressure on themselves to be as climate-friendly as possible.

*Reflexive log*

*Whilst reading interview transcripts and noticing how participants felt emotionally supported through acting against climate change, I reflected on to what extent I was using this research to support my own sense of climate action and therefore, my wellbeing. I had not thought about the research in this way before and had only considered the potential implications and benefits to others, not myself. Whilst this research will not reduce my carbon emissions, it makes sense that channelling my mix of difficult feelings into something practical and potentially useful to the climate issue, supports my sense of doing something and hopefully making a difference.*

### 4.4.4 Sub-theme 2.4: Some other people feel the same

The final sub-theme within the wider theme of *'On the other hand positive change can happen'* explores the sense gained through analysis that participants appreciated knowing other people shared their views regarding climate change. This appeared to contribute to their feelings of positivity that change may come.

Although participants described some of the difficulties involved in climate change conversations in sub-theme 1.4 (4.3.4), most participants were able to identify at least one other likeminded person they could connect with about climate change.

Participants spoke about the value of talking with others who held similar care and concern for the planet. Some participants felt this connection with specific family members.

> *Ava: "He's [father] also quite the same on this sort of thing so it's nice that he shares the same view."*

> *Isobel: "… they [grandparents] are like, I think they are angry as well you know […] so they kind of like have the same feelings."*

Knowing some friends held the same beliefs about climate change was seen as being important and supportive to participants.

*Ava: "But I just remember that both me and my friend were just a bit disappointed that people were making fun of the assembly [about climate change] and talked about it."*

*Isobel: "… my friends, especially as a lot of them have like similar views."*

Being aware of staff within school who also cared about the environment and climate change was seen as significant and a source of potential support for one participant.

*George: "… the [subject] teacher he's quite, quite an activist. So we'll learn some things in his class. Erm he'll do what he can to, help the environment kind of thing."*

The value of knowing about influential and inspiring young climate activists leading the way and acting as role models was expressed by some participants. Seeing people of their own age engage in climate activism appeared to support participants' sense of connection with other eco-compassionate young people. Specifically, Greta Thunberg was identified as an inspirational and motivational figure.

*George: "It's just I kept thinking, will I be asked about young people that have made a difference or that I look up to or something? And there's Greta […] She is definitely the face of the entire movement at the minute […] I like what she's doing."*

*Isobel: "…and I think obviously it became you know more apparent as I got older, seeing people like Greta Thunberg and things talking, talking*

*about it and big like climate change events that happened, making making more aware to people."*

*Emma: "And I feel like growing up in my generation I have kind of seen that myself with like, climate marches, and the work of Greta Thunberg, and just things like that."*

*Reflexive log*

*Thinking about the sense of support and hope that participants appeared to feel by knowing that other people cared about the planet as much of they did, reminded me of my own experiences, which until this point I perhaps had not fully considered. I recalled the time when I first joined a climate change group and the wonderful sense of reassurance and optimism alongside relief at being surrounded by other like-minded people, perhaps because my true environmental identify could be seen and understood. Immediately I felt a strong connection with others within the group, despite knowing very little about them. I wondered how my own experiences of this were impacting how I was making sense of the data and whether these recollections influenced my creation of this sub-theme.*

## 4.5 Theme 3: Strategic ways forward


The third and final theme captures participants' views about what needs to happen to address climate change and support young people and their concerns. The theme encompasses two sub-themes, with '*More and empowering education for all'* reflecting participants' perspectives of climate education as currently inadequate, and that greater focus needs to be given to equipping and empowering people of all ages to take meaningful action. The sub-theme, '*The need for visible climate leadership – all adults to step up'*, explores the sense that participants want to see adults, including parents, teachers, and political leaders, lead the way in addressing climate change.

### 4.5.1 Sub-theme 3.1: More and empowering education for all

There was commonality across participants that further climate change education was needed, both within schools and across wider society. Participants shared a sense that there was a lack of awareness and real understanding about the threat and it's impacts. Alongside supporting our knowledge and understanding of climate change, participants expressed the need to ensure that people were taught about solutions and how to take positive action.

Most participants discussed a lack of awareness and understanding about climate change across society, suggesting that climate education at a societal level was deficient. There was a sense that if people were more educated about the issue, they would show more compassion towards the planet and change their behaviour, suggesting participants viewed education as crucial in bringing about change.

> *Emma: "Like in general just more awareness. […] I feel like I've had experiences before with like older family members or just like anyone in general but have just been like 'oh well it's not a big deal, like there's nothing we can do'. And I feel like there should be more like, I don't know, like things for people to read and understand why."*

> *Isobel: "I think like everyone should be more aware of it [climate change]."*

> *Oliver: "… I personally feel like there's little awareness…."*

Ava made a connection between others' apathy and uncare with their lack of awareness and understanding.

> *Ava: "… it's lack of education about it, lack of just thinking about it, if more people talked about it and implemented more things, they'd get more aware of it and be more inclined to do something about it."*

The limited nature of climate change education within the school curriculum and wider school activities was discussed by some participants, suggesting that the issue was not regarded as significant.

*George: "But I, I can't remember anytime where it's [whole school learning day] been an environmental based one."*

*Oliver: "I remember having a few lessons in Year 11/Year 10. … And just loosely brushing on global warming and climate change and how it can affect the Earth. But examples weren't given in like current issues, within current issues for climate change."*

Oliver's description of "loosely brushing" on the topic indicates a view of a light-touch approach to climate change teaching and learning, suggesting that he felt this lacked depth. This was reflected later when he mentioned his own knowledge gaps, despite learning about the issue in school.

Oliver: "But personally, I don't feel much like ((pause)) aware about climate change like I think I should be […] I only know like a little bit."

A common idea expressed by participants was the need for greater and improved education across society. Here, participants felt that education should not only raise awareness and understanding about the impacts of climate change, but also help to provide people with solutions and ideas about the actions they can take to enable them to feel educated, equipped, and empowered to make a positive difference.

*Emma: "… resources […] to help educate people more on what's going on what they can do. And then obviously leading on, once people have that idea and that realisation that we have to do something, then obviously things put in place to help that to happen."*

Participants discussed the need to teach people about practical steps and solutions to tackle climate change to support their sense of climate self-efficacy. This suggests that participants felt the reason not all in society were acting was due to lacking knowledge about what they could do to help.

> *Ava: "Offer little things like 'ok this is what **you** can do, this is how **you** can spread awareness if you want to get involved with these groups, do these things'."*

> *Isobel "… I mean it gets spoken about quite often, but I'd probably say instead of just saying you know you need to take care of the environment, saying like **ways** to do that […] like practical, easy to do ways, you know like everybody can do, like everyone can like access."*

Emma spoke about the importance of ensuring people weren't left with just the difficult messages about the impacts of climate change but were also given hope they could be part of the solution, supporting individuals' perceived environmental behavioural control and sense of agency.

> *Emma: "I think like, well there should be information about what's going on, but then obviously reassurance that we can change that. Cause I feel like if people just say and like give things to do and explain why it is so important to do these things."*

Participants unanimously expressed that school needed to provide more opportunities for students to learn about climate change and how to address it. This involved both strengthening the current curriculum but also providing additional opportunities to explore issues outside of lessons, such as assemblies, tutor time, and within whole school learning days.

*Isobel: "I'd maybe say like show maybe occasionally like a PSHE lesson or something, show like the impacts, like err maybe like a short video or something that shows like what you are doing is hurting the environment."*

*Oliver: "…for like tutor time every morning, it could be like something like once per week, for example. We could have examples of how climate change is affecting the current, like world and what can be done to, ((pause)), what is gonna make you think, what can be done to like limit the impact."*

*Ava: "I think they could make more assemblies about it [climate change]."*

This idea implies participants felt that greater prioritisation and focus could be given to the issue of climate change within their school.

Alongside education, increasing opportunities for pro-environmental behaviour within schools was discussed by most participants. When asked what schools could do to help support CYP with climate change concerns, participants offered suggestions of practical climate-friendly practices, both at a systemic level and an individual level.

*Ava: "I feel like increasing more like recycling availabilities would probably get people more motivated to do it, like 'oh it's there I can see it' and if they became more aware of it as well it would probably mean more people would be inclined to recycle."*

*Oliver: "And then, print-outs in lessons, maybe, don't use as much paper for them."*

*Emma: "Just like more access to ((pause)) like at school here we have biodegradable napkins, which I think is quite cool, so just more things like that really."*

Ava suggested how school could make connections with community environmental groups, indicating a recognition that it is important to seek collective approaches and look beyond the school for action and solutions.

*Ava: "…maybe they could like provide some programmes, like volunteer programmes, like if you are interested in this, why not join these charities or join these groups, and stuff like that."*

These suggestions implied that, by seeing greater commitment to action and through raising the profile of climate change within school, more people would engage in pro-environmental behaviour. Furthermore, it appeared participants felt seeing action being taken by the school, staff, and students, would have a positive impact on their wellbeing and support in managing their climate concerns more effectively.

### 4.5.2 Sub-theme 3.2: The need for climate leadership – all adults to step up

This sub-theme describes the sense that participants value seeing *leaders* acting against climate change. Here, leaders is used as a broad term, relating to those with influence and includes parents, school staff, and the government.

The importance of adults acting as role models in addressing climate change was discussed by most participants. While some spoke about the positive influence of their parents/carers and extended family members, such as grandparents, in supporting their understanding of environmental issues including climate change, others expressed an expectation that parents should set examples for their children and help to educate them about the issue. This suggests participants recognised the crucial role parents can have in nurturing and developing children's outlook and behaviour in relation to climate change. George described how he viewed his parents as role models for their pro-environmental behaviour and he showed a sense of being grateful for their leadership.

> *George: "You get, you get a lot of what you take and see about the world from your parents. So I feel like it's a very good thing that I can erm look to them and go, look, they're, they're doing this and this to help the environment."*

Another participant spoke about the need for parents to support their child's interests and help to educate them about climate change and taking care of the planet.

> Emma: "I guess […] if they want to learn more about climate change like letting them access that. Especially like younger kids, like young kids like 5, 6. I don't know just being aware of the planet and what we have to do to look after the planet."

When asked what parents could do to support CYP with climate change concerns, many participants discussed the need for parents to take the initiative and lead climate conversations with their children.

*Isobel: "… you need to talk if you have kids, talk about it with your kids, I mean I'm sure there's, there'll be like cartoons out there that touch on it and just, just like show like what's right and wrong, you're like the role models …."*

*Oliver: "Let's say something happens on the news with regard to climate change […] but I get home […] and she [parent] could tell me more about it or er something like that."*

*Ava: "I think considering what they do, considering how they can influence, thinking, 'ok what can I do? what can I tell my children?' so they consider it more as well."*

These extracts suggest participants felt parents/carers have an obligation to support children to learn, think, and talk about climate change. Providing a safe space to discuss climate change within the family home seems to be of significance to the young people sampled.

Some participants identified a teacher in school they saw as a climate change role model and who they could look to for inspiration and influence, again emphasising the idea that participants valued seeing adults prioritise climate change.

*George: "That's something [paper use] my [subject] teacher goes on about a lot, cos he's, he's very big on the environment. So he will try and not use as much paper […] he also convinced me to make a, make a change. When I used to write my essays I'd use only half the paper."*

*Isobel: "Probably the best person [to talk to about climate change] would be like my [subject] teacher, he's obviously quite like passionate about the the environment so if anyone it would probably be him."*

There was consensus across participants that the government was not doing enough and that politicians could and should implement further changes to support climate change mitigation and adaptation. This implied participants felt climate change was not a government priority.

*Isobel: "I mean, I just think, er, like I mean the government could obviously do more about it [climate change]."*

*Emma: "But I feel like it's not really factored in as much as it should be into politics."*

Oliver felt the government had a responsibility to raise awareness and understanding of climate change, connecting with the previous sub-theme describing how participants felt society at large did not have adequate awareness and understanding about the topic to be able to take meaningful action.

*Oliver: "I just hope […] that maybe the government does more things to like ((pause)) make people aware of the issues around climate change."*

Most participants were keen to see climate-friendly legislation and policy, including bans and fines for climate-damaging practices.

*Ava: "… that government would introduce more things to reduce climate change like on a grander scale because if it's on a grander scale more people will be likely to do it because it's like 'oh, cos it's a law, we've got to do this'."*

*Isobel: "I mean, I just think, er, like I mean the government could obviously do more about it erm, just implement new, like you have to spend like a certain amount of money if you use this many carbon emissions, …"*

*George: "Like, they [the government] could say that they want to outlaw all massive diesel cars and like go for hybrid or electric cars."*

Participants seemed to indicate that the general public needed motivation and incentives to engage in more climate-friendly practices, along with disincentives to reduce or stop their climate-damaging behaviours. An implicit assumption within this sub-theme is the need for more top-down and authoritarian approaches, suggesting participants felt awareness and understanding alone would be insufficient to support individual change.

There was a sense that more could be done by the government to make pro-environmental behaviour cheaper, easier, and more attractive for society to access so more people could make more climate-friendly choices, including large-scale system change and improved infrastructure.

*Emma: "… like using public transport more. I feel like at the moment, public transport isn't great and I know a lot of people, obviously being at school, the thought of having to get a bus is a bit daunting, cos they're not always the nicest places. So I feel like more focus on improving these resources so people want to use them more."*

*Isobel: "I just think that obviously the petrol and the diesel cars are cheaper, but maybe make the electric cars cheaper so just so everyone can afford them…"*

*Reflexive log*

*Whilst considering participants' comments about the government, I considered my own political views and position. The sense that the government did not view climate change as a priority resonated with my own beliefs and I wondered if my stance here had shaped how I had heard and interpreted the data. I also reflected on whether, despite my attempts to remain neutral within the interviews, my non-verbal responses to participants' comments about the government during the interview process, may have indicated my feelings and therefore potentially influenced how they continued to discuss the government's role.*

## 4.6 Chapter summary

This chapter presented three main themes and 10 associated sub-themes generated during reflexive TA following semi-structured interviews exploring the views, feelings and experiences of adolescents concerned about climate change. Themes and related sub-themes were each discussed along with extracts from the interviews.

The three main themes generated were:

- *This is really difficult*
- *On the other hand… positive change can happen*
- *Strategic ways forward*

The following chapter discusses these themes in relation to the wider literature and theoretical frameworks, alongside considering the potential implications for practice.

# Chapter 5. Discussion

## 5.1 Chapter introduction

This chapter summarises the interpretations generated during analysis (chapter 4) to answer each of the study's two research questions. The chapter discusses themes in relation to research and theory explored within the literature review (chapter 2). A consideration of implications for practice and future research follows before examining the quality and trustworthiness of the research and discussing methodological limitations.

## 5.2 Research question 1. What are the views, feelings, and experiences of young people concerned about climate change?

Overall, participants felt that knowing about climate change was a challenging experience impacting various aspects of their lives. Despite this, most participants had hope and optimism that change would come. The two themes, *'This is really difficult'* and '*On the other hand, positive change can happen'*, are highly pertinent to this research question and a discussion of each follows, before exploring how they relate to each other.

### 5.2.1 This is really difficult

The theme '*This is really difficult'* encompasses the challenging aspects of climate change awareness. These include the weight of knowing about the

serious and scary reality of climate change, the range of difficult feelings in response to the threat, and the juxtaposition of feeling a sense of responsibility to fix the issue while simultaneously lacking agency and self-efficacy to meaningfully act. Each of these aspects align with the existing literature and findings in previous research.

The perception of climate change as a significant and serious issue supports findings discussed in the majority of studies examined within the SLR, in addition to large scale surveys (BBC, 2020; Save the Children, 2022; Votes for Schools, 2021) described in chapter 2. For example, participants shared a sense of urgency, a finding noted in all qualitative studies within the SLR (Karsgaard & Davidson, 2021; McDonald-Harker et al., 2022; Orlowski, 2020; Thompson et al., 2022). A key concern for participants was the devasting impact on animals, indicating care and compassion for wildlife.

A significant feature within this theme was the presence of a range of challenging emotions in response to climate change, consistent with much of the existing literature and research (Halstead et al., 2021; Hickman et al., 2021; Karsgaard & Davidson, 2021; Parry et al., 2022; Strife, 2012; The Royal College of Psychiatrists, 2020; Thompson et al., 2022; Trott, 2022).

Worry, uncertainty, and anxiety were described by participants who showed concern for the future of the planet, themselves, and future generations. Some young people talked about how their uncertainty about what the future would be like had impacted their thoughts and decisions about their own futures, including having children and opportunities for travel. The expression of worry by participants supports conclusions by Sciberras and Fernando (2022) as well as findings within the qualitative and quantitative research discussed in the SLR (Harker-Schuch et al., 2020; Hermans & Korhonen, 2017; Hickman et al., 2021; Lawson et al., 2019; Parry et al., 2022; Trott, 2022) that CYP are worried

about how climate change will impact the planet, their own lives, and those of future generations.

Participants' climate-related emotions also concerned other people's responses to climate change. Frustration and anger were expressed in relation to seeing climate uncare by others. Participants expressed a perception that despite having some climate change awareness, many other people fail to take the issue seriously, as shown in their actions, behaviour, and talk, including joking about the issue and engaging in environmentally unfriendly practices. This source of frustration connects with research by Diffey et al. (2022) which highlighted how many young people in their study noted feelings of anger, alongside fear and despair at seeing insufficient climate responses by others. Some participant's view of a lack of meaningful action and a slow pace of change by adults, seemed to contribute to their sense that climate change is not seen as a priority by some and acted as a source of frustration and anger. This conclusion supports previous findings by Hickman et al. (2021) that the perception of adults and governments specifically not taking adequate climate change action contributes to young people's feelings of distress.

Further challenging emotions experienced by participants included sadness, despair, and hopelessness. Often these feelings were associated with exposure to climate change impacts through media or social media, with participants describing how seeing the impact of climate change on animals and their habitats in wildlife and environmental videos, documentaries, and images was upsetting. This lends support to Parry et al.'s (2022) finding that viewing climate coverage via digital media evoked difficult feelings for some young people who felt that reporting and content was often very negative and problem-focused.

One participant also expressed a sense of guilt for wanting to experience some of the benefits of a high-carbon lifestyle, such as travelling by plane,

connecting with findings in an earlier study that noted wealth privilege and consumerist lifestyle-related guilt amongst young people (Karsgaard & Davidson, 2021).

In line with findings of previous research (Karsgaard & Davidson, 2021; Littrell et al., 2020; Parry et al., 2022; Thompson et al., 2022), young people in this study expressed a sense of responsibility towards contributing to solving climate change. They noted how their generation was being called upon to bring about change and felt they had no choice but to act immediately. This gives support to the narrative of young people as environmental “saviours” and agents of change within popular discourse and literature (Sanson et al., 2019), suggesting that this discourse may be putting CYP under pressure.

*Reflexive log*

*Whilst thinking about participants' sense of responsibility to fix the climate change mess, I once again doubted the appropriateness of my questions and asking participants for their ideas about what would help CYP. I was concerned that I had unfairly expected them to come up with solutions. I have found the societal narrative that young people will sort out climate change, a problem that they did not create, infuriating so to feel that I may have aligned myself with this viewpoint was uncomfortable. I also experienced shame and guilt when listening to the participants talk about how they felt adults showed little concern about climate change because they will not be significantly impacted. It was upsetting to think that, despite warnings from climate scientists over the last 40 years, our inaction has heavily contributed to a situation that now rests so heavily on the younger generation. I imagine that holding such strong feelings has influenced my interpretation of the related data. I wondered if I had expected participants to express anger and frustration towards older generations and whether I was noticing this more strongly within the data due to my own emotions. Initially, I thought that a generational divide may form a sub-theme, however, through the rigorous process of reflexive TA and my frequent returning to the original transcripts, data, and codes, it was clear that although this was evident in the data, it was not as prominent as I may have expected.*

Despite feeling responsible to fix climate change, young people in the current study felt ill-equipped to tackle the issue and take meaningful action, indicating a lack of agency and self-efficacy. Such feelings of powerlessness and helplessness were also explored in the wider literature (Hickman et al., 2021;

Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022). Karsgaard and Davidson (2021) noted how feelings of helplessness were connected to the sense of being just one individual, the lack of power associated with being a child, the lack of knowledge about how to address climate change, and the perception that climate change was too advanced to be stopped. Similar concerns were raised by participants in the current study, who shared a sense of limited power and, therefore, a relative lack of climate agency, self-efficacy, and perceived behavioural control that stemmed from a combination of being a child reliant on adults, being just one individual, and having insufficient knowledge of further solutions and actions.

Self-determination theory could help to explain how young people in this study may be emotionally impacted by climate change. Self-determination theory posits that one can experience personal wellbeing and cope with threats and stressors when all three basic psychological needs of autonomy, relatedness, and competence are met (Deci & Ryan, 2000; Ryan & Deci, 2017). Participants in this study appeared to lack autonomy in relation to climate change, as being dependent on their parents meant they had limited opportunities to make their own decisions about climate-related behaviour. In addition, they lacked some climate change competence and self-efficacy, due to feeling they didn't know what other action they could take, and that they were just one individual facing a huge challenge. Taken together, these suggest the threat of climate change for some CYP may impede at least two of the three basic psychological needs required for psychological wellbeing.

### 5.2.2 On the other hand, positive change can happen

The theme '*On the other hand, positive change can happen'* contrasts with the challenges described previously and focuses on participants' hope and optimism for a more positive future. Feelings of hope expressed by the

participants supports findings discussed in chapter 2 in which several studies (Finnegan, 2022; Halstead et al., 2021; Herrick et al., 2022; Hickman et al., 2021; Karsgaard & Davidson, 2021; Littrell et al., 2020; Ojala, 2012a, 2012c; Orlowski, 2020; Ratinen & Uusiautti, 2020) described a positive future outlook for the planet and humankind..

Participants were passionate about grasping the opportunity to make a difference and being part of the climate change solution. Sources of hope appeared to be the belief in the commitment of younger generations to solve the issue, learning about positive action around the world, feeling they had contributed to climate change mitigations, and a belief that when societal understanding increases, greater action would be taken. This suggests that the young people held constructive hope, rather than hope based on denial, which aligns with findings by Ratinen and Uusiautti (2020) who noted relatively high constructive climate change hope rather than denial hope amongst students in Finland. Similar to participants in the current study, constructive hope was based on awareness of climate change mitigation work taking place across the world and student's own sense of empowerment (Ratinen & Uusiautti, 2020). Research by Li and Monroe (2019) and Togneri (2022) also found that knowing about meaningful actions and learning about climate solutions supported CYP's sense of hope.

Current conclusions lend support to Ojala's (2012a) description of climate hope being comprised of three aspects, trust in our own ability to make a difference to climate change, trust in others to do so, and the positive reappraisal or reframing of the problem. As mentioned previously, participants showed some trust in their own ability to influence climate change problems (although they expressed some limitations as discussed in 4.3.3), expressed trust in some others, (although this seemed to be directed predominantly towards youth), and showed evidence of thinking differently about climate change (change will come as societal awareness increases). Taken together,

these suggest that Ojala's (2012a, 2015) climate hope definition may be a valuable tool in helping to understand and promote hope.

Young people's sense of hope in the face of climate change can also be understood through Snyder's (2000) theory. Hope theory (Snyder, 2000), as outlined in chapter 2, connects action with hope, and describes how agency and pathways thinking are both crucial to its development. The current study suggests that when CYP have belief in their ability to both engage in climate solutions, and to find workable pathways to achieve personal climate goals, their sense of climate hope may be fostered.

### 5.2.3 Overall views, feelings, and experiences of climate change

At first glance, the two aspects described previously, with participants experiencing a range of challenging thoughts and emotions in response to climate change alongside having a more positive, hopeful, and optimistic outlook, appear to contradict each other. However, in line with research discussed in the literature review (Finnegan, 2022; Halstead et al., 2021; Karsgaard & Davidson, 2021; Orlowski, 2020), participants appeared to hold two apparently opposing views simultaneously.

This conclusion connects with the notion of binocular vision (Bion, 1984; Nicholsen, 2002), (see 2.6.2) where contrasting perspectives of the same situation are held. While the severity of climate change is acknowledged, the huge efforts many are taking to address the issue are also recognised (Pihkala, 2018). Wray (2022) discusses how binocular vision supports a balance between hope and fear and is necessary for us to be able to face the challenges ahead. The literature suggests, therefore, that it is not only possible, but helpful for climate hope and distress to coexist, suggesting that many participants expressed a healthy response to climate change. This

implies that we should not attempt to eradicate difficult climate emotions but acknowledge and accept these while promoting hope.

## 5.3 Research question 2. What do young people perceive as helpful and unhelpful in supporting their climate change concerns?

Participants shared a range of supportive and unsupportive influences that they felt impacted their climate change concerns. While drawing on aspects of the third theme, '*Strategic ways forward'*, ideas from the previous two themes are also discussed due to the interconnected nature of themes and questions. Influences are organised into five main topics outlined below, although the reader will notice links and overlap between them:

- *Feeling educated and empowered v. feeling unprepared and ignorant*
- *Taking meaningful action v. a lack of agency and self-efficacy*
- *Seeing 'care' v. seeing 'uncare'*
- *Connection v. disconnection*
- *Supportive climate talk v. climate silence and dismissal*

### 5.3.1 Feeling educated and empowered v. feeling unprepared and ignorant

A relative lack of climate change awareness, education, and focus was noted by participants in the current study. They felt society at large lacked the knowledge and understanding necessary to motivate it into making climate-friendly behaviour choices. Supporting observations by Greer et al. (2023), the young people felt climate education in school was limited, and suggested ways to enhance opportunities to learn about the issue in school, including

strengthening the current curriculum and providing regular climate-focused sessions or events.

Participants were clear that they did not want to just receive facts and information about climate change and stressed the importance of learning practical climate solutions to feel equipped to make a positive and meaningful contribution to mitigating climate change, as captured by the sub-theme '*More and empowering climate education for all*'. This aligns with findings from previous studies with both students and teachers in the UK that argued for an action-oriented and empowering climate education (BERA, 2021; Dunlop et al., 2022). The conclusion that participants wanted more education about practical climate solutions supports the notion of pathways thinking within Snyder's (2000) hope theory. By learning about a variety of different climate-friendly options, young people can draw from a range of ways to reach their climate goals.

Overall, it appeared young people felt increasing the visibility of climate change as an issue within school, furthering their understanding of the topic, and being provided with a range of practical actions, would support their ability to cope with climate concerns. In contrast, a lack of meaningful climate education and focus within school was seen as unhelpful to participants.

### 5.3.2 Taking meaningful action v. a lack of agency and self-efficacy

The current research described how young people felt supported by knowing that they were taking meaningful action to address climate change, summarised in the sub-theme, *'I am making a difference'*. Overall, participants discussed using a range of individual pro-environmental behaviours to reduce their carbon emissions and environmental impact. Participants shared that carrying out such actions helped them to cope with their challenging climate

thoughts and feelings, a finding that supports previous research (Herrick et al., 2022; Karsgaard & Davidson, 2021; Littrell et al., 2020; Parry et al., 2022; Thompson et al., 2022; Trott, 2020; Trott, 2022). This suggests having a sense of climate agency may act as a source of emotional support for young people.

Connecting this interpretation to coping theory discussed in chapter 2, the majority of young people in the current study appeared to be relying heavily on problem-focused coping (Lazarus & Folkman, 1984). Problem-focused coping concentrates on ways to manage or change the problem. When climate change is viewed as the problem, coping strategies include concentrating on personal behaviours such as reducing journeys by car, adapting one's diet, and lowering energy use, which were all behaviours described by participants. While problem-focused coping approaches have often been viewed as a constructive way to manage stress (Clarke, 2006; Lazarus & Folkman, 1984), some propose they may not be helpful when coping with complex and largely uncontrollable problems (Heyman et al., 2010), suggesting that this strategy may not be supportive in a climate change context. Findings with young people in Sweden indicated that when children adopted climate problem-focused coping strategies and concentrated largely on individual actions, they experienced heightened distress (Ojala, 2012b, 2012c, 2013). However, when problem-focused coping was accompanied by meaning-focused coping strategies (Ojala, 2012b, 2012c, 2013), wellbeing increased.

Meaning-focused coping has been proposed as being helpful in coping with complex issues that cannot be solved quickly (Park & Folkman, 1997), suggesting it's utility in relation to managing the climate threat. Meaning-focused coping strategies involve positive reappraisal and the activation of emotions such as hope and trust in others (Ojala, 2012b). Examples of meaning-focused coping were noted by participants in the current study, for example, they placed trust in the younger generation, and shared a sense of hope that greater action would be taken once societal awareness and understanding increases. This suggests that participants utilised some

meaning-focused coping strategies alongside their predominant problem-focused coping approaches, which may have supported their coping and wellbeing. As meaning-focused coping strategies may play a role in activating hope (Ojala, 2012b, 2012c), it seems important that attention is paid to supporting children to develop meaning-focused alongside some problem-focused coping strategies.

Despite feeling that they were able to contribute through their individual actions, the young people also expressed lacking agency and self-efficacy, and shared they didn't know what more they could do, and that they had limited opportunities to make decisions about climate-related actions due to their age. This connects with concepts from self-determination theory (Bandura, 1997) as discussed in relation to research question 1 previously and explored more fully in chapter 2. For these young people, they experienced some sense of control and efficacy, but this was limited, and it appeared that the psychological needs of autonomy and competence (efficacy) were not fully satisfied, suggesting that, when viewed through a lens of self-determination theory, their wellbeing may have been impacted.

