Strategies Parents Use to Support Adolescents Experiencing Climate Grief

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ABSTRACT

Climate change poses a significant threat to all living species. As people come to understand the urgency and the depth of the multi-layered problems and threats associated with the climate crisis, they may come to experience what journalists and some scholars have come to label "climate grief" or "climate anxiety." Yet, there is very little literature available from the perspectives of children or their parents on what climate grief is and what to do about it. To fill this gap in knowledge, this honors thesis explores the dimensions of climate grief, how adolescents who are 12-17-years-old are coping, and how their parents support them. I also sought to understand how relatedness with nature played a role in these parenting strategies and what relationship this had with their children's response. This research is important from a sociological perspective, as it helps put climate grief—and responses to it—in a broader social context.

Through open-ended interviews with seven parents and their seven adolescent children, I learned that children and their parents do not have a single term to define their feelings about climate change. Next, I learned that parents use a range of parenting strategies to support their children but were often unaware of the depth of their child's emotional distress concerning climate change. Moreover, parents and their children agreed that some parenting strategies worked, although the children and parents both deemed some more successful than others. Finally, children in this study reported needing more actionable support regarding their feelings about climate change, like spending more time outside as a family and more autonomy and encouragement in community involvement that promotes pro-environmental action and advocacy. This study has implications for sociological definitions of climate grief and for literature concerned with parenting children concerned about environmental change. Ultimately,

this work can help inform parenting strategies that adults can use to support their children who experience emotional distress related to climate change.

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I. INTRODUCTION

"Adults keep saying we owe it to the young people, to give them hope, but I don't want your hope. I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. I want you to act. I want you to act as you would in a crisis. I want you to act as if the house is on fire, because it is." -Greta Thunberg, 2018

Climate change poses a significant threat to all living species (Intergovernmental Panel on Climate Change 2019). As people come to understand the urgency and the depth of the multi-layered problems and threats associated with the climate crisis, they may come to experience what journalists and some scholars have come to label "climate grief" or "climate anxiety" (Cunsolo and Ellis 2018). Among those that are the most vulnerable to these feelings of distress are children and youth (Samji and Snell 2020). As young people learn more about how climate change will affect their lives, it is vital to understand how their parents or other caregivers support them to cope with the realities they face. This honors thesis explores the dimensions of climate grief, how adolescents who are 12-17-years-old are coping, and how their parents support them. This research is important from a sociological perspective, as it helps put climate grief—and responses to it—in a broader social context. Moreover, learning about strategies to support adolescents provides an opportunity to identify approaches that can be integrated into emotional and behavioral health frameworks. In turn, such models can help young people affected by climate change while enhancing their resilience as they grow into adulthood.

II. BACKGROUND AND LITERATURE REVIEW

The ecologist Aldo Leopold (1949) and author Elyne Mitchell (1946) are credited with first discussing the emotional pain and grief experienced with ecological loss in their work. Leopold once wrote in *A Sand County Almanac*, "one of the penalties of an ecological education is that one lives alone in a world of wounds" (p. 48). An even more stark description of this pain

came in Mitchell's book *The Soil and Civilization*, where she wrote, "Divorced from his roots; man loses his psychic ability" (p. 174).

More recently, as global warming and climate change impacts have accelerated, journalists, psychologists, and other scholars have used a variety of terms and concepts to capture the worry, anxiety, distress, and even grief that people express for a changing environment. This literature review provides an overview of the most commonly used terms in journalistic and social and behavioral science discourse that capture some of the emotions associated with a rapidly warming planet. While I adopt the term "climate grief" in this research, this first section of the literature review is meant to give a sense of the rapidly evolving landscape of terminology meant to capture the connection between emotions and the environment. In addition, I address the literature on the impacts of climate change in adult populations as well as the more limited available research on the effects of climate grief on children. In doing so, I demonstrate the lack of empirical evidence or sociological attention to the problems with and solutions to climate grief, especially for children and their adult parents.

A. Key Terms and Concepts

"Give sorrow words; the grief that does not speak knits up the o-er wrought heart and bids it break." -William Shakespeare, Macbeth

Various people and cultures have created concepts and terms in their languages that attempt to capture the emotional relationship to the natural environment. For example, in Portuguese, a language that I speak, *Saudade* is a term that describes a person's feeling for a loved one or place that is absent or disappeared. This word is often used when representing the feelings that one has when noticing ecological loss caused by climate change or deforestation. Among Indigenous people worldwide, various terms have long been used to explain these

feelings. For instance, the Hopi, a Native American tribe now found in Northern Arizona, use the term *Koyaanisqatsi*, which means that "human life is disintegrating and out of balance with the earth" (Delaney, 2013:78). Indigenous people of the island nation of Tuvalu, located midway between Australia and Hawaii, use the term *Manvase* to express concern or "worry about the environment" (Gibson et al., 2020:102237). During a recent exploration to Baffin Island Inuit of the Arctic, University of Colorado Boulder researcher Shari Gearheard (2010) observed the intersection of Indigenous knowledge and sea ice. While on location, she noted that the Inuit had begun applying the word *uggianaqtuq* to the weather patterns altered by climate change. The meaning of the word *uggianaqtuq* "is for a friend to act unexpectedly or in an unfamiliar way" (p). The difference taught Gearheard about the emotional relationship that the Inuit have with the ice. This term established that they had feelings of fear and disappointment when describing the Arctic weather.

Educators have also created terms that can be used to express feelings of distress from climate change. For example, environmental educator David Sobel (1996) created the term *eco-phobia* meaning "a helpless sense of dread about the future" The term has since been used by academic journalists in articles provide advice to parents about how they can talk to their kids about climate change (Finnegan 2020, Saffer 2017). At the University of Colorado Boulder, Dr. Susan Strife uses the term at the Sustainability, Climate Action, and Resilience Center (Strife 2012).

Despite the longstanding recognition of the connections between environmental status and human well-being, relatively few terms have been introduced into the English language that directly address environmentally-induced mental distress. Recently, however, as the realization that the sixth mass extinction is well underway, there has been an increasing interest in

understanding the impacts of climate change on mental health (Ceballos et al., 2015). Consequently, expressions of negative psychological and emotional states relating to climate change and ecological loss have appeared more often in media and medical and psychological literature. Indeed, my searches via Google Scholar revealed that research and interest in this particular topic have nearly tripled over the past decade.

Now, journalists, medical providers, and social and behavioral scientists have begun to use an assortment of key terms to describe the varying effects of climate change on a person's or community's mental health. In fact, the pioneering efforts of Leopold and Mitchell's eco-mental perspectives remained mostly un-revisited until a 1985 article called "How Ecosystems Respond to Stress" reignited interest in creating terms that address the relationship that humans have with the natural environment. In this article, author David Rapport described *ecosystem distress syndrome* as when "human disturbance of ecosystems creates situations in which ecosystems do not 'bounce back' to former (healthy) configurations, even when factors that stress the system are removed" (Rapport 1985:12). Rapport and colleagues go on to argue in later work that the ecosystem's inability to bounce back implies that humans also experience ecosystem distress syndrome manifested through changes in nutrient cycling and productivity of food sources in terrestrial and aquatic ecosystems (Rapport et al. 1999). This work argues that these changes impact human communities' vital needs, therefore affecting people's mental and physical health (Rapport and Maffi 2011).

The term *climate change distress* is often used in two ways, sometimes referring to a call to help or a person's feeling state. For example, when used by the World Health Organization (WHO) in an announcement made by Dr. Margaret Chan in 2008, the WHO director-general defined it in the former way, meaning that this is a way to sound the alarm on the adverse

impacts of climate change on human health. In addressing the root of the distress, she said, "climate change endangers human health …. that could kill millions." Searle and Gow (2010) also used the term climate change distress when reporting findings from a survey of 275 adults to learn about the associations between climate change distress and depression and anxiety. Their paper defines climate change distress as "something that shows symptoms indicative of depression, anxiety, and stress" (p. 1).

Glenn Albrecht, an Australian environmental philosopher who studies the relationship between ecosystems and human health, prompted considerable effort to name the psychological connection humans have with the environment. Albrecht was inspired to pursue this path after reading an editorial written by Kay Anderson and Susan Smith (2001) called "Emotional Geographies," where the share their observations of research that is meant to create "policy change." They argue for a "glaringly obvious, yet intractable silencing, of emotion in both social research and public life" (p. 7). Further, Anderson and Smith assert that while research on what a person *feels* in a particular environment is well recognized, there has been a lack of recognition in words and an inadequate integration of the study of emotions concerning the natural environment. Albrecht (2001), whose research previously focused on the emotional bonds people have with their homes and the likelihood of intense emotional responses when their home undergoes unwanted change, redoubled his efforts to develop terminology to rectify the identified deficiency in the literature.

Albrecht began by creating the diagnostic term *psychoterratic disease*, meaning the "negative relationship to our home environment, be it at local, regional or global scales" (cited in Higgingbotham et al. 2006:3). This term was developed in response to analyses of community members' emotional responses to the open-cut mining and other eco-system disturbances in

Australia. His and others qualitative research demonstrated a loss of identity, loss of an endemic sense of place, and a decline in wellbeing. Albrecht also kept what he called an "eco-biography," that he later shared, "would allow him to explore his mind's inner landscape" to create terms that enabled him to express this relationship. From this came his most notable term, *Solastalgia* (Pilgram and Petty 2010: 79-89).

In the more recent book *Nature and Culture,* Albrecht (2010:113) writes about *Solastalgia,* meaning "an emplaced or existential melancholia experienced with the negative transformation (desolation) of a loved home environment. A feeling of homesickness while still at home." The root of *Solastalgia* comes from the words "solace" and "desolation." Albrecht further explains that solace means comfort or consolation in a time of distress or sadness, and desolation has the meaning connected to abandonment or isolation. He concluded that the suffix -algia has an etymology from the Greek word meaning pain. Since the term's inception, it has become widely used by people from all walks of life from all over the world. Albrecht's work has inspired other people to research and develop other words that have a similar meaning but represent their own individual way of describing how climate change makes them feel. For instance, his work and other pioneers have prompted mental health care providers to develop new terms to express their patients' and clients' feelings.

To systematically assess the feelings documented in Albrecht and others' work, researchers developed a validated measure called the *environmental distress scale* to determine pain related to climate change. This scale introduced the term *environmental distress* into the scholarly lexicon to describe "chronic stress on ecosystems and on people's physical and mental health" (Higgingbotham et al. 2006:3). This definition is focused on a total sense of well-being tied to our ecosystem, which can lead to emotional distress if threatened.

Another term that is now more commonly used by psychologists is *ecological stress*. It is generally defined as psychological distress that can arise from observing changes to the environment over time and experiencing an associated sense of loss. The term *ecological stress* is meant to explain "the chronic stressor created by climate change that requires psychological adaptation" (Helm et al. 2018:158). Research on this emotional experience has been linked to psychological adaptation to climate change to identify and understand coping strategies that could be useful for this kind of stress (Helm et al. 2018:158).

In the same vein, the term *eco-anxiety* was introduced to describe the extreme emotional responses to an increasing amount of information and misinformation about the threats of climate change (Resser et al. 2012). The term most often refers to "a severe and debilitating worry related to a changing and uncertain natural environment" (Gifford and Gifford 2016:1). *Eco-anxiety* is now widely used in the media, and a single Google search yielded approximately 176,000 results; however, interestingly, a search of academic journals through the Web of Science, Pub Med, and Social Science Index only resulted in a total of 58 journal articles using the term.

Some journalists have encouraged the use of other associated terms. For instance, Daniel Goleman (2009) wrote in the *New York Times* about his personal feelings of living in an age where climate change is common knowledge. There he encouraged the use of *eco-angst* to refer to "feelings of fear and guilt regarding climate change."