Self-determination theory, therefore, would emphasise the importance for schools to adopt strategies to support students' climate autonomy and competence. Research in the literature review described how climate action engagement promoted climate efficacy implicating this as an area of potential focus. In supporting CYP to act, caution must be taken to ensure there is not an over reliance on individual and personal actions which by themselves may reduce wellbeing (Ojala, 2012b, 2012c). Bandura's (2006) modes of proxy and collective agency as described in chapter 2 may be useful in recognising how agency can be supported beyond individual behaviours. Proxy agency could be supported by enabling young people to act through others with greater power and influence, for example, by lobbying local councillors (Koskela & Paloniemi, 2023) and engaging in democratic and political processes

(Gislason et al., 2021). Young people's collective agency could be promoted through group-, school-, or family-wide projects (Koskela & Paloniemi, 2023).

### 5.3.3 Seeing "care" v. seeing "uncare"

The young people in this study discussed the challenge of seeing others who didn't appear to care about climate change, echoing findings by Diffey et al. (2022), Hickman (2020), and Togneri (2022). This noticed "uncare", ranged from peers choosing not to recycle, a lack of climate-friendly behaviour opportunities within school (such as few recycling facilities), environmentally irresponsible practices by large companies, and a lack of government prioritisation.

In comparison, participants also spoke about noticing others who did show care and concern for climate change, as described in the sub-theme, '*Some other people feel the same'.* Knowing other people cared about climate change appeared to support young people cope with difficult feelings, perhaps by helping them to recognise they were not alone in facing climate change. Hearing and seeing positive climate news stories seemed to provide the young people with reassurance that action is being taken and they do not have to carry the burden alone. Further, seeing high-profile, young climate activists, and the younger generation take climate change seriously offered support and reassurance. Participants also appeared to value seeing adults (people in power, teachers, and family members) set an example and prioritise climate change, outlined in the sub-theme, '*The need for climate leadership – adults to step up'.*

Seeing care may have helped to foster young people's sense of trust in others, one of the key aspects of Ojala's (2012a) climate hope concept discussed previously. Further, seeing others take positive action may have supported participant's trust in their own ability to influence climate change.

These interpretations imply that young people may feel more supported and able to cope when they see climate change prioritised, particularly by adults and leaders, and when climate change care and concern is visible.

### 5.3.4 Connection v. disconnection

Connecting with other people who care about climate change seemed to support participants' feelings by activating hope and optimism and encouraging a sense of belonging. Also drawing on the sub-theme '*Some other people feel the same'*, participants valued having opportunities to talk and connect with equally passionate others (family, friends, peers, and teachers). The importance of connecting with likeminded others in helping people to cope with climate change noted in the current study is also described in previous research with children and young adults (Budziszewska & Głód, 2021; Halstead et al., 2021; Karsgaard & Davidson, 2021; Nairn, 2019; Togneri, 2022). Collective processes were found to foster hope in young adult climate activists who felt relief in being able to share the heavy responsibility of climate change with others (Nairn, 2019). This suggests opportunities to meet and work with others not only supports a sense of belonging, but may also reduce the disempowering feeling of being just one person facing a huge challenge alone as discussed in research question 1.

In contrast, listening to, talking to, or seeing others who didn't share the same environmental and climate concerns was noted to be difficult for participants, suggesting a feeling of disconnection from others may hinder young people's ability to cope with their concerns. A similar finding was noted by Eames et al. (2018) who suggested how an awareness of holding different environmental values to their peers could be a cause of difficulty for CYP.

This sense of belonging young people experienced by connecting with others passionate about climate change could be understood as relatedness within self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2017). Accordingly, relatedness is one of the three basic psychological needs that must be satisfied for people to experience wellbeing and have the ability to cope with stressors and threats. This highlights the importance of having opportunities to connect with likeminded others, suggesting a need for climate concerned young people to have other equally eco-compassionate people with which to relate. There is also an implication that competence, in terms of climate efficacy, may be promoted through collective action, giving further support to the need for schools to consider ways to bring groups of eco-compassionate young people and adults together.

### 5.3.5 Supportive climate talk v. climate silence and dismissal

The young people in this study described some of the challenges concerned with talking to others about climate change as summarised in the sub-theme *'Climate communication challenges'*. These encompassed a lack of meaningful talk and discussion about the subject, the tension involved in holding a different view, lacking voice, and being dismissed or belittled by others. Such difficulties appeared to be unhelpful to the climate concerned participants.

Participants' experiences of lacking a powerful voice and not having many opportunities to talk about climate change lend support to survey findings (BBC, 2020; Votes for Schools, 2021) discussed in the literature review, which reported children's sense of not being listened to in relation to the issue. Some participants in the present study experienced or anticipated dismissal by others when speaking up about their climate concerns, a difficulty also described by Hickman (2020). The current research suggests that some climate concerned CYP may not always feel able to talk freely about their related worries, and the

perception that they are being dismissed could signify a sense that their views lack importance and significance.

The supportive nature of being able to have meaningful and respectful conversations with others about climate change was highlighted by young people within this study. Participants shared they felt it would be helpful for parents to initiate and lead climate conversations within families, suggesting the provision of a safe space to discuss the issue would be supportive. This aligns with research which indicated that access to non-judgemental spaces where feelings can be shared, supported young people's ability to cope (Diffey et al., 2022). Teachers comfortable in a climate change discussion was also identified as a source of support for participants, which links with studies indicating that students who viewed their teachers as being accepting and respectful of their climate concerns and holding a positive future outlook, experienced greater constructive hope than students who felt their teachers failed to take their climate feelings seriously and adopted a more dismal future outlook (Finnegan, 2022; Ojala, 2015). Positive and respectful perceived communication by friends and family was also related to young people adopting more meaning and problem-focused coping strategies (Finnegan, 2022; Ojala, 2015), rather than the potentially less helpful emotion-focused approaches (Ojala & Bengtsson, 2019).

Such interpretations imply a role for schools and communities to provide regular safe and inclusive spaces for CYP to share their climate thoughts and feelings. Research (Baker et al., 2021) discussed in chapter 2 highlighted how parents and educators lacked confidence in discussing climate change concerns, emphasising the need to ensure adults around CYP feel comfortable and confident to respond to their concerns honestly, sensitively, and without causing further distress.

### 5.3.6 Overall helpful and unhelpful influences

In summary, several influences were identified as being helpful or potentially helpful in supporting participants to manage climate change concerns. These included comprehensive and empowering education focused on actions and solutions; opportunities to take meaningful action; seeing climate care and compassion in people, systems, and organisations; adults as role models; opportunities for discussion, including respectful climate conversations where feelings and concerns are accepted; and connecting with other likeminded people.

On the other hand, influences thought to be unhelpful to participants included inadequate climate education, a lack of power in making climate friendly decisions and action, seeing uncare, few opportunities to talk about climate change, dismissive responses, and placing all the responsibility to solve climate change on CYP.

Viewing these conclusions through a social-ecological framework (Bronfenbrenner, 1996) as discussed in chapter 2 highlight how influences at the micro- (family, peers), meso- (school, community), and exo- (government, media) systems surrounding CYP can influence their climate change concerns.

*Reflexive log*

*Listening to young people concerned about climate change has strengthened my commitment to ensure their voices are heard. It has encouraged me to continue to act to mitigate the effects of climate change. Carrying out the research enabled me to identify ways I can support the wellbeing and agency of CYP concerned about the climate within my work as a TEP. Recognising the need for young people to see "adults who care", I have adopted small but hopefully significant changes, such as wearing my climate badges on school visits. Engaging in the research has already supported my confidence in talking about the impact of climate change on CYP's wellbeing, both professionally and personally and the process encouraged me to establish a LA EPS climate change interest group: a space to talk, share climate feelings, consider our roles within the issue, and plan related action and steps. I have been compelled to scrutinise my own climate emotions, thoughts, and responses, and I now feel I have a more developed understanding of my own ways of coping. My sense of hope for the future has been amplified by having the privilege of talking to the young people within this study.*

## 5.4 Dissemination of research conclusions

The researcher arranged to share a summary of the completed research with the participants and the host school's link teacher. The study will be disseminated within the EPS where the researcher is on placement and will be further explored within the LA EPS climate change working group. The researcher has begun to create guidance materials for school staff and parents/carers regarding ways to support a child who is concerned about climate change. It is hoped the researcher will share conclusions more widely,

including within the Climate Concerns and Educational Psychology Interest Group.

## 5.5 Implications

This section will consider some of the implications from the current research for educational settings, EPs, and at a wider LA and government level. While the researcher recognises the current study is based on the views and experiences of a small sample of young people, conclusions support much of the previous research carried out beyond the UK. Therefore, it is hoped the interpretations will strengthen understanding and support the development of provision for CYP concerned about climate change.

### 5.5.1 Implications for schools and educational settings

The current research has a number of implications at the school level. Participants felt current climate education was inadequate and did not equip and empower them to take action to address climate change. While working within the constraints of the national curriculum, schools may wish to consider ways to provide greater opportunities for children to learn about and discuss climate change. Climate solutions should be taught to support students' sense of self-efficacy and ability to imagine a positive future. Supporting CYP to recognise where they do have climate control and agency within their lives will be important. This may involve a whole-school, creative, cross-curricular approach that moves climate change education beyond the traditional science and geography curricula. While providing a focus to enable CYP to take climate action seems critical, it is important to ensure the attention moves beyond personal actions, so they have a range of strategies and support from which to draw from.

Raising the profile of climate change within school will help young people to know others care about the issue. This could include making school-based solutions, such as recycling facilities, more visible across the school site. “Developing a culture of environmental care” (Togneri, 2022, p.119) within the school ethos may provide children with a sense they are not alone with their worries, reduce their burden, and support them to cope with climate emotions.

During the interviews, participants were quick to raise several environmental improvements that could be made within school. Therefore, providing opportunities for CYP to engage in decision-making about school- and community-based climate and environmental solutions may support their sense of autonomy and empower them to become active change agents within their settings and communities. As some young people also shared a sense of not being listened to, working in coproduction may support them in being heard and allow them to feel their concerns and suggestions for improvement are valid.

A further implication relates to developing CYP’s sense of belonging. Connecting with other like-minded eco-compassionate people was important for participants and acted as a source of support. For some, this sense of belonging was felt with family members rather than within the school context, highlighting the need to consider how such connection and belonging can be fostered in school. This could involve establishing environmental and climate-focused groups that meet regularly. While the aims of the group may centre on climate action or act as a space to share climate concerns, it should take a positive outlook and be an enjoyable space to make connections with others. Young people valued knowing about staff members in school who cared about the environment, suggesting that providing ways for them to link with staff could also be supportive. Further, this highlights the importance of an open and inclusive school culture where staff feel comfortable to share their environmental identity with students and colleagues.

When considered together, these implications will likely support dialogue regarding climate change and help reduce young people's concern that the topic is rarely discussed in a meaningful way. Safe spaces where CYP can talk honestly and openly about their views without worry of being judged or dismissed may also be beneficial. It will be important for adults to acknowledge and validate young people's climate concerns rather than trying to remove them.

### 5.5.2 Implications for EPs

The research highlights several potential implications for EPs working across a range of levels, including individual casework, systemic work, and research.

Within individual casework, EPs may wish to utilise hope, coping, and self-determination theories when gathering information and working with others to reach a shared understanding of a child's climate change distress. Understanding the child's strengths, needs, and context through these theories as part of a holistic framework may help to identify appropriate recommendations to support them in feeling more able to cope with their concerns. For example, helping CYP to notice where they do have climate control and agency as well as looking for ways this can be enhanced. In therapeutic work, the focus should not be on removing difficult feelings but accepting and exploring them while developing their binocular vision (5.2.3) and fostering a sense of constructive hope, to enable them to envisage a more positive future.

At a school level, EPs are well placed to increase awareness of the impact of CYP's climate change concerns and how they can be supported to cope, drawing on the suggestions outlined previously (5.5.1). This could involve whole staff training with schools and settings. Staff supervision by EPs may be beneficial for adults within schools who support students with challenging

climate feelings. This could also provide a contained safe space for those adults to explore and reflect on their own emotional responses to climate change.

A further role for EP systemic work could involve working with parents and carers through workshops or training. EPs could support parents to feel confident to respond to their child's climate change concerns in an honest and respectful manner while encouraging a positive outlook. Additionally, EPs could work with parents to enable them to support their child to cope with difficult related thoughts and emotions.

It seems important for EPs to explore their own feelings regarding climate change and to consider how their views may impact their support and responses within this area (Diffey et al., 2022).

### 5.5.3 Wider level implications: LAs and government

Further implications are directed at a LA and government level. At a systemic level, EPs could provide training and support to services and organisations that work with CYP to raise awareness of the impact of climate change concerns and share supportive strategies. With suggestions that mental health practitioners do not always know how to respond to climate change distress (Diffey et al., 2022; Stoknes, 2015), this work could include working with CYP's mental health services within the LA.

As conclusions supported previous research that CYP would like to see improved climate education, this has an implication for the development of climate education policy and guidance. While the Department for Education has recently published a sustainability strategy (DfE, 2022) outlining climate education as a key area of focus, this guidance has come under criticism for

maintaining a narrow view of climate education (Dunlop & Rushton, 2022; Howard-Jones & Dillon, 2022) and for failing to empower young people to take action (Howard-Jones & Dillon, 2022). In light of this, the government may want to consider these conclusions when they review and evaluate the strategy.

It is CYP's futures that are most at risk from climate change, therefore it seems crucial their voices are heard and acted upon at every opportunity. Young people in this study felt those in power, including the government, could and should be doing more to address climate change. The government may be interested in the messages participants shared within this research and may want to consider how they can better include CYP within future decision-making.

### 5.5.4 Implications for future research

This study has also raised a number of potential implications for future research within educational psychology and education more widely. CYP were the focus of the current study, but future research could concentrate on adults, including parents/carers and educational staff. It may be valuable to explore the views of parents and gain their experience of supporting a child with climate change concerns. Similarly, there is an opportunity to gain insight into educators' understanding of climate change distress within schools.

While the current study focused on young people approaching adulthood, future research could explore the views of children at different ages. Climate change concern research with children is lacking across all age groups so it would be helpful to see if the conclusions reported here are reflected throughout the younger years, or if age and developmental differences exist.

Climate education was a prominent theme within the current study highlighting a need for further research into the role of education in supporting children's climate concerns. Although climate education research is growing (Monroe et al., 2019), studies often focus on promoting knowledge and pro-environmental behaviour change and action, rather than exploring emotions. Looking at school climate education through an action research (Robson & McCartan, 2016) methodology may be an empowering approach for young people and the schools involved and is worthy of further consideration. In addition, focusing on children and staff's views on the impact of the government's sustainability strategy (DfE, 2022) may be another research direction.

*Reflexive log*

*I have been uncomfortable using the term 'findings' as I began to write up the research. In line with my subjectivist epistemology, I am mindful the conclusions I have drawn are my interpretations of what was shared by the young people. The themes weren't waiting within the data for me to "find", they were generated by me based on my interpretation of the data, which will have been influenced by my own experiences, perceptions, values, and interaction with the literature. Although, within a critical realist ontology I recognise that a reality exists, I acknowledge that my understanding of this reality is imperfect and subjective. Therefore, I have found using the terms "interpretations" and "conclusions" more appropriate.*

## 5.6 Quality and trustworthiness of the research

Due to the nature of qualitative research, notions such as reliability and validity typically used to judge quantitative research, are not applicable in the evaluation of qualitative studies (Giorgi, 2002; Willig, 2013). Various guides

and criteria for evaluating the quality and trustworthiness of qualitative research have been developed over the last two decades (Willig, 2013; Yardley, 2017). However, the diversity and complexity of qualitative studies and their related theoretical assumptions present a challenge to the creation of one all-encompassing judgement tool (Yardley, 2008; Yardley, 2015). To address this, Yardley (2000; 2008) suggests considering four generic principles when evaluating qualitative research: sensitivity to context, commitment and rigour, transparency and coherence, and impact and importance. These principles can be used flexibly across diverse theoretical orientations and methodologies (Braun & Clarke, 2022; Yardley, 2000; Yardley, 2008; Yardley, 2015; Yardley, 2017). A discussion of each of the four principles within the current study follows.

### 5.6.1 Sensitivity to context

Yardley (2000; 2008) highlights how good quality research must be sensitive to the many contexts in which it may be situated within. The context of a qualitative study can include theory, relevant literature and research, the sociocultural setting, ethical issues, and the views of participants (Yardley, 2008).

To ensure sensitivity towards theory and research, the researcher engaged with relevant theoretical and empirical literature and completed a thorough SLR around CYP's climate change views. This process highlighted gaps within current literature and understanding and supported the development of the research aims and methodological approach.

The use of open-ended questions in the interview schedule enabled participants to talk freely about what they felt was important and supported sensitivity to their perspectives and the social-cultural context (Yardley, 2008).

When considering ethical issues, the researcher recognised interviewing young people about their climate change related thoughts and feelings could potentially raise some difficult emotions. Steps were taken to minimise such feelings and their impact on participants. These included voluntary and informed participation, designated school staff available to provide emotional support if required, and the adoption of a sensitive approach to interviewing (see ethical considerations, 3.7).

During data analysis, the researcher demonstrated sensitivity to the data by being curious and open to possible meanings, complexities, and inconsistencies.

### 5.6.2 Commitment and rigour

Yardley (2015) described how researchers need to demonstrate commitment and rigour to their research topic. This can be shown through a deep engagement with the topic, thorough data collection, methodological competence, and sufficient breadth and/or depth of analysis. At a personal level, the researcher had a longstanding interest in climate change and engaged with topics concerning CYP's related responses and experiences. At the time of research, these issues were starting to be recognised within educational psychology (O'Hare, 2022) and the researcher was able to engage with the topic at a professional level.

To support the quality and rigour of data collection, the interview schedule was developed over time and involved refinement and modifications through revisiting the existing literature, reflections in research supervision, and piloting the interview schedule.

To achieve commitment and rigour during data analysis, the researcher followed Braun and Clarke's (2022) guidance in conducting reflexive TA as detailed in section 3.6.4.2. This process was supported by Braun and Clarke's (2022) '15-point checklist of criteria for a good TA process' to ensure the analysis was thorough, methodological, and reflexive. Interpretations were discussed and explored in research supervision.

### 5.6.3 Coherence and transparency

Coherence relates to the consistency and compatibility of a study as a whole (Yardley, 2015). A coherent study will be clear, logical, and convincing, demonstrating alignment across theoretical underpinnings and research design (Yardley, 2008). Transparency refers to the clarity of the account of each step of the research process to guide the reader to understand what the researcher did and why throughout research stages. Alongside a logical and convincing argument, it is also critical to provide details of the approaches used (Yardley, 2008). Sufficient data must be shared to enable the reader to understand the basis of the researcher's analytic interpretations and conclusions (Yardley, 2008).

The current study demonstrated coherence and transparency by having adopted and described a consistent and integrated approach which provides rationale between the research aims, appropriate methodology, and theoretical assumptions. Research is written in a clear and logical manner with the aim of guiding the reader through the research stages. The method chapter provides transparent details concerning participants and recruitment, the interview procedure and schedule, and data generation and analysis methods. Extracts of raw data demonstrating how the researcher interpreted data are included in chapter 4. Examples of analysed transcripts and photographs showing theme generation are included in the appendices.

A reflexive approach, whereby the researcher acknowledged and considered their role and influence in shaping the study (Berger, 2015), was adopted throughout the research and write up process. A diary was used to capture the researcher's thinking processes and decisions, with reflexive log entries being used to support the researcher to question their own responses and consider how their values, assumptions, and expectations influenced the study. Research reflexivity is considered in more detail in section 3.8.

### 5.6.4 Impact and importance

Impact and importance concern the extent to which the research interpretations can make a difference by affecting current understanding and potentially future practice (Yardley, 2008). The current study aims to add to the emerging evidence base exploring CYP's climate change concerns. The research enhances understanding and provides further insight into a developing area of study by promoting the voice of young people. Research conclusions highlight practical implications and recommendations for practitioners working with CYP with climate change concerns as discussed in section 5.5.

## 5.7 Methodological research limitations

The current section describes the limitations associated with the participant sample, data generation, and data analysis.

### 5.7.1 Participant sample limitations

To allow an opportunity for in-depth analysis, it was expected that between six and eight participants would be recruited to the study, however the research

involved five participants. In discussion with their supervisor, the researcher felt that the initial five interviews were sufficiently rich and detailed to enable quality reflexive TA to occur. Taking this into consideration, along with time restraints, the researcher did not seek further participants. While the researcher felt that participants provided a vast amount of insight and valuable data, it could be argued that a wider range of perceptions and further understanding could have been gained by increasing the sample size.

It is important to consider how the participant sample may affect the transferability of the research to other groups of young people concerned about climate change. First, all participants volunteered to be part of the study. Therefore, the research only gained the voices of those who felt both able to come forward and comfortable enough to share their views with an unfamiliar person. Second, all participants attended the same secondary school in northern England. Although data concerning the socio-economic background of participants was not collected, the school serves a mixed area containing pockets of affluence and deprivation and the school is largely in line with the national average of students receiving pupil premium funding. It may be that young people from different socioeconomic backgrounds have varying climate change perceptions. While some research has indicated higher levels of climate worry within more economically-privileged young people (Threadgold, 2012), a more recent UK poll suggested that concern is experienced similarly across socioeconomic groups (Davis & Levi, 2021). Further, with all participants attending the same school, their experiences and views concerning climate change as an issue within school may differ from young people's experiences in other secondary schools, again raising the need for caution in transferring the research conclusions to wider contexts. At the time of the research, the young people's school did not facilitate any climate or environmental groups for students and staff, and it may be that experiences vary in other settings with active eco-clubs or eco-councils.

### 5.7.2 Data generation limitations

The researcher recognised their relative inexperience in carrying out semi-structured interviews and how this may have impacted data generation. Listening back to audio recordings of participant interviews, the researcher noted missed opportunities to support young people to expand on ideas shared. In early interviews, the researcher felt they perhaps moved on to new questions too quickly and could have allowed further time for elaboration. As interviews progressed, the researcher felt more confident to slow the pace where needed and revisit topics and questions when conversation diverted. Despite devising an interview schedule that aimed to include open-ended questions, reading interview transcripts highlighted how prompts and follow-up questions occasionally came across as closed, which may have reduced opportunities for participants to fully share their views. Although the interview schedule was piloted, further trialling with unfamiliar young people may have supported the researcher to feel more comfortable and confident within the interview process to potentially lessen some of the limitations discussed.

The researcher's values, views, and experiences shaped aspects of the data generation process including the construction of the interview schedule and their interview responses. The researcher was mindful of their role within the interviews and recognised they made an active contribution to the process beyond devising questions. While the researcher attempted to adopt a neutral stance when asking questions and listening to participants talk, this may not have been fully achieved and non-verbal responses in particular may have reflected the researcher's opinions, which, in turn, may have impacted the data.

A further limitation to the data generation approach concerns the young people's expressed lack of climate agency and desire for empowerment. The researcher reflected on how semi-structured interviews provided a space for participants' voices to be heard, which was hoped to be supportive, however,

a different method, such as action research (Stringer, 2021), may have offered greater opportunities for developing the young people's sense of empowerment.

### 5.7.3 Data analysis limitations

The researcher's inexperience with reflexive TA may have been a limitation within this study. Lack of familiarity with the method meant the researcher was keen to strictly adhere to advice from Braun and Clarke (2022) and they frequently revisited guidance throughout this stage. While this felt supportive to the researcher and ensured steps towards quality reflexive TA were followed, this may have disrupted some of the fluency within the process.

Throughout analysis, the researcher was conscious of how their own perspectives and experiences were likely influencing the interpretation of participants' views and the generation of codes and themes. As a climate engaged citizen, the researcher has experienced a range of challenging thoughts and feelings in response to climate change as outlined in chapter 1 (1.4), many of which echoed those raised by young people in the study. In addition, due to a personal and professional interest in the topic, the researcher engaged with climate change emotion literature prior to conducting data analysis, including carrying out a literature review (chapter 2). Therefore, despite the researcher's efforts to analyse the data inductively, familiarity with some of the existing literature and research likely shaped the focus and direction of the codes and themes generated, suggesting a theoretical element to analysis.

### 5.7.4 Wider considerations

The potential impact of the chrono-system (Bronfenbrenner, 1996) on the research should also be considered. As changes and continuities over time

can influence CYP's development (Bronfenbrenner, 1996), it is important to locate the timescale of the current study. Participant interviews were carried out in 2022 and 2023 (see Appendix 28 for a research timeline), following the global pandemic and during the Russia-Ukraine war and UK cost-of-living crisis. CYP's mental health was negatively impacted during the pandemic (Richard et al., 2023), with a significant rise in referrals to children's mental health services being noted in 2021 (Nuffield Trust, 2022). Further, recent reports have suggested children's anxiety levels post-pandemic remain high (DfE, 2023). Whether these stressors interact, or influence CYP's levels of climate concern is not yet clear, however, it is important to be mindful of such potential factors. A further chrono-system consideration relates to global and local climate events. The interviews took place shortly after the United Nations Climate Change Conference of the Parties (COP)27 and just over one year following the Glasgow-based COP26. As the UK hosted the 2021 proceedings, it could be argued that the event temporarily increased the profile of climate change within the UK, which may have influenced young people's interests with the issue.

# Chapter 6. Conclusion

## 6.1 Distinct contribution of the research

Whilst there is agreement that climate change is a significant issue currently facing CYP, there is limited UK qualitative research exploring their views, feelings, experiences, and how they can be supported. By adopting an exploratory, qualitative approach, the research provides a detailed insight into how five young people concerned about climate change feel about the issue. While previous survey data (BBC, 2020; Save the Children, 2022; Votes for Schools, 2021) suggested a high level of climate concern with CYP around the UK, the current research offers a distinct contribution by providing insights and rich accounts into the source, nature, and experience of such concerns, alongside their wider thoughts and feelings in relation to climate change. The use of semi-structured interviews positions the young people as experts of

their own perceptions and experiences and allows them to tell their stories in their own words. The research also provides a unique understanding concerning young people's perspectives regarding supportive influences that enable them to cope with the challenges of climate change, again, an area with a limited evidence base. This study adds to the rapidly growing literature and research and poses implications for educational settings, EPs, and government policy.

## 6.2 Summary

Conclusions support existing research that highlight the challenges CYP face in knowing about climate change. Participants found the reality of climate change difficult with concerns expressed around it's urgency and significance. Adding to the current evidence base, participants experienced a range of challenging emotions in response to the climate threat, including sadness, anger, frustration, helplessness, worry, and anxiety for what may come.

Despite such challenges, most participants appeared able to simultaneously hold two perspectives; they seemed to recognise the scale and threat of climate change yet remained hopeful for a brighter future. Hope and a positive outlook appeared to be connected to young people's sense they were taking meaningful action and making a difference, alongside knowing action was being taken elsewhere, and the belief their generation was taking climate change seriously.

Influences thought to be unhelpful in managing their climate change thoughts and feelings concerned limited climate education, few opportunities for making impactful decisions and actions, noticing a lack of care and concern in others, limited climate change talk, unhelpful responses by others, and the heavy expectation that CYP will solve climate change.

Whilst identifying a range of unhelpful influences, participants also suggested several supportive influences enabling them to cope with their climate change concerns. Conclusions support literature (BERA, 2021; Dunlop et al., 2022) suggesting a need for an empowering climate curriculum that promotes CYP's agency and efficacy. The need to see others, including adults and leaders, caring, and prioritising climate change was important to participants. The study aligns with previous research (Budziszewska & Głód, 2021; Halstead et al., 2021; Karsgaard & Davidson, 2021; Nairn, 2019; Togneri, 2022) suggesting that collective processes and connecting with likeminded others can act as a source of support. A further helpful influence identified by the study was the importance of meaningful and respectful climate talk with others.

The research lends support to the utility of self-determination theory, alongside theories of hope and coping in developing understanding of CYP's responses to climate change. Although further research is needed to explore such concepts more fully within the context of climate change, they may provide a useful stance within a holistic framework when considering supporting climate change concerns.

While this study describes the views and experiences of one small group of climate concerned young people, with the researcher recognising the need for further research, the conclusions contribute to the knowledge and understanding within this topic and give rise to a number of implications for education settings and EPs.

# 7. References


Adams, M. (2016). *Ecological crisis, sustainability and the psychosocial subject: Beyond behaviour change. Studies in the psychosocial.* Palgrave Macmillan.

Albrecht, G. (2011). Chronic environmental change: Emerging 'psychoterratic' syndromes. In I. Weissbecker (Ed.), *Climate change and human well-being: Global challenges and ppportunities* (pp. 43-56). Springer New York. https://doi.org/10.1007/978-1-4419-9742-5_3

Albrecht, G., Sartore, G.-M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The distress caused by environmental change. *Australasian Psychiatry, 15*(1_suppl), S95-S98. https://doi.org/10.1080/10398560701701288

Allen, K.-A. (2020). Climate change, a critical new role for educational and developmental psychologists. *The Educational and Developmental Psychologist, 37*, 93-93. https://doi.org/10.1017/edp.2020.15

Amnesty International UK. (2019). *Phillipines country most at risk from climate crisis*. https://www.amnesty.org.uk/philippines-country-most-risk-climate-crisis

Andrews, R. (2005). The place of systematic reviews in education research. *British Journal of Educational Studies, 53*(4), 399-416. https://doi.org/10.1111/j.1467-8527.2005.00303.x

Ashforth, B. E. (1989). The experience of powerlessness in organizations. *Organizational Behavior and Human Decision Processes, 43*, 207-242. https://doi.org/10.1016/0749-5978(89)90051-4

Averill, J. R., & Sundararajan, L. (2005). Hope as rhetoric: Cultural narratives of wishing and coping. In *Interdisciplinary perspectives on hope.* (pp. 133-165). Nova Science Publishers.

Baker, C., Clayton, S., & Bragg, E. (2021). Educating for resilience: parent and teacher perceptions of children's emotional needs in response to climate change. *Environmental Education Research, 27*(5), 687-705. http://dx.doi.org/10.1080/13504622.2020.1828288

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York : W.H. Freeman.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*(2), 164-180. https://doi.org/10.1111/j.1745-6916.2006.00011.x

Bandura, A., & Cherry, L. (2020). Enlisting the power of youth for climate change [doi:10.1037/amp0000512]. 945-951. https://doi.org/10.1037/amp0000512

Barnum, D. D., Snyder, C. R., Rapoff, M. A., Mani, M. M., & Thompson, R. (1998). Hope and social support in psychological adjustment of children who have survived burn injuries and their matched controls. *Children's Health Care, 27*(1), 15-30. https://doi.org/10.1207/s15326888chc2701_2

Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment and Urbanization, 20*(2), 501-519. https://doi.org/10.1177/0956247808096125

Batel, S., & Adams, M. (2016). Ecological crisis, sustainability and social worlds: Developing a critical agenda. *Papers on Social Representations, 25*, 1.1-1.27.

BBC. (2020). *BBC Newsround Climate Change Poll*. https://comresglobal.com/polls/bbc-newsround-climate-change-poll-march-2020/

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

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research, 15*(2), 219-234. https://doi.org/10.1177/1468794112468475

Bhutto, F. (2023, 26th March). There's no greater feminist cause than the climate fight - and saving each other. *The Guardian,* para. 8. https://www.theguardian.com/commentisfree/2023/mar/26/climate-change-crisis-women-feminism-pakistan-floods

Bion, W. (1984). *Learning from experience*. Karnac Books.

Bourke, R., & Loveridge, J. (2014). Exploring informed consent and dissent through children's participation in educational research. *International Journal of Research and Method in Education, 37*(2), 151-165. https://doi.org/10.1080/1743727X.2013.817551

Bozic, N. (2013). Developing a strength-based approach to educational psychology practice: A multiple case study. *Educational and Child Psychology, 30*(4), 18-29. https://doi.org/https://doi.org/10.53841/bpsecp.2013.30.4.18

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. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589-597. https://doi.org/10.1080/2159676X.2019.1628806

Braun, V., & Clarke, V. (2021a). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research, 21*(1), 37-47. https://doi.org/10.1002/capr.12360

Braun, V., & Clarke, V. (2021b). Conceptual and design thinking for thematic analysis. *Qualitative Psychology, 9*(1), 3-26. https://doi.org/10.1037/qup0000196

Braun, V., & Clarke, V. (2021c). Conceptual and design thinking for thematic analysis. *Qualitative Psychology (Washington, D.C.), 9*(1), 3-26. https://doi.org/10.1037/qup0000196

Braun, V., & Clarke, V. (2021d). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology, 18*(3), 328-352. https://doi.org/10.1080/14780887.2020.1769238

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE.

British Association for Counsellors and Psychotherapists (BACP). (2020, October 15). Mental health impact of climate change. https://www.bacp.co.uk/news/news-from-bacp/2020/15-october-mental-health-impact-of-climate-change/

British Educational Research Association (BERA). (2021). *A manifesto for education for environmental sustainability.* https://www.bera.ac.uk/news/manifesto-for-education-for-environmental-sustainability-efes-published-by-bera-research-commission

British Psychological Society. (2021a). *Code of Ethics and Conduct*. British Psychological Society. https://www.bps.org.uk/guideline/code-ethics-and-conduct

British Psychological Society. (2021b). *Code of Human Research Ethics*. British Psychological Society. https://www.bps.org.uk/guideline/bps-code-human-research-ethics

Bronfenbrenner, U. (1996). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Budziszewska, M., & Głód, Z. (2021). “These are the very small things that lead us to that goal”: Youth climate strike organizers talk about activism empowering and taxing experiences. *Sustainability, 13*(19), 11119. https://doi.org/10.3390/su131911119

Burke, S. E. L., Sanson, A. V., & Van Hoorn, J. (2018). The psychological effects of climate change on children. *Current Psychiatry Reports, 20*(5), 35-35. https://doi.org/10.1007/s11920-018-0896-9

Burr, V. (2015). *Social constructionism* (3rd ed.). 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

Carbon Disclosure Project. (2023, 31st March). Those on low income and elderly most vulnerable to UK climate change. https://www.cdp.net/en/articles/citiesannouncements/those-on-low-income-and-elderly-most-vulnerable-to-uk-climate-change

Chapman, D. A., Lickel, B., & Markowitz, E. M. (2017). Reassessing emotion in climate change communication. *Nature Climate Change, 7*(12), 850-852. https://doi.org/10.1038/s41558-017-0021-9

Charlton-Perez, A. (2021). *The climate change gaps in UK school curriculum*. Carbon Brief. https://www.carbonbrief.org/guest-post-the-climate-change-gaps-in-the-uk-school-curriculum/

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage Publications.

Charmaz, K. (2008). Grounded theory. In J. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (2nd ed.).

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE open medicine, 7*, 2050312118822927-2050312118822927. https://doi.org/10.1177/2050312118822927

Cianconi, P., Betrò, S., & Janiri, L. (2020). The Impact of climate change on mental health: A systematic descriptive review. *Front Psychiatry, 11*, 74. https://doi.org/10.3389/fpsyt.2020.00074

Clarke, A. T. (2006). Coping with interpersonal stress and psychosocial health among children and adolescents: A meta-analysis. *Journal of Youth and Adolescence, 35*(1), 11-24. https://doi.org/10.1007/s10964-005-9001-x

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., & Manning, C. (2018). *Psychology and climate change: Human perceptions, impacts, and responses*. San Diego: Elsevier Science. https://doi.org/10.1016/C2016-0-04326-7

Clayton, S., Manning, C., Krygsman, K., & Speiser, M. (2017). *Mental health and our changing climate: Impacts, implications and guidance*.

Climate Change Committee. (2023). *Progress in adapting to climate change - 2023 report to parliament*. https://www.theccc.org.uk/publication/progress-in-adapting-to-climate-change-2023-report-to-parliament/

Climate Psychology Alliance. (2020). *The handbook of climate psychology*. https://www.climatepsychologyalliance.org/images/files/handbookofclimatepsychology.pdf

Cook, D. A., & Artino Jr, A. R. (2016). Motivation to learn: An overview of contemporary theories. *Medical Education, 50*(10), 997-1014. https://doi.org/10.1111/medu.13074

Corner, A., Roberts, O., Chiari, S., Völler, S., Mayrhuber, E., Mandl, S., & Monson, K. (2015). How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators. *Wiley Interdisciplinary Reviews: Climate Change, 6*. https://doi.org/10.1002/wcc.353

Costello, A., Abbas, M., & Allen, A. (2009). Managing the health effects of climate change. (vol 373, pg 1693, 2009). *The Lancet (British edition), 373*(9682), 2200-2200.

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

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (5th ed.). SAGE.

Currie, J., & Deschênes, O. (2016). Children and climate change: Introducing the issue. *The Future of children, 26*(1), 3-9. https://doi.org/10.1353/foc.2016.0000

Davis, M., & Challenger, R. (2009). Climate change – Warming to the task. *The Psychologist, 22*, 112-114.

Davis, R., & Levi, S. (2021, October 31). A crisis in common. How eco-anxiety is shared across our country. *nousthinktank*. https://nousthinktank.com/reports/a-crisis-in-common/

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01

Department for Education. (2022). *Sustainability and climate change: A strategy for the education and children's services systems*. https://www.gov.uk/government/publications/sustainability-and-climate-change-strategy

Department for Education. (2023). *State of the nation 2022: Children and young people's wellbeing*. https://www.gov.uk/government/publications/state-of-the-nation-2022-children-and-young-peoples-wellbeing

Dickie, G., & James, W. (2022, November 8). War distracts from climate change: Ukraine. *The West Australian*. https://thewest.com.au/news/conflict/war-distracts-from-climate-change-ukraine-c-8799770

Diefenbach, T. (2009). Are case studies more than sophisticated storytelling?: Methodological problems of qualitative empirical research mainly based on semi-structured interviews. *Quality & Quantity, 43*(6), 875-894. https://doi.org/10.1007/s11135-008-9164-0

Diffey, J., Wright, S., Uchendu, J. O., Masithi, S., Olude, A., Juma, D. O., Anya, L. H., Salami, T., Mogathala, P. R., Agarwal, H., Roh, H., Aboy, K. V., Cote, J., Saini, A., Mitchell, K., Kleczka, J., Lobner, N. G., Ialamov, L., Borbely, M., ..., & Lawrance, E. (2022). “Not about us without us” – the feelings and hopes of climate-concerned young people around the world. *International Review of Psychiatry, 34*(5), 499-509. https://doi.org/10.1080/09540261.2022.2126297

Dijkstra, E. M., & Goedhart, M. J. (2012). Development and validation of the ACSI: Measuring students' science attitudes, pro-environmental behaviour, climate change attitudes and knowledge. *Environmental Education Research, 18*(6), 733-749. https://doi.org/10.1080/13504622.2012.662213

Dodds, J. (2021). The Psychology of Climate Anxiety. *BJPsych Bulletin, 45*, 1-5. https://doi.org/10.1192/bjb.2021.18

Dunlop, L., & Rushton, E. A. C. (2022). Education for environmental sustainability and the emotions: Implications for educational practice. *Sustainability, 14*(8), Article 4441. https://doi.org/10.3390/su14084441

Dunlop, L., Rushton, E. A. C., Atkinson, L., Ayre, J., Bullivant, A., Essex, J., Price, L., Smith, A., Summer, M., Stubbs, J. E., Diepen, M. T. v., & Wood, L. (2022). Teacher and youth priorities for education for environmental sustainability: A co-created manifesto. *British Educational Research Journal, 48*(5), 952-973. https://doi.org/10.1002/berj.3803

Eames, C., Barker, M., & Scarff, C. (2018). Priorities, identity and the environment: Negotiating the early teenage years. *The Journal of Environmental Education, 49*(3), 189-206. https://doi.org/10.1080/00958964.2017.1415195

Egbo, B. (2005). Emergent paradigm: Critical realism and transformative research in educational administration. *McGill Journal of Education, 40*(2), 267-284. https://mje.mcgill.ca/article/view/568

Egger, M., Juni, P., CJ, B., Holenstein, F., & Sterne, J. (2003). How important are comprehensive literature searches and the assessment of trial quality in systematic reviews? Empirical study. *Health Technology Assessment, 7*, 1-76. https://doi.org/10.3310/hta7010

Field, A. P., & Lawson, J. (2008). The verbal information pathway to fear and subsequent causal learning in children. *Cognition and Emotion, 22*(3), 459-479. https://doi.org/10.1080/02699930801886532

Finlay, L. (2002). “Outing” the researcher: The provenance, process, and practice of reflexivity. *Qualitative Health Research, 12*(4), 531-545. https://doi.org/10.1177/104973202129120052

Finnegan, W. (2022). Educating for hope and action competence: A study of secondary school students and teachers in England. *Environmental Education Research, ahead-of-print*, 1-20. https://doi.org/10.1080/13504622.2022.2120963

Folkman, S. (2008). The case for positive emotions in the stress process. *Anxiety, Stress, and Coping, 21*(1), 3-14. https://doi.org/10.1080/10615800701740457

Friedman, H. (2008). Humanistic and Positive Psychology: The methodological and epistemological divide. *The Humanistic Psychologist, 36*(2), 113-126. https://doi.org/10.1080/08873260802111036

Frydenberg, E. (2008). *Adolescent coping: Advances in theory, research, and practice*. Routledge.

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

Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *The American Psychologist, 66*(4), 290-302. https://doi.org/10.1037/a0023566

Giorgi, A. (2002). The question of validity in qualitative research. *Journal of Phenomenological Psychology, 33*(1), 1-18. https://doi.org/10.1163/156916202320900392

Gislason, M. K., Kennedy, A. M., & Witham, S. M. (2021). The interplay between social and ecological determinants of mental health for children and youth in the climate crisis. *International Journal of Environmental Research and Public Health, 18*(9), 4573. https://doi.org/10.3390/ijerph18094573

Glow Scotland. (2021). *What is the difference between the global north vs the global south?* https://blogs.glowscotland.org.uk/sl/climateemergencynewsroom/2021/11/03/global-north-vs-global-south/

Gough, D. (2007). Weight of Evidence: a framework for the appraisal of the quality and relevance of evidence. *Research Papers in Education, 22*(2), 213-228. https://doi.org/10.1080/02671520701296189

Greenhill, A., & Wilson, M. (2004). Theory and action for emancipation: Elements of a critical realist approach. *International Federation for Information Processing Digital Library; Information Systems Research;, 143*. https://doi.org/10.1007/1-4020-8095-6_42

Greenpeace. *Climate change affects rich and poor unequally. Climate justice redresses the balance*. https://www.greenpeace.org.uk/news/climate-change-inequality-climate-justice/

Greer, K., King, H., & Glackin, M. (2023). The 'web of conditions' governing England's climate change education policy landscape. *Journal of Education Policy, 38*(1), 69-92. https://doi.org/10.1080/02680939.2021.1967454

Gregory, A. (2021, October 6). 'Eco-anxiety': Fear of environmental doom weighs on young people. *The Guardian*. https://www.theguardian.com/society/2021/oct/06/eco-anxiety-fear-of-environmental-doom-weighs-on-young-people

Grix, J. (2004). *The foundations of research*. Palgrave.

Grund, J., & Brock, A. (2019). Why we should empty pandora's box to create a sustainable future: Hope, sustainability and its implications for education. *Sustainability, 11*(3).

Halstead, F., Parsons, L. R., Dunhill, A., & Parsons, K. (2021). A journey of emotions from a young environmental activist. *Area, 53*(4), 708-717. https://doi.org/10.1111/area.12745

Harker-Schuch, I., Lade, S., Mills, F., & Colvin, R. (2020). Opinions of 12 to 13-year-olds in Austria and Australia on the concern, cause and imminence of climate change. *Ambio, 50*(3), 644-660. https://doi.org/10.1007/s13280-020-01356-2

Health and Care Professions Council. (2016). *Standards of Conduct, Performance and Ethics*. https://www.hcpc-uk.org/standards/standards-of-conduct-performance-and-ethics/

Hermans, M., & Korhonen, J. (2017). Ninth graders and climate change: Attitudes towards consequences, views on mitigation, and predictors of willingness to act. *International Research in Geographical and Environmental Education, 26*(3), 223-239. http://dx.doi.org/10.1080/10382046.2017.1330035

Herrick, I. R., Lawson, M. A., & Matewos, A. M. (2022). Through the eyes of a child: Exploring and engaging elementary students' climate conceptions through photovoice. *The Educational and Developmental Psychologist, 39*(1), 100-115. https://doi.org/10.1080/20590776.2021.2004862

Heyman, J. C., Brennan, M., & Colarossi, L. (2010). Event-exposure stress, coping, and psychological distress among New York students at six months after 9/11. *Anxiety, Stress, and Coping, 23*(2), 153-163. https://doi.org/10.1080/10615800902926772

Hibberd, M., & Nguyen, A. (2013). Climate change communications & young people in the Kingdom: A reception study. *International Journal of Media and Cultural Politics, 9*. https://doi.org/10.1386/macp.9.1.27_1

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

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

Holton, J. A., & Walsh, I. (2017). *Classic grounded theory  Applications with qualitative and quantitative data*. SAGE.

Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M. P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M. C., Vedel, I., & Pluye, P. (2018). The mixed methods appraisal tool (MMAT) version 2018 for information professionals and researchers. https://doi.org/10.3233/EFI-180221

Houston, S. (2022). Dialectical critical realism, transformative change and social work. *Critical and Radical Social Work*, 1-15. https://doi.org/10.1332/204986021X16455451510551

Howard-Jones, P., & Dillon, J. (2022). *Climate change education: A "world-leading strategy" would benefit from being research informed*. https://www.bristol.ac.uk/media-library/sites/policybristol/briefings-and-reports-pdfs/2022/PolicyBristol_PolicyReport74_Howard-Jones_climate-change-education.pdf

Huckle, J. (2004). Critical Realism: A philosophical framework for higher education for sustainability. In P. B. Corcoran & A. E. J. Wals (Eds.), *Higher education and the challenge of sustainability: Problematics, promise, and practice* (pp. 33-47). Springer. https://doi.org/10.1007/0-306-48515-X_4

IPCC. (2023). *Climate change 2023: Synthesis report*. https://www.ipcc.ch/report/sixth-assessment-report-cycle/

IPSOS. (2022). *Climate literacy amongst school leavers*. https://www.ipsos.com/en-uk/despite-around-half-school-leavers-54-saying-they-have-had-education-climate-change-past-year

Joseph Rowntree Foundation. (2014). *Climate change and social justice: An evidence review*. https://www.jrf.org.uk/report/climate-change-and-social-justice-evidence-review

Karsgaard, C., & Davidson, D. (2021). Must we wait for youth to speak out before we listen? International youth perspectives and climate change education. *Educational Review, ahead-of-print*, 1-19. https://doi.org/10.1080/00131911.2021.1905611

Kleres, J., & Wettergren, Å. (2017). Fear, hope, anger, and guilt in climate activism. *Social Movement Studies, 16*, 1-13. https://doi.org/10.1080/14742837.2017.1344546

Koskela, I.-M., & Paloniemi, R. (2023). Learning and agency for sustainability transformations: Building on Bandura's theory of human agency. *Environmental Education Research, 29*(1), 164-178. https://doi.org/10.1080/13504622.2022.2102153

Landis, D., Gaylord-Harden, N. K., Malinowski, S. L., Grant, K. E., Carleton, R. A., & Ford, R. E. (2007). Urban adolescent stress and hopelessness. *Journal of Adolescence, 30*(6), 1051-1070. https://doi.org/10.1016/j.adolescence.2007.02.001

Lastoweckyi, C. (2021, June 20). Climate change and classism. https://www.teachthefuture.uk/blog/climate-change-and-classism

Lawrance, E., Thompson, R., Fontuna, G., & Jennings, N. (2021). *The impact of climate change on mental health and emotional wellbeing: Current evidence and implications for policy and practice*. The Grantham Institute.

Lawrance, E. L., Jennings, N., Kioupi, V., Thompson, R., Diffey, J., & Vercammen, A. (2022). Psychological responses, mental health, and sense of agency for the dual challenges of climate change and the COVID-19 pandemic in young people in the UK: An online survey study. *The Lancet Planetary Health, 6*(9), e726-e738. https://doi.org/10.1016/S2542-5196(22)00172-3

Lawson, D. F., Stevenson, K. T., Peterson, M. N., Carrier, S. J., Seekamp, E., & Strnad, R. (2019). Evaluating climate change behaviors and concern in the family context. *Environmental Education Research, 25*(5), 678-690. https://doi.org/10.1080/13504622.2018.1564248

Lawton, G. (2019). I have eco-anxiety but that's normal. *New Scientist, 244*(3251), 22. https://doi.org/https://doi.org/10.1016/S0262-4079(19)31914-1

Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.

Lazarus, R. S. (1999). Hope: An emotion and a vital coping resource against despair. *Social Research, 66*(2), 653-678. http://www.jstor.org/stable/40971343

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*, 872544-872544. https://doi.org/10.3389/fpsyg.2022.872544

Leiserowitz, A., Smith, N., & Marlon, J. (2011). *American teens' knowledge of climate change. Yale project on climate change communication*.

Levy, B. S., & Patz, J. A. (2015). Climate change, human rights, and social justice. *Annals of Global Health, 81*(3), 310-322. https://doi.org/https://doi.org/10.1016/j.aogh.2015.08.008

Li, C., & Monroe, M. C. (2018). Development and validation of the climate change hope scale for high school students. *Environment and Behavior, 50*(4), 454-479. https://doi.org/10.1177/0013916517708325

Li, C. J., & Monroe, M. C. (2019). Exploring the essential psychological factors in fostering hope concerning climate change. *Environmental Education Research, 25*(6), 936-954. https://doi.org/10.1080/13504622.2017.1367916

Lincoln, S., Lynham, S., & Guba, E. (2018). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. Denzin & Y. Lincoln (Eds.), *The SAGE handbook of qualitative research* (5th ed., pp. 108-150). SAGE.

Littrell, M. K., Tayne, K., Okochi, C., Leckey, E., Gold, A. U., & Lynds, S. (2020). Student perspectives on climate change through place-based filmmaking. *Environmental Education Research, 26*(4), 594-610. http://dx.doi.org/10.1080/13504622.2020.1736516

Lueck, M. A. M. (2007). Hope for a cause as cause for hope: The need for hope in environmental sociology. *The American Sociologist, 38*(3), 250-261. https://doi.org/10.1007/s12108-007-9017-7

Lynas, M., Houlton, B. Z., & Perry, S. (2021). Greater than 99% consensus on human caused climate change in the peer-reviewed scientific literature. *Environmental Research Letters, 16*(11), 114005. https://doi.org/10.1088/1748-9326/ac2966

Ma, T., Moore, J., & Cleary, A. (2022). Climate change impacts on the mental health and wellbeing of young people: A scoping review of risk and protective factors. *Social Science and Medicine, 301*, 114888-114888. https://doi.org/10.1016/j.socscimed.2022.114888

Macy, J., & Johnstone, C. (2022). *Active hope: How to face the mess we're in with unexpected resilience and creative power* (2nd ed.). New World Library.

Magnusson, E., & Marecek, J. (2015). *Doing interview-based qualitative research: A learner's guide*. Cambridge University Press. https://doi.org/10.1017/CBO9781107449893

Manoli, C. C., Johnson, B., & Dunlap, R. E. (2007). Assessing children's environmental worldviews: Modifying and validating the new ecological paradigm scale for use with children. *The Journal of Environmental Education, 38*(4), 3-13. https://doi.org/10.3200/JOEE.38.4.3-13

Maran, D. A., & Begotti, T. (2021, September 4). Media exposure to climate change, anxiety, and efficacy beliefs in a sample of Italian university students. *International Journal of Environmental Research and Public Health, 18*(17). https://doi.org/10.3390/ijerph18179358

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

Masten, A. S. (2019). Resilience from a developmental systems perspective. *World Psychiatry, 18*(1), 101-102. https://doi.org/https://doi.org/10.1002/wps.20591

Maxwell, J. A. (2012). *A realist approach for qualitative research*. SAGE.

McDonald-Harker, C., Bassi, E. M., & Haney, T. J. (2022). “We need to do something about this”: Children and youth’s post-disaster views on climate change and environmental crisis. *Sociological inquiry, 92*(1), 5-33. https://doi.org/10.1111/soin.12381

McGeer, V. (2004). The Art of Good Hope. *Annals of The American Academy of Political and Social Science, 592*, 100-127. https://doi.org/10.1177/0002716203261781

Mead, J., Fisher, Z., Wilkie, L., Gibbs, K., Pridmore, J., Tree, J., & Kemp, A. (2019). *Rethinking wellbeing: Toward a more ethical science of wellbeing that considers current and future generations*. https://doi.org/10.22541/au.156649190.08734276

Mertens, D., Holmes, H., & Harris, R. (2009). Transformative research and ethics. In D. Mertens & P. Ginsberg (Eds.), *Handbook of social research ethics*. Sage.

Mertens, D. M. (2007). Transformative Paradigm: Mixed Methods and Social Justice. *Journal of Mixed Methods Research, 1*(3), 212-225. https://doi.org/10.1177/1558689807302811

Mertens, D. M. (2015). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (4th ed.). SAGE.

Met Office. (2023, January 5). Climate change drives UK's first year over 10 C. https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2023/climate-change-drives-uks-first-year-over-10c#:~:text=Study%20shows%20human%20induced%20climate,recorded%20for%20the%20first%20time.

Met Office. (n.d.). *Climate change in the UK*. https://www.metoffice.gov.uk/weather/climate-change/climate-change-in-the-uk

Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: A systematic review of the research. *Environmental Education Research, 25*(6), 791-812. https://doi.org/10.1080/13504622.2017.1360842

Moore, J. (2005). Recognising and questioning the epistemological basis of educational psychology practice. *Educational Psychology in Practice, 21*(2), 103-116. https://doi.org/10.1080/02667360500128721

Mulkerrins, J. (2021, May 25). Frank Luntz: The man who came up with 'climate change' - and regrets it. *The Times*. https://www.thetimes.co.uk/article/frank-luntz-the-man-who-came-up-with-climate-change-and-regrets-it-6v6pp00pc

Nadin, S., & Cassell, C. (2006). The use of a research diary as a tool for reflexive practice: Some reflections from management research. *Qualitative research in Accounting and Management, 3*(3), 208-217. https://doi.org/10.1108/11766090610705407

Nairn, K. (2019). Learning from young people engaged in climate activism: The potential of collectivizing despair and hope. *Young, 27*(5), 435-450. https://doi.org/10.1177/1103308818817603

Nakat, G. (2023, February 21). Climate justice and social justice: Two sides of the same coin. *Greenpeace*. https://www.greenpeace.org/international/story/58334/climate-justice-and-social-justice-two-sides-of-the-same-coin/#:~:text=More%20frequent%20climate%20related%20disasters,heritage%20is%20being%20wiped%20out.

Nicholls, R. J., & Kebede, A. S. (2012). Indirect impacts of coastal climate change and sea-level rise: The UK example. *Climate Policy, 12*(sup01), S28-S52. https://doi.org/10.1080/14693062.2012.728792

Nicholsen, S. (2002). *The love of nature and the end of the world: The unspoken dimensions of environmental concern*. MIT Press.

Norgaard, K. M. (2011). *Living in denial: Climate change, emotions, and everyday life*. MIT Press. https://doi.org/10.7551/mitpress/9780262015448.001.0001

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), 1-13. https://doi.org/10.1177/1609406917733847

Noyes, J., Booth, A., Moore, G., Flemming, K., Tunçalp, Ö., & Shakibazadeh, E. (2019). Synthesising quantitative and qualitative evidence to inform guidelines on complex interventions: Clarifying the purposes, designs and outlining some methods. *British Medical Journal Global Health, 4*(Suppl 1), e000893-e000893. https://doi.org/10.1136/bmjgh-2018-000893

Nuffield Trust. (2022). Growing problems, in depth: The impact of Covid-19 on health care for children and young people in England. https://www.nuffieldtrust.org.uk/resource/growing-problems-in-detail-covid-19-s-impact-on-health-care-for-children-and-young-people-in-england

O'Brien, K., Selboe, E., & Hayward, B. M. (2018). Exploring youth activism on climate change: Dutiful, disruptive, and dangerous dissent. *Ecology and Society, 23*(3), 42. https://doi.org/10.5751/ES-10287-230342

O'Hare, D. P. (2022). *The climate crisis, children, young people and educational psychology. British Psychology Society Division of Educational and Child Psychology*. BPS DECP.

Ojala, M. (2012a). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research, 18*(5), 625-642. https://doi.org/10.1080/13504622.2011.637157

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

Ojala, M. (2012c). Regulating worry, promoting hope: How do children, adolescents, and young adults cope with climate change? *International Journal of Environmental and Science Education, 7*, 537-561.

Ojala, M. (2013). Coping with climate change among adolescents: Implications for subjective well-being and environmental engagement. *Sustainability, 5*(5), 2191-2209. https://doi.org/10.3390/su5052191

Ojala, M. (2015). Hope in the face of climate change: Associations with environmental engagement and student perceptions of teachers' emotion communication style and future orientation. *The Journal of Environmental Education, 46*(3), 133-148. https://doi.org/10.1080/00958964.2015.1021662

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

Ojala, M. (2021). To trust or not to trust? Young people's trust in climate change science and implications for climate change engagement.