Recently, the term *eco-guilt* has been gaining attention in the popular press. Emily Chen, a journalist, used the term in an article she wrote in *Vouge* about the feelings that disable pro-environmental action. In the article, she defined *eco-guilt* as "guilt people feel when faced with

emotions caused by climate change" (Chen 2021). Chen's article drew on the work of Patrik Sörqvist and Linda Langeborg to argue that *eco-guilt* can negatively impact a person and prevent them from acting on climate change or otherwise engaging in pro-environmental behaviors. She tied this concept into another term that is also embedded in her article, *climate grief,* which she explains is a term that really speaks to people's feelings about climate change.

As introduced by Wilcox (2012:1), *climate grief* is the "anticipatory grieving for losses expected to come due to climate change, but not yet arrived." She argues that in the discourse of climate change, the framework of grief and mourning are not associated with the resulting impacts of this crisis but are individually recognized. She also asserts that a discussion about climate grief could expand the climate change narrative "in politically and ethically productive ways." Similarly, Cunsolo and Ellis (2018) introduced the term of *ecological grief* into the literature, which is "The grief felt concerning experienced or anticipated ecological losses, including the loss of species, ecosystems, and meaningful landscapes due to acute or chronic environmental change" (p. 275). It is worth mentioning that in a single Google search, the terms *climate grief* and *ecological grief* are the most used among those I researched.

Table 1 summarizes the terms that I have explained above, among others. Additionally, the table includes a variety of other terms that have been used in academic, Indigenous, and journalistic writing. The table highlights the term or concept, its definition and source, and the number of times the term appears in a single Google search. While these are obviously rough estimates of the cultural or scholarly uptake of a given term, I do think this is a helpful way to show where specific ideas or concepts have gained traction in comparison to others. The prevalence of climate grief in popular discourse is also one reason I selected it from the ever-growing list of terms to help anchor my thesis research.

Table 1. Key Terms and Concepts

Key Term or Concept	Citations	Definition	Google Search Results for this Term	Web of Science Results for this Term
Eco-Phobia	David Sobel (1996) William Finnegan (2020) Susan Strife (2012)	A helpless sense of dread about the future	91,500	63
Climate Change Distress	Kristina Searle and Kathryn Gow (2010) and Dr. Margaret Chan (2008)	"Climate change distress as something that shows symptoms indicative of depression, anxiety, and stress." and A distress call to encourage action made by the World Health Organization (WHO) Director General.	3,360	1
Climate Grief	Ashlee Cunsolo Willox (2012)	"Anticipatory grieving for losses expected to come due to climate change, but not yet arrived."	675,000	99
Eco-nostalgia	Glenn Albrecht, Simon Schama, Kirkpatrick Sale, Svetlana Boym, Karen Liftin, and Raymond Williams	A term used by various environmental theorists to explain the feelings of loss of the environment.	2,430	1
Eco-angst	Daniel Goleman (2009) NYT Blog Post	"Feelings of fear and guilt regarding climate change."	4,390	0
Eco-Anxiety	Gifford & Gifford (2016)	"A severe and debilitating worry related to a changing and uncertain natural environment."	182,000	147
Eco-guilt	Robyn K. Mallett (2012) and Emily Chen (Vouge 2021)	"Guilt and anxiety that arises when people think about times, they have not met personal or societal standards for environmental protection." and "Guilt people feel when faced with emotions caused by climate change."	19,100	28
Ecological Grief	Ashlee Cunsolo and Neville R. Ellis (2012)	"The grief felt concerning experienced or anticipated ecological losses, including the loss of species, ecosystems, and meaningful landscapes due to acute or chronic environmental change."	684,000	91
Environmental Distress	Dr. Britt Ray	This term was used to describe chronic stress on ecosystems and physical and mental health. This definition focuses on our total sense of wellbeing tied with our	229,000	56

		ecosystem. If threatened, we can become distressed.		
Manavase	Tuvalu	Climate change fear.	45	0
Solastalgia	Glenn Albrecht	An emplaced or existential melancholia experienced with the negative transformation (desolation) of a loved home environment. A feeling of homesickness while still at home.	111,000	74
Saudade	Portuguese Language	A person's feeling for a loved one, or place, that is absent or disappeared.	N/A	121
Climate Trauma	Zhiwa Woodbury	Provides the missing narrative explaining our dissociated unresponsiveness to the climate crisis.	9,840	6
Koyaanisqatsi	Hopi	"Human life is disintegrating and out of balance with the earth."	N/A	0
Uggianaqtuq	Inuit	For a friend to act unexpectedly or in an unfamiliar way.	N/A	0
Ecosystem Distress Syndrome	David Rapport (1985)	Human disturbance of ecosystems creates situations in which ecosystems do not 'bounce back' to former (healthy) configurations, even when factors that stress the system are removed.	2,250	2
Psychoterratic Disease	Glenn Albrecht	Negative relationships to our home environment, be it at local, regional or global scales.	13	5
Ecological Stress	David Helm (2018)	The chronic stressors created by climate change that requires psychological adaptation. Also a term used for natural ecosystems under stress.	106,000	673
Eco-Distress	Britt Wing	Dread, grief, or concern about climate change.	5,110	65
Environmental Melancholia	Renee Lertzman	Pervasive state many residents in industrialized regions experience when it comes to environmental predicaments or challenges.	17,200	40

B. Context of Climate Grief and Climate Change

There is no pain so great as the memory of joy in the present grief. -Aeschylus (525 BC-456 BC)

Environmental changes and extreme weather events have been linked to various mental health outcomes, including strong emotional responses such as sadness, distress, despair, anger, fear, helplessness, hopelessness, and depression (Berry et al. 2010). Research has shown that people in both the Northern and Southern hemispheres are experiencing these emotions in growing numbers (Coyle & Susteren 2012; Cunsolo & Wilcox et al. 2012). These emotions are social in nature and can be expressed differently according to social norms, a person's social group or class, and across cultures and time. Sociologist George Herbert Mead (1982) saw emotions as things that shift with social situations and are determined by the circumstances of a particular society's community and culture. Given the variability of emotions and their expression, the literature suggests grief and a sense of mourning were common among sampled populations globally.

Grief is a complicated word whose meanings, forms, and expressions change according to time, place, culture, and person. Indeed, grief can mean many things, including a deep and poignant distress caused by or as if by bereavement; a cause of such suffering; and an unfortunate outcome (Merriam-Webster 2021). To add to that definition, grief is an emotion. It is not only varied in terms of the complex feelings it may evoke; as sociologists have pointed out, but it is also socially shaped and controlled, and cultural influences dictate grieving practices. For example, certain possessions operate as a source of meaning for people who have survived the death of a loved one. Depending on the cultural norms or affiliations that a person has, the linking of certain objects may differ (Archer 1999; Rosenblatt 2006).

While grief is often recognized as part of normal, albeit difficult, life transitions, research has identified several forms of grief with varying impacts on a person's health and wellbeing across their lifespan (Parkes & Prigerson 2010). Grief can be expressed as an internal and emotional response to loss (Niemeyer and Cacciatore 2016). In addition, grief can have a significant effect on the mind and the body. For instance, grief can disrupt sleep and consume actions and thoughts during waking hours. It also takes a toll on the body and can impact organ systems and immune functions (Shear 2015). Extreme loss, the kind experienced after the loss of a loved one, is associated with changes in heart muscle cells or coronary blood vessels that prevent the left ventricle from contracting effectively. This leads to a medical condition called stress-induced cardiomyopathy or, more colloquially, broken-heart syndrome. The symptoms are similar to those of a heart attack: shortness of breath and chest pain (Virani 2007). Furthermore, there is a debate that grief can become pathological, but defining it and measuring its expansive variables have prevented it from becoming a unitary concept (Horowitz et al. 1993). Even more, grief impacts a person differently depending on their age and life-stage.

Many of the emotional responses to the death of a person have been well researched in psychology and sociology. However, grieving for a damaged planet is a much newer area of study in psychology, often referred to as ecopsychology. To better understand how grief extends into ecological loss and climate change, some scientists have drawn upon extensive research of Indigenous populations to differentiate between different types of grief (Cunsolo & Landman 2017). Panu Pihkala (2020), for example, argues that various kinds of grief are expressed with climate change*: bereavement-like grief*, related to climate change enhanced by natural disasters that hit close to home or affect loved ones; *transitional grief*, which identifies as a growing awareness that things are changing and can cause for feelings of grief because of the many things

will be lost in that change; and *anticipatory grief*, meaning grief that comes before an impending loss. Pihkala asserts that within each type of grief exists an interlocking yet unexplored relationship with one another.

A systemic review on climate-related non-economic losses shows that people realize they are subject to thousands of different ways that they can experience loss (Tschakert 2019:58-72) and other forms of *bereavement-like grief.* For example, research on Hurricane Katrina evacuees showed that many experienced extreme grief concerning the loss of home and community and separation from familiar people and cultural attributes (Weber and Peek 2012). Thousands of survivors in that disaster lost not just their homes, belongings, and livelihoods; they also lost the familiar surroundings that make a home feel like home.

The type of grief that occurred after Katrina and other major acute onset disasters also extends to more chronic or creeping hazards that result from gradual weather changes. An example of this is found in Australia in the Wheatbelt among farmers and their families who experienced drought and observed other unusual weather patterns caused by climate change. These changes caused many farmers to experience deep worries about the weather and contributed to cumulative and chronic forms of place-based distress, culminating in heightened perceived risk of depression and suicide (Ellis & Albrecht 2017:161-168; Nixon 2011). In these contexts, understanding climate grief is becoming more relevant and studied due to the increased frequency and intensity of extreme weather events as well as chronic hazards such as sea-level rise and desertification related to climate change (Bergquist and Nilsson et al. 2019).

Transitional grief is manifested through loss of environmental knowledge and cultural identity related to the natural environment and often impacts marginalized populations.

Moreover, this grief is most often felt among people who have a close working relationship with the natural environment like farmers, mountaineers, or Indigenous peoples (Middleton et al. 2020; Berry et al. 2013; Comtesse et al. 2021). These individuals and groups are more likely to be exposed directly to climate change's overall effects through prolonged droughts, arctic ice melting, changes in available food sources, and landscape changes (Stanke et al. 2012). Examples of these experiences have been seen among Inuit Elders in the Arctic who have passed down knowledge of the environment for generations. Still, because of climate change, this knowledge no longer applies in the same ways (Cunsolo et al. 2011). A loss of identity is grieved in these moments because their role in the tribe of knowing place is no longer perceived as valuable or valid. Furthermore, the disruption to places also impacts the cultural systems adapted to the land over generations (Cunsolo et al. 2013). Notably, literature on *transitional grief* in the context of climate change is most often found in qualitative studies on Indigenous populations, but little exists outside of this group (Clayton et al. 2017).

There is a small but growing literature on *anticipatory grief*. Thus far, most of this work has been prompted by the American Psychological Association in collaboration with ecoAmerica (Clayton et al., 2017). The available report issued from this collaboration indicates that this type of grief is emergent from the anticipated loss of the natural environment and can be both chronic and acute. Additionally, this type of grief can be carried both emotionally and physically despite no single root cause. Furthermore, the report predicts that as climate change's effects become more noticeable, a higher prevalence of this grief type will be seen, particularly in children. In a sense, this type of grief is more ambiguous and harder to articulate, making it more challenging to understand and research.