*Children's Geographies, 19*(3), 284-290. https://doi.org/10.1080/14733285.2020.1822516

Ojala, M. (2022). How do children, adolescents, and young adults relate to climate change? Implications for developmental psychology. *European Journal of Developmental Psychology, ahead-of-print*(ahead-of-print), 1-15. https://doi.org/10.1080/17405629.2022.2108396

Ojala, M. (2023). Hope and climate-change engagement from a psychological perspective. *Current Opinion in Psychology, 49*, 101514. https://doi.org/10.1016/j.copsyc.2022.101514

Ojala, M., & Bengtsson, H. (2019). Young people's coping strategies concerning climate change: Relations to perceived communication with parents and friends and proenvironmental behavior. *Environment and Behavior, 51*(8), 907-935. https://doi.org/10.1177/0013916518763894

Ojala, M., Cunsolo, A., Ogunbode, C. A., & Middleton, J. (2021). Anxiety, worry, and grief in a time of environmental and climate crisis: A narrative review. *Annual Review of Environment and Resources, 46*(1), 35-58. https://doi.org/10.1146/annurev-environ-012220-022716

Olmos-Vega, F. M., Stalmeijer, R. E., Varpio, L., & Kahlke, R. (2022). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Medical teacher, ahead-of-print*, 1-11. https://doi.org/10.1080/0142159X.2022.2057287

Olsson, D., Gericke, N., Sass, W., & Boeve-de Pauw, J. (2020). Self-perceived action competence for sustainability: The theoretical grounding and empirical validation of a novel research instrument. *Environmental Education Research, 26*(5), 742-760. https://doi.org/10.1080/13504622.2020.1736991

Orlowski, P. (2020). Adolescent perspectives on climate change in an era of economic uncertainty: Eschewing neoliberalism in Nelson, British Columbia. *International Journal for Talent Development and Creativity, 8*(1-2), 29-46. https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1297441&site=ehost-live

Otto, I. M., Donges, J. F., Cremades, R., Bhowmik, A., Hewitt, R. J., Lucht, W., Rockström, J., Allerberger, F., McCaffrey, M., Doe, S. S. P., Lenferna, A., Morán, N., van Vuuren, D. P., & Schellnhuber, H. J. (2020). Social tipping dynamics for stabilizing Earth's climate by 2050. *Proceedings of*

*the National Academy of Sciences (PNAS),, 117*(5), 2354-2365. https://doi.org/10.1073/pnas.1900577117

Pacheco, S. E. (2020). Catastrophic effects of climate change on children's health start before birth. *Journal of Clinical Investigation, 130*(2), 562-564. https://doi.org/10.1172/jci135005

Palinkas, L. A., O'Donnell, M. L., Lau, W., & Wong, M. (2020). Strategies for delivering mental health services in response to global climate change: A narrative review. *International Journal of Environmental Research and Public Health, 17*(22), 1-19. https://doi.org/10.3390/ijerph17228562

Park, C., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology, 1*, 115-144. https://doi.org/10.1037/1089-2680.1.2.115

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

Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Blackwell.

Pihkala, P. (2018). Eco-anxiety, tragedy, and hope: Psychological and spiritual dimensions of climate change. *Zygon, 53*(2), 545-569. https://doi.org/10.1111/zygo.12407

Pihkala, P. (2022a). Commentary: Three tasks for eco-anxiety research – a commentary on Thompson et al. (2021). *Child and Adolescent Mental Health, 27*(1), 92-93. https://doi.org/10.1111/camh.12529

Pihkala, P. (2022b). The Process of Eco-Anxiety and Ecological Grief: A Narrative Review and a New Proposal. *Sustainability, 14*(24).

Pihkala, P. (2023, 4 July). Meaning and eco-anxiety. https://ecoanxious.ca/stories/meaning-and-eco-anxiety/

Pilgrim, D. (2014). Some implications of critical realism for mental health research. *Social Theory & Health, 12*(1), 1-21. https://doi.org/10.1057/sth.2013.17

Potter, J., & Hepburn, A. (2005). Qualitative interviews in psychology: Problems and possibilities. *Qualitative Research in Psychology, 2*(4), 281-307. https://doi.org/10.1191/1478088705qp045oa

Powell, R. B., Stern, M. J., Krohn, B. D., & Ardoin, N. (2011). Development and validation of scales to measure environmental responsibility, character development, and attitudes toward school. *Environmental Education Research, 17*(1), 91-111. https://doi.org/10.1080/13504621003692891

Randall, R. (2019). *Climate anxiety or climate distress? Coping with the pain of the climate emergency.* https://rorandall.org/2019/10/19/climate-anxiety-or-climate-distress-coping-with-the-pain-of-the-climate-emergency/

Ratinen, I., & Uusiautti, S. (2020). Finnish students' knowledge of climate change mitigation and its connection to hope. *Sustainability, 12*(6), 2181. https://doi.org/10.3390/su12062181

Readfearn, G. (2022, November 22). Australia faces worsening extreme weather events latest BoM and CSIRO climate report finds. *The Guardian*. https://www.theguardian.com/australia-news/2022/nov/22/australia-faces-worsening-extreme-weather-events-latest-bom-and-csiro-climate-report-finds

Rehman, A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations, 3*(8), 51-59. http://www.ijeionline.com/attachments/article/57/IJEI.Vol.3.No.8.05.pdf

Reissman, C. (1993). *Narrative analysis*. Sage.

Richard, V., Dumont, R., Lorthe, E., Loizeau, A., Baysson, H., Zaballa, M.-E., Pennacchio, F., Barbe, R. P., Posfay-Barbe, K. M., Guessous, I., Stringhini, S., Amrein, D., Arm-Vernez, I., Azman, A. S., Bal, A., Balavoine, M., Berthelot, J., Bleich, P., Boehm, L., ..., & Study Group. (2023). Impact of the COVID-19 pandemic on children and adolescents: Determinants and association with quality of life and mental health—a cross-sectional study. *Child and Adolescent Psychiatry and Mental Health, 17*(1), 17. https://doi.org/10.1186/s13034-023-00563-5

Rippstein-Leuenberger, K., Mauthner, O., Sexton, J., & Schwendimann, R. (2017). A qualitative analysis of the Three Good Things intervention in healthcare workers. *BMJ Open, 7*(5), e015826. https://doi.org/10.1136/bmjopen-2017-015826

Robson, C. (2011). *Real world research: A resource for users of social research methods in applied settings* (3rd ed.). Wiley.

Robson, C., & McCartan, K. (2016). *Real world research: A resource for users of social research methods in applied settings* (4th ed.). Wiley.

Rubin, H. J., & Rubin, I. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed.). SAGE.

Ryan, R., & Deci, E. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Sanson, A., & Bellemo, M. (2021). Children and youth in the climate crisis. *BJPsych Bulletin, 45*, 1-5. https://doi.org/10.1192/bjb.2021.16

Sanson, A., Burke, S., & Van Hoorn, J. (2018). Climate Change: Implications for Parents and Parenting. *Parenting, 18*, 200-217. https://doi.org/10.1080/15295192.2018.1465307

Sanson, A., & Dubicka, B. (2022). Editorial: The climate and ecological mental health emergency – evidence and action. *Child and Adolescent Mental Health, 27*(1), 1-3. https://doi.org/10.1111/camh.12540

Sanson, A. V., Van Hoorn, J., & Burke, S. E. L. (2019). Responding to the impacts of the climate crisis on children and youth. *Child Development Perspectives, 13*(4), 201-207. https://doi.org/10.1111/cdep.12342

Save the Children. (2022). *Survey reveals scale of climate anxiety among British children on eve of COP27*. https://www.savethechildren.org.uk/news/media-centre/press-releases/survey-reveals-scale-of-climate-anxiety-among-british-children

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

Sekhar, S. (2023, 8th March). Climate crisis: The evolution of climate terminology. https://www.ecolytics.io/blog/climate-crisis-the-evolution-of-climate-terminology

Seligman, M. E. P. (1991). *Learned Optimism*. Knopf.

Seligman, M. E. P. (1996). *The Optimistic Child: A proven program to safeguard children against depression and build lifelong resilience*. Harper.

Sewell, A. (2016). A theoretical application of epistemological oppression to the psychological assessment of special educational needs concerns and practical implications for anti-oppressive practice. *Educational Psychology in Practice, 32*(1), 1-12. https://doi.org/10.1080/02667363.2015.1090404

Sheldon, K. M., & Hilpert, J. C. (2012). The Balanced Measure of Psychological Needs (BMPN) scale: An alternative domain general measure of need satisfaction. *Motivation and Emotion, 36*, 439-451. https://doi.org/10.1007/s11031-012-9279-4

Silverman, D. (2011). *Interpreting qualitative data: A guide to the principles of qualitative research* (4th ed.). SAGE.

Smith, J., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research* SAGE.

Smith, J., & Osborn, M. (2008). Interpretative phenomenological analysis. In Smith, J. (Ed.), *Qualitative psychology: A practical guide to research methods* (2nd ed., pp. 53-80). Sage.

Snyder, C. R. (2000). *Handbook of hope: Theory, measures, and applications*. Academic.

Snyder, C. R., Irving, L. M., & Anderson, J. R. (1991). Hope and health. In C. R. Snyder & D. R. Forsyth (Eds.), *Handbook of social and clinical psychology: The health perspective* (pp. 285–305). Pergamon Press.

Spisak, B. R., State, B., van de Leemput, I., Scheffer, M., & Liu, Y. (2022). Large-scale decrease in the social salience of climate change during the COVID-19 pandemic. *PLoS ONE, 17*(1), e0256082. https://doi.org/10.1371/journal.pone.0256082

Stanisławski, K. (2019). The coping circumplex model: An integrative model of the structure of coping with stress. *Frontiers in Psychology, 10*, 694. https://doi.org/10.3389/fpsyg.2019.00694

Stern, M. J., Powell, R. B., & Ardoin, N. M. (2008). What difference does it make? Assessing outcomes from participation in a residential

environmental education program. *The Journal of Environmental Education, 39*(4), 31-43. https://doi.org/10.3200/JOEE.39.4.31-43

Stevenson, K., & Peterson, N. (2016). Motivating action through fostering climate change hope and concern and avoiding despair among adolescents. *Sustainability, 8*(1), 1-10. https://doi.org/10.3390/su8010006

Stevenson, K. T., Peterson, M. N., & Bondell, H. D. (2019). The influence of personal beliefs, friends, and family in building climate change concern among adolescents. *Environmental Education Research, 25*(6), 832-845. https://doi.org/10.1080/13504622.2016.1177712

Stoknes, P. E. (2015). *What we think about when we try not to think about global warming*. Chelsea Green.

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

Stringer, E. T. (2021). *Action research* (5th ed.). SAGE.

Taylor, M., Watts, J., & Bartlett, J. (2019, 27th September). Climate crisis: 6 million people join latest wave of global protests. *The Guardian*. https://www.theguardian.com/environment/2019/sep/27/climate-crisis-6-million-people-join-latest-wave-of-worldwide-protests

Teach the Future. (2021). *Teaching the future. Research with UK teachers on the current state and future of climate education*. https://www.teachthefuture.uk/research

Teach the Future. (n.d.). https://www.teachthefuture.uk/vision

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. (2020). Reflexive thematic analysis. In M. Ward & S. Delamont (Eds.), *Handbook of qualitative research in education* (2nd ed., pp. 430-441).

Terry, G., Hayfield, N., Clarke, V., & Braun, V. (2017). Thematic Analysis. In C. Willig & W. Stainton Rogers (Eds.), *The sage handbook of qualitative research in psychology* (2nd ed., pp. 17-37). Sage.

The Royal College of Psychiatrists. (2020, 20th November). The climate crisis is taking a toll on the mental health of children and young people. https://www.rcpsych.ac.uk/news-and-features/latest-news/detail/2020/11/20/the-climate-crisis-is-taking-a-toll-on-the-mental-health-of-children-and-young-people#:~:text=Over%20half%20(57%25)%20of%20child%20and%20adolescent%20psychiatrists%20surveyed,the%20Royal%20College%20of%20Psychiatrists.

Thompson, R., Fisher, H. L., Dewa, L. H., Hussain, T., Kabba, Z., & Toledano, M. B. (2022). Adolescents' thoughts and feelings about the local and global environment: A qualitative interview study. *Child and Adolescent Mental Health, 27*(1), 4-13. https://doi.org/10.1111/camh.12520

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

Todd, S. (2020). Creating aesthetic encounters of the world, or teaching in the presence of climate sorrow. *Journal of Philosophy of Education, 54*(4), 1110-1125. http://dx.doi.org/10.1111/1467-9752.12478

Togneri, H. (2022). *From "powerless and alone" to finding "all the great people who care": A cooperative inquiry with young people exploring eco-anxiety and constructive ways of coping* [DEdPsy, University of Cardiff]. https://orca.cardiff.ac.uk/id/eprint/152217/1/Thesis%20-%20Hannah%20Togneri%20-%201720282.pdf

Trott, C. D. (2020). Children's constructive climate change engagement: empowering awareness, agency, and action. *Environmental Education Research, 26*(4), 532-554. http://dx.doi.org/10.1080/13504622.2019.1675594

Trott, C. D. (2022). Climate change education for transformation: exploring the affective and attitudinal dimensions of children's learning and action. *Environmental Education Research, 28*(7), 1023-1042. https://doi.org/10.1080/13504622.2021.2007223

UNICEF. (1989). *The United Nations convention on the rights of the child*. https://www.unicef.org.uk/wp-content/uploads/2016/08/unicef-convention-rights-child-uncrc.pdf

UNICEF. (2015). *Unless we act now: The impact of climate change on children.* https://www.unicef.org/media/50391/file/Unless_we_act_now_The_impact_of_climate_change_on_children-ENG.pdf

United Nations. (2015). *Paris Agreement. Conference of the parties on its twenty-first session.* https://unfccc.int/process-and-meetings/the-paris-agreement

United Nations. (n.d.-a). *Global issues: Climate change*. https://www.un.org/en/global-issues/climate-change

United Nations. (n.d.-b). *What is climate change?* https://www.un.org/en/climatechange/what-is-climate-change

United Nations Development Programme. (2021). *The peoples' climate vote*. https://www.undp.org/publications/peoples-climate-vote

United Nations Educational Scientific Cultural Organization, U. (2021). *Learn for our planet: A global review of how environmental issues are integrated in education*. UNESCO. https://unesdoc.unesco.org/notice?id=p::usmarcdef_0000377362

van Zomeren, M., Spears, R., & Leach, C. W. (2010). Experimental evidence for a dual pathway model analysis of coping with the climate crisis. *Journal of Environmental Psychology, 30*(4), 339-346. https://doi.org/10.1016/j.jenvp.2010.02.006

Vergunst, F., & Berry, H. L. (2022). Climate change and children's mental health: A developmental perspective. *Clinical Psychological Science, 10*(4), 767-785. https://doi.org/10.1177/21677026211040787

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

Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2021). Educators' experiences and strategies for responding to ecological distress. *Australian Journal of Environmental Education, 37*, 1-15. https://doi.org/10.1017/aee.2020.34

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

Verplanken, B., & Roy, D. (2013). "My worries are rational, climate change is not": Habitual ecological worrying Is an adaptive response. *Public Library of Science, 8*(9), e74708. https://doi.org/10.1371/journal.pone.0074708

Votes for Schools. (2021). *Votes for COP26 data report*. https://www.votesforschools.com/site/assets/files/2633/votesforschools_-_cop26_data_report.pdf

Wahlström, M., J. de Moor, Uba K., Wennerhag M., De Vydt, M., Almeida P., Baukloh, A., Bertuzzi, N., Chironi, D., Churchill, B., Cisar, O., Collin, P., Noble, T., Daniel, A., Davies S., della Porta, D., Deutschman, A., Ellefsen, R., Emilsson, K., ... Zamponi, L. (2020). *Surveys of participants in Fridays For Future climate protests on 20-28 September, 2019, in 19 cities around the world*. https://doi.org/https://osf.io/asruw/

Weintrobe, S. (2013). The difficult problem of anxiety in thinking about climate change. In S. Weintrobe (Ed.), *Engaging with Climate Change: Psychoanalytic and Interdisciplinary Perspectives.* (pp. 33-47). Taylor and Francis Group.

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/https://doi.org/10.1016/j.jenvp.2022.101866

Wilkinson, S. (2008). Focus groups. In J. A. Smith (Ed.), *Qualitative Psychology: A practical guide to research methods*. Sage.

Willig, C. (2013). *Introducing qualitative research in psychology* (3rd ed.). Open University Press.

Willig, C., & Stainton Rogers, W. (2017). *The SAGE handbook of qualitative research in psychology* (2nd ed.). SAGE.

Wong, P. (2016). Chinese positive psychology revisited. *International Journal of Existential Psychology & Psychotherapy, 6*(1), 1-7.

Wong, P., & Roy, S. (2017). Critique of positive psychology and positive interventions. In N. Brown, T. Loams, & F. Eiroa-Orosa (Eds.), *The*

*Routledge international handbook of critical positive psychology.* Routledge.

Wray, B. (2022). *Generation dread. Finding purpose in an age of climate crisis*. Knopf.

Wullenkord, M. C., Tröger, J., Hamann, K. R. S., 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), 20. https://doi.org/10.1007/s10584-021-03234-6

Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology and Health, 15*(2), 215-228. https://doi.org/10.1080/08870440008400302

Yardley, L. (2008). Demonstrating validity in qualitative psychology. In J. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (2nd ed., pp. 235-251). Sage.

Yardley, L. (2015). Demonstrating validity in qualitative psychology. In J. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (3rd ed., pp. 257-272). Sage.

Yardley, L. (2017). Demonstrating the validity of qualitative research. *The Journal of Positive Psychology, 12*(3), 295-296. https://doi.org/10.1080/17439760.2016.1262624

Young, S. (2019, June 5). World Environment Day: 80% of teenagers feel under pressure to save the planet but aren't learning how. *The Independent*. https://www.independent.co.uk/life-style/teenagers-save-planet-world-environment-day-2019-climate-change-plastic-pollution-protest-a8945131.html

Zeldin-O'Neill, S. (2019, October 16). 'It's a crisis, not a change': The six Guardian language changes on climate matters. *The Guardian*. https://www.theguardian.com/environment/2019/oct/16/guardian-language-changes-climate-environment

# 8. Appendices

## Appendix 1. Climate change emotions terminology

Table describing climate change emotions terminology

| Term | Definition |
|---|---|
| Solastalgia | "the distress that is produced by environmental change impacting on people while they are directly connected to their home environment" (Albrecht et al., 2007, p.95) |
| Eco-anxiety | "a chronic fear of environmental doom" (Clayton et al., 2017, p.68) |
| Climate anxiety | How humans perceive, fear, and dread the impacts of climate change, "a heightened emotional, mental or somatic distress in response to dangerous changes in the climate system" (Climate Psychology Alliance, 2020, p.22) |
| Climate distress | The range of feelings experienced in response to climate change, including shock, fear, anger, grief, sorrow, guilt and shame (Randall, 2019) |
| Ecological grief | "The grief felt in relation to experienced or anticipated ecological losses, including the loss of species, ecosystems, and meaningful landscapes" (Wray, 2022, p.21) |
| Eco-paralysis | When people care too much about climate change but feel unable to do anything effective, they engage in avoidance as a psychological defence (Albrecht, 2011, Verlie et al., 2020) |
| Eco-empathy, eco-compassion, eco-caring | Alternative terminology suggested to shift from a pathologizing mental illness model to an attachment framework, focusing on connections, relationship, and love (Hickman, 2020) |

## Appendix 2. SLR database search terms

Table of search terms used in database searches

| | |
|---|---|
| 1 | climate OR (climate change) OR (climate crisis) OR (climate emergency) |
| Operator | AND |
| 2 | child* OR teenage* OR adolescen* OR boy OR girl OR pupil OR student* OR “young person” OR “young people” OR youth |
| Operator | AND |
| 3 | feel* OR emotion* OR voice OR experience* OR perspective* OR opinion* OR view* |
| Operator | NOT/AND NOT |
| 4 | university OR undergraduate* OR graduate* |

Note. The asterisk (*) is a wildcard symbol that enables the inclusion of words with varied suffixes.

## Appendix 3. SLR: Articles excluded at abstract screen

Table showing articles excluded at abstract with rationale

| Study reference | Exclusion criteria |
|---|---|
| Barrable, A., Booth, D., Adams, D., & Beauchamp, G. (2021). Enhancing nature connection and positive affect in children through mindful engagement with natural environments. *International Journal of Environmental Research and Public Health,* 18(9), 4785. | Study does not include climate change (6) |
| Basch, C., Yalamanchili, B., & Fera, J. (2021). Climate change on TikTok: A content analysis of videos. *Journal of Community Health*, 47(1), 163–167. | Adults only (5) |

| Study reference | Exclusion criteria |
|---|---|
| Bierbaum, R. & Lazaroff, M. (2022). From theory to practice: The student experience evaluating development projects focused on nature-based solutions. *Sustainability*, 14(9), 5722. | Adults only (5) |
| Birdsall, S. (2020). Nurturing hope: From climate-change worriers to eco-warriors. *Set: Research information for teachers,* 3, 48-53. | Not a primary study (4) |
| Bonell, A., Badjie, J., Jammeh, S., Ali, Z., Hydara, M., Davies, A., Faal, M., Ahmed, A. N., Hand, W., Prentice, A. M., Murray, K. A., & Scheelbeek, P. (2022). Grassroots and youth-Led climate solutions from The Gambia. *Frontiers in Public Health,* 10, 784915–784915. | Study does not include a focus on views, feelings or experiences (6) |
| Bright, R., & Eames, C. (2020). Climate strikes: Their value in engaging and educating secondary school students. *Set: Research Information for Teachers,* (3), 4–11. | Full article inaccessible (1) |
| Burke, S., Sanson, A. V., & Van Hoorn, J. (2018). The psychological effects of climate change on children. *Current Psychiatry Reports,* 20(5), 35–35. | Not a primary study (4) |
| Cherry, L. (2021). The power of positive role models: Youth climate activism in films. *Journal of Environmental Studies and Sciences,* 11(2), 212–216. | Not a primary study (4) |
| Deng, Y., Wang, M., & Yousefpour, R. (2017). How do people's perceptions and climatic disaster experiences influence their daily behaviors regarding adaptation to climate change? A case study among young generations. *The Science of the Total Environment,* 581-582, 840–847. | Study does not include views, feelings or experiences about climate change (6) |
| Di Giorgi, E., Michielin, P., & Michielin, D. (2020). Perception of climate change, loss of social capital and mental health in two groups of migrants from African | Adults only (5) |

| Study reference | Exclusion criteria |
|---|---|
| countries. *Annali dell'Istituto Superiore Di Sanita*, *56*(2), 150–156. | |
| Dobson, J. (2019). Youth activism for health: Taking the future into their own hands. *British Medical Journal,* 367, l6881–l6881. https://doi.org/10.1136/bmj.l6881 | Not a primary study (4) |
| Duke, J., & Holt, E. A. (2022). Seeing climate change: Psychological distance and connection to nature. *Environmental Education Research*, 28(7), 949–969. | Adults only (5) |
| Fisher, E. & Arens, N. C. (2020). Geoscience education and motivated reasoning. *Journal of College Science Teaching*, 49(5), 36–41. | Adults only (5) |
| Gibson, K., Barnett, J., Haslam, N., & Kaplan, I. (2020). The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders*, 73, 102237. | Adults only (5) |
| 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. | Study does not include under 18-year-olds (5) |
| Halstead, F., Parsons, L. R., Dunhill, A., & Parsons, K. (2021). A journey of emotions from a young environmental activist. *Area*, 53(4), 708–717. | Not a primary study (4) |
| Holmqvist Olander, M., & Olander, C. (2017). Understandings of climate change articulated by Swedish secondary school students. *Journal of Biological Education*, 51(4), 349–357. | Study does not include views, feelings, or experiences (6) |
| Jimenez, J., Moorhead, L., & Wilensky, T. (2021). 'It's my responsibility': Perspectives on environmental justice and education for sustainability among international school students in Singapore. | Study does not include views, feelings, or experiences |

| Study reference | Exclusion criteria |
|---|---|
| *International Studies in Sociology of Education,* 30(1-2), 130–152. | about climate change (6) |
| Leckey, E., Littrell, M. K., Okochi, C., González-Bascó, I., Gold, A., & Rosales-Collins, S. (2021). Exploring local environmental change through filmmaking: The Lentes en Cambio Climático program. *The Journal of Environmental Education*, 52(4), 207–222. | Study explores climate change awareness but not views, feelings, or experiences (6) |
| Littrell, M., Okochi, C., Gold, A. U., Leckey, E., Tayne, K., Lynds, S., Williams, V., & Wise, S. (2020). Exploring students' engagement with place-based environmental challenges through filmmaking: A case study from the Lens on Climate Change program. *Journal of Geoscience Education*, 68(1), 80–93. | Study does not include views, feelings, or experiences about climate change (6) |
| McGregor, C., & Christie, B. (2021). Towards climate justice education: Views from activists and educators in Scotland. *Environmental Education Research*, 27(5), 652–668. | Study does not include views, feelings, or experiences about climate change (6) |
| Meltzer, G., Zacher, M., Merdjanoff, A., Do, M., P., Pham, N., K., & Abramson, D. (2021). The effects of cumulative natural disaster exposure on adolescent psychological distress. *The Journal of Applied Research on Children*, 12(1). | Study does not focus on climate change (6) |
| Munoz-Carrier, G., Thomsen, D., & Pickering, G. J. (2020). Psychological and experiential factors affecting climate change perception: Learnings from a transnational empirical study and implications for framing climate-related flood events. *Environmental Research Communications*, *2*(4), 45003. | Adults only (5) |

| Study reference | Exclusion criteria |
|---|---|
| Neenan, E., Roche, J. & Bell, L. (2021) Time to listen: Children's voice in geoscience education research. *Frontiers in Environmental Science,* 9. | Not a primary study (4) |
| Pinto, R. & Grove-White, S. (2020). From climate anxiety to resilient active citizenship: When primary schools, parents and environmental groups work together to catalyse change. *Forum: For promoting 3-19 comprehensive education,* 62(2), 251-256. | Parents views, not the views of children and young people (5) |
| Puttick, G., & Tucker-Raymond, E. (2018). Building systems from scratch: An exploratory study of students learning about climate change. *Journal of Science Education and Technology,* 27(4), 306–321. | Study does not include views, feelings, or experiences about climate change (6) |
| Ritchie, J. (2021). Movement from the margins to global recognition: Climate change activism by young people and in particular indigenous youth. *International Studies in Sociology of Education,* 30(1-2), 53–72. | Not a primary study (4) |
| Romm, N. (2020). Eliciting children's/young people's (group) engagement with scenarios as participatory research practice for exploring and extending responses to climate change. *Participatory Educational Research*, 7(1). | Study does not include views, feelings, or experiences about climate change (6) |
| Schauss, M., & Sprenger, S. (2021). Students' conceptions of uncertainties in the context of climate change. *International Research in Geographical and Environmental Education*, 30(4), 332–347. | Study does not include views, feelings, or experiences about climate change (6) |

| Study reference | Exclusion criteria |
|---|---|
| Schneiderhan-Opel, J., & Bogner, F. X. (2021). The effect of environmental values on German primary school students' knowledge on water supply. *Water,* 13(5), 702. | Study does not explore climate change (6) |
| Sciberras, E., & Fernando, J. W. (2022). Climate change-related worry among Australian adolescents: An eight-year longitudinal study. *Child and Adolescent Mental Health,* 27(1), 22–29. | Not a primary study, uses pre-existing data (4) |
| Sezen-Barrie, A., Miller-Rushing, A., & Hufnagel, E. (2020). 'It's a gassy world': Starting with students' wondering questions to inform climate change education. *Environmental Education Research*, 26(4), 555–576. | Study focuses on teachers (5) and climate change education (6) |
| Stapleton, S. (2019). A case for climate justice education: American youth connecting to intragenerational climate injustice in Bangladesh. *Environmental Education Research*, 25(5), 732–750. | Study focuses on climate justice education (6) |
| Surili, S., P., Robb, K., Pluff, C., Maldonado, E., Tatar, G., & Williams, T. (2021). Elevating mental health disparities and building psychosocial resilience among BIPOC children and youth to broaden the climate and health discourse. *Journal of Applied Research on Children,* 12(1). | Not a primary study, review of evidence (4) |
| Wong, Y. & Faikhamta, C. (2021). Reconnecting self, others and nature. *Cultural Studies of Science Education*, 16(3), 867–880. | Study focuses on nature and mindfulness and does not include views, feelings or experiences about climate change (6) |

| Study reference | Exclusion criteria |
|---|---|
| Wu, J., & Otsuka, Y. (2021). Pro-climate behaviour and the influence of learning sources on it in Chinese adolescents. *International Research in Geographical and Environmental Education*, 30(1), 24–38. | Study does not include views, feelings or experiences (6) |
| Zummo, L., Gargroetzi, E., & Garcia, A. (2020). Youth voice on climate change: Using factor analysis to understand the intersection of science, politics, and emotion. *Environmental Education Research*, 26(8), 1207–1226. | Not a primary study, used secondary data (4) |

## Appendix 4. SLR: Articles excluded at full text screen

Table showing articles excluded at full text screening with rationale

| Study reference | Exclusion criteria |
|---|---|
| Calculli, C., D'Uggento, A. M., Labarile, A., & Ribecco, N. (2021). Evaluating people's awareness about climate changes and environmental issues: A case study. *Journal of Cleaner Production,* 324, 129244. | Adults included in the study (5) |
| Catanzaro, M., & Collin, P. (2021). Kids communicating climate change: learning from the visual language of the SchoolStrike4Climate protests. *Educational Review* (Birmingham), ahead-of-print, 1–24. | Adults included in the study (5) |
| Cutter-Mackenzie, A., & Rousell, D. (2019). Education for what? Shaping the field of climate change education with children and young people as co-researchers. *Children's Geographies*, 17(1), 90–104. | Not a primary study (4) |
| Dunlop, L., & Rushton, E. (2022). Education for environmental sustainability and the emotions: | The focus on emotions was specifically regarding |

| | |
|---|---|
| Implications for educational practice. *Sustainability*, 14(8), 4441. | education rather than climate change generally (6) |
| Hestness, E., McGinnis, J. R., & Breslyn, W. (2019). Examining the relationship between middle school students' sociocultural participation and their ideas about climate change. *Environmental Education Research*, 25(6), 912–924. | Study only explores climate change awareness and knowledge (6) |
| Jackson, L., & Pang, M.-F. (2017). Secondary school students' views of climate change in Hong Kong. International *Research in Geographical and Environmental Education*, 26(3), 180–192. | Study only explores climate change awareness and knowledge (6) |
| Kuang, H. & Root, R. (2019). Perceptions of climate change in adolescents and its psychiatric implications. *Journal of the American Academy of Child and Adolescent Psychiatry*, 58 (10), S229. | Full text inaccessible (1) |
| Lindgren Leavenworth, M., & Manni, A. (2021). Climate fiction and young learners' thoughts-a dialogue between literature and education. *Environmental Education Research*, 27(5), 727–742. | Not a primary study (4) |
| Ojala, M., & Bengtsson, H. (2019). Young people's coping strategies concerning climate change: Relations to perceived communication with parents and friends and pro-environmental behavior. *Environment and Behavior*, 51(8), 907–935. | Adult included in the study (5) |
| Pickard, S. (2022). Young environmental activists and Do-It-Ourselves (DIO) politics: Collective engagement, generational agency, efficacy, belonging and hope. *Journal of Youth Studies*, ahead-of-print(ahead-of-print), 1–21. | Adults included in the study (5) |
| Simon, P., Pakingan, K., Aruta, J. (2022). Measurement of climate change anxiety and its mediating effect between experience of climate | Adults included in the study (5) |

| | |
|---|---|
| change and mitigations of Filipino youth. *Educational and Developmental Psychologist,* 39 (1), 17-27. | |
| Wang, S., Leviston, Z., Hurlstone, M., Lawrence, C., & Walker, I. (2018). Emotions predict policy support: Why it matters how people feel about climate change. *Global Environmental Change*, 50, 25–40. | Adults included in the study (5) |

## Appendix 5. SLR: Weight of Evidence A

WoE A concerns the methodological quality of the studies in the review (Gough, 2007). The Mixed-Methods Appraisal Tool (MMAT) (Hong et al., 2018) was utilised to assess each of the studies due to its application to appraise qualitative, quantitative and mixed methods research.