C. Climate Grief Research on Adult Populations

"No one ever told me that grief felt so like fear." -C.S. Lewis

Although there has been progress, much is still left unknown about climate grief—especially in terms of sociological research. Of the available research studies, most are written by psychologists and focus on the experiences of adult populations (Clayton et al. 2017). Moreover, the available body of work tends to focus on acute onset disasters that cause severe psychological trauma emerging from loss or injury of a loved one or self, damage to or loss of personal property, and loss of livelihood (Manning and Clayton 2017).

While most of the available research focuses on the measurable reactions to extreme weather events, some literature observes the more chronic and perhaps overlooked changes to the environment and their effects on mental health. For example, climate scientists and activists are groups particularly prone to climate grief (Clayton 2018). Anecdotal evidence has shown that while a person's response to climate change is different depending on the person, those who are confronted with its daily realities through professional work, advocacy, and/or personal experience are at higher risk for distress and climate grief (Fritze et al. 2008). Today, climate scientists are confronted with not only being scientists, but they have also become "reluctant activists" because of the politicization of climate change. This further illustrates the complexity and grief that may emerge as people attempt to not only understand the dynamics of climate change but articulate them to a still, often skeptical public (Allen 2020).

Some of the work of climate scientists has been linked to behavioral outcomes. For example, it is estimated that the average U.S. resident will experience between four and eight times as many days above 95 degrees Fahrenheit each year as they do now by the end of the

century (Houser 2015). Higher temperatures have been linked to increased levels of violence and suicide, and it is estimated that between 2010-2099, climate change will add an additional 30,000 murders, 200,000 cases of rape, and 3.2 million burglaries, in large part to do with increased average temperatures and associated stress caused by climate change (Ranson 2012).

Research on drought has identified it as the most significant contributing factor to global food insecurity. Hunger is the strongest in areas where vulnerabilities to food access and prices exist. A recent report found a consistent relationship between drought-stricken areas, food insecurity, and worsening mental health-related to finical loss and the suffering brought on from watching people, plants, and animals dying (O'Brien 2014; Jones 2017).

Additional literature has shown that human migration will be a significant driver of social upheaval and distress throughout the century (Wolsko and Marino 2016). With migration comes a loss of human habitation, loss of home, loss of culture, loss of safety, intolerable living conditions, and a multitude of other complex and compounded issues that impact mental health and lead to complicated pathological grief among many other long term and chronic illnesses (Pumariega et al., 2005).

Research on climate change communication and its relationship with distress has been researched by environmental psychologists (Randall 2009). Given the complexity of climate change, initial research on this topic looked at how the scientific community explained climate change to the public and how this, in turn, shaped public opinion (Bell 1994). Specifically, one study explored ways to encourage pro-environmental behavior to combat human-caused climate change, but it found that misinformation and feelings of climate change-related distress prevented action (Frantz and Mayer 2009). This prompted research on communication strategies

that could be used to combat misinformation and dismantle apathy that arose from not being able to handle distress stemming from climate change (Kollmus and Agye 2002). Furthermore, this also created a space for research on how to communicate information on climate change to children but little on how to help children manage feelings of climate grief (O'Neill and Nicholson-Cole 2009).

D. Climate Grief Research on Children

"Children are the world's most valuable resource and its best hope for the future" -John F. Kennedy, 1963

The effects of climate change will impact everyone but especially children. With newly developed psychological, physiological, immune, and neural systems, children are placed in a more delicate situation, directly impacting their health across their life span (Garcia and Sheehan 2016). In a review published by Burke, Sanson, and Horn (2018), the authors evaluated existing literature on the psychological impacts of climate change, both direct and indirect, on children. Their review identified several reports that the overall well-being of children's mental health will be impacted, including through PTSD, depression, anxiety, sleep disorders, attachment disorder, and substance abuse.

My literature search revealed a limited but growing body of work focused specifically on children's emotional responses to climate change. Caroline Hickman's (2020) research, for example, focuses on young people and their concept of climate change and feelings about climate change. She found that children feel like they live in a world that abandons them and seems cruel. Hickman reveals in her research that some of the children she spoke to feel that the human causes of climate change are what is being done to them and that it feels personal.

Moreover, Hickman explains that children often question whether it is safe to talk about their climate anxieties and grief.

Survey research shows that children are more likely to be interested and worried about climate change than adults. In addition, children are also more likely to accept the scientific consensus of human-caused climate change than adults (Feldman et al. 2010; Corner et al. 2015). More notable, it was found in one study that 82% of a sample of 1001 urban children in the United States between the ages of 10-12 expressed fear, sadness, and anger when discussing their future lives in the context of climate grief (Strife 2012). Research in a study done in Germany has also shown that 26% of children believe the world will end in their lifetimes due to climate change. (Tucci et al., 2007; Hurrelmann et al., 2010).

E. Coping Mechanisms Children Use to Address Climate Grief

"Give me rampant intellectualism as a coping mechanism." -Fight Club-Chuck Palahniuk 1996

While understanding the psychological impacts of climate change on children is expanding, very few empirical studies exist to understand how they are coping with it. However, Swedish Environmental Psychologist Maria Ojala (2012), in a survey of over five hundred 12--year-old's, found that children use problem-focused coping—find information on how to solve problems of climate change—to deal with feelings of distress induced by climate change. She argues that this does create more instances of pro-environmental behavior from the child and makes them more aware of the negative impacts of climate change. She argues that this has a lasting effect on a child's depressive state in their day-to-day interactions. Ojala asserts that a more effective coping strategy would be through meaning-focused coping. She believes that giving meaning to the problem of climate change will allow these children to be involved in a situation that cannot be instantly improved but requires constant involvement in.

Another study by Strazdins and Skeat (2019) suggests that children come to terms and cope with climate change by creating positive images of the future. Meaning that when children can drive their interest into a meaningful future that embodies roles that restore the environment and protect the most vulnerable, they are able to cope better than having a negative outlook on the future. The authors argue that a pessimistic outlook encouraged more individualistic behaviors that have a negative impact on overall well-being and rates of consumption.

A relatively recent study showed improved outcomes in overall wellbeing when children actively address the source of anxiety caused by climate change in a more constructive way (Hart et al., 2014). The authors of the study argue that when children choose to be involved in local and state governance or hold memberships in organizations that promote a climate protection agenda, children are allowed an opportunity to manage their anxiety while simultaneously working for a future that limits the impacts of climate change. The authors promote the idea that these kinds of activities build psychological protection and make children feel more in control.

F. Parenting in the Anthropocene

Words are world-makers—and language is one of the great geological forces of the Anthropocene." -Robert Macfarlane, Underland: A Deep Time Journey 2020

As more children have expressed concerns regarding climate grief, various journalistic treatments and a much smaller number of scholarly works have looked at how to support children who have experienced climate-related disasters or climate grief. A single Google search using the phrase "How to support children who have climate grief" solicited over a hundred million results. This large number of results may be due to the complexity of parenting or the fact that climate change is such a wide-ranging issue confronting parents today. Others argue that

it is a moral obligation to protect children from climate change and that we owe it to them to organize and act to mitigate it (Cripps 2017).

Literature on how to help children cope with climate grief is especially limited in terms of addressing children of different ages. Most of the advice given in various news articles and parenting books is to allow young children to fall in love with nature. In a nationwide curriculum science program created at Berkeley University called Full Option Science System (2017), young children need to take the time to learn about the environment to build a relationship with it that will later promote pro-environmental attitudes and behaviors. Which according to Sobel (2008), who created the term ecophobia, will later build resilience when given the responsibility to care for nature. However, research on sustainability education in early childhood argues that we should not underestimate the knowledge that younger children have about environmental issues (Engdhal 2015).

Currently, most research on how parents can help their children cope with climate change has been on adolescents. As children head into adolescence, they develop physically, psychologically, and intellectually (WHO 2018). As they mature, they begin to think more abstractly and, therefore, become more capable of viewing climate change as a problem. Moreover, they can understand the human causes of climate change, and they see how their behaviors contribute to the problem (Chawla and Flanders Cushing 2007). During this developmental stage, researchers and educators have identified several strategies that help related to pro-environmental engagement, teaching that creates a tone of optimism for the future, tools for ecotherapy, and screening the type of information shared about climate change. For example, Ojala's (2012) work with adolescents suggests that using realistic hope as a tool to support adolescents while also being transparent with the magnitude of the problem produces less

anxiety and encourages lasting involvement over the long term. Sanson, Burke, and Hoorn (2018:35) took Ojala's methods and created a five-item strategy that parents can use to support their adolescents. As seen in Table 2 created by Sanson, Burke, and Hoorn, these coping strategies include acknowledging feelings, positive reappraisal and cognitive structuring, developing trust in different societal actors, developing confidence in their ability to make a difference, and identifying pathways to a solution. In addition to their five-item strategy Sanson, Burke, and Hoorn provide examples of how parents can apply them.

Table 2. Tips for Parents to Help Adolescents Develop Strategies for Coping with Climate Change

Climate Coping Strategies	How Parents Can Help Young People
Acknowledging feelings	Let them know that it is reasonable to feel angry, frustrated, anxious, sad, helpless, depressed, or despairing about environmental problems. Help them to identify different ways to cope with these emotions (e.g., by naming feelings, expressing them, using breathing techniques to calm arousal).
Positive reappraisal/cognitive restructuring	Help them to identify their own self-talk about climate change and make it more helpful (e.g., "From little things, big things grow," "There's a lot that we can personally do, starting today."). Challenge catastrophic thinking, denial and black-and-white thinking (e.g., "It's not too late to make a difference."). Invite them to think about climate change in a historical context and recognize the much greater awareness of the problem now than in the past.
Developing trust in different societal actors	Help them to see that scientists, politicians, climate experts, and environmental organizations are all working hard on solutions. Point out the massive groundswell of public support, including youth from countries around the world. Point out examples of how we have dealt with big problems before (e.g., dismantling apartheid in South Africa, closing the hole in the ozone layer, ending segregation in the USA).
Developing confidence in their own ability to make a difference	Help them to find examples of people (including people like themselves) making a positive difference to the environment. Help them to get involved in relevant organizations at local, national, and international levels. Help them to see that cooperation and people working together in groups can achieve much. Engage with schools to encourage them to provide opportunities for students to express and share their concerns about the future, and to participate in climate change mitigation activities.
Identifying pathways to a solution	Help them find concrete things to do to address climate change, like being actively engaged in raising awareness, running educational programs, conserving nature, promoting use of renewable energy, adopting environmentally friendly practices. Model inclusive and social justice values to help them seek climate solutions which are fair and just. Help them to build their citizenship skills by supporting them in communicating with influential people (e.g., politicians and fossil fuel companies), and teaching them conflict resolution skills.

In 2014, UNICEF recommended that parents should encourage children to contribute to combating climate change actively. This seminal report indicated that these actions could build psychological protection, let young people feel like they have control in their lives, and become more hopeful (Hart and Fisher 2014). In 2015, a UNICEF report named *Unless We Act Now* encouraged parents to build their children's resilience and self-efficacy through encouraging their active involvement in local, national, and global levels to mitigate and adapt to climate change. Thousands of additional examples worldwide provide programs for children to participate in this kind of engagement. Journalistic and anecdotal accounts of the success of these programs have been well reported and continue to increase as more and more programs are developed.

G. Knowledge Gaps

To date, the limited research around climate grief and other forms of ecological distress has been conducted by adults and with adult and adolescent participants (Lertzman 2015; Weintrobe 2013). While research on the impact of climate change and climate-related disasters on children exists, it has often been framed through adults' perspectives and focuses specifically on the psychological, physical health, or educational impacts that climate change will cause in children (Ojala 2012; Peek 2008; Xu et al. 2012,).

An increasing number of researchers have called for children's voices to be centered in the discussion on climate change and disasters (Currie and Deschenes 2016; Fothergill and Peek 2015). Simultaneously, however, there has been some public and political backlash against children who speak out against climate change, as witnessed in the recent exchanges between youth climate activist Greta Thunberg and former U.S. President Donald Trump. With insidious pressure against children who express concern about the environment, parents need evidence-

based communications strategies to talk to their children about climate change. This evidence-based approach will allow parents to developed targeted parenting approaches to support their children. Even more, there is a need for parents to be invited to take the perspective of their own child into account to understand how to shape their expectations of the future.

There is a lack of empirical evidence on best practices used to support children who experience climate grief. Similarly, there is little available research focused on children and their own experiences of climate grief. This thesis seeks to build upon the available evidence while beginning to fill these gaps in knowledge.

III. METHODS

This project draws upon qualitative data from open-ended interviews with adolescents who experience climate change-related distress and their parents. I also collected quantitative data taken from a Nature Relatedness Scale that assess the subjective relationship that the participants have with the natural environment. A detailed timeline of the steps that I took to complete this research is provided in Appendix A.

A. Institutional Review Board Approval

This study required Institutional Review Board (IRB) approval to research human subjects. To study adolescents and their adult parents, I submitted a University of Colorado Boulder IRB project protocol, including recruitment materials (Appendix B), consent forms (Appendix C), an adult parent interview guide (Appendix D), an adolescent interview guide (Appendix E), and a copy of the Nature Relatedness Scale (Appendix F). After I received IRB approval on January 25, 2021, I immediately began recruiting participants for this study.

B. Participant Inclusion Criteria and Recruitment Strategies

The study inclusion criteria for the adult parents participating were to be age 30 or older and to have an adolescent child between the ages of 12 and 17 who experience emotional distress about climate change. The inclusion criteria for the adolescents were to be between the ages of 12 and 17, have or had emotional distress experiences about climate change, and have at least one parent participating in the study.

I recruited participants for this study through organizational contacts, social media posts, and recruitment emails. Specifically, I began recruiting through an organization called ClimateMama (climatemama.com), whose mission is to collectively create a world where children can thrive while facing the realities of climate change. This organization works with families by understanding how people impact the environment, and they connect families with simple and straightforward ways to reduce their carbon footprints. I sent my IRB-approved recruitment email to the leadership of ClimateMama, who then distributed that message to active members of the organization. ClimateMama leadership also shared a social media post about my research. I identified two participants as a result of recruitment efforts through this organization.

From there, I began reaching out to my immediate network, including organizations that I am affiliated with, such as InVivo—an organization that focuses on creating interdisciplinary networks that research planetary health—where I recruited two participants; I recruited four participants through members of my honors cohort; two participants through a University of Colorado Boulder faculty member; and four participants through members of the Behavioral Neuroendocrinology Lab.

C. Participant Demographics

This study included eight parents and eight adolescent children. Among the adult population were 7 female participants and 1male parent participant. Among the adolescent participants were 6 female participants, 1 male participant, and 1 transgender participant. The ethnicities represented among the adult and adolescents' participants were one Black or African American person, one person of mixed ethnicity, and 14 White persons. The participants lived in Colorado (n = 14) or California (n = 2). All of the adults had completed at least a bachelor's degree and several of the parents interviewed had advanced degrees and made over one $100,000 a year. All of the parents interviewed had professions that required involvement with environmental sciences in either a clinical, business, or scientific capacity. All adolescents interviewed were currently enrolled in middle or high school and reported having other siblings. To protect the participants' identities, I gave each a unique identifier—a number—that that was connected to their data and information (see Table 3 below).

D. Caregiver and Adolescent Open-Ended Interviews

The study adhered to the IRB approved protocols from the University of Colorado Boulder. All adult participants gave informed consent, and all adolescent participants gave assent before being interviewed.

The parent interviews, which took between 30 to 80 minutes, included four questions to initially screen the participants, eight questions that collected demographic information, and 10 open-ended questions with additional probes that asked more about how their adolescents experiencing climate grief and how they supported them.

The adolescent interviews, which took between 15 to 30 minutes, included two screening questions, five questions that collected demographic information, and seven open-ended questions with additional probes regarding climate grief and their parents' support.

All adult and adolescent interviews were conducted and recorded over a secure meeting platform called Zoom. The audio recorded data was transcribed by a professional transcription company and returned in Word document form.

E. Nature Relatedness Scale-Quantitative

In both the adult and adolescent interviews, I used the validated 21-item Nature Relatedness Scale (NR-Scale) that assesses subjective connectedness with the natural environment. Both the adult parent and adolescent child responded to statements using a 5-point Likert scale. The scale assesses the affective, cognitive, and experiential aspects of a personal connection to nature. The scale also measures three-factor dimensions: NR-Self, NR-Perspective, and NR-Experience. Factor NR-Self represents the self-identification with nature; factor NR-Perspective reflects an external worldview of what nature is and the effects of human interaction; factor NR-Experience reflects the experience that a person has with the environment and their level of comfort with it. It took the adults approximately 10 minutes to complete the scale and the adolescents approximately 10 minutes.

F. Interview Process

My recruitment materials invited prospective participants to reach out to me directly if they fit the criteria for the study and were interested in participants. In turn, I sent participants an email that provided detailed information about the study and instructions to schedule a time to

meet for the interview. I attached the consent forms and interview scripts for the adult parent and adolescent child in the follow-up email. All meetings were scheduled through an online platform called Calendly.

Prior to conducting interviews, I would ensure that the interviewee had signed the required consent form via DocuSign, which allowed the participant to sign the consent forms digitally. After the consent forms were signed, I met with the participants on the designated day at the time established via Zoom. Because this thesis research was conducted at the height of the global COVID-19 pandemic, virtual interviews were the only possibility for this type of qualitative data collection.

I began each interview by introducing myself and providing a brief overview of the study. In all cases, I interviewed the parents first, prior to receiving permission to interview their child. At the outset of each interview, I asked the screening questions to verify the participants' eligibility in terms of my inclusion criteria for this study. I would then ask for their verbal consent to record the Zoom interview. After they gave their consent to record, I would proceed with the interview of the parent. Because the interview was being recorded, I focused predominantly on the interviewee. I would also make some notes in response to questions related to participant demographics, especially compelling comments that I wanted to follow up on later in the interview, and the numbers affiliated with their answers to the Nature Relatedness (NR) Scale. After the parent finished the NR-Scale, I thanked them and asked if I could speak to their adolescent. All parents gave permission for me to speak to their adolescent after the parent interview.

When the adolescents came to do their interview, to the best of my knowledge, the parents left the room in their home where the Zoom meeting was taking place. I then proceeded

to ask the adolescent for their assent to participate in the study and permission to record the interview. The interviews with the adolescents followed many of the same steps as those with the adults. Like the adult interviews, I also made notes on the adolescents' demographics, comments they made that I wanted to follow up on, and the numbers affiliated with their answers to the NR-Scale. After the interview, I thanked the adolescent and then ended the Zoom meeting.

G. Data Compilation and Analysis

After I finished the interviews, I would record the parent's and adolescent's demographic information and NR-Scale numeric responses in an excel spreadsheet. In each instance, I used the participant's designated ID number to protect their identity. As shown in Table 3, the odd numbers (1,3,5, etc.) represent parents, and the corresponding even numbers (2,4,6, etc.) represent their adolescent child. Table 3 summarizes the demographic and interview-related information, including participant gender, geographic location, birthdate, race, employment status and/or role, education level, marital status, number of children, income, interview time, and interview date of the parents.

Table 3. Adult Parent and Adolescent Interviewee Demographics

ID	Gender	Location	Birthdate	Race	Employment Status and/or Role	Education/ Grade	Marital Status	# of Children or Family Members	Income	Interview Time	Interview Date
1	Female	Louisville, CO	6/8/67	Caucasian	FT Social Worker CU Boulder	PhD	Divorced	3 Children	$70,000	80 min	1/28/21
2	Female	Louisville	Not given	Caucasian	Student	12	n/a	5 Family Members	n/a	30 min	1/28/21
3	Female	Melano Park, CA	2/15/68	Caucasian	FT Stanford Continuing Education	Masters	Married	3 Children	$200,000	60 min	2/2/21
4	Female	Melano Park, CA	3/30/03	Caucasian	Student	12	n/a	5 Family Members	n/a	30 min	1/2/21
5	Male	Broomfield, CO	4/3/66	Caucasian	FT CEO Retirement Community	Masters	Single	3 Children	$160,000	45 min	2/6/21
6	Female	Broomfield, CO	3/29/06	Caucasian	Student	9	n/a	5 Family Members	n/a	20 min	2/6/21
7	Female	Boulder, CO	1/9/70	Caucasian	FT IT Director at NOAH	Masters	Married	2 Children	$180,000	60 min	2/9/21
8	Male	Boulder, CO	7/8/03	Caucasian	Student	12	n/a	4 Family Members	n/a	35 min	2/9/21
9	Female	Lafayette, CO	10/15/67	African American	FT Manger IT Staffing	Masters	Married	4 Children	$180,000	45 min	2/20/21
10	Female	Lafayette, CO	10/14/04	Mixed	Student	11	n/a	6 Family Members	n/a	30 min	2/23/21
11	Female	Ft. Collins, CO	8/6/79	Caucasian	FT HADC	PhD	Divorced	4 family Members	$120,000	25 min	3/9/21
12	Female	Ft. Collins, CO	8/20/2005	Caucasian	Student	10	n/a	2 Children	n/a	20min	3/9/21
13	Female	Boulder, CO	11/21/73	Caucasian	FT Landscaper	Bachelors	Divorced	2 Children	25K	60min	3/10/21
14	Female	Boulder, CO	1/30/2006	Caucasian	Student	9	n/a	4 family members	n/a	15min	3/10/21

H. Quantitative Data Analysis

After recording demographic information, I recorded the NR-Scale numbered responses in a spreadsheet using each participant's assigned number to protect their identity. I used a spreadsheet to streamline the process of scoring that the creators of the scale, Nisbet, Zelenski, and Murphy (2009:715) created.

I. Qualitative Data Analysis

After recording and averaging the NR-Scale data, I then listened to the interviews, made notes on each participant's interview, and then sent the audios file for transcription. Once I had the completed audio files, I coded them on my computer screen in a three-step process that used the Microsoft Suite programs Excel and Microsoft Word

During my first stage of analysis, I read the transcribed interview data three times to identify themes. Then, to condense and organize the data, I created a separate word document for the parent and adolescents. In these documents, which I referred to as the rainbow rubric, I wrote out the central a priori and emergent themes and assigned each central theme a highlighted color. After finishing this task, I then re-read the transcripts and highlighted phrases or words that matched the themes that I had identified and described in the rainbow rubric.

In the second stage of my analysis, I copied and pasted the quotations from the data that I had highlighted into the rainbow rubric along with the participant ID numbers underneath the corresponding central theme. In some cases, I assigned quotations to multiple themes when the participant had touched on several relevant topics in one quotation. The use of color-coding allowed me to observe broader trends in terms of the most prominent patterns in the data.

In the third step of my analysis, I compared the NR-Overall, NR-Self, NR-Perspective, and NR-Experience scores to the color-coded responses of each participant to identify patterns between the quantitative scores and qualitative responses. In the fourth and final step of my analysis, I looked for patterns in the NR-Overall, NR-Self, NR-Perspective, and NR-Experience scores between parents and their adolescents. Through this process, I further condensed the empirical data into four broad themes associated with supporting adolescents with climate grief.