Table showing WoE A summary for all studies

| Study | WoE A<br>Methodological Quality<br>MMAT |
|---|---|
| Harker-Schuh et al. (2020) | Some methodological flaws<br>Criteria partially met |
| Hermans & Korhonen (2017) | Some methodological flaws<br>Criteria partially met |
| Herrick et al. (2022) | Few methodological flaws<br>Criteria met |
| Hickman et al. (2021) | Few methodological flaws<br>Criteria met |
| Karsgaard & Davidson (2021) | Few methodological flaws<br>Criteria met |
| Lawson et al. (2019) | Some methodological flaws<br>Criteria partially met |
| Littrell et al. (2020) | Some methodological flaws<br>Criteria partially met |
| McDonald-Harker et al. (2022) | Few methodological flaws<br>Criteria met |
| Orlowski (2020) | Some methodological flaws<br>Criteria partially met |
| Parry et al. (2022) | Some methodological flaws<br>Criteria partially met |
| Ratinen & Uusiautti (2020) | Some methodological flaws |

| Study | WoE A<br>Methodological Quality<br>MMAT |
|---|---|
| | Criteria partially met |
| Stevenson et al. (2019) | Some methodological flaws<br>Criteria partially met |
| Thompson et al. (2022) | Few methodological flaws<br>Criteria met |
| Trott (2020) | Some methodological flaws<br>Criteria partially met |
| Trott (2022) | Some methodological flaws<br>Criteria partially met |
| Added in April 2023 | |
| Finnegan (2022) | Some methodological flaws<br>Criteria partially met |

## Completed appraisals using Hong et al.'s (2018) Mixed-Methods Appraisal Tool (MMAT)

### Qualitative studies:

Karsgaard and Davidson (2021)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | 2 explicitly stated |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 1.1 Is the qualitative approach appropriate to | Yes | |

| | | |
|---|---|---|
| answer the research question? | | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |

McDonald-Harker et al. (2022)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | 4 questions explicitly stated |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |

| | | |
|---|---|---|
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |

Orlowski (2020)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Extracts included |
| 1.5 Is there coherence between qualitative data | Yes - partly | No information about how data was analysed |

| | | |
|---|---|---|
| sources, collection, analysis and interpretation? | | |

Thompson et al. (2022)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | No | Aims described but not research question |
| S2. Do the collected data allow to address the research questions? | Yes - partly | Using aims as a guide as no research questions |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes - partly | Using aims as a guide as no research questions |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes- partly | Using aims as a guide as no research questions<br>Interview questions and project coproduced with young people |
| 1.3 Are findings adequately derived from the data? | Yes- partly | Young people |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |

Mixed method studies:

Herrick et al. (2022)

| Criteria | Score | Comment |
|---|---|---|
| S1. Are there clear research questions? | Yes | Very clear |
| S2. Do the collected data allow to address the research questions? | Yes | |
| **Qualitative** | | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | Range of qualitative methods |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |
| **Quantitative descriptive** | | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |

| | | |
|---|---|---|
| 4.2 Is the sample representative of the target population? | No | Small sample size (n = 22)<br>Study carried out in one class |
| 4.3 Are the measures appropriate? | Yes | TE survey shorter than typical due to age of sample and limitations to instructional time |
| 4.4 Is the risk of nonresponse bias low? | Yes | Whole class participated |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |
| **Mixed methods** | | |
| 5.1 Is there an adequate rationale for using a mixed methods design to address the research question? | Can't tell | Rationale not explicitly stated |
| 5.2 Are the different components of the study effectively integrated to answer the research question? | Yes | Clearly reports triangulation of data |
| 5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | Yes | |
| 5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | Can't tell | No mention of divergences/inconsistencies |
| 5.5 Do the different components of the study | Yes | |

| | | |
|---|---|---|
| adhere to the quality criteria of each tradition of the methods involved? | | |

Littrell et al. (2020)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | Very clear |
| S2. Do the collected data allow to address the research questions? | Yes | |
| **Qualitative** | | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |
| **Quantitative descriptive** | | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | No | Small sample size (n = 34) |

| | | |
|---|---|---|
| | | Sample already engaged in a maths and science summer programme<br>Demographics provided |
| 4.3 Are the measures appropriate? | Yes | |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |
| **Mixed methods** | | |
| 5.1 Is there an adequate rationale for using a mixed methods design to address the research question? | Can't tell | Rationale not explicitly stated |
| 5.2 Are the different components of the study effectively integrated to answer the research question? | Yes | |
| 5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | Yes | |
| 5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | Can't tell | |
| 5.5 Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | Yes | |

Parry et al. (2022)

| Criteria | Score | Comment |
|---|---|---|
| S1. Are there clear research questions? | No | Aims stated but not research question |
| S2. Do the collected data allow to address the research questions? | Yes - partly | Using aims as a guide as no research questions |
| **Qualitative** | | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes - partly | Using aims as a guide as no research questions |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes- partly | Using aims as a guide as no research questions |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Some extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |
| **Quantitative descriptive** | | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | No | Small sample size (n = 51)<br>75% of respondents were female<br>Demographics provided |
| 4.3 Are the measures appropriate? | Yes | |

| | | |
|---|---|---|
| 4.4 Is the risk of nonresponse bias low? | Can't tell | |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |
| **Mixed methods** | | |
| 5.1 Is there an adequate rationale for using a mixed methods design to address the research question? | Yes | |
| 5.2 Are the different components of the study effectively integrated to answer the research question? | Yes | |
| 5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | Yes | |
| 5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | Can't tell | |
| 5.5 Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | Yes | |

Trott (2020)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | 3 clear research questions |

| | | |
|---|---|---|
| S2. Do the collected data allow to address the research questions? | Yes | |
| **Qualitative** | | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Some extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |
| **Quantitative descriptive** | | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | No | Small sample size (n = 55)<br>Convenience sample<br>Sample already engaged in Boys and Girls Club<br>Sample self-selected so may have had an interest in topic |
| 4.3 Are the measures appropriate? | Yes | |

| | | |
|---|---|---|
| 4.4 Is the risk of nonresponse bias low? | Can't tell | |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |
| **Mixed methods** | | |
| 5.1 Is there an adequate rationale for using a mixed methods design to address the research question? | Yes - partly | |
| 5.2 Are the different components of the study effectively integrated to answer the research question? | Yes | |
| 5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | Yes | |
| 5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | Can't tell | None mentioned |
| 5.5 Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | Yes | |

Trott (2022)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | 2 clear research questions stated |

| | | |
|---|---|---|
| S2. Do the collected data allow to address the research questions? | Yes | |
| **Qualitative** | | |
| 1.1 Is the qualitative approach appropriate to answer the research question? | Yes | |
| 1.2 Are the qualitative data collection methods adequate to address the research question? | Yes | |
| 1.3 Are findings adequately derived from the data? | Yes | |
| 1.4 Is the interpretation of results sufficiently substantiated by data? | Yes | Many extracts included |
| 1.5 Is there coherence between qualitative data sources, collection, analysis and interpretation? | Yes | |
| **Quantitative descriptive** | | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | No | Small sample size (n = 55)<br>Convenience sample<br>Demographics provided |
| 4.3 Are the measures appropriate? | Yes | All measures previously validated on age range |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |
| **Mixed methods** | | |

| | | |
|---|---|---|
| 5.1 Is there an adequate rationale for using a mixed methods design to address the research question? | Yes - partly | |
| 5.2 Are the different components of the study effectively integrated to answer the research question? | Yes | |
| 5.3 Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | Yes | |
| 5.4 Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | Can't tell | None mentioned |
| 5.5 Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | Yes | |

Quantitative studies:

Harker-Schuh et al. (2021)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Partly | Aims and hypotheses stated but not research questions |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |

| | | |
|---|---|---|
| 4.2 Is the sample representative of the target population? | Partly | Large sample (n = 459)<br>Detailed demographics provided and information suggesting that a reasonable level of representation was achieved, however, only selected from 6 schools |
| 4.3 Are the measures appropriate? | Partly | Only 3 questions<br>Developed for survey – non-standardised |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | Some anecdotal information that this may have occurred, no response rates provided<br>No information included explaining a large reduction in the number of participants completing the survey to those included in the data set |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Hermans & Korhonen (2017)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | 4 research questions clearly stated |

| | | |
|---|---|---|
| S2. Do the collected data allow to address the research questions? | Yes | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | Can't tell | Moderate sample size (n = 549)<br>Sample across 11 schools<br>Insufficient demographic information provided to determine |
| 4.3 Are the measures appropriate? | Yes - partly | Developed for study - newly created measures |
| 4.4 Is the risk of nonresponse bias low? | Yes | Response rate 86% |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Hickman et al. (2021)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Yes | Clear research questions |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | Yes - Partly | Large sample size (10,000) |

| | | |
|---|---|---|
| | | The samples are not fully representative of the countries' populations due to use of an online polling company requiring the sample to have internet access and sometimes the ability to speak English<br><br>Quota sampling (age, gender, and region) in the study did not lead to complete representativeness by country, so collected data were weighted based on statistics from the Organisation for Economic Co-operation and Development for each country by age group, gender, and region but not population size, so aggregated results must be interpreted with caution because they are not globally representative. |
| 4.3 Are the measures appropriate? | Yes - partly | Non-standardised and newly created measures |
| 4.4 Is the risk of nonresponse bias low? | Yes | 68% of those who started the survey, went on to complete it |

| | | |
|---|---|---|
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Lawson et al. (2019)

| **Criteria** | **Score** | **Comment** |
|---|---|---|
| S1. Are there clear research questions? | Partly | Study aims and hypotheses stated but no clear research question |
| S2. Do the collected data allow to address the research questions? | Yes - partly | Using aims as a guide as no research questions |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes- partly | Using aims as a guide as no research questions |
| 4.2 Is the sample representative of the target population? | Can't tell | 182 families<br>Hierarchical sampling design<br>Limited demographic information provided |
| 4.3 Are the measures appropriate? | Yes- partly | Non-standardised and newly created measures<br>Reliability of scales found to be satisfactory |
| 4.4 Is the risk of nonresponse bias low? | No | |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Ratinen & Uusiautti (2020)

| Criteria | Score | Comment |
|---|---|---|
| S1. Are there clear research questions? | Yes | Aims and 2 research questions clearly stated |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes | |
| 4.2 Is the sample representative of the target population? | Can't tell | Convenience sample<br>Moderate sample size (n = 950)<br>Little information regarding demographics |
| 4.3 Are the measures appropriate? | Yes - partly | Measures created for study |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | State that an exact response rate cannot be provided due to the online questionnaire being administered by teachers |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Stevenson et al. (2019)

| Criteria | Score | Comment |
|---|---|---|
| S1. Are there clear research questions? | Partly | Study aims and hypotheses reported but no research question shared |

| | | |
|---|---|---|
| S2. Do the collected data allow to address the research questions? | Yes - partly | Using aims as a guide as no research questions |
| 4.1 Is the sampling strategy relevant to address the research question? | Yes - partly | Using aims as a guide as no research questions |
| 4.2 Is the sample representative of the target population? | Can't tell | Moderate sample size (n = 426)<br>Random selection of schools but self-selection bias of teachers may have had impact<br>Schools were representative of the state in terms of socio-economic status<br>Some demographic information regarding gender and ethnicity reported but difficult to determine representation |
| 4.3 Are the measures appropriate? | Yes - partly | Measures created for study utilising previous scales |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | Low response rate from teachers (24 out of 150)<br>Response rates not reported for children |
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

Finnegan (2022)

| Criteria | Score | Comment |
|---|---|---|
| S1. Are there clear research questions? | Yes | Clearly states 2 research questions |
| S2. Do the collected data allow to address the research questions? | Yes | |
| 4.1 Is the sampling strategy relevant to address the research question? | Partly | Limitations – convenience, snowball and voluntary response sampling |
| 4.2 Is the sample representative of the target population? | No | Large sample (n = 512)<br>Voluntary response<br>Higher proportion of females (67%) than males<br>Equal proportion of students attending independent and state schools which is not representative of the general student population in the UK (13% of A-level students attend an independent school)<br>785 of the students identified as white – slightly below national percentage |
| 4.3 Are the measures appropriate? | Yes | |
| 4.4 Is the risk of nonresponse bias low? | Can't tell | No response rates provided, do not know how many students completed the survey after starting it |

| | | |
|---|---|---|
| 4.5 Is the statistical analysis appropriate to answer the research question? | Yes | |

## Appendix 6. SLR: Weight of Evidence B

WoE B judges the methodological relevance of each study in answering the research question. The researcher gave each study a WoE rating based on criterion developed for the review. Methodologies received higher scores if they enabled participants to provide their views, feelings, and experiences, such as interviews and focus groups. Lower scores were given to surveys and questionnaires which were considered to be less relevant to answering the review question. In studies which had used multiple methods of data collection, the dominant methodology was appraised.

Table showing Weight of Evidence B criteria

| Weighting | Study design |
|---|---|
| High | In-depth data collection methods which allow participants to openly share their views, feelings and experiences, including interviews and focus groups |
| Medium | Surveys with open questions |
| Low | Surveys and questionnaires with closed questions |

Table showing Weight of Evidence B scores and descriptors for each study

| Study | WoE descriptor |
|---|---|
| Harker-Schuh et al. (2020) | Low |

| | |
|---|---|
| Hermans & Korhonen (2017) | Low |
| Herrick et al. (2022) | High |
| Hickman et al. (2021) | Low |
| Karsgaard & Davidson (2021) | Medium |
| Lawson et al. (2019) | Low |
| Littrell et al. (2020) | Medium |
| McDonald-Harker et al. (2022) | High |
| Orlowski (2020) | High |
| Parry et al. (2022) | Medium |
| Ratinen & Uusiautti (2020) | Low |
| Stevenson et al. (2019) | Low |
| Thompson et al. (2022) | High |
| Trott (2020) | High |
| Trott (2022) | High |
| *Added in April 2023* | |
| Finnegan (2022) | Low |

## Appendix 7. SLR: Weight of Evidence C

WoE C concerns the relevance and appropriateness of each study in answering the review question. To support this judgement, consideration was given to the level of focus each study gave to CYP's experiences, views, and feelings regarding climate change. Studies where this was viewed as the

primary focus were given higher scores than studies which involved a different primary focus.

Table showing Weight of Evidence C criteria and rationale

| Criteria | Study focus |
|---|---|
| High | Primary focus on CYP's experiences, views and feelings regarding climate change |
| Medium | A significant focus on CYP's experiences, views and feelings regarding climate change, although this is not the primary focus of the study |
| Low | Study includes some focus on CYP's experiences, views and feelings regarding climate change, but this is not the primary or secondary purpose of the study |

Table showing Weight of Evidence C scores for each study

| Study | WoE descriptor |
|---|---|
| Harker-Schuh et al. (2020) | High |
| Hermans & Korhonen (2017) | High |
| Herrick et al. (2022) | Medium |
| Hickman et al. (2021) | High |
| Karsgaard & Davidson (2021) | Medium |
| Lawson et al. (2019) | Low |
| Littrell et al. (2020) | Medium |
| McDonald-Harker et al. (2022) | Medium |
| Orlowski (2020) | Medium |

| | |
|---|---|
| Parry et al. (2022) | Low |
| Ratinen & Uusiautti (2020) | High |
| Stevenson et al. (2019) | Medium |
| Thompson et al. (2022) | Medium |
| Trott (2020) | Medium |
| Trott (2022) | Medium |
| Added in April 2023: Finnegan (2022) | Low |

## Appendix 8. SLR: Qualitative data extraction

Table showing qualitative data extraction

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| Herrick et al. (2022) | Explores the use of photovoice as a flexible arts-based research and pedagogical approach to identify elementary students' knowledge, understanding and experiences of climate change | USA | Mixed methods, Photovoice and transformative experience informed study<br>Interviews<br><br>Place-based pedagogical approach | 5th graders (*n* =22) at a public city elementary school<br>59% male<br>41% female<br><br>70% Caucasian<br>15% Asian<br>15% two or more/other | Photovoice helped students to construct hope about their futures in relation to the changing climate and fostered a transformative experience<br><br>Sharing localised experiences with climate change led students to construct hope and build agency around climate issues<br><br>Themes:<br>• The collective role that humans have in being responsible for what is happening to the planet<br>• The reality of limited resources that the environment provides |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | | | and how that should promote protection and sustainability<br>• Emphasis on the role of time<br>• Absence<br>• Cause and effect patterns of thinking |
| Karsgaard & Davidson, (2021) | To explore how climate change is conceptualised and experienced by students from diverse international contexts and how these can inform climate justice education | Virtual across 13 countries (Brazil, Canada, China, Colombia, Ghana, India, Indonesia, Kenya, Mexico, Peru, Slovenia, UK, US) | Participatory research exploration through a climate change learning experience<br><br>297 blog assignments, 14 in-person semi-structured interviews | Secondary school (public and private) students (*n* = 99)<br><br>Participants either volunteered to take part or were nominated by their teachers<br><br>Participants had a proficiency in English | Themes:<br>• Climate change as an issue of justice<br>• Structural causes and individualist solutions<br>• Emotional responses to climate change<br>-fear, despair<br>- grief for observed and predicted losses including animals and vulnerable people<br>- guilt and shame regarding personal impacts |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | Analysis – thematic analysis | | - hope – often encouraged by the actions of others |
| Littrell et al. (2020) | To explore student's perspectives on climate change before and after a film-based climate change programme | USA | Mixed methods<br><br>Place-based filmmaking<br><br>Surveys pre- and post-programme<br><br>Open-ended questions<br>Analysis used an open coding method | High school students (*n* = 34), aged 14-18 years old who participated in a week-long programme<br><br>Recruited from a residential summer maths and science programme<br><br>60.5% female<br>39.55% male<br><br>41.9% Hispanic, Latinx, or Spanish origin<br>27.9% American Indian or Alaskan Native<br>7% White | Themes:<br>• Severity of climate change – 62% of participant's comments pre-programme and 50% of comments post-programme were coded as 'severe', indicating that students recognised climate change as significant, dangerous or alarming<br>• Responsibility and ability to address climate change<br>• Negative impacts and local relevance of climate change |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | | 2.3% Asian or Asian American<br>2.3% Black or African American<br>2.3% Native Hawaiian or other Pacific Islander<br>11.6% identified as more than one ethnicity<br>4.7% preferred not to say | |
| McDonald-Harker et al. (2022) | To explore how experiencing disaster impacts children's environmental views and practices | Canada | Semi-structured interviews<br><br>Analysis – descriptive and pattern coding | 5 -17 years (*n* = 83)<br>Females, *n* = 41<br>Males, *n* = 42<br>From flood-affected communities | Experiencing a flood changed children's environmental perceptions and practices<br><br>Following the flood, children were more likely to:<br>• Engage in reflexive processes, leading them to reflect more on nature, the Earth, the environment and eco-systems |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | | | • Contemplate larger environmental issues, including climate change<br>• Take action to mitigate climate change |
| Orlowski (2020) | To investigate how Canadian youth process and makes sense of issues relating to climate change and the economy | Canada | Semi-structured interviews | 10 senior high school students<br>7 females<br>3 males | Themes:<br>• Anthropogenic nature of climate change – agreement across participants<br>• Sources of facts and opinions on climate change<br>• Hope versus despair – all participants reported some hope, broad spectrum of responses around despair and pessimism<br>• Climate change and economic concerns – most participants did not agree with a neo-liberal political view that there |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | | | is a job-versus-environment binary to choose from |
| Parry et al. (2022) | To explore the interface between climate change and social media reporting | UK, Netherlands and other | Mixed methods<br><br>Survey – mix of open-ended qualitative questions, Likert scale questions<br><br>Content analysis | Aged 16 -25 years old (*n* = 51, stage 1 *n* = 28, stage 2 *n* = 23)<br><br>Participants self-selected by responding to adverts on Twitter<br><br>75% female<br>25% male | Themes:<br>• Observing coverage 'an outsider looking in'<br>• Feelings – emotional connection<br>• Appraising – nature of reporting, accuracy of facts, individual v collective responsibility<br>• Engaging – clear steps, empowerment, motivation for change, responsibility, intrinsic and extrinsic motivation |
| Thompson et al. (2022) | To explore adolescents' thoughts and feelings about the environment and understand their experiences of | UK | Semi-structured interviews<br><br>Thematic analysis | Convenience sample, 14-18 years old (*n* = 15)<br><br>66.7% female<br>26.7% male<br>6.75 non-binary | 6 themes identified:<br>• The local environment<br>• Efficacy<br>• Challenging emotions<br>• Information<br>• Hindrances<br>• Perceptions of the future |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | environmental issues | | | 80% White<br>13.3% Black<br>6.7% Declined to answer<br><br>Mixed socioeconomic background and urban/rural residents<br><br>Self-reported environmental campaigning<br>53.3% Yes<br>46.7% No<br><br>Self-reported prior mental health difficulties,<br>13.3% Present<br>80% Absent<br>6.7% Declined to answer | Participants reported feeling disempowered to personally influence environmental problems but engaged with them<br><br>Children reported that engaging with climate change mitigation actions supported their wellbeing |
| Trott (2020) | To explore children's | USA | Mixed methods | Children aged between 10 and 12 | • Following participation in the programme, children |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | perceptions and knowledge of climate change before and after a climate change programme | | Participatory Focus groups<br><br>Survey – mix of closed and open-ended questions | years across three Boys and Girls Clubs<br>*n* = 55<br><br>52.7% female<br><br>56.4% White<br>25.4% Hispanic/Latinx<br>14.6% biracial or multiple ethnicities<br>3.5% Asian/Pacific Islander | reported a strengthened sense of agency through being informed about climate change and being more aware and confident about:<br>- Specific steps they can take to reduce their environmental impact<br>- General ways to help the environment<br>- Events in the world<br>- Ways that they can make a difference to improve their communities and the world<br>• Children expressed sense of urgency<br>• Existing responses to climate change were viewed as being inadequate or non-existent |

| Author(s), publication date | Purpose(s) | Location | Method | Sample | Relevant key findings |
|---|---|---|---|---|---|
| | | | | | • Opportunities for taking action during the programme led to a sense of agency and hope |
| Trott (2022) | To examine affective and attitudinal impacts of a climate change education programme on children | USA | Mixed methods<br><br>Survey – open and closed questions<br><br>Focus groups and thematic analysis | 10 -12-year-olds (*n* = 55) participating in a 15 week after-school programme, from 3 different clubs/sites<br><br>52.7% female<br>47.3% male<br>61.8% entitled to free or reduced-price lunch | Themes:<br>• Respect for nature<br>• Urgency of climate action<br>• Mixed emotions about climate change<br>- Scary, depressing and anxiety-provoking<br>- Taking action to address climate change helped to manage negative emotions and led to more positive feelings<br>- |

## Appendix 9. SLR: Themes, subthemes, and quotes in the qualitative data

Table showing themes, sub-themes, example quotes and relevant studies

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| 1. Importance and relevance | Severity – all studies | "The heat spikes … could be deadly" (Karsgaard & Davidson, 2021, p.8).<br><br>"I realized how global warming is affecting all of us. It made me think [about] how we could help. It's just horrible what would happen if the glaciers melted. Homes would be lost. Lots of land would be lost." (Trott, 2022, p.1034)<br><br>"Climate change impacts people directly by putting things such as shelter and access to food and water at risk …" (Karsgaard & Davidson, 2021, p.98). |
| | Urgency – all studies | "I'm honestly not that confident because [the atmosphere] is warming up so fast. Every year it's getting worse, and if we keep on going the way we are going now, I feel that soon it'll be too late to deal with. That's my concern" (Orlowski, 2020, p.41). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | | "Good that it seems like more people are treating it with the seriousness it deserves but concerned it may be too late" (Parry et al., 2022, p. 33).<br><br>"There is a big little voice in the back of your head going, the world is dying, are you gonna make it past 50?" (Thompson, 2022, p7).<br><br>"I know it [climate change] causes a lot of problems worldwide and that if we don't try to make a change soon we are going to go into self-extinction" (Littrell et al., 2020, p.600). |
| | The future<br>(Herrick et al., 2022; Karsgaard & Davidson, 2021; McDonald-Harker et al., 2022; Orlowski, 2020; Thompson, 2022, Trott, 2022) | "…it's kind of like my adulthood might not be a thing. Or, me being an adult might be in a world where we are getting constant weather issues, constant floods, where you have to wear a mask outside because you can't breathe" (Thompson, 2022, p.9).<br><br>"Because if we don't take care of the planet now, we probably won't have anything left in the next fifty years…We're probably just going to die out and not live anymore" (Trott, 2022, p.1034).<br><br>"…if we keep doing the things that make the world sick, then our future, then we may possibly not have a future." (Karsgaard & Davidson, 2021, p.12). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | | "I'm fairly certain, it might take time, but I reckon it will get better, they just need to wake up almost." (Thompson et al., 2022, p.5).<br><br>"Once the majority of the world's population understands the severity of [climate change] through education, I believe we can change things for the better" (Orlowski, 2020, p.42).<br><br>"For the future generations we should probably try to think about our children and what's going to be their reality" (McDonald-Harker et al., 2022, p.23). |
| 2. Thoughts and feelings | Challenging emotions (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022; Trott, 2022) | "I'd say that I don't go out of my way to learn more things about it because I dunno, it's quiet depressing in a way" (Thompson et al, 2022, p.7). |
| | Sadness, anxiety, guilt (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022; Trott, 2022) | "I feel fear because we're in 2018, we have less than 32 years until 2050" (Karsgaard and Davidson, 2021, p.12).<br><br>"I feel ashamed of being part of this race" (Karsgaard and Davidson, 2021, p.12).<br><br>"It makes me feel quite helpless and sad" (Parry et al., 2022, p.33). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | Disappointment, criticism, and frustration in others inaction (Parry et al., 2022; Thompson et al., 2022; Trott, 2020; Trott, 2022) | "Why aren't people taking this more seriously?" (Parry et al., 2022, p.33).<br><br>"Frustration with people in power, like people in government, politicians who aren't, it feels like sometimes they're not listening…" (Thompson et al., 2022, p.8).<br><br>"I feel quite frustrated that nothing, like, not that nothing is being done but I don't see as much progress as I would think there would have been, especially like people in power you would think that they would take the environmental problems seriously and try and tackle it so it's quite frustrating that there's a lack of progress or a lack of initiative taken place" (Thompson et al., 2022, p.7). |
| | Helplessness and powerlessness (Karsgaard & Davidson, 2021; Parry et al., 2022; Thompson et al., 2022) | "I can feel a bit stuck a bit useless I'm like, why isn't this happening…I don't know what I can do, it feels like, I feel a bit lost in just not being able to do much because I'm just one person, I dunno, it feels like it's out of control" (Thompson et al., 2022, p.7).<br><br>"When I first [started reading about climate change] I cried, because I was like – I wanted to, like, to do so much but then, I'm just one person. And I felt so helpless because I couldn't do, I felt like I couldn't do anything" (Karsgaard & Davidson, 2021, p.12). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | More welcomed emotions<br>(Herrick et al., 2022; Karsgaard &Davidson, 2021; Littrell et al., 2022; Orlowski, 2020; Thompson et al., 2022; Trott 2022) | "I am hopeful that we will be able to deal with [climate change]. It's being brought to light more and more in the media nowadays. It's kind of bad in some ways, but it is also necessary to make people aware of how serious this problem is" (Orlowski, 2020, p.41).<br><br>"I consider myself an optimist, so I'd *like* to think that we can deal with [climate change]. But I truly don't know if we can" (Orlowski, 2020, p.41).<br><br>"its always like, the internal battle between hope and despair…there's moments when I'm flush with large amounts of hope, like, 'I can actually change this! And then there's parts where there is, like, despair where it's like, 'Well, if we're going to stop this wouldn't we have stopped it by now?" (Karsgaard & Davidson, 2021, p.12). |
| 3. Information | Media and digital media<br>(Orlowski, 2020; Thompson et al., 2022) | "You know what the media are like, they're fear mongers, a lot of media, it's very hard to get media that truly shows you the big picture and shows you the big picture as what it is, not as you know, an overdramatised scary model" (Thompson, 2022, p.8). |
| | Friends and family<br>(Orlowski, 2020; Parry et al., 2022; Thompson et al., 2022) | "My parents are very aware of [climate change]. We always recycle, we don't drive much – we usually walk or bike because of what cars are doing to the climate. My mother especially is very conscientious" (Orlowski, 2020, p.36). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | | |
| | School<br>(Orlowski, 2020; Thompson et al., 2022; Trott, 2020) | “A big reason for why I know about climate change is because we are taught about it in our school. Science classes mainly, but also in social studies… I think that every science class I’ve taken has done at least something on climate change. I mean, the science teachers have gone through college and learned about these things, so I find what they say and the websites they tell us to look at are reliable” (Orlowski, 2020, p.37). |
| 4. Action, agency, and engagement | Responsibility<br>(Karsgaard & Davidson, 2021; Littrell et al., 2020; Parry et al, 2022; Thompson et al., 2022) | “I think we feel we’ve kind of, we have to try and fix the mistakes that have been made in the generations above us, so we’re kind of trying to do what we can I guess” (Thompson et al., 2022, p.8). |
| | Making a difference<br>(Herrick et al., 2022.; McDonald-Harker et al., 2022; Thompson et al., 2022) | “we’ve changed… we usually didn’t recycle paper back them, but now we do” (McDonald-Harker et al., 2022, p.25).<br><br>“we can tell our families, and then they’ll tell their friends, and then the friends might tell the public” and “we should show the effects of climate change on social media” (Herrick et al., 2022, p.107). |
| | Education, knowledge, and awareness | “I thought there was no way I could help climate change but now I know I could in little ways” (Littrell et al., 2020, p.601). |

| Theme | Subtheme and relevant studies | Example quotations |
|---|---|---|
| | (Herrick et al., 2022; Littrell et al., 2020; McDonald-Harker et al, 2022; Parry et al., 2022; Trott, 2020; Trott, 2022) | "I feel like I can actually do something… about the environment and what's going on" (Trott, 2022, p.1035)<br><br>"by having clear steps and actions that can be taken, young people may feel more motivated" (Parry et al., 2022, p.35). |