IV. ANALYSIS

The family is one of the most important agents of socialization throughout the life course. While the roles and responsibilities of parents role has shifted throughout history, their primary responsibility is to care for and prepare their children for the future. In the current century, many parents are presented with new challenges related to preparing children for a world increasingly impacted by rapid environmental change. This theme was apparent in conducting the interviews and administering the NR-Scale for this honors thesis, as the adult and adolescent participants shared their personal experiences with climate grief. Moreover, I learned about how these experiences with climate grief impact the parent-child relationship and families' support structures.

In the sections that follow, I focus on four key patterns that emerged when interviewing the parents and their children: (a) the terminology used to express and explain what climate grief means for the parents and adolescents and how these terms affected the types of support that were given and needed; (b) the different types of support that the adolescents in this study received from their parents at different ages; (c) what was successful and unsuccessful in terms of the approaches to support—from both the parental and adolescent perspectives; and (d) the

importance of how one's relationship with the natural environment impacts the way that adolescents cope with climate grief and the support that they are given.

A. Terminology Used to Express and Explain Climate Grief

Feelings are often a particular reaction to a specific event, usually in a short duration like happy, sad, angry, and joy. In analyzing the data, I found that key terms that are common in scholarly literature and journalistic outlets are not used by adolescents nor their parents when expressing their experiences with distress related to climate change. Second, adolescents who are experiencing climate change-related distress may signal that the child is experiencing different types of grief. Finally, parents in this study had different levels of awareness of what their children were feeling and assigned different feeling words to that awareness, which in some instances did not match what their adolescent was actually feeling.

a. Feeling Words

Putting words to feelings is a cognitive act of putting feelings to thinking and then talking. Humans need to link emotions to talking because this acts as a mechanism for regulating relationships, integrating events into life stories, and engaging in self-soothing and reflection (Hollinger 2018). Similarly, I found that both the adolescents in this study and their parents did not use one key concept but instead drew on a range of terms to capture an array of deeply unsettled emotions. They use 'feeling words' to describe an internal narrative of distress they experience while talking about climate change. Moreover, the key concept that I've used to organize this thesis, 'climate grief,' was not a term that was used by many of the parents or adolescents in this study. In fact, as the study progressed, I learned that the use of the term 'climate grief' acted as a deterrent to recruitment because some of the parents did not think that their child was experiencing 'grief' about climate change.

Parents and adolescents used similar ‘feeling words’ when expressing their climate change-related distress. In order of most times used, the four most common words used by the parents and adolescents combined were anxious, worried, sad, and upset. These words represent human core emotions such as the word sad; or complex human emotions such as worried and anxious that can be classified under the core emotion of fear; or the word upset, which can be classified as a complex emotion under the core emotion of anger (Jacobsen 2018). These feeling words were most often used when asked questions about what the “terms climate grief and climate anxiety mean” to them and when referring to an experience of climate grief.

Adolescents in this study used ‘feeling words’ such as anger, denial, depression, blame, acceptance, and profound sadness when asked about what “climate grief and climate anxiety mean” to them. Parents also used these words, with the addition of guilt as one of the most common words they shared. Table 4 shows the ranked words in order of most used by the parents and the adolescents. To be noted, parents and their children use many of the same overlapping terms, just in a slightly different order.

Table 4. Ranked Most Used Feeling Words by Parents, Adolescents, and Combined

Ranking	Parents	Adolescents	Combined
1	Worried	Anxious	Anxious
2	Anxious	Worried	Worried
3	Sad	Sad	Sad
4	Guilt	Angry	Upset
5	Angry	Depressed	Angry
6	Depressed	Acceptance	Depressed
7	Acceptance	Blame	Acceptance
8	Blame	Denial	Blame

b. Different Types of Grief That Adolescents Experience

Another key theme arose in analyzing the data that some children did not realize that they were experiencing what might be labeled grief until they took part in this study and had an opportunity to reflect on their feelings. Furthermore, many of the words that the adolescents used indicated that they were experiencing different types of grief that have been previously identified in the literature such as bereavement-like grief, transitional grief, and anticipatory grief.

In some of the adolescent interviews, the adolescents discovered that they were experiencing climate grief prior to the interview after conversing with their parents about participating in the study. In one example of this 17-year-old male living in Boulder, Colorado, verbally processed this after I asked if there was anything else he wanted to share:

> *When my mother told me about participating in the study, I didn't think that I was experiencing grief, but now that I think about it, I actually am. I am profoundly sad.*

The 'feeling words' that adolescents used can be categorized as different types of grief, even if the adolescents themselves didn't always use this exact terminology. For example, when some of the adolescents talked about the wildfires that ravaged Colorado and California in the summer of 2020, many shared feelings of loss, fear, powerlessness, and even anger. When children use these feelings words, it can be a sign that they are *bereavement-like grief*, that is, grief related to climate change enhanced by natural hazards that hit close to home or affect loved ones.

Older adolescents used the same 'feeling words' that younger interviewees did, but they tended to use more details to explain what these 'feeling words' meant to them and where they

emerged. For example, older adolescents who felt “anxiety” talked more often about their growing awareness that things will be changing around the world. This can be a sign that these adolescents are experiencing *transitional grief*, which identifies as a growing awareness that things are changing and can cause feelings of grief because of the many things that will be lost in that changes that created by climate change (Middleton et al., 2020, Berry et al. 2013, Comtesse, et al. 2021).

Some of the ways adolescents and their parent's process climate change are related to stories told through documentary films and news television programs. Documentary films, for example, that feature endangered species, specifically polar bears, gave parents and their children the first visual glimpse of the impacts of climate change on such a beloved animal. When older adolescents talked about how they experienced these stories, they used ‘feeling words such as “helplessness” and “sadness” about polar bears but also used the word “angry*”* and blamed older generations on the state of things. This could be a sign of *anticipatory grief*, meaning grief that comes before an impending loss (Clayton et al., 2017). This was not just expressed about polar bears but also in other documentaries and news shows that talked about changes in National Parks and other natural phenomena around the world that scientists claim could disappear like coastal areas, glaciers, and biodiversity (Watson 1998). While older adolescents expressed more anger, younger respondents remained hopeful that a given species would still be alive later in their lives in the future.

c. Parents Different Levels of Awareness

Another key theme that emerged in the data was how much parents and children shared their feelings concerning the changing environment. Some parents admitted that they have difficulty acknowledging and communicating their internal feelings regarding the environment.

This lack of communication directly impacts how the parent supports their adolescent overall and is setting a precedent for how their children communicate with them about their internal feelings. In fact, three adolescents established the first contact with me to participate in the study because they believed their parents did not know they were experiencing emotional distress about the environment.

During the interviews, I learned that parents were often surprised to find out about the depth of suffering their children experienced concerning the environment. This relates to what Fothergill and Peek (2015) have previously reported regarding disaster-affected children hiding their trauma from their parents not to overburden them. I also found, however, that some parents were very connected to the ways their children felt even if the adolescent did not communicate their feelings about climate change.

When I asked parents when they first noticed that their adolescent was experiencing climate grief, many hesitated. For example, one mother said that the word grief was "too strong of a word to use." Instead, parents used words like "discomfort" and "adjusting" or sometimes "anxiety" to express their interpretations of how they believed their adolescent was reacting to climate change.

One mother whose daughter asked her to participate asked her daughter during the interview if she felt grief related to climate change. The daughter answered in the affirmative. All the parents spoke about knowing that their children had moments of distress about climate grief but admitted that they did not know to what depth.

Self-feeling and self-conception played a role in the 'feeling words' that parents and children used to describe an internal narrative of distress that they experienced while talking about climate change. The parents and children perhaps held back, at times, in discussing climate

change-related feelings with one another because they worried about being judged or alarming one another. For example, one mother said:

> *I do not want to show my children that I am upset about climate change because I do not want them to be afraid. They are the ones who are going to be dealing with it more than I am, and I want them to be prepared, not scared.*

In other instances, parents were more connected to the various emotions that their child was experiencing. Five parents shared that they had a sense of what their child was feeling even if they did not use 'feeling words' to describe it. One parent shared that she observed different behaviors in her daughter when the Cal-Wood Wildfire ignited north of Boulder, Colorado in October of 2020. She explained that her 14-year-old daughter became depressed and quiet, and she suspected that her daughter was experiencing higher levels of anxiety and distress:

> *I saw her pain when the Cal-Wood Fires started. It's a place that the 6th and 7th graders go to learn about nature. I really saw the fear and pain.*

The Cal-Wood Wildfire, which grew to over 10,000 acres and destroyed 20 homes in its path, was sparked near the beloved Cal-Wood Education Center. This educational camp for children and young adults provides environmental education—that children in the area have visited for the past 38 years (Denver Post 2020).

B. Parental Support Throughout Childhood

Parents used a wide range of strategies to support their adolescents who were experiencing climate grief. These strategies were influenced by their child's age but also the levels of communication between the parent and child. In the following section, I breakdown the

common parenting themes that emerged from interviews with the parents. I have broken this down into three stages: younger children, pre-teen children, and adolescents.

a. Parenting Strategies for Younger Children

All seven of the parents in this study explained that in the early development of their child (~4 years to 8 years), they shielded alarming information about climate change from them. Two parents stated that they did not feel it was important to expose or talk about climate change when their children were not "cognitively ready" to learn or hear about it. These same parents shared their belief that climate change is too complex for younger children to understand. Furthermore, parents talked about what actions they took to protect their children from the emotional distress of climate change as they were around seven or eight. A mother of three children, for example, spoke about turning the television channel or radio station when more alarming news on the impacts of climate change were discussed.

All seven of the parents reported encouraging their children to connect to the outside environment through play dates, school field trips, and family outings to parks or hiking adventures. Four of the parents shared that they created family experiences that encouraged pro-environmental behaviors like composting and recycling. One mother shared how this allowed her younger children to learn about responsibility and work ethic, but she explained that no connection between these behaviors and climate change was discussed. The same four parents revealed that these activities continued throughout their children's childhood.

b. Parenting Strategies for Pre-teen Children

Parenting strategies used during the child's preteens (~9 years to 11 years) echoed many of the strategies used by parents when their children were younger. The four parents that spoke about creating pro-environmental family activities also reported a transfer of responsibility of

these family activities to their children as they aged. This started during their children's pre-teen years and included economic incentives for their completion. The one father spoke about how these paid chores gave an opportunity to teach pro-environmental habits, life management skills, build upon work ethic ideas, and get things done around the household.

Three parents shared that they introduced new concepts about the natural environment and climate change through platforms and products created by Netflix and Disney. The parents revealed that this was the primary way of communicating these concepts to their children during their pre-teen years. Two of the three parents who spoke about using Disney and Netflix talked about how their children began teaching them about things that they learned while watching these videos.

Five of the parents reported observing their children having an emotional reaction such as crying when learning about the effects of climate change in their pre-teens. All seven of the parents shared that they became more involved in their child's education outside of the home at this age. One mother spoke about how her daughter's distress over climate change at this age acted as a catalyst for her to participate more in her daughter's classroom. Another mother observed that her daughter became increasingly angry about climate change through her preteens, so she decided to become active in her daughter's curriculum planning and field trip planning by promoting nature-centered field trips. She also spoke about becoming the lead organizer promoting less waste of paper products in the classroom. Because parents had more than one child, they often shared that if it was their eldest child who became distressed, they remained engaged in a similar capacity in the schools for their younger children as well.

c. Parenting Strategies for Adolescents and Teens

All 7 parents in the study spoke about the difficulties of parenting adolescent and teen children (~12 years to 17 years) and admitted frustration that parenting strategies that they used when their children were younger no longer worked. Five of the parents spoke about remaining involved with their child's education but became more involved in preparing their child for college rather than teaching and supporting pro-environmental behaviors. One mother talked about a time when she sent her child to a boarding school for a year in Maine that helped her daughter learn more about the human impact that causes climate change:

> *My daughter went to a boarding school on the coast of Maine, where she was able to take classes on sustainability. They lived outdoors weeks at a time and studied the direct impacts of their decisions on the environment, such as making a fire to tracking coastal pollution and litter. Every child and school should have this experience.*

This mother had a higher income than any of the other participants but believed that similar programming could be developed in public and private schools.

Four parents spoke about adopting pro-environmental habits that their children learned about in their schools. Some of the examples that these parents gave included better recycling habits, composting, and resource use. However, three parents did not talk about the suggestions that their children gave because they said they worked in environmental sciences or related jobs and knew about best practices. In these instances, parents set the guidelines and required that their children obey their directions or face the consequences.

All seven parents in the study spoke about using more direct language to explain how they felt about climate change with their adolescents and teens when their children confronted them with questions about climate change. These conversations were based on science and

information found from reputable sources or the parents' professional background. In these conversations, two parents reported that preparation was the central theme of the conversations and that they did not assuage the fears and concerns that their children were having in these instances.

Finally, two parents reported seeing more anger in their adolescent child about climate change at this developmental stage. In some of these instances, these parents reported that they would dismiss the anger by saying things like "it is all going to be okay." These parents shared that they wanted to resolve their child's feelings of anger quickly and felt this approach better served their child's wellbeing at the time.

C. Successful and Unsuccessful Approaches for Addressing Climate Grief

Children and their parents are faced with stressful events throughout their lives. Many experience things like divorce, loss of a loved one, and academic failure. To cope with this part of life, most parents provide varying forms of support to their children to help them to feel loved and to help build resilience. In this section, I add to this body of work on parenting during times to duress to demonstrate what parents and their children perceived to be unsuccessful and successful parenting strategies to help cope with climate grief. I also discuss what adolescents wished their parents would have done to help them better cope with climate grief.

a. Parent Perspectives of Unsuccessful Parenting Strategies

One of the goals of this thesis was to understand how parents were parenting their children who were experiencing feelings of distress related to the changing climate. In particular, the parents in my sample felt that the way they communicated with their children was the most unsuccessful strategy for helping their children cope with their emotions related to climate

change. Additionally, parents expressed regrets and remorse around unsuccessful communication tactics and parenting in general.

A strategy that parents commented on not being successful was telling their children that "everything is going to be okay." One mother shared that she did not know what else to say when her daughter came home and talked about how much she hated the 'boomer' generation. The mother felt that her daughters' anger was unjustified but did not know how to make her daughter feel better. Other parents spoke about not having time to talk to their children about climate change. One mother said:

> *Sometimes I just do not have time to talk about climate change and how he [her son] feels about climate change. I just tell him that it is going to be okay. Looking back at this, I feel bad about doing this.*

Like this mother, other parents spoke about having an overwhelming sense of guilt caused by feelings of not providing sufficient love and support that they felt their children needed. This sense of guilt extended into how they felt about the strategies they used to support their children who were experiencing climate grief. One mother even shared that her feelings of guilt acted as a deterrent to speaking about the effects of climate change with her child.

In the three cases where parents were unaware that their child was experiencing climate change-related emotional distress, parents expressed guilt and embarrassment about not knowing about their children's feelings. This was reflected in their interviews when asked what strategies they felt were unsuccessful in helping their children cope. These parents lamented that avoiding conversations about climate change to avoid emotional distress was not a successful strategy, as they were obviously left unaware of the depth of pain their children were experiencing. One mother said:

I mean it's not something I ever really, you know, was paying attention. It makes me anxious for them; you know, distressed for them. You know, helpless, sad, and guilty.

b. Adolescent Perspectives of Unsuccessful Parenting Strategies

All seven of the children that I interviewed for this research shared that communication was at the root of parenting strategies that they deemed unsuccessful or less helpful. In addition, children also deemed parenting strategies such as using scare tactics to force them to change behaviors or to make them participate in pro-environmental behaviors as unhelpful. Moreover, while children see benefits in practicing pro-environmental behavior, they discussed their feelings of being manipulated or forced into practicing these behaviors as an unsuccessful strategy.

Parents who have jobs in the environmental sciences or climate sciences often have more information on the current and future impacts of global climate change. Because of this wealth of knowledge, two children aged 17-years-old shared that their parents scared them about climate change. While these two children appreciated being told the truth about what effects climate change will have on the planet, they reported that their parents used this to make them "feel bad" about taking longer showers or not walking to school. These children also reported that their parents used this strategy as a tool to manipulate them into practicing pro-environmental behaviors that they do not necessarily understand. One 17-year-old said:

My parents manipulate me into not use the car by using the environment as an excuse.

Although some of the children felt their parents talked to them too much about the scientific impacts of climate change, all seven children in the study shared that their parents did not speak with them enough about their own feelings of distress about climate change. One 16-year-old girl said:

When I bring up my feelings about climate change, my mom will talk to me about it, but we do not talk about it much. I wish we talked about it more.

Children in the study felt that their parents talked more about actions that could be taken to stop climate change than they did about their feelings. For example, a young 17-year-old boy spoke of the frustration he felt when his parents told him not to dwell on his feelings of distress about climate change and to focus on becoming a climate activist instead.

c. Parent Perspectives on Successful Parenting Strategies

In this study, parents reported that some of the strategies they used to support their grieving children worked better than others. Parents in my sample explained that the most successful parenting strategy for supporting their adolescent child in every moment is through open and honest discussion and communication. All seven parents in the study admitted that they were not perfect at this but they clearly realized the power of positive and open communication. Those parents who recognized that their children were experiencing climate grief spoke about specific conversations they had with their children about these feelings. For example, one mother of a 16-year-old girl shared that she was aware of the triggers that would bring up negative emotions about climate grief in her daughter. In turn, she would make sure to have a one-on-one conversation to check in with her afterward.

Several parents explained that encouraging their children to participate in pro-environmental behaviors at home and school was extremely successful. These parents felt that action-based behaviors were the best way to support their children's feelings about climate change. One mother said:

We are a very pro-environmental family, and this has helped our kids deal with climate anxiety. I hope that this makes them more resilient.

Similarly, one father of a 16-year-old girl who suffers from depression spoke about how encouraging his daughter to participate in these activities helped with her depression symptoms and helped her create new friendships. However, it is worth noting that, as summarized above, children did not always agree that being "pushed" to engage in environmental action was helpful to them, even though their parents perceived this to be so.

d. Adolescent Perspectives on Successful Parenting Strategies

Children in this study brought up several instances of parenting strategies that they deemed most helpful. All seven children spoke on how open and trusting communication helped them with their overall wellbeing. They asserted this was the most effective way to help them cope with climate grief.

During the interviews, the children expressed that pro-environmental behaviors did make them feel like they were doing something about climate change—even though it was sometimes difficult to be pushed in this direction without receiving accompanying emotional support and without the autonomy to choose what behaviors they want to participate in as noted above.

Children identified some parenting strategies that parents did not mention. For example, from their perspective, spending time in nature was extremely important. Specifically, five of the children indicated that the most helpful way to deal with their distress was when their parents allowed them to spend time in National Parks or the outdoors. Two of the children elaborated that this made them feel connected to the environment and resulted in them feeling calmer about anything that was causing distress, including climate change. One child spoke about their experiences with their mother:

We went to six National Parks since COVID 19 started. It was amazing! It made me feel calm and safe from COVID. I hope that we keep going to them.

Another theme that emerged in the data was related to the adolescents' perspectives on the power of being involved in household or community-level decision-making concerning pro-environmental behaviors. In fact, three of the children shared stories of times that their parents gave them autonomy on leadership opportunities to create and sustain pro-environmental behaviors in their household and their community. One teen said:

I really liked when my parents listened to me. They let me pick the cleaning products that we use in the house for the laundry and bathroom. I found these lids on Amazon that you can put on top of your soda can that keeps them okay so that you are not throwing out your soda cans all the time.

These children shared that having this autonomy on top of the action of participating in pro-environmental behaviors had a lasting impact and relieved some feelings of anxiety. These children also shared that they sustained the pro-environmental behaviors if they decided to participate and not their parents.

e. Additional Coping Support: What Adolescents Wanted

Every parent in some way helped their children cope with climate grief, whether knowingly or unknowingly. All seven children in the study recognized this and acknowledged the key roles their parents played in helping them process the emotions and feelings they were experienced. Still, the young people shared several things that they needed more of in terms of coping support. In particular, two themes emerged from the data, with both building upon other successful parenting strategies.

First and foremost, the adolescents described how they wanted to be outside more with their parents. Five of the children mentioned that their parents did spend some time with them in the outdoors but not as much as they claimed they did. One of the children said:

> *My mom says she is outdoorsy to her friends, but she isn't. She likes to pretend she is, but we all need to spend more time outside. Especially her! I think she is scared of the outdoors or something.*

Three of these children said that their parents felt like they were active in the outdoors because they went on a few hikes a year in the mountains. Only one child expressed that their parents spent the time that they needed outside by taking them to National Parks during school breaks over the last five years.

Second, adolescents underscored during the interviews that they wished they could be more connected to community organizations that support children who are upset about climate change. Three of the children wanted their parents to find ways for their family to be involved in these kinds of organizations. None of the parents in the study mentioned that they were involved in these types of groups, nor did they mention this as a potential strategy.

D. Importance of the Relationship with the Natural Environment and Adolescent Coping

To explore how each participants' relationship with the natural environment was related to adolescent coping and parenting strategies, I applied the NR-Scale. While my sample size was not large enough to identify trends, I was able to see some patterns worthy of further exploration.

Table 5 (adults) and Table 6 (adolescents) show the participants' responses to the 21-question NR-Scale. I used the same scoring methods as the creators of the scale, Nisbet,

Zelenski, and Murphy (2009:715). To compile this data, first, I recorded the raw number given by the adult parent and adolescent child participants into columns highlighted in gray. I then used the Nisbet, Zelenski, and Murphy (2009:715) scoring methods that included reversing scored items 2, 3, 10, 11, 13, 14, 15, 18 and inserted this new data into the columns after the column highlighted in gray. I also reversed these same numbers for each of the three NR-Scale factor items as well that follow.