## Appendix 10. SLR: Quantitative data extraction

Table showing quantitative data extraction

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| Harker-Schuh et al., (2021) | To determine the current opinion of 12–13-year-olds regarding concern, imminence | Austria and Australia | Survey | First year public secondary school students, across 6 (2 Austria, 4 Australia) inner urban schools aged 12-13 years old | Climate opinion was measured using 3-Likert Scale questions with one item for each theme of concern, imminence and anthropogenic nature | The majority of children reported that climate change was probably or definitely:<br>• something people should worry about, Austria (84.6%) |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | and the anthropogenic nature of the climate<br><br>To determine if differences exist between genders and countries | | | (*n* = 463 Austria, *n* = 78 Australia, *n* = 375)<br><br>53.4% male<br>45.3% female | Descriptive statistics on trends in overall data were produced using aggregated data<br><br>Chi-square tests were applied to determine the dependent structure between the three dimensions<br><br>Ordinal logistic regression was performed to determine the relationship between responses and predictors | and Australia (89.1%)<br>• caused by humans, Austria (75.6%) and Australia (83.6%)<br>• happening now, Austria (73.1%) and Australia (87.5%) |
| Hermans & Korhonen (2017) | To understand children's attitudes towards climate | Finland | Questionnaire<br><br>Administered by | Ninth graders from 11 secondary schools (*n* = 549) | Questionnaire was developed for study<br><br>Attitudes towards climate change consequences were | • Respondents generally considered climate change to be a risk |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | change consequences and mitigation | | researcher | 54.3% male<br>45.5% female<br><br>Response rate 86% | assessed with 10 items using 5-point Likert scales<br>Climate change mitigation views were measured using the same items and questions about their own willingness to act<br><br>Climate education and understanding were assessed using items and 5-point Likert scales | • Gender difference- more females viewed climate change as a risk<br>• Respondents indicated moderate levels of worry<br>• Respondents viewed climate change mitigation as relevant |
| Hickman et al., (2021) | To understand young people's feelings, thoughts and functional impacts associated | Global – 10 countries (Australia, Brazil, Finland, France, India, Nigeria, Philippines | Online survey | Children and young people aged 16-25 years (n = 10,000<br>(n = 1,000 per country)<br><br>68% completed of participants | Survey developed over two months by 11 international experts in related fields<br><br>Survey included questions covering 7 domains: | • Respondents were worried about climate change:<br>59% very or extremely worried<br>84% at least moderately worried |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | with climate change and government response | , Portugal, Philippines, UK, USA) | | completed blind survey<br><br>51% male<br>49% female<br>49% 16-20 years<br>51% 20-25 years<br><br>Recruited via Kantar, a participant recruitment platform<br>Participants collected points for taking part | • Climate-related worry<br>• Climate-related functional impact<br>• Climate-related emotions<br>• Climate-related thoughts<br>• Experience of being ignored or dismissed when talking about climate change<br>• Beliefs regarding government responses to climate change | • Over 50% felt sad, angry, powerless, helpless, guilty and anxious<br>• Over 45% reported that their climate change feelings impacted their daily life functioning<br>• Negative thoughts about the future<br>• Government response to climate change was perceived negatively<br>• Climate distress and anxiety were associated with perceived insufficient |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | • Emotional impact of government responses to climate change<br><br>Descriptive statistics calculated for each aspect<br>Pearson's correlation analysis evaluated link with thoughts and feelings about government response | government response and related feelings of betrayal<br>• High levels of concern noted in all countries, some increase in those respondents living in countries more directly impacted by climate change |
| Lawson et al. (2019) | To explore the relationship between parent and child climate related views and behaviours | USA | Case study survey | 182 families<br>Children *n* = 182<br>Parents *n* =241<br><br>Students aged 11-14 years, across 15 schools<br><br>49.1% male | Measures were created for the study<br>Climate change concern was measured using adapted items from Leiserowitz et al.'s (2011) survey on global warming | • Children were found to be somewhat unconcerned with climate change overall but large variation evident<br>• Children's climate change |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | 56.5% Caucasian<br><br>Parent response rate 24.9% | Climate behaviour was measured using a modification of the Climate Change Behaviour scale<br><br>Family level climate change discussion was measured by a single item, previously used in studies.<br><br>Multiple linear regression analyses were used | concern was positively related to children's climate behaviours<br>• Parent's climate change concern was not related to children's climate behaviours<br>• Parents climate behaviours related to child's climate behaviours<br>• Frequency of family climate change discussions impacted on children's climate behaviours, |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | | irrespective of parents' views |
| Littrell et al. (2020) | To explore student's perspectives on climate change before and after a film-based climate change programme | USA | Mixed methods<br><br>Place-based filmmaking<br><br>Surveys pre- and post-programme<br><br>(Open-ended questions Analysis used an open coding method) | High school students (*n* = 34), aged 14-18 years old who participated in a week-long programme<br><br>Recruited from a residential summer maths and science programme<br><br>60.5% female 39.55% male<br><br>41.9% Hispanic, Latinx, or Spanish origin 27.9% American Indian or Alaskan Native | Multiple choice and Likert-type questions were used to measure students' beliefs about the occurrence of climate change and its importance to their lives<br><br>Questions were adopted from a previous used scale on global warming (Leiserowitz et al., 2011) | • Importance of climate change to students' lives<br>• Anthropogenic nature |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | 7% White<br>2.3% Asian or Asian American<br>2.3% Black or African American<br>2.3% Native Hawaiian or other Pacific Islander<br>11.6% identified as more than one ethnicity<br>4.7% preferred not to say | | |
| Parry et al. (2022) | To explore the interface between climate change and social media reporting | UK, Netherlands and other | Mixed methods<br><br>Survey – mix of open-ended qualitative questions | Aged 16 -25 years old (n = 51, stage 1 *n* = 28, Stage 2 *n* = 23)<br><br>Participants self-selected by responding to | 10 reflective statement items using 5-point Likert scales were used to measure participants' views concerning social media reporting of climate change | • Most (95%) of participants expressed that they had the skills to cope well with social media coverage on climate change |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | , Likert scale questions | adverts on Twitter<br><br>75% female<br>25% male | | • 13% of participants reported that climate coverage in social media negatively impacted their mental health<br>• 78% reported an increase in climate change anxiety in response to coverage on social media |
| Ratinen & Uusiautti (2020) | To identify the types of hope that students have towards climate change | Finland | Online questionnaire, completed at school | Elementary and secondary students across 6 city communities, aged 11 -17 years<br>*n* = 950 | Questionnaire was developed for study<br><br>Climate change knowledge was measured using statements and 5-point Likert scales | • Respondents had a relatively high constructive hope rather than denial hope in terms of climate change |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | To determine if climate change knowledge and optimism levels affect hope | | Administered by teachers | 51% male<br>49% female | Climate change opinion was measured using three items and rated on 5-point Likert scales<br><br>Climate change mitigation was measured using statements and 5-point Likert scales<br><br>Hope was measured using a version of a previously used measure with a 7-point Likert scale (Ojala, 2012b)<br><br>Analysis included hierarchical regression analyses, principal component analyses, and t-tests | • Hope was not built on minimisation of climate change<br>• Hope was affected by:<br>-self-empowerment<br>-climate change knowledge – greater knowledge was associated with higher levels of hope<br>-belief in climate work by environmental organisations<br>-gender – girls had greater hopefulness than boys |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| Stevenson (2019) | To investigate the impact of personal beliefs, perceived beliefs of family and friends, and occurrence of climate change discussion, on children's climate change concern | USA | Questionnaire | Students, aged 11-14 years (*n* = 426)<br><br>55.6% female<br><br>57.9% White<br>17% African American<br>7.1% Hispanic<br>1.4% American Indian<br>1.4% Asian<br>11.6% multi-racial<br>3.6% other | Climate change concern was measured through 4 questions Questionnaire was developed for the study<br><br>Personal acceptance of anthropogenic global warming was measured through 2 questions<br><br>Perceived acceptance of anthropogenic global warming among friends and family was measured through descriptive social norms<br><br>Items were adapted from Leiserowitz et | • Acceptance of global warming and human causes were found to be positively related to climate change concern<br>• Perceived acceptance of anthropogenic global warming among friends and family was found to be positively related to climate change concern |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | al.'s (2011) survey on global warming<br><br>Analysis included multiple linear regression | |
| Trott (2020) | To explore children's perceptions and knowledge of climate change before and after a climate change programme | USA | Mixed methods, participatory<br><br>Survey – closed and open questions<br><br>(Focus groups) | Children aged between 10 and 12 years across three Boys and Girls Clubs<br>*n* = 55<br><br>52.7% female<br><br>56.4% White<br>25.4% Hispanic/Latinx<br>14.6% biracial or multiple ethnicities<br>3.5% Asian/Pacific Islander | Pre- and post-intervention survey<br><br>Survey included 2 items regarding climate change perceptions and 11 items assessing climate change knowledge using Leiserowitz et al.'s (2011) scale | • Extent to which children thought about climate change<br>Not at all/not a lot, 52.7% pre-programme, 18.2% post programme<br>• Children's climate change knowledge increased through the programme |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| Trott (2022) | To examine affective and attitudinal impacts of a climate change education programme on children | USA | Mixed methods<br><br>Survey – open and closed questions<br><br>Focus groups and thematic analysis | 10 -12-year-olds (*n* = 55) participating in a 15 week after-school programme, from 3 different clubs/sites<br><br>52.7% female<br>47.3% male<br>61.8% entitled to free or reduced-price lunch | Pre- and post-intervention survey<br>Connection with nature was measured using a 7-item scale (Stern et al., 2008)<br><br>Endorsement of an ecological worldview was measured using 10-items (Manoli et al., 2007)<br><br>Feelings concerning environmental responsibility were measured using 6-items (Powell et al., 2011)<br><br>Attitudes regarding the urgency of climate change were measured using 6- | • Greater sense of urgency reported following programme (pre- M=3.81, SD=0.65, post-M=4.07. SD=0.62, responses 1(strongly disagree) to 5 (strongly agree)<br>• Strong sense of environmental responsibility pre and post programme, (pre- M=4.33, SD=0.52, post-M=4.55, SD=0.49, responses 1(strongly |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | items (Dijkstra & Goedhart, 2012)<br><br>All scales were previously validated with children under 12 | disagree) to 5 (strongly agree)<br>• Children expressed an ecological worldview pre- and post-programme, some increase but not found to be significant<br>• Children expressed a strong connection with nature pre- and post-programme, some increase but no significant change observed |
| Added April 2023: | | | | | | |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| Finnegan (2022) | To explore students' future outlooks in response to climate change<br><br>To explore the relationship between teacher practices, students' future outlook, and student participation in sustainability activities | England, UK | Online questionnaire | Sixth form students, aged 16-18 years (*n* = 512), from 12 secondary schools in Southern England<br>67% female<br>30% male<br><br>78% white<br><br>51% state school<br>49% independent school<br><br>Also, teachers (*n* = 69) | Climate Change Hope was measured using the Climate Change Hope Scale (Li and Monroe, 2018)<br><br>Climate change distress was measured using a similar measure by Searle and Gow (2010)<br><br>Negative emotions questions were adapted from Wahlström et al.'s (2019, 2020) questions<br><br>Future scenarios were adapted from short narratives | • Participants had mixed feelings about the future, hope and anxiety coexist<br>• Negative future scenarios were rated as more likely than positive future scenarios<br>• A strong positive correlation between hope and action competence was noted<br>• Teacher practices were linked to participants' sense of hope. Students were more hopeful |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | (Grund and Brock, 2019)<br><br>Action competence was measured by the Self-Perceived Action Competence for Sustainability Questionnaire (Olsson et al. 2020)<br><br>Educator practices and views of educator practices were measured by Likert scales devised by Ojala (2015)<br><br>Student activity was measured by 2 questions using a Likert scale for frequency | when teachers accepted their negative emotions and held a more positive and solution-oriented outlook concerning social and environmental issues |

| Author(s) publication date | Purpose(s) | Location | Method | Sample | Measures/Analysis | Relevant key findings |
|---|---|---|---|---|---|---|
| | | | | | One open-ended question asked participants to share their future outlook in three words | |

## Appendix 11. Epistemological positions

| Epistemology | Core features | Considerations with current research |
|---|---|---|
| Subjectivism | • A true external reality can never be directly known as everyone has their own subjective understanding of that reality, which may differ from others' understanding and experience (Rehman & Alharthi, 2016)<br>• Concerned with the different ways that individuals perceive, understand, and make sense of events experienced (Lincoln et al., 2018; Rehman & Alharthi, 2016)<br>• The researcher seeks to understand the world from the viewpoint of those living in it (Mertens, 2015)<br>• Recognises the influence of social, cultural, and historical experiences and contexts on an individual's world view and interpretations of events (Burr, 2015)<br>• Knowledge generated through research is influenced by the researcher's values and approaches (Grix, 2004; Rehman & Alharthi, 2016) | • Researcher acknowledges how participants' views, feelings, and experiences, along with their interpretations of these, are subjective and shaped by individuals' constructs<br>• Research aims are focused on understanding the world from the viewpoint of CYP<br>• Recognition of the influence of the researcher's experiences and assumptions on the research process is consistent with the researcher's values |

| Epistemology | Core features | Considerations with current research |
|---|---|---|
| | • Emphasises the interactive relationship between the researcher and participants in shaping knowledge and meaning (Creswell & Creswell, 2018; Mertens, 2015) | |
| Constructionism | • Knowledge and reality are constructed by people.<br>• Language is central - it is perceived to construct knowledge and realities rather than purely reflect them (Braun & Clarke, 2022; Willig & Stainton Rogers, 2017)<br>• The same event can be described in different ways, resulting in a range of valid perceptions and meaning making (Willig, 2013)<br>• Language becomes the focus of study, and careful analysis of the words used by individuals is needed (Burr, 2015)<br>• Concerned with the different ways that individuals can perceive, understand, and make sense of events experienced (Burr, 2015; Willig, 2013)<br>• Recognises the influence of social, cultural, and historical experiences and contexts on an individual's world view and interpretations of events (Burr, 2015) | • Researcher acknowledges individuals have own understandings and descriptions of events and experiences<br>• Research focus is exploring CYP's understandings and viewpoints<br>• Recognition of the influence of the researcher's experiences and assumptions on the research process is consistent with the researcher's values<br>Limitations to current research:<br>• Language – The researcher adopts a primarily intentional view of language and perceives language as a tool for |

| Epistemology | Core features | Considerations with current research |
|---|---|---|
| | • Emphasises the role of the interaction between researcher and participants. The researcher is perceived as being active in influencing and creating evidence (Mertens, 2015) | expression and the communication of meaning, rather than the construction of meaning. Accordingly, the researcher views language as reflecting CYP's thoughts, feelings, and experiences |
| Transformative | • Recognises the crucial role of culture in determining knowledge. Socially constructed realities are defined by social, political, cultural, economic, racial, ethnic, gender, age, and disability values (Mertens, 2007, 2015)<br>• Issues of power and privilege are central<br>• Researchers carefully consider which and whose realities should be privileged within the study (Mertens, 2007)<br>• Emphasises the interactive connection between participants and researcher and how this relationship is situated within a cultural context (Mertens et al., 2009; Mertens, 2015) | • The study focuses on prioritising the voices and experiences of a less powerful group, e.g., CYP<br>• Within the context of climate change, CYP can be viewed as lacking power in making climate related decisions and actions<br>• Social justice stance aligns with researcher's values<br>• The acknowledgement of the researcher's role and bi-directional influence of |

| Epistemology | Core features | Considerations with current research |
|---|---|---|
| | • The researcher is focused on social justice and confronts discrimination and oppression (Mertens, 2015). They stand alongside marginalised and less powerful groups (Mertens, 2015), and prioritise their voices and experiences, in the hope of bringing about change | researcher and participants aligns with researcher's views<br>Limitations to current research:<br>• Study aims are not focused on examining issues of power and oppression |

## Appendix 12. Selecting a qualitative research method

Table showing methodological approaches, features, and considerations regarding suitability to current study

| Methodological approach | Core features | Suitability with current research | Concerns and limitations with current research |
|---|---|---|---|
| Reflexive thematic analysis (TA) | • Focuses on exploring and interpreting patterns of meaning across data (Braun & Clarke, 2022) | • Can bring rich and complex insights (Braun & Clarke, 2006)<br>• Supports the exploration and generation of patterns within the perceptions, | • Theoretical freedom as a potential challenge (as well as an advantage), related to risk of inadequately |

| Methodological approach | Core features | Suitability with current research | Concerns and limitations with current research |
|---|---|---|---|
| | | feelings, and experiences of CYP, in line with research aims focus on shared themes and patterns about CYP's climate change views<br>• The crucial role of researcher reflexivity aligns with the researcher's values (Braun & Clarke, 2021d; Terry & Hayfield, 2020) | addressing theoretical assumptions |
| Interpretative phenomenological analysis (IPA) | • Focuses on the subjective lived experiences of participants | • The focus on understanding the meanings that individuals attach to experiences links with research aims (Smith & Osborn, 2008) | • The interest on the individual and idiographic experience is less relevant to the research questions, which aim to consider |

| Methodological approach | Core features | Suitability with current research | Concerns and limitations with current research |
|---|---|---|---|
| | | | • ideas and patterns across the participants, as well as explore themes beyond personal experience (Smith et al., 2009) |
| Grounded Theory | • Focuses on the systematic generation of new theory grounded with the research data (Charmaz, 2008) | • Appropriate when exploring topics, such as CYP's climate change views/feelings, with limited existing research and understanding (Chun Tie et al., 2019; Holton & Walsh, 2017)<br>• Can be valuable when exploring understanding, perceptions, and influencing factors (Braun | • The current research aims to explore views, feelings, and experiences, rather than to generate theories<br>• Due to the researcher's interest within this topic, they had already engaged extensively with the existing literature |

| Methodological approach | Core features | Suitability with current research | Concerns and limitations with current research |
|---|---|---|---|
| | | & Clarke, 2013) in line with research aims<br>• Emphasises the role and influence of the researcher in the generation of data, in line with the current researcher's position (Charmaz, 2006; Charmaz, 2008) | (generally discouraged within this approach) and felt that this was likely to shape the generation of theory |

## Appendix 13. Selecting a data generation method

Table showing data generation methods, features, and considerations regarding suitability to current study

| Data generation method | Core features | Advantages with current research | Concerns and limitations with current research |
|---|---|---|---|
| Semi-structured interviews | • Researcher asks interviewees questions to gain information<br>• Uses a pre-determined schedule to ensure focus but the researcher can respond flexibly and adapt schedule as appropriate (Mertens, 2015)<br>• Exploratory and open-ended questioning | • Enables a flexible exploration of participant's experiences and perceptions<br>• Allows participants to share first-hand experiences, perceptions, and feelings, eliciting rich and full accounts<br>• Positions participants as experts (Smith & Osborn, 2008) | • Time consuming (Robson, 2011)<br>• Potential for unconscious bias (Potter & Hepburn, 2005) |

| Data generation method | Core features | Advantages with current research | Concerns and limitations with current research |
|---|---|---|---|
| Focus groups | • A small group (6-8) of people engaging in an informal discussion about a particular theme (Wilkinson, 2008)<br>• Data is gathered from all participants simultaneously (Braun & Clarke, 2013).<br>• Researcher/moderator guides the group | • Gain insights into peoples' thoughts and feelings in line with research aims<br>• Interactions between participants are encouraged, leading to more naturalistic conversations and dialogue, and in-depth detailed accounts (Wilkinson, 2008).<br>• Can offer a supportive environment and can lead to participants developing a sense of empowerment on realisation that they are not isolated in their views and experiences (Braun & Clarke, 2013). | • Ethical concerns with a potentially distressing topic (Wilkinson, 2008)<br>• Expertise in facilitating focus groups needed (Robson, 2011) |

| Data generation method | Core features | Advantages with current research | Concerns and limitations with current research |
|---|---|---|---|
| | | • Time efficient (Robson, 2011) | |
| Surveys | • Enable data to be captured from a large population<br>• Qualitative surveys can include open questions to gain views concerning a topic<br>• Usually completed without the researcher present | • Can generate large amounts of data within a short period of time (Robson, 2011)<br>• Allows anonymity for sensitive issues (Robson, 2011) | • Typically low response rates (Robson, 2011)<br>• Potential for misunderstandings in survey questions with little chance to intervene/clarify (Robson, 2011)<br>• Lack of opportunities to seek clarification, ask for further detail to add to deeper understanding |

# Appendix 14. Study recruitment, information, and consent letters

## Recruitment letter to Headteachers

**School of Psychology**

**Letter to Schools**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

# *Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*


*Doctorate in Applied Educational Psychology*

*Researcher: Joanna Payton*

*Contact Details: joanna.payton@nottingham.ac.uk*

*Supervisor: Victoria Lewis*

*Supervisor Contact Details: victoria.lewis@nottingham.ac.uk*


My name is Jo Payton and I am a student at the University of Nottingham studying for the Doctorate in Applied Educational Psychology. I am currently on placement in [Local Authority] Educational Psychology Service. As part of my training, I am required to conduct a research project. As part of this, I hope to explore children and young people's views and experiences concerning climate change to help raise awareness and develop support systems. I am contacting you to inform you of the research project and to ask whether you would be willing to discuss this further.

**What is the research about?**

The research aims to explore the views of experiences of eco-compassionate children and young people in response to climate change. I am interested in finding out about children

and young people's feelings towards climate change along with their views concerning facilitators and barriers to managing these feelings, their experiences of communicating with others about their thoughts and feelings concerning climate change, and their ideas about how adults can best support them to cope with potentially difficult feelings. Gaining further insight and a deeper understanding of young people's experiences will help to raise awareness amongst practitioners (including school staff and EPs) to enhance practice in supporting young people with the management of feelings around climate change.

**Who will participate?**

I would like to recruit pupils who meet the following criteria:

- Pupils in Year 9
- Pupils who are concerned about climate change and experience/have experienced strong feelings in relation to climate change
- Pupils who are verbally able to talk about their experiences, perspectives, and feelings
- Pupils who are not experiencing extreme psychological distress nor accessing or awaiting external mental health support.

Pupils will self-select to participate in the study. I will share a recruitment poster that can be shared and displayed around school. A short script will also be shared so that school staff can mention the study in an assembly or tutor time. School staff would not be expected to encourage or to put any pressure on to pupils to participate in the research.

I am hoping to recruit between 6 and 10 participants, but it may be that they do not all attend your school.

**What does the research involve?**

Pupils will be interviewed individually by myself for about 45 minutes. Interviews will take place within the school setting and during school hours. The young person will be asked to talk about their views, feelings and experiences towards climate change. The interviews will be audio recorded and then transcribed by the researcher.

To support the practicalities of the research, the school will be asked to designate a nominated member of staff who:

- can act as a contact point for potential participants
- coordinates information sharing and consent forms provided by the researcher
- can disseminate supportive information and signpost young people to relevant

support services if appropriate (all information will be provided by the researcher)

I will also ask the school to have a member of staff contactable on the day of the interviews in case some young people feel upset by the potential sensitivity of the topic. It may be helpful if the nominated staff member has experience of supporting young people's wellbeing and mental health.

If you would like to, your school will be able to receive a summary of the research findings, including suggestions about the type of support young people would like to receive to help them to manage any difficult feelings regarding climate change.

**How will the data be kept confidential? Will anyone be identified?**

The names of participants along with the school name will be anonymised. Any identifiable data will not be included in the transcriptions. Participants will be given a pseudonym. I will store the data securely and in line with GDPR. Data will be kept for 25 years after the research has ended and then will be destroyed.

If any safeguarding concerns arise, I will contact the school's safeguarding lead.

**What happens next?**

If you feel that you may be interested in taking part in the research, please get in touch using the email address above. I would be happy to discuss the research further if you feel that you would like more information before deciding whether to participate.

If you agree to take part, you will be asked to confirm a nominated member of staff who will act as a contact point. I will then arrange a meeting with the nominated staff member to talk through the research further and to share documents including the recruitment poster, participant and parent information sheets, and participant and parent consent forms. Once the study has been shared with pupils and the posters have been displayed, the nominated staff member will be asked to meet with potential interested participants and to check that they meet the inclusion criteria before distributing information sheets and consent forms. Once distributed, I will ask that the nominated staff member makes follow-up phone calls to parents of interested pupils to provide them with an opportunity to ask questions and to

speak to myself should they wish.

**Next steps**

I look forward to you getting in touch using the contact information provided. I will follow up this email letter with a phone call next week to discuss the research further. If you have any questions in the meantime, please contact me at *joanna.payton@nottingham.ac.uk* or my research supervisor, Dr Victoria Lewis at *victoria.lewis@nottingham.ac.uk*

Kind regards,
Jo Payton
Trainee Educational Psychologist
University of Nottingham

## Information sheet for young people

**School of Psychology**

**Information Sheet – Young Person**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

*Title of Project: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

*Ethics Approval: S1422*

*Researcher: Joanna Payton*

*Contact Details: joanna.payton@nottingham.ac.uk*

*Supervisor: Victoria Lewis*

*Supervisor Contact Details: victoria.lewis@nottingham.ac.uk*

This is an invitation to take part in a research study on 'Exploring the views and experiences of eco-compassionate children and young people concerned about climate change'.

Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

If you participate, you will be interviewed once by myself (the researcher) in school. The interview should last about 45 minutes. You will be asked to talk about your feelings around climate change and how these have impacted you. I will ask you about what has helped and what hasn't helped you to manage these feelings along with your experiences of communicating with others about your thoughts and feelings concerning climate change. You will be asked if you have any thoughts and ideas about how adults can further support you to manage the feelings related with climate change. I will also ask about your thoughts for the future.