Table 5. Parent Nature Relatedness Scale Data

Participant ID	1	1	1	1	1	3	3	3	3	3	5	5	5	5	5	7	7	7	7	7	9	9	9	9	9	11	11	11	11	11	13	13	13	13	13
Q1I enjoy being outdoors, even in unpleasant weather	5	5			5	5	5			5	3	3			3	5	5			5	2	2			2	5	5			5	5	5			5
Q2 Some species are just meant to die out or become extinct	1	5		5		3	3		3		3	3		3		2	4		4		1	5		5		4	2		2		2	4		4	
Q3 Humans have the right to use natural resources any way they want	1	5		5		1	5		5		1	5		5		1	5		5		1	5		5		1	5		5		1	5		5	
Q4 My ideal vacation spot would be a remote, wilderness area.	5	5			5	5	5			5	4	4			4	5	5			5	2	2			2	3	3			3	5	5			5
Q5 I always think about how my actions affect the environment	3	3	3			4	4	4			4	4	4			5	5	5			5	5	5			4	4	4			4	4	4		
Q6 I enjoy digging in the earth and getting dirt on my hands	5	5			5	5	5			5	4	4			4	4	4			4	4	4			4	5	5			5	5	5			5
Q7 My connection to nature and the environment is a part of my spirituality.	5	5	5			5	5	5			5	5	5			5	5	5			3	3	3			5	5	5			4	4	4		
Q8 I am very aware of environmental issues.	3	3	3			4	4	4			4	4	4			5	5	5			4	4	4			5	5	5			5	5	5		
Q9 I take notice of wildlife wherever I am.	5	5			5	5	5			5	4	4			4	5	5			5	5	5			5	4	4			4	5	5			5
Q10 I don't often go out in nature.	1	5			5	1	5			5	2	4			4	1	5			5	2	4			4	1	5			5	1	5			5
Q11 Nothing I do will change problems in other places on the planet.	2	4		4		1	5		5		1	5		5		2	4		4		1	5		5		1	5		5		2	4		4	
Q12 I am not separate from nature, but a part of nature	5	5	5			5	5	5			5	5	5			5	5	5			5	5	5			5	5	5			5	5	5		
Q13 The thought of being deep in the woods, away from civilization, is frightening	1	5			5	1	5			5	1	5			5	2	4			4	3	3			3	1	1			1	1	1			1
Q14 My feelings about nature do not affect how I live my life.	1	5	5			5	1	1			2	4	4			1	5	5			1	5	5			1	5	5			1	5	5		
Q15 Animals, birds and plants should have fewer rights than humans	1	5		5		1	5		5		1	5		5		1	5		5		1	5		5		1	5		5		1	5		5	
Q16 Even in the middle of the city, I notice nature around me.	5	5	5			5	5	5			5	5	5			5	5	5			5	5	5			5	5	5			5	5	5		
Q17 My relationship to nature is an important part of who I am.	5	5	5			5	5	5			5	5	5			5	5	5			4	4	4			5	5	5			5	5	5		
Q18 Conservation is unnecessary because nature is strong enough to recover from any human impact.	1	5		5		1	5		5		1	5		5		1	5		5		1	5		5		2	4		4		1	5		5	
Q19 The state of non-human species is an indicator of the future for humans.	5	5		5		5	5		5		4	4		4		5	5		5		5	5		5		5	5		5		5	5		5	
O20 I think a lot about the suffering of animal	5	5		5		5	5		5		3	3		3		5	5		5		5	5		5		4	4		4		5	5		5	
021 I feel very connected to all living things and the earth	4	4	4			4	4	4			5	5	5			5	5	5			4	4	4			5	5	5			5	5	5		

Table 6. Adolescent Nature Relatedness Scale Data

Participant ID	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	8	8	8	8	8	10	10	10	10	10	12	12	12	12	12	14	14	14	14	14
Q1I enjoy being outdoors, even in unpleasant weather	4	4			4	5	5			5	2	2			2	4	4			4	5	5			5	5	5			5	5	5			5
Q2 Some species are just meant to die out or become extinct	4	2		2		2	4		4		1	5		5		2	4		4		4	2		2		2	4		4		1	5		5	
Q3 Humans have the right to use natural resources any way we want	1	5		5		1	5		5		1	5		5		1	5		5		2	4		4		2	4		4		1	5		5	
Q4 My ideal vacation spot would be a remote, wilderness area.	4	4			4	5	5			5	3	3			3	3	3			3	4	4			4	3	3			3	4	4			4
Q5 I always think about how my actions affect the environment	2	2	2			3	3	3			2	2	2			2	2	2			4	4	4			4	4	4			3	3	3		
Q6 I enjoy digging in the earth and getting dirt on my hands	5	5			5	4	4			4	4	4			4	4	4			4	4	4			4	4	4			4	5	5			5
Q7 My connection to nature and the environment is a part of my spirituality.	5	5	5			4	4	4			3	3	3			4	4	4			4	4	4			5	5	5			3	3	3		
Q8 I am very aware of environmental issues.	5	5	5			4	4	4			3	3	3			5	5	5			5	5	5			4	4	4			5	5	4		
Q9 I take notice of wildlife wherever I am.	4	4			4	5	5			5	2	2			2	5	5			5	4	4			4	3	3			3	2	2			2
Q10 I don't often go out in nature.	1	5			5	1	5			5	5	1			1	2	4			4	2	4			4	1	5			5	3	3			3
Q11 Nothing I do will change problems in other places on the planet.	1	5		5		3	3		3		2	4		4		4	2		2		2	4		4		1	5		5		2	4		4	
Q12 I am not separate from nature, but a part of nature	5	5	5			2	2	2			4	4	4			5	5	5			3	3	3			4	4	4			5	5	4		
Q13 The thought of being deep in the woods, away from civilization, is frightening	2	4			4	1	5			5	2	4			4	4	2			2	2	4			4	2	4			4	4	4			4
Q14 My feelings about nature do not affect how I live my life.	2	4	4			1	5	5			3	3	3			2	4	4			1	5	5			3	3	3			2	2	2		
Q15 Animals, birds and plants should have fewer rights than humans	2	4		4		2	4		4		2	4		4		1	5		5		2	4		4		2	4		4		1	5		5	
Q16 Even in the middle of the city, I notice nature around me.	2	2	2			4	4	4			2	2	2			5	5	5			5	5	5			5	5	5			4	4	4		
Q17 My relationship to nature is an important part of who I am.	5	5	5			5	5	5			3	3	3			3	3	3			4	4	4			5	5	5			4	4	4		
Q18 Conservation is unnecessary because nature is strong enough to recover from any human impact.	1	5		5		1	5		5		2	4		4		1	5		5		1	5		5		1	5		5		2	4		4	
Q19 The state of non-human species is an indicator of the future for humans.	5	5		5		4	4		4		3	3		3		5	5		5		4	4		4		3	3		3		4	4		4	
O20 I think a lot about the suffering of animal	4	4		4		4	4		4		4	4		4		4	4		4		5	5		5		4	4		4		5	5		5	
021 I feel very connected to all living things and the earth	4	4	4			4	4	4			2	2	2			3	3	3			5	5	5			4	4	4			4	4	4		

After completing data input of the scored numbered responses, I calculated the overall NR-Scale score by averaging all 21 items (after reverse scoring appropriate items). Similarly, I also calculated the three NR dimensions by averaging appropriate items after reverse scoring. Table 7 shows the averages recorded for the NR-overall score, NR-Self item score NR-Perspective score, and NR-Experience score corresponding to the participant's unique number. Thousands of people have completed this scale over the past decade and responses can range from 1 to 5. Most people score an average of about 3 to 4. People who spend a lot of time outdoors, who learn about plants and animals, or who work in outdoor education tend to score closer to 5, whereas people who do not enjoy these things tend to score closer to 1. Being mindful of the nature around us, spending time in nature, and protecting the natural environment are all activities that may, over time, help us to develop nature-relatedness.

Table 7. Parent and Adolescent Nature Relatedness (NR) Scale Outcome Measures

Participant ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total Parent Avg	Total Child Avg	Total Sample Avg
NR overall score	4.7	4.2	4.6	4.2	4.3	3.2	4.8	4	4.3	4.2	4.4	4.25	4.6	4	4.5	4	4.3
NR-self items score	4.4	4	4.4	3.9	4.6	2.8	5	3.9	4.4	4.4	4.9	4.3	4.8	3.5	4.6	3.8	4.2
NR-perspective items score	4.9	4.3	4.7	4.1	4.3	4.1	4.7	4.3	5	4	4.3	4.1	4.7	4.6	4.6	4.2	4.4
NR-experience items score.	5	4.3	5	4.8	4	2.6	4.7	3.7	3.3	4.2	3.8	4	4.3	3.8	4.3	3.9	4.1

First, as shown in Table 7, which lists the NR-Scale overall score for the entire sample of parents and their children, the sample average is 4.3. According to the data shown in Table 7, the

average NR-Scale score for adolescents was 4, and their parents are 4.5. This is relevant because according to Nisbet et al., higher NR-overall scores (>3) show that a person is more connected to the natural environment and depends on it for their wellbeing. While the scores fall within the average that most people score there is a difference in the sample of how children feel connected to the environment and how their parents do.

In addition to comparing the averages for the parents and their children, two other items stood out, but of course, should be interpreted with caution given my extremely small sample size. The first is that the child with the lowest NR-overall score also reported being on medications for their anxiety and depression. Participant 6 is the youngest adolescent interviewed in the study and had the lowest NR-overall score of 3.2. This participant's NR-overall score is 1 point lower than the sample average. Participant 6 was the only child in the study that reported being on pharmaceutical drugs to help them cope with distress. I recognize this is only one child, but it was interesting to ponder the relationship between the mental health of this participant and their NR-overall score or their connection to the environment.

The second item that stood out in my review of the NR-Scale data in relation to the qualitative data is that child, participant 8, who had a parent, participant 7, who worked as a climate scientist, had the most significant difference in scoring with their parents. Specifically, the child had a lower NR-overall score and lower NR-self score than their parent. This stood out because, with the exception of participant 6, the other children who had a parent who worked in other non-climate related sectors had NR-overall and NR-Self scores that were similar to their parents. Yet, in this case, participant 7 has the highest NR-overall score of 4.8. However, her son, participant 8, had one of the two lowest NR-overall scores and is .8 less than his mothers'

NR-overall score. When comparing the survey data to the interview data, it was notable because, during their interview, the child said:

> *I wish that we could spend more time outdoors as a family but my parents are too busy because of COVID.*

The NR-self scores also varied between participant 7 and participant 8. The parent scored a 5, the highest in the sample, while her son scored a 3.9. While I was not able to test for statistical significance of this finding, it is worth further exploration to see how differing relationships to nature shape the ability to process climate grief.

V. CONCLUSION

This thesis was designed to explore the concept of climate grief and the strategies that parents use to support their children who are experiencing emotional distress associated with climate change. My goal was to understand which strategies were most effective from the perspectives of parents and their children. Finally, I wanted to examine how relatedness with nature shaped parenting strategies and the adolescent's response.

To conduct this thesis, I interviewed seven parents and seven adolescents. I used an open-ended interview guide to explore questions about the parent's perception of the nature of climate grief, and what strategies they used to support their children who have experienced climate-related emotional distress. In the adolescent interviews, I asked open-ended questions about how children felt about the support received and their notions of climate grief. I followed the adult and adolescent interviews with the administration of an NR-Scale that assesses the affective, cognitive, and experiential aspects of a personal connection to nature.

My qualitative analyses revealed four major themes. First, there is no single key term that is used by children and their parents to explain distress in relation to a changing climate. Instead, they expressed themselves by using overlapping 'feeling words' such as sad, worried, and anxious. Second, parents used a range of strategies to try to support their children, although the children and the adults both deemed some more successful and some unsuccessful. Third, I found that some parents were unaware of the depth of emotional distress that their children are feeling in relation to climate change. Fourth, children in this study reported needing more actionable support regarding their feelings of distress, including more time in nature and more space to express their feelings. In terms of the quantitative analyses where I summarized the NR-Scale scores, I found that all of the participants feel within the average range of nature relatedness although some outliers exist. For instance, one participant who self-reported being on medication had the lowest overall NR-Scale rankings and the parent with the highest NR-Scale ranking was raising a child with one of the lowest overall NR-Scale rankings.

Climate change is an environmental *and* social issue that is caused and experienced by people and influenced by institutional practices. The data presented in this thesis underscores the power and limits of the term *climate grief,* first introduced by Wilcox et al. (2012), which asserts that the framework of grief and mourning will be ethically and politically productive. Specifically, their research argued that an increasing number of people in both the Northern and Southern Hemispheres were experiencing what they suggest is best captured by grief. Yet this foundational work does not consider the limitations of this term. While grief is an emotion that is varied in its meanings, it is also something that has evolved as a social construct. When an emotion or term is socially shaped, it can become unrelatable to certain social groups. In fact, this study's participants used many other words beyond grief, what I refer to as 'feelings words,'

that describe their emotional experiences related to climate change. In terms of parenting strategies, my findings support Ojala's (2012) study that focuses on successful parenting strategies that parents use to help support their adolescents who experience emotional distress from climate change. I discovered that parents and adolescents both found similar parenting strategies to be most effective that echo four of Ojala's five-item strategies for supporting adolescents. The most relevant strategies identified by Ojala include acknowledging the adolescent's feelings, helping the adolescent develop trust in different societal actors and in their own self-confidence, and helping the adolescent identify pathways towards a solution that addresses the problems of climate change.