After the interview you will have chance to talk about anything that was raised during the interview and asked if you would like to add anything.

The interviews will be recorded with a digital recorder and typed up word-for-word by the researcher afterwards. Once I have analysed the information from all of the interviews, I will send you a written summary about what the research found.

Participation in this study is totally voluntary and you do not have to take part if you do not want to. You are free to withdraw at any point before and during the interview and for up to two weeks after the interview takes place. All data will be kept confidential and used for research purposes only. It will be stored safely and securely in line with GDPR. The only other instance that any information may be shared with another person would be if the researcher felt that you may be at risk of harm to yourself or another person.

If you have any questions or concerns, please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

## Information sheet for parents/carers

**School of Psychology**

**Information Sheet – Parents and Carers**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

*Title of Project: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

*Ethics Approval: S1422*

*Researcher: Joanna Payton*

*Contact Details: joanna.payton@nottingham.ac.uk*

*Supervisor: Victoria Lewis*

*Supervisor Contact Details: victoria.lewis@nottingham.ac.uk*

This is an invitation for your child to take part in a research study on 'Exploring the views and experiences of eco-compassionate children and young people concerned about climate change'.

Before you decide if you wish your child to take part, it is important for you and your child to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

If you and your child agree to participate, they will take part in an interview in school whereby they will be asked questions about their feelings around climate change and the impact of such feelings. They will be asked about what has helped and what hasn't helped them to manage these feelings along with their experiences of communicating with others about their thoughts and feelings concerning climate change. They will be asked if they have any thoughts and ideas about how adults can further support them to manage the feelings related with climate change. I will also ask about their thoughts for the future.

After the interview your child will have chance to talk about anything that was raised during the interview and asked if they would like to add anything.

A digital voice recorder will be used during interviews to record your child's responses. All data will be kept confidential. Voice recordings are needed to ensure that records are accurate and a true representation of what is said during interviews and used to support the outcomes of the research. The interview should last about 45 minutes.

Once I have analysed the information from all of the interviews, I will send your child a written summary about what the research found.

Participation in this study is totally voluntary and your child does not have to take part if you or they do not want to. Your child is free to withdraw at any point before and during the interview and for up to two weeks after the interview takes place. All data will be kept confidential and used for research purposes only. It will be stored safely and securely in line with GDPR. The only other instance that any information may be shared with another person would be if the researcher felt that your child may be at risk of harm to themselves or another person.

If you have any questions or concerns, please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

## Study consent form for participants

**School of Psychology**

Consent Form

University of Nottingham
UK | CHINA | MALAYSIA

*Title of Project: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

*Ethics Approval Number:* S1422

*Researcher:* Joanna Payton *joanna.payton@nottingham.ac.uk*

*Supervisor: Victoria Lewis victoria.lewis@nottingham.ac.uk*

The participant should answer these questions independently:

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily (if applicable)? YES/NO
- Do you understand that you are free to withdraw from the study? YES/NO
  (at any time up until two weeks following the interview and without giving a reason)
- Do you give permission for voice recording to occur? YES/NO
  (this will not be shared with any other person)
- I give permission for the written transcript of my interview from this study to be shared with other researchers provided that my anonymity is completely protected. YES/NO
- Do you agree to take part in the study? YES/NO

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time up until two weeks after the interview."

Name (block capitals):

Signature of the Participant:

Date:

I have explained the study to the above participant, and he/she has agreed to take part.

Signature of researcher: Date:

## GDPR privacy notice

**GDPR: Research participant privacy notice (included with consent form)**

**Title: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change**

Ethics Approval: S1422

Researcher: Joanna Payton

Contact Details: joanna.payton@nottingham.ac.uk

Supervisor: Victoria Lewis

**Privacy information for Research Participants**

For information about the University's obligations with respect to your data, who you can get in touch with and your rights as a data subject, please visit: www.nottingham.ac.uk/utilities/privacy/privacy.aspx.

**Why we collect your personal data**

We collect personal data under the terms of the University's Royal Charter in our capacity as a teaching and research body to advance education and learning. Your personal data is being collected as part of a research project. The researcher is part of a doctorate programme in Applied Educational Psychology, at the University of Nottingham. The specific purpose of the research is to gather the voices of eco-compassionate children and young people about climate change.

**Legal basis for processing your personal data under GDPR**

The legal basis for processing your personal data on this occasion is in line with GDPR Article 6(1e) processing is necessary for the performance of a task carried out in the public interest.

We hope this research will help education settings and other practitioners learn and develop appropriate ways in which to support pupils who are worried about climate change.

**How long we keep your data**

The University may store your data for up to 25 years and for a period of no less than 7 years after the research project finishes. The researchers who gathered or processed the data may also store the data indefinitely and reuse it in future research. Any data stored will be anonymised, meaning that participants will not be identifiable. Any data that might identify a participant will be left out of transcriptions. All participants will be given a 'pseudonym' (a fake name) in the research to protect their identity.

**Who we share your data with**

Extracts of your data may be disclosed in published works that are posted online for use by the scientific community. Your data may also be stored indefinitely on external data repositories (e.g., the UK Data Archive) and be further processed for archiving purposes in the public interest, or for historical, scientific or statistical purposes. It may also move with the researcher who collected your data to another institution in the future.

## Study consent form for parents/carers

**School of Psychology**

Parents and Carers Consent Form

University of Nottingham
UK | CHINA | MALAYSIA

*Title of Project: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

*Ethics Approval Number:* ***S1422***

*Researcher:* Joanna Payton *joanna.payton@nottingham.ac.uk*

*Supervisor: Victoria Lewis* *victoria.lewis@nottingham.ac.uk*

The participants parent or guardian should answer these questions independently:

- Have you and your child read and understood the Information Sheet?
  YES/NO

- Have you and your child had the opportunity to ask questions about the study?

  YES/NO

- Have all your and your child's questions been answered satisfactorily (if applicable)?
  YES/NO
- Do you and your child understand that he/she is free to withdraw from the study? (at any time up until two weeks after the interview and without giving a reason)
  YES/NO

- Do you and your child give permission for voice recording to occur (please note this will not be shared with any other person)?
  YES/NO

- I give permission for the written transcript of my child's interview from this study to be shared with other researchers provided that mine and my child's anonymity is completely protected.

YES/NO

- Do you and your child agree for them to take part in the study?
  YES/NO

"This study has been explained to me to my satisfaction, and I agree for my child to take part. I understand that I and my child are free to withdraw at any time up to two weeks after the interview takes place."

Signature of the Participants Parent or Guardian:

Date:

Name (in block capitals):

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

## Interview guide for participants

**School of Psychology**

Participants Interview Guide

University of Nottingham
UK | CHINA | MALAYSIA

*Title of Project: Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

*Ethics Approval Number: S1422*

*Researcher:* Joanna Payton *joanna.payton@nottingham.ac.uk*

*Supervisor: Dr Victoria Lewis victoria.lewis@nottingham.ac.uk*

**Thank you for considering taking part in the above research project.**

I hope that by listening to you and hearing about your views and experiences, practitioners like me and others who work with children and young people can start to gain more understanding about how best to support you and other children and young people.

**During the interview, I would like to ask you questions about:**

- Your thoughts, interest, and understanding of climate change
- Any feelings that you have experienced regarding climate change
- How these feelings have impacted you
- Talking to other people about climate change
- Helpful and unhelpful factors in managing any strong feelings related to climate change
- Your ideas about how adults could support young people dealing with climate change
- Ways to reduce the impact of climate change
- Your ideas, thoughts and hopes for the future

## Information sheet for young people who do not meet the inclusion criteria

**School of Psychology**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Thank you so much for your interest in taking part in the research 'Exploring the views and experiences of eco-compassionate children and young people concerned about climate change'.

You have not been selected to take part in the research this time but here is some information that may help you to manage your concerns about climate change as well as some organisations and groups that might have some helpful information.

### General emotional support

| | | |
|---|---|---|
| ***The Samaritans***<br>24-hour service offering emotional support | www.samaritans.org | Freephone 116 123 (24 hours) |
| ***Childline***<br>Call, email, or chat online about any issue confidentially | www.childline.org.uk | Freephone 0800 1111 (24 hours) |
| ***Kooth***<br>Free, safe and anonymous wellbeing support for young people | www.kooth.com | |
| ***Young Minds***<br>Information about mental health | www.youngminds.org.uk | |

### Climate related emotional support

| | |
|---|---|
| ***Ecoanxiety***<br>Information about the mental health impacts of climate change, resources, support and signposting to further helpful organisations | www.ecoanxiety.com |
| ***Royal College of Psychiatrists***<br>Information and tools to support managing difficult feelings about climate change | www.rcpsych.ac.uk/mental-health/parents-and-young-people/young-people/eco-distress---for-young-people |
| ***Climate Psychology Alliance***<br>Resources to help manage difficult feelings about climate change | www.climatepsychologyalliance.org/support/youngpeople/544-youth-resources |
| ***Climate Psychologists***<br>Information and guidance about how to cope with climate change concerns | www.climatepsychologists.com/resources |

## What can you do to feel better?

Feeling worried about climate change and its impact is a normal and rational response. However, it is important to take steps to try and manage these feelings. Here are some ideas of things you can do:

- Acknowledge your feelings when they come up.
- Talk with other people about your concerns – there are many other people who have the same concerns.
- Look after your own physical and mental health – try to eat well, exercise, get plenty of sleep, spend time in nature, connect with family and friends, and avoid spending too much time on social media.
- Limit news and information – take care that you don't overload yourself. Try limiting your news to 10 minutes a day and make sure that you look for positive news items as well.
- Remember to do the things you enjoy.
- Take action – try doing one thing each day to reduce your carbon footprint.
- Encourage others to take action – talk to your friends, family, school or other organisations.
- Stay hopeful and connected – remember that lots of people around the world are working on many different solutions to help reduce the impacts of climate change.

## *Climate change information*

| | |
|---|---|
| ***NASA Climate Kids***<br>Information, games and activities | climatekids.nasa.gov/climate-change-meaning/ |
| ***National Geographic Kids***<br>Information, games and resources | www.natgeokids.com/uk/ |

## Connecting with others and taking action

| | |
|---|---|
| ***UK Student Climate Network***<br>A student-led climate justice organisation | ukscn.org/take-action/ |
| ***UK Youth Climate Coalition***<br>A voluntary non-profit organisation working towards global climate justice | www.ukycc.com/ |
| ***iwill***<br>*An organisation empowering young people to be active in making a positive difference to the world* | www.iwill.org.uk/ |
| ***Rotherham Climate Action***<br>A new group aiming to create a sustainable future for Rotherham through local action | www.rotherhamclimateaction.co.uk/ |

Recruitment poster

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology

# Invitation to participate in research

*Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*

**Are you concerned about climate change?**

**Have you experienced strong feelings about climate change?**

If you would like to take part in an interview to share your views, feelings and experiences regarding climate change, please speak to _____ in _____ who will be able to tell you more about taking part in this research study.

*This research project has been approved by the University of Nottingham Research Ethics Committee (**Ethics Approval: S1422**)*

## Recruitment script to support poster


**Script for staff when sharing poster with students**

- I would like to share a poster with you about an invitation to take part in some research that a student from the University of Nottingham is carrying out.
- The research is looking at the views and experiences of young people in response to climate change.
- The researcher is looking for participants who are concerned about climate change and have or have had strong feelings about the topic.
- You will be asked some questions and given an opportunity to talk about your views, feelings, and experiences regarding climate change.
- If you feel you might be interested in taking part, please see _____ who will be able to give you some more information about the research so you can decide if you would like to participate.
- Participation in this study is entirely voluntary and you do not have to take part if you do not want to.

## Appendix 15. Original interview schedule

| **Question and possible prompts** |
|---|
| **1. Can you tell me about how you first became aware and engaged in climate change?** |
| **2. What motivates you to care about climate change?**<br>Why does climate change matter to you? |
| **3. What's your understanding of the words 'climate change'?** |
| **4. Can you tell me about what you think <u>we</u> can do to help address the issue of climate change?** |
| **5. What do you think <u>you</u> can do to help address the issue of climate change?** |
| **6. What feelings come to mind when you think about climate change?**<br>- Since being aware of climate change, have you always felt this way? How has this changed over time?<br>- How often do you feel this way?<br>- I wonder if you have experienced any other feelings, can you tell me about those? |
| 7. **How has being concerned (insert feeling identified) about climate change impacted you and your life?**<br>**You mentioned that you sometimes feel X and X about climate change. How has feeling like this impacted you and your life?**<br>- What is different in your life because of your concerns about climate change?<br>- In what ways do you think your behaviour might have changed because of your climate change concerns? Environmental |

behaviour/action, diet, transport, travel, fashion, technology, energy use, consumer choice
- Are there things that you do more of/less of?

8. **I'm interested to hear what helps you to cope with your thoughts and feelings/concerns about climate change?**
    - People, information, media, groups, internet, behaviour, agency/action

9. **I'd like to know what doesn't help you in terms of your thoughts and feelings/concerns about climate change? Is there anything that makes it harder/more difficult?**
    - People, information, media, groups, internet, behaviour, agency/action, government

10. **Who do you feel you can talk to about climate change?/what's your experience of talking to others about climate change?**
    - Peers, friends, family, staff at school, others
    - How do people respond in these conversations?
    - What helps you in these conversations?
    - What can be unhelpful?

11. **What advice would you give to adults inside and outside of schools who want to support children and young people who are concerned about climate change?**
    - What could they do to help?
    - Is there anything else they could be doing?
    - Schools, parents, families, organisations

12. **What are your hopes and dreams for the future in terms of climate change?**

| |
|---|
| **Conclusion and debrief**<br>Thank participant for their time and responses.<br>**13. Is there anything that you would like to add? Are there other things that you expected me to ask about?**<br><br>**14. Is there anything you would like to ask me about this study?** |

## Appendix 16. Revised interview schedule

| **Question and possible prompts** |
|---|
| **1. Can you tell me about how you first became aware and engaged in climate change?** |
| **2. What motivates you to care about climate change?**<br>Why does climate change matter to you? |
| **3. What's your understanding of the words 'climate change'?** |
| **4. Can you tell me about what you think can be done do to help address the issue of climate change?** |
| **5. What do you think you can do to help address the issue of climate change?** |
| **6. What feelings come to mind when you think about climate change?**<br>- Since being aware of climate change, have you always felt this way? How has this changed over time?<br>- How often do you feel this way? |

- I wonder if you have experienced any other feelings, can you tell me about those?

7. **How has being concerned (insert feeling identified) about climate change impacted you and your life?**

**You mentioned that you sometimes feel X and X about climate change. How has feeling like this impacted you and your life?**

- What is different in your life because of your concerns about climate change?
- In what ways do you think your behaviour might have changed because of your climate change concerns? Environmental behaviour/action, diet, transport, travel, fashion, technology, energy use, consumer choice
- Are there things that you do more of/less of?

8. **I'm interested to hear what helps you to cope with your thoughts and feelings/concerns about climate change?**
   - People, information, media, groups, internet, behaviour, agency/action

**If unsure, ask:**

**What advice would you give to a friend who told you that they were concerned about climate change?**

9. **I'd like to know what doesn't help you in terms of your thoughts and feelings/concerns about climate change? Is there anything that makes it harder/more difficult?**
   - People, information, media, groups, internet, behaviour, agency/action, government

10. **Who do you feel you can talk to about climate change?/what's your experience of talking to others about climate change?**
    - Peers, friends, family, staff at school, others
    - How do people respond in these conversations?

| |
|---|
| - What helps you in these conversations?<br>- What can be unhelpful? |
| **11. What advice would you give to adults inside and outside of schools who want to support children and young people who are concerned about climate change?**<br>- What could they do to help?<br>- Is there anything else they could be doing?<br>- Schools, parents, families, organisations |
| **12. What are your hopes and dreams for the future in terms of climate change?** |
| **Conclusion and debrief**<br>Thank participant for their time and responses.<br>**13. Is there anything that you would like to add? Are there other things that you expected me to ask about?**<br>**14. Is there anything you would like to ask me about this study?** |

## Appendix 17. Verbal consent script

I want to make sure that you are fully aware of what will be happening during our meeting today.

My name is Jo and I am a Trainee Educational Psychologist. I am here today because I am interested in listening to how young people are feeling about climate change and how these feelings might or might not be affecting them. I hope that by listening to you and hearing about your views and experiences, practitioners like me and others who work with children and young people can start to gain more understanding about how best to support you and other children and young people.

Today I will be asking you some questions about your feelings around climate change and how these have impacted you. I will ask you about what has

helped and what hasn't helped you to manage these feelings along with your experiences of communicating with others about your thoughts and feelings concerning climate change. You will be asked if you have any ideas about how adults can further support you to manage the feelings related with climate change. I will also ask about your thoughts for the future.

The things that your share will be treated confidentiality, so it will not be shared with anyone else, unless you say something that makes me feel that you might hurt yourself or someone else and it would be important for me to tell another adult.

It would be good if you could try and answer all of the questions as best as you can, but if there are any questions that you feel that you don't want to answer, that is fine, just let me know by saying, "I don't want to answer this question'.

I want to be able to remember everything you say so if you agree to go ahead, I will turn on this recorder (point) which will record what you and I say. Nobody else will be able to listen to this recording.

You shouldn't feel any pressure to take part today and if at any time you don't want to be part of the interviews, that is fine and up to you, just let me know and I will delete the recording and you can go back to your lessons.

Are you happy with everything that I have talked about?

Do you have any questions about what I have talked about?

Are you happy to continue with the interview?

I will now turn the voice recorder on.

## Appendix 18. Verbal debrief script

I would like to thank you for taking part in this interview and let you know that the voice recorder has been switched off.

I hope that by listening to you and hearing about your views and experiences, practitioners like me and others who work with children and young people can start to gain more understanding about how best to support you and other children and young people.

Learning from your experiences may help:

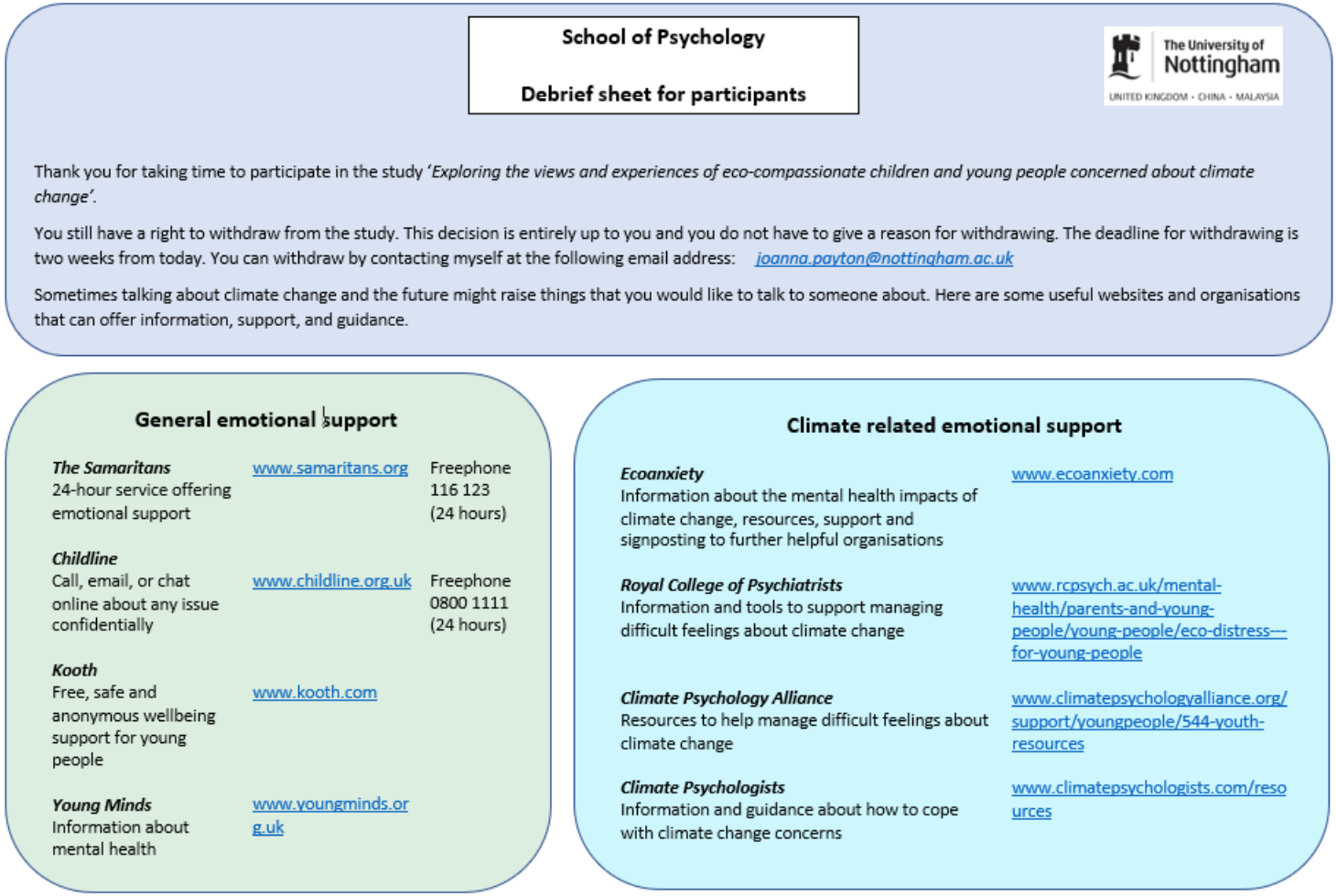
- To improve awareness of young people's experiences of climate change
- To find out ways that adults can support young people who are worried about climate change
- You to know that what you have to say is important and that people do want to listen

The interview will be kept confidential and used for research purposes only. It will be stored safely and no one else other than me will listen to what has been said.

Sometimes talking about your past experiences and thoughts about climate change might raise things that can be upsetting. XXXX (nominated staff member) is available today if you feel that it would be helpful to spend some time with them before going back to class. There are also lots of different organisations and groups that may be able to offer some support or some information (provide debriefing sheet).

If you have any further queries or concerns, please don't hesitate to ask XXXX (nominated staff member).

## Appendix 19. Written debrief information sheet for participants



**School of Psychology**

**Debrief sheet for participants**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Thank you for taking time to participate in the study '*Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*'.

You still have a right to withdraw from the study. This decision is entirely up to you and you do not have to give a reason for withdrawing. The deadline for withdrawing is two weeks from today. You can withdraw by contacting myself at the following email address: *joanna.payton@nottingham.ac.uk*

Sometimes talking about climate change and the future might raise things that you would like to talk to someone about. Here are some useful websites and organisations that can offer information, support, and guidance.

**General emotional support**

| | | |
|---|---|---|
| ***The Samaritans***<br>24-hour service offering emotional support | www.samaritans.org | Freephone 116 123 (24 hours) |
| ***Childline***<br>Call, email, or chat online about any issue confidentially | www.childline.org.uk | Freephone 0800 1111 (24 hours) |
| ***Kooth***<br>Free, safe and anonymous wellbeing support for young people | www.kooth.com | |
| ***Young Minds***<br>Information about mental health | www.youngminds.org.uk | |

**Climate related emotional support**

| | |
|---|---|
| ***Ecoanxiety***<br>Information about the mental health impacts of climate change, resources, support and signposting to further helpful organisations | www.ecoanxiety.com |
| ***Royal College of Psychiatrists***<br>Information and tools to support managing difficult feelings about climate change | www.rcpsych.ac.uk/mental-health/parents-and-young-people/young-people/eco-distress---for-young-people |
| ***Climate Psychology Alliance***<br>Resources to help manage difficult feelings about climate change | www.climatepsychologyalliance.org/support/youngpeople/544-youth-resources |
| ***Climate Psychologists***<br>Information and guidance about how to cope with climate change concerns | www.climatepsychologists.com/resources |

**What can you do to feel better?**

Feeling worried about climate change and its impact is a normal and rational response. However, it is important to take steps to try and manage these feelings. Here are some ideas of things you can do:

- Acknowledge your feelings when they come up.
- Talk with other people about your concerns – there are many other people who have the same concerns.
- Look after your own physical and mental health – try to eat well, exercise, get plenty of sleep, spend time in nature, connect with family and friends, and avoid spending too much time on social media.
- Limit news and information – take care that you don't overload yourself. Try limiting your news to 10 minutes a day and make sure that you look for positive news items as well.
- Remember to do the things you enjoy.
- Take action – try doing one thing each day to reduce your carbon footprint.
- Encourage others to take action – talk to your friends, family, school or other organisations.
- Stay hopeful and connected – remember that lots of people around the world are working on many different solutions to help reduce the impacts of climate change.

***Climate change information***

| | |
|---|---|
| ***NASA Climate Kids***<br>Information, games and activities | climatekids.nasa.gov/climate-change-meaning/ |
| ***National Geographic Kids***<br>Information, games and resources | www.natgeokids.com/uk/ |

**Connecting with others and taking action**

| | |
|---|---|
| ***UK Student Climate Network***<br>A student-led climate justice organisation | ukscn.org/take-action/ |
| ***UK Youth Climate Coalition***<br>A voluntary non-profit organisation working towards global climate justice | www.ukycc.com/ |
| ***iwill***<br>*An organisation empowering young people to be active in making a positive difference to the world* | www.iwill.org.uk/ |
| ***Rotherham Climate Action***<br>A new group aiming to create a sustainable future for Rotherham through local action | www.rotherhamclimateaction.co.uk/ |

# Appendix 20. Written debrief sheet for parents/carers

**School of Psychology**

**Debrief sheet for parents and carers**

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Thank you consenting for your child to participate in the study '*Exploring the views and experiences of eco-compassionate children and young people concerned about climate change*'.

Your child still has a right to withdraw from the study. This decision is entirely up to you and your child and you do not have to give a reason for withdrawing. The deadline for withdrawing is two weeks from today. You or your child can withdraw by contacting myself at the following email address: joanna.payton@nottingham.ac.uk

Sometimes talking about climate change and the future might raise things that your child would like to talk to you or someone else about. Here are some useful websites and organisations that can offer information, support, and guidance.

## Talking about climate change, developing awareness and acceptance of the situation

| | |
|---|---|
| ***Parents for Future***<br>Information and resources about talking to children and engaging with others | www.parentsforfuture.org.uk |
| ***Our Kids Climate***<br>*A network of parent groups united for climate action.*<br>*A booklet with ideas about talking to your child about climate change.* | Booklet:<br>https://media.ourkidsclimate.org/2021/06/Talk-about-climate-guide-for-parents-2021-06-01.pdf |
| ***The Big Conversation***<br>Links to resources and a webinar exploring how to talk to children about climate change | www.wedonthavetime.org/events/the-big-conversation |

## Understanding and coping with emotions

| | |
|---|---|
| ***Climate Psychology Alliance***<br>Information for families about supporting young people | www.climatepsychologyalliance.org/support/youngpeople/545-parent-teacher-resources |
| ***Royal College of Psychiatrists***<br>Information and resources for parents, carers and teachers | www.rcpsych.ac.uk/mental-health/parents-and-young-people/information-for-parents-and-carers/eco-distress---for-parents-and-carers |
| ***Climate Psychologists***<br>A blog with suggestions about how to talk to children and young people about climate change | www.climatepsychologists.com/blog/managing-climate-anxiety-and-eco-emotions-how-to-talk-to-kids-about-climate-change |
| ***Young Minds***<br>Information for young people and parents about mental health and wellbeing | www.youngminds.org.uk/parent/<br>Webchat:<br>www.youngminds.org.uk/parent/parents-helpline-and<br>webchat/#ParentsWebchatandEmailservice |

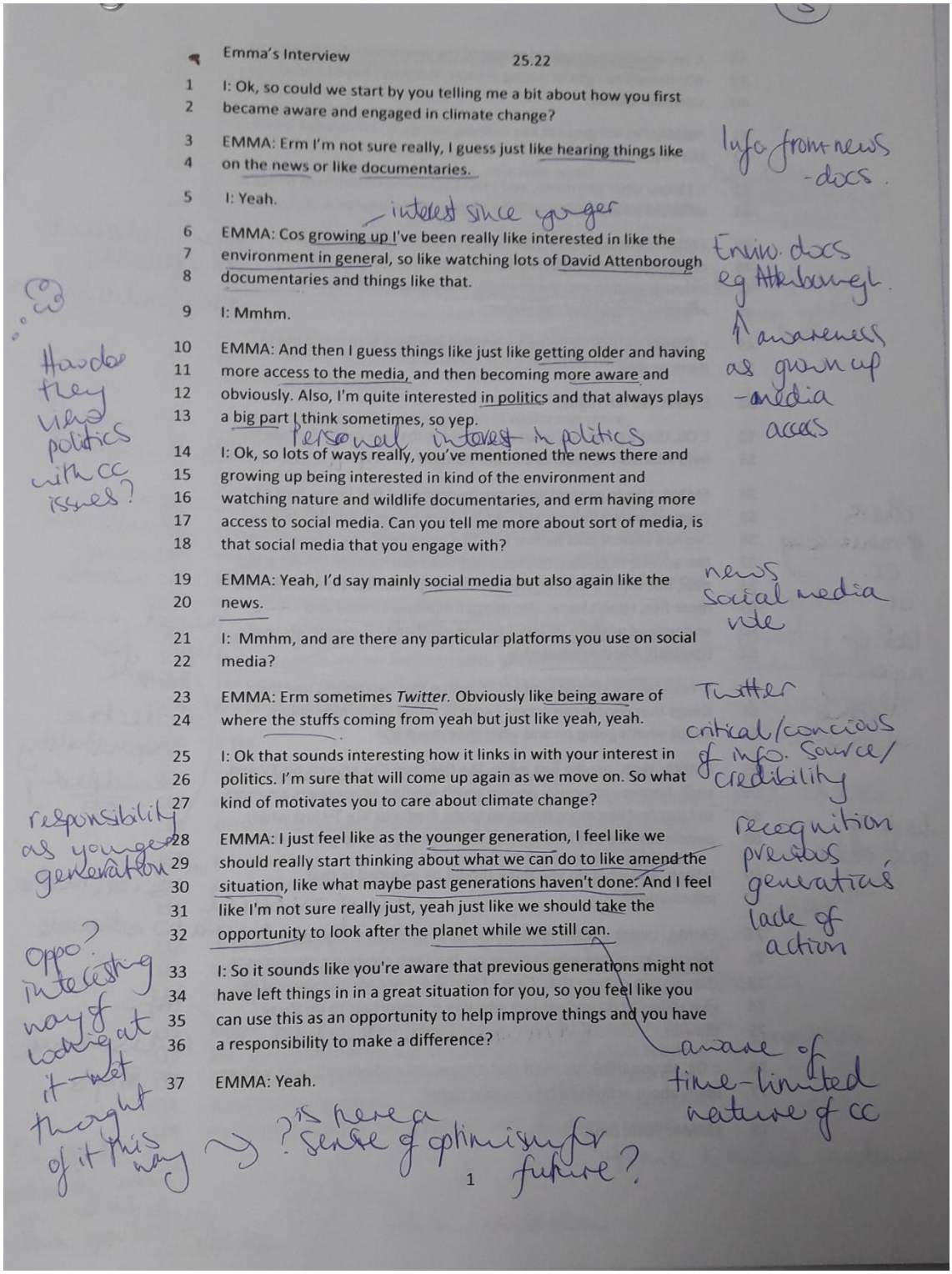
## Talking to children and young people about climate change

## A brief guide for parents, carers and school staff

- Research - Gather information so you feel confident in talking about climate change and its impact and to ensure that you are sharing factual information.
- Help yourself - Understand your own responses to climate change. Before we can help others, we need to help ourselves. Take some time to acknowledge your own feelings, thoughts and reactions and if needed, use strategies to help manage any uncomfortable feelings and check that you are in an emotionally safe space yourself. The website links and organisations provided may be helpful in supporting your own feelings and reactions.
- Prepare the conversation – Think about the time and place to support the most useful conversations so you can both focus on the topic. If your child wants to talk about climate change when you are busy, acknowledge them and explain that you will have some more time later to talk about it (e.g., 'That's an interesting question, shall we talk about that when we are …. this afternoon?'). Remember to follow up with them later.
- Listen to how your child is feeling and take their concerns seriously. Explain to them that their feelings make sense and show that they are a caring person. Listen with empathy and acknowledge and validate their emotions, e.g., 'It's ok to feel worried about this'.
- Find out what they know and dispel any myths.
- Invite and answer questions honestly. If your child asks you a question you cannot answer, tell them, e.g., 'That's a good question. I am not sure but I will find out and we can talk about this again'.
- Try to balance difficult facts or news with positive news or action, e.g., sharing some empowering projects and stories about people working on solutions.
- Be sensitive to cues that they may be finding the conversation difficult and don't be afraid to pause the conversation.
- Support them to feel empowered and take action. Taking action can help us to feel more hopeful, more resilient and more in control. Help them to think about what actions they and you as a family can do. Be a role model and use yourself as an example, e.g., 'Now that we know more about the impacts of climate change, I think I'm going to start doing more/less …., what else do you think we could do as a family?' Help them to recognise that they are not responsible for changing the situation on their own.
- If it seems appropriate, encourage them to talk to their friends and staff at school about climate change and support them to connect with groups of young people who have similar concerns about the environment.
- Remember that worry and fear are normal emotions that help us to prepare ourselves for uncertain or potentially difficult or dangerous situations.

*With thanks to Westminster, Kensington and Chelsea Educational Psychology Consultation Service*

# Appendix 21. Transcript note-making during familiarisation



Emma's Interview 25.22

I: Ok, so could we start by you telling me a bit about how you first became aware and engaged in climate change?

EMMA: Erm I'm not sure really, I guess just like hearing things like on the news or like documentaries.

I: Yeah.

EMMA: Cos growing up I've been really like interested in like the environment in general, so like watching lots of David Attenborough documentaries and things like that.

I: Mmhm.

EMMA: And then I guess things like just like getting older and having more access to the media, and then becoming more aware and obviously. Also, I'm quite interested in politics and that always plays a big part I think sometimes, so yep.

I: Ok, so lots of ways really, you've mentioned the news there and growing up being interested in kind of the environment and watching nature and wildlife documentaries, and erm having more access to social media. Can you tell me more about sort of media, is that social media that you engage with?

EMMA: Yeah, I'd say mainly social media but also again like the news.

I: Mmhm, and are there any particular platforms you use on social media?

EMMA: Erm sometimes *Twitter*. Obviously like being aware of where the stuffs coming from yeah but just like yeah, yeah.

I: Ok that sounds interesting how it links in with your interest in politics. I'm sure that will come up again as we move on. So what kind of motivates you to care about climate change?

EMMA: I just feel like as the younger generation, I feel like we should really start thinking about what we can do to like amend the situation, like what maybe past generations haven't done. And I feel like I'm not sure really just, yeah just like we should take the opportunity to look after the planet while we still can.

I: So it sounds like you're aware that previous generations might not have left things in in a great situation for you, so you feel like you can use this as an opportunity to help improve things and you have a responsibility to make a difference?

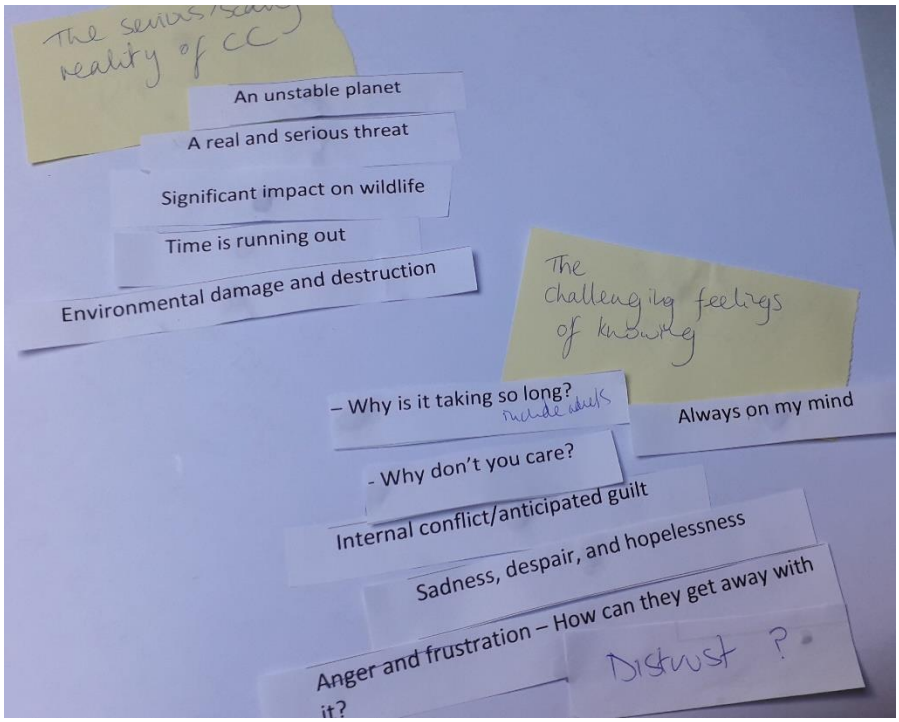
EMMA: Yeah.

## Appendix 22. Transcript coding example

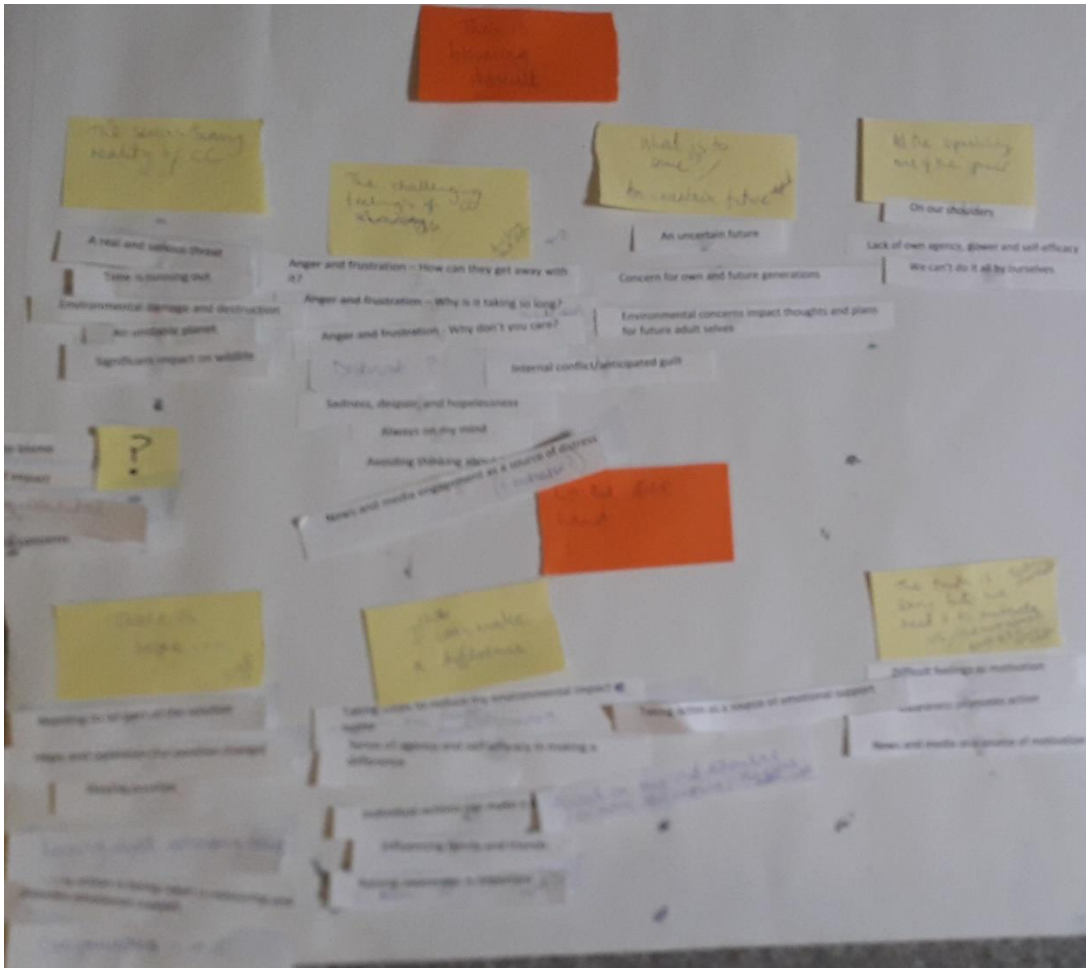
Table showing transcript extract with developing codes

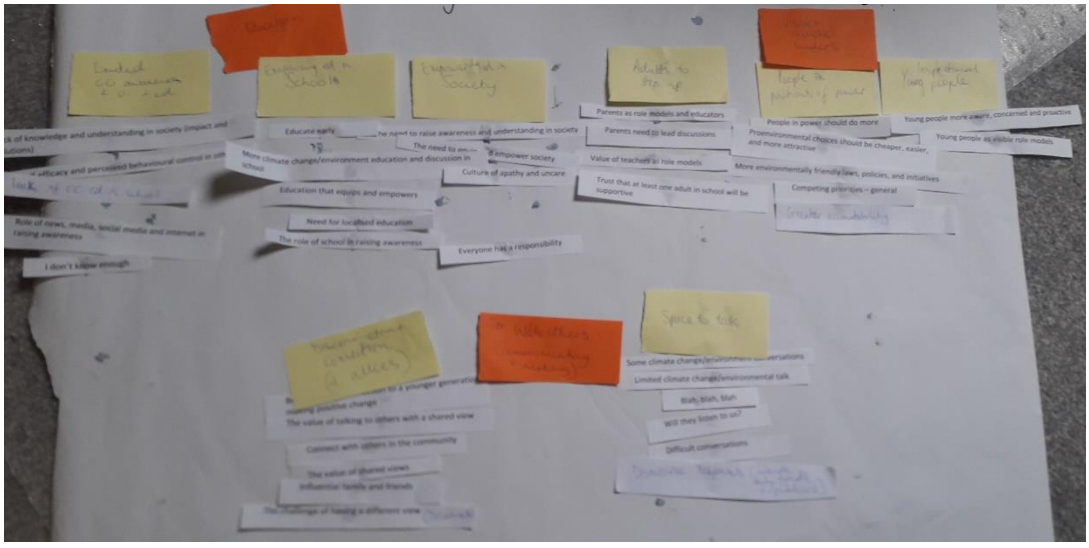
| Transcript | Initial code | Code development | Code development |
|---|---|---|---|
| I: So it sounds like a lot of your anger is around those big companies that are not perhaps being environmentally responsible?<br>ISOBEL: Yeah, they just take it for granted.<br>I: Yeah, ok and do you feel like that towards any others or about anything else?<br>ISOBEL: I mean, I just think, er, like I mean the government could obviously do more about it erm, just implement new, like you have to spend like a certain amount of money if you use this many carbon emissions, I think that maybe they've already done that but I think maybe it should be like higher and it should be like less carbon emissions that you should be spending.<br>I: Yep. Ok, have you noticed any feelings other than anger when you think about climate change?<br>ISOBEL: I mean it's quite, you know, it's quite sad, especially, you know when you see a lot of images, of erm like I said like the animals and stuff that are having to relocate and change and they're like dying and we don't really see it that much so we don't really think about it.<br>I: Yeah, so your main feeling around climate change is anger but you also have feelings of sadness when you think about the impact on animals and see what's happening to them. And is that linked to when you watch those documentaries?<br>ISOBEL: Er, yeah, yeah, I'd say. I mean it's always at the back of my mind, as in like, just thinking about that. It's just, it's just like we can only do so much before it's like yeah, it's like those companies that like should do more than us, because obviously, they're you know, making a bigger impact. | Feelings of anger<br><br>Lack of environmental responsibility and care by large companies<br><br>Anger directed at large, environmentally irresponsible companies<br><br>Confusion and frustration at environmentally irresponsible actions by large companies<br><br>The government could do more<br><br>Carbon taxes to hold companies accountable<br><br>Feelings of sadness<br>Seeing the impact on animals is upsetting<br>Out of sight, out of mind<br><br>Always on my mind<br><br>Limitations of individual actions<br>Large companies with greater impacts on the climate should take greater action to address climate change | Anger and frustration at large, environmentally irresponsible companies<br><br>The government could do more<br>Increase environmentally friendly laws and policies<br><br>Greater accountability and punishments for large industries and companies<br><br>Feelings of sadness<br>Impact on wildlife<br>Direct engagement with images evokes difficult feelings<br><br>Out of sight, out of mind<br><br>We can't do this all by ourselves<br><br>Always on my mind<br><br>Greater accountability and punishments for large industries and companies | Anger and frustration – how can they get away with it?<br><br>People in power should do more<br><br>More environmentally friendly laws, policies and initiatives<br><br>Sadness, despair and hopelessness<br><br>Eco-compassion -Impact on wildlife<br><br>News and media engagement as a source of distress<br><br>Always on my mind<br><br>We can't do it all by ourselves<br><br>Anger and frustration |

# Appendix 23. Clustering codes example



# Appendix 24. Theme development examples



## Appendix 25. Candidate themes, sub-themes, codes, and extracts example

Table showing candidate themes, sub-themes, codes and related extracts sample

| Possible Theme | Sub-theme | Codes | Relevant extracts |
|---|---|---|---|
| More education for everyone | A climate education gap – society and school | *Lack of climate change focus in school*<br><br>*I don't know enough*<br><br>*Lack of awareness, knowledge and understanding in society (impact and solutions)*<br><br>*(Lack of self-efficacy and perceived behavioural control in others) – does this fit here?* | G: But I, I can't remember anytime where it's [whole school learning day] been an environmental based one.<br><br>O: I remember having a few lessons in Year 11/Year 10. And just loosely brushing on global warming and climate change and how it can affect the Earth. But examples weren't given in like current issues, within current issues for climate change, erm.<br><br>G: I don't think that's like the main topic that comes up. But like, like I've mentioned the [subject] teacher he's quite, quite an activist. So we'll learn some things in his class. Erm he'll do what he can to, help the environment kind of thing<br><br>A: Well, I firstly became more aware of it in Year 10 or 11 in topics like ((pause)) biology where they went through like the effects of climate change and ((pause)). I was aware of it before but we didn't really cover it in lessons.<br><br>O: But personally, I don't feel much like ((pause)) aware about climate change like I think I should be<br>I know, I only know like a little bit.<br><br>A: But ((pause)) to be fair I s'pose it's just, just, its lack of education about it, lack of just thinking about it, if more people talked about it and implemented more things, they'd get more aware of it and be more inclined to do something about it.<br><br>Is: I think like everyone should be more aware of it. |

| Possible Theme | Sub-theme | Codes | Relevant extracts |
|---|---|---|---|
| | | | O: But I feel like with little awareness like there currently is, I personally feel like there's little awareness not much can be really done cos people are just going to do things that will just be erm pointless.<br><br>E: Like in general just more awareness. I feel like as part of the younger generation we are slightly more aware but then I feel like I've had experiences before with like older family members or just like anyone in general but have just been like 'oh well it's not a big deal, like there's nothing we can do'. And I feel like there should be more like, I don't know, like things for people to read and understand why<br><br>Is: It'd be like, they'd probably just say something like it's, it's been happening for so long. Like they just don't really, they just don't see the point in like caring so much. They'll, they'll do like their best to recycle but they won't pause do much more, I'd probably say, like as in like finding out extra information they wouldn't really do that.<br><br>E: I've had like conversations with all my family members in my past and they've had that similar 'oh there's nothing we can do' outlook, like, like 'it's too late now to fix it', and I've tried to explain that there is things we can do, like, thinking about our plastic use<br><br>A: But my mum, isn't too aware of it, she doesn't, like when I try and sort it out, sometimes she gets a bit annoyed cos its sort of like you're criticising the way I do things but it's like I'm aware of where things go and I want to recycle things where I can. And also like with when food waste is on packaging, I don't think she realises that it |

| Possible Theme | Sub-theme | Codes | Relevant extracts |
|---|---|---|---|
| | | | needs to be clean before you can recycle it. She's just a bit less aware of it.<br><br>E: I guess just like, it annoys me when I see people like climate change deniers or when they say 'it's not a big deal' or 'it doesn't exist', it's just frustrating that some people can be a bit close-minded and not aware of what's going on or want to be aware of what's going on. |

| | | | |
|---|---|---|---|
| | Education to equip and empower<br><br>- In school and at a wider societal level – does this need splitting? | We need solutions, not just facts<br><br>The need to inform, equip and empower society<br><br>More climate change/environmental education in school<br><br>Lack of self-efficacy and perceived behavioural control in others – see above? | A: Offer little things like 'ok this is what **you** can do, this is how y**ou** can spread awareness if you want to get involved with these groups, do these things'.<br><br>Is: Erm, probably just, I mean it gets spoken about quite often, but I'd probably say instead of just saying you know you need to take care of the environment, saying like **ways** to do that.<br><br>A: But maybe, if it's just specifically around climate change, offer little things like 'ok this is what **you** can do, this is how y**ou** can spread awareness if you want to get involved with these groups, do these things'.<br><br>E: […] resources like I've said just to help educate people more on what's going on what they can do. And then obviously leading on, once people have that idea and that realisation that we have to do something, then obviously things put in place to help that to happen<br><br>Is: Yeah, like practical, easy to do ways, you know like everybody can do, like everyone can like access.<br><br>E: And I feel like there should be more like, I don't know, like things for people to read and understand why […] maybe just more, like I've seen like adverts on TV and stuff. Because obviously people aren't reading newspapers anymore so I just feel like more things on social media or like TV just where people can see this information and it's not going to get unnoticed.<br><br>O: I think being more aware of what climate change is and how it's affecting, how it could affect you as a, a person or friends, family whatever, that would help people to like understand the full issues of climate change. |

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| | | | O: And then when people, once they actually understand what climate change is, they can actually sort like what they can do out to like limit the massive impact of climate change.<br><br>E: I think like, well there should be information about what's going on, but then obviously reassurance that we can change that. Cause I feel like if people just say and like give things to do and explain why it is so important to do these things.<br><br>A: I think maybe assemblies if we are talking about in schools, maybe for each individual year group, just stressing the importance of it, saying 'ok, this recycling benefits our future, obviously not to a grand scale but it's still better than binning things that could be, like plastic for example, that could be recycled, instead of extracting more of it, when there's like loads of ((inaudible)) already'.<br><br>Is: I'd maybe say like show maybe occasionally like a PSHE lesson or something, show like the impacts, like err maybe like a short video or something that shows like what you are doing is hurting the environment.<br><br>O: [...] for like tutor time every morning, it could be like something like once per week, for example. We could have examples of how climate change is affecting the current, like world and what can be done to, ((pause)), what is gonna make you think, what can be done to like limit the impact.<br>O: Er, I said earlier about doing something once a week in maybe tutor time type of thing.<br><br>A: I think they could make more assemblies about it |

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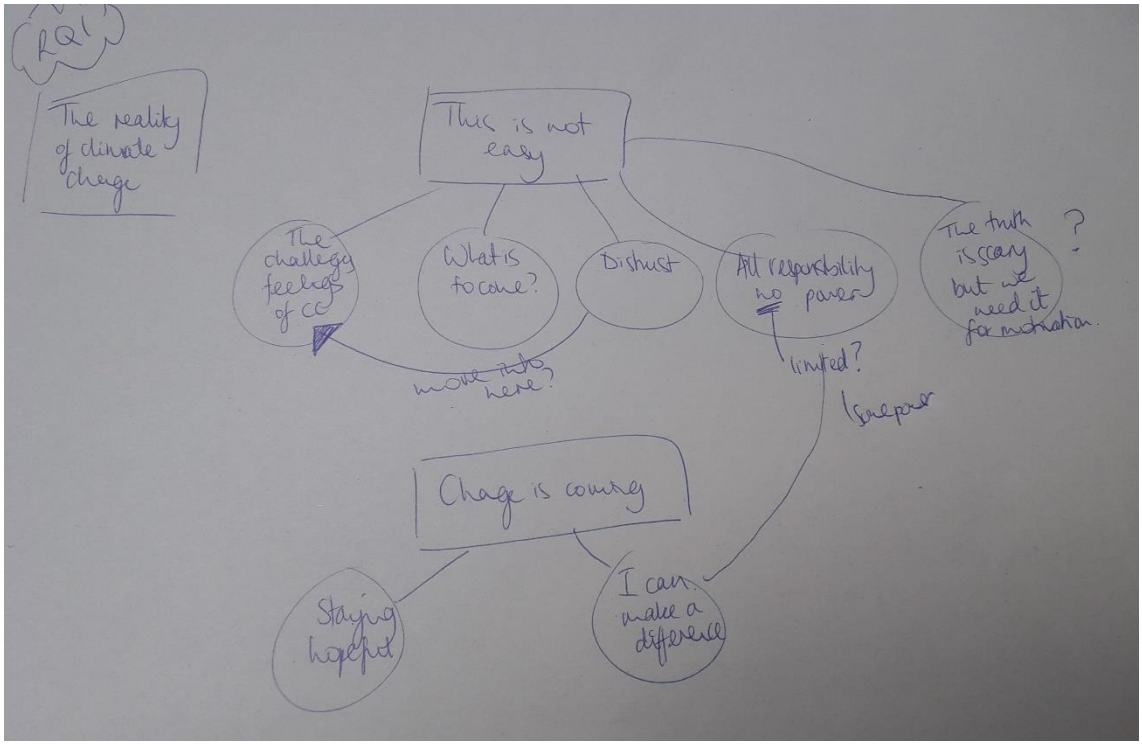
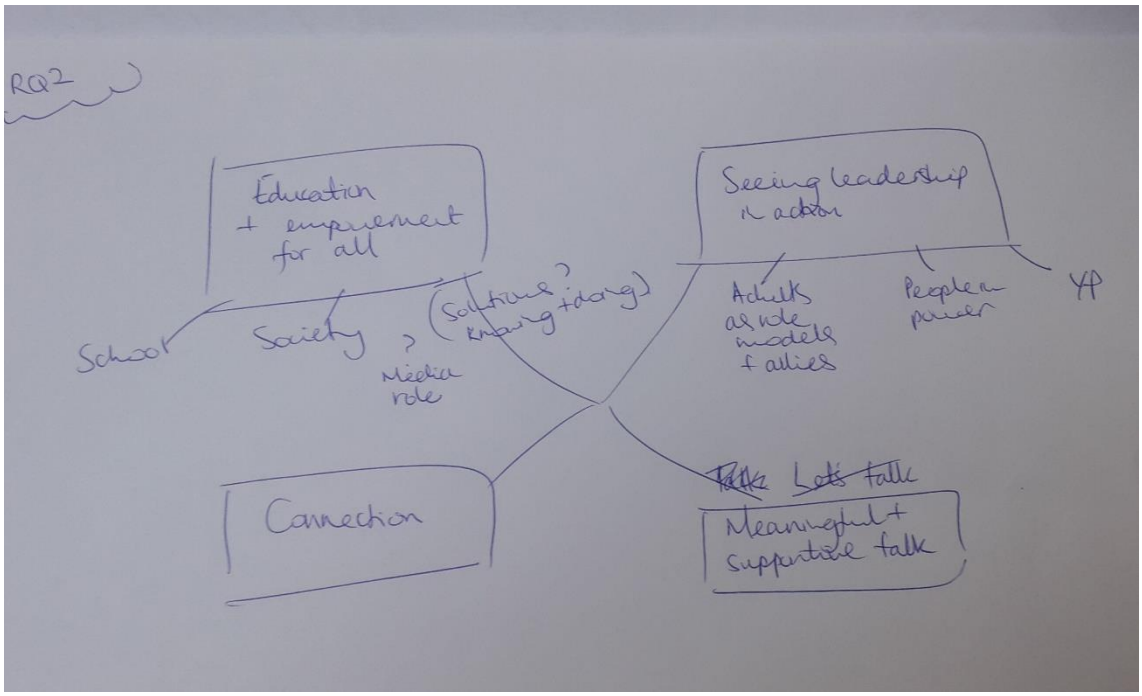
| | | | E: I'd just say like provide them [children] with the like necessary advice and resources to learn more about climate change.<br><br>O: Maybe spending more time on that, climate change as an issue, and then examples of, I don't know, in your local area right now, like [village], that didn't happen at my time of GCSE's but like I'd hope that now it could be used as a thing in a question that might come up as an example.<br><br>E: Especially like younger kids, like young kids like 5, 6. I don't know just being aware of the planet and what we have to do to look after the planet. Like even simple things like not littering, let them know that that's a bad thing and it won't help us in the future.<br><br>G: But I, I can't remember anytime where it's [whole school learning day] been an environmental based one. I feel like that could be something.<br><br>E: I feel like obviously not everyone's gonna be experts but, they'll [adults] be able to provide them with information from experts or like studies that can help them understand. |

## Appendix 26. Developing and reviewing themes examples




Combine all data RQ1+RQ2?
What is no one care?/ uncertain future
All the responsibility none of mine
but
There is hope!
I/we can make a difference
This is difficult
The challenging feelings of cc
On the other hand
The truth is scary but we need it to motivate us
The serious reality
Climate Change
climate ed gap
Educating
Leadership
Communicating/ working with others
Limited awareness + ed.
School empower?
Society
Inspo. yp
People in power
Adults as role models
allies?
Connection + Disconnection
The need for meaningful + supportive talk
Lets talk + listen?

## Appendix 27. Ethical approval letter

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Ref: **S1422**

Tuesday 17th May 2022

Dear Joanna Payton and Victoria Lewis,

**Ethics Committee Review**

Thank you for submitting an account of your proposed research 'Exploring the views and experiences of eco-compassionate children and young people concerned about climate change'

That proposal has now been reviewed by the Ethics Committee and I am pleased to tell you that your submission has met with the committee's approval.

Final responsibility for ethical conduct of your research rests with you or your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society and the University Research Ethics Committee. If you have any concerns whatever during the conduct of your research then you should consult those Codes of Practice. The Committee should be informed immediately should any participant complaints or adverse events arise during the study.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely

*Professor Stephen Jackson*
*Chair, Ethics Committee*

## Appendix 28. Research timeline