However, when parents were unaware that their child was experiencing emotional distress, these strategies were not used, and the focal adolescent was left feeling unsupported. I also discovered that Ojala's (2012) fifth strategy, which encourages parents to provide their children with positive reappraisal, was a point of disagreement between parents and their children on how this strategy should be approached. According to my data, some parents would use "scare tactics" to encourage their children to participate in pro-environmental behaviors instead of helping them create their own positive and helpful self-talk about climate change and ways to prevent it.

Adolescents in this study also expressed support needs that extended beyond Ojala's (2012) recommended strategies and what their parents often described. Some children shared that their feelings of distress were diminished when they were able to spend more time outdoors with their family, but they emphasized that their parents did not prioritize this as a strategy. Some of the children also discussed the need to be more involved with community organizations

that allow young people to have more autonomy over their pro-environmental practices, but that their parents did not encourage this.

As with any work, there are limitations in the study design and implementation. First, my sample was limited to two geographic locations, with all of my participants living in California or Colorado. In future research, samples should be drawn from a range of regions across the United States. Moreover, future research could include participants from an international sample to understand how country-specific norms impact parenting strategies and the impacts of climate change on mental health.

Second, this sample was limited in terms of its small size, with only seven parents and seven adolescent children included. Future qualitative research should drawn on larger, more purposive samples to maximize variability, while quantitative research should include random representative samples to ensure generalizability to racially and ethnically diverse populations.

Third, this research only focused on adolescents between the ages of 12-17 and their parents. I found there was variability even in this relatively limited age range, although given the limited sample size, I was not able to fully explore trends or patterns related to child age. Future research should therefore include a broader age range of children who can participate. This change in inclusion criteria will provide a more in-depth understanding of what strategies parents are using for children of different ages and how children of varying ages respond.

Fourth, I used convenience and snowball sampling for this study, which led to various recruitment issues. For example, not every parent understood that they key term *climate grief* could apply to their children. In future studies, it would be helpful to offer an expanded

definition of *climate grief,* using more of the feeling words identified in this study in recruitment materials.

It is my hope that this thesis and future work will highlight the importance of evidence-based parenting strategies that help support children's mental health. As the effects of climate change continue to accelerate, this work feels urgent. This thesis reveals the difficulty and complexity of parenting during times of climate change extremes and what is working and not working. It shows gaps between what parent's think are effective strategies in parenting and what their children deem is effective. Perhaps even more importantly, this work has strived to give a voice to parents who have children who are emotionally distressed about climate change as well as to the children who are living through a time of mounting global change. As we enter this age of extremes and all its attendant effects, it is our societal obligation to support future generations to ensure they can thrive in an ever more uncertain future.

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VII. APPENDICES

Appendix A: Project Timeline

2020

April:

- 4/4/20 First Advisor Meeting
- Topic Selection
- Faculty and Student Working Contract Signing

May-September

- 5/6/2020 Faculty and Student Working Contract Signing
- Research of Topic for Duration of the Summer
- Interviewing of authors and journalist who have written on climate grief.
- 8/24/2020 Began Fall Honors Cohort Class
- Began Writing IRB

October

- 10/09/20 Submitted Prospectus to Honors Program Office
- Wrote Thesis Introduction
- Began Literature Review
- 10/05/2020 Submitted IRB

November

- 11/16/2021 Received IRB Review
    - 11/17/2021 Resubmitted IRB
- 11/29/2021 Submitted First Draft of Literature Review

December

- 12/30/2020 Received IRB Edits

2021

January:

- 1/12/2021 Resubmitted IRB Review
- 1/14/2021 Received Literature Review Edits
- 1/25/2021 IRB Approval
- 1/26/2021 Began Participant Recruitment
- 1/26/2021 Began Participant Interviews
- Drafted Methods Section

February:

- 2/9/2021 Submitted Literature Review to Advisor
- Continued Participant Interviews and Recruiting
- 2/20/2021 Submitted Audio Files for Transcribing
- 2/20/2021 Submitted First Draft of Methods to Honors Advisor
- 2/22/2021 Created Appendices
- 2/26/2021 Resubmitted Edited Drafts of Methods to Honors Advisor

March:

- Continued Interviews
- Began Analysis
- 3/2/2021 Submitted Audio Files for Transcribing
- 3/20/2021 Submitted First Section of Analysis to Honors Advisor
- 3/20/2021 Received All Transcribed Audio
- 3/22/2021 Submitted Second Section of Analysis with First Section Edits to Honors Advisor
- 3/23/2021 Submitted Third Section of Analysis with Second Section Edits to Honors Advisor
- 3/24/2021 Submitted Fourth Section of Analysis with Third Section Edits to Honors Advisor
- 3/26/2021 Submitted Drafted Conclusion with Fourth Section of the Analysis to Honors Advisor
- 3/26/2021 Drafted Table of Contents
- 3/27/2021 Drafted Abstract
- 3/27/2021 Began Creating Defense Slides

April:

- 4/2/2021 Defended Thesis to Committee

Appendix B: Recruitment Materials

A. Recruitment Email

Recruitment email.

Hello!!: My name is Taylor Hirschberg, and I am an Sociology Honors Student at the University of Colorado Boulder. I am writing to invite you to participate in my research study about strategies parents use for supporting adolescents who experience climate grief.

Who is eligible? Parents and other caregivers of adolescents ages 12 to 17 who are experiencing feelings of distress over climate change. Adolescents 12 to 17.

What is the expectation? I would like to interview you via audio/video Zoom and your adolescent child. The first interview would be with you and will take approximately **45-60 minutes. The second interview with your adolescent child will take 30-45 minutes. Both interviews will include an open-ended interview for you and your adolescent, after which I will ask you to complete a 21-question survey.**

If there is more than one adolescent child experiencing climate distress in your household, they are invited to participate in the study as well. If there is more than one caregiver in the household, they, too are encouraged to participate if interested.

Participation is completely voluntary. You can choose to be in the study or not. If you'd like to participate or have any questions about the study, please email me at Taylor.Hirschberg@colorado.edu.

Thank you for your time and consideration.

Sincerely,

Taylor Hirschberg

Department of Sociology, University of Colorado Boulder (BA expected, May 2021)

B. Social Media Recruitment Post

This is a call for research participants in a study focused on helping children cope with climate change.

What is the study about? I am recruiting parents and other caregivers who can share strategies for supporting adolescents who are experiencing feelings of distress over climate change.

Who is eligible? Parents and other caregivers of adolescents ages 12 to 17 who have expressed climate grief or other forms of sadness related to a changing climate. Adolescents 12 to 17.

Who is conducting the study? My name is Taylor Hirschberg, and I am an Sociology Honors Student at the University of Colorado Boulder. This research is for my honors thesis.

Need more information? Please contact me at Taylor.Hirschberg@colorado.edu.

Appendix C: Adolescent and Caregiver Consent and Assent Form

Title of research study: **Strategies Caregivers Use for Supporting Adolescents Who Experience Climate Grief**

IRB Protocol Number: 20-0450

Investigator: **Taylor Hirschberg**

Purpose of the Study

The purpose of the study is to understand how caregivers support their adolescent children who experience climate distress/ grief. I am here to learn what strategies you use to help your child or children. Given the significance of climate change, it is essential to understand what this means for caregivers and their adolescent children. I am eager to document your experiences and any lessons learned to help other caregivers and adolescent children cope with climate distress/grief. We expect that you will be in this research study until April 12, 2021

We expect about 50 people will be in this research study. I expect about 25 caregivers and 25 adolescent children to participate in this research study.

Explanation of Procedures

I have a series of questions that I would like to ask you. The interview should take about 45-60 minutes to complete. After completing this open-ended interview, I will ask you to take a 21-question closed-ended survey.

The interview will be more like an open-ended conversation with you that will allow you to tell me freely about how you feel and what methods you use to help support your adolescent. After the conclusion of the open-ended interview, I will administer a 21-item questionnaire called the Nature Relatedness Scale

Upon completing the interview, I will ask to speak to your adolescent(s) who have experienced climate distress/grief. If you consent, I will ask your child to do an open-ended interview that asks about the support they have received while experiencing climate distress/grief. I will also be administering the same 21-item questionnaire called the Nature Relatedness Scale. An interview would be conducted with you first, then with your child, at an agreeable time. I anticipate that the interview with your child should take around 30-45 minutes.

Due to COVID-19 precautions, we will be doing the interview and survey via Zoom. You have the option of having your camera on or off during our interview, but I will have my camera on so that you can see me. Upon commencing the survey, I will be sharing my screen to see it, thus enabling you to refer to the questions to answer better.

Voluntary Participation and Withdrawal

Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

Risks and Discomforts

It is impossible to identify all potential risks in research procedures, but I have taken reasonable safeguards to minimize any known and potential but unknown risks. Sometimes when people talk about moments of distress, they can become upset. If that should happen during the interview, you can choose not to answer the question or to end the interview at any time.

If you have a medical emergency, call 911. If you have medical complaints, contact the Clinical and Translational Research Center (CTRC) at (303) 735-2304. After hours, call (303) 206-6339 (physician pager).

Potential Benefits

We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits may include many interviewees who express that they appreciate having a chance to tell their stories. Also, the results from this research are designed to help children and caregivers cope with climate distress grief.

Alternatives

This research is not designed to diagnose, treat, or prevent any disease. Your alternative is not to take part in the research.

Confidentiality

Information obtained about you for this study will be kept confidential to the extent allowed by law. Research information that identifies you may be shared with the University of Colorado Boulder Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including people on behalf of the Office for Human Research Protections. The information from this research may be published for scientific purposes; however, your identity will not be given out.

Questions

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at Taylor Hirschberg at Taylor.Hirschberg@colrado.edu or Dr. Lori Peek at Lori.Peek@Colorado.edu.

This research has been reviewed and approved by an IRB. You may talk to them at (303) 735-3702 or irbadmin@colorado.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

Signatures

Your signature documents your permission to take part in this research.

Signature of subject	Date
Printed name of subject	
Signature of person obtaining consent	Date
Printed name of person obtaining consent	

Your signature documents your permission for the named child to take part in this research.

Printed name of child

Signature of parent or individual legally authorized to consent to the child's general medical care	Date
Printed name of parent or individual legally authorized to consent to the child's general medical care	❑ Parent ❑ Individual legally authorized to consent to the child's general medical care (See note below)

Note: Investigators are to ensure that individuals who are not parents can demonstrate their legal authority to consent to the child's general medical care. Contact legal counsel if any questions arise.

Signature of parent	Date
Printed name of parent	

If signature of second parent not obtained, indicate why: (select one)

☒ The IRB determined that the permission of one parent is sufficient.
- ❑ Second parent is deceased
- ❑ Second parent is unknown
- ❑ Second parent is incompetent
- ❑ Second parent is not reasonably available
- ❑ Only one parent has legal responsibility for the care and custody of the child

Signature of person obtaining consent and assent | Date

Printed name of person obtaining consent

Assen

- ❑ Obtained
- ❑ Not obtained because the capability of the child is so limited that the child cannot reasonably be consulted.

Appendix D: Adult Interview Guide

Supporting Adolescent Children Who Experience Climate Grief

Parent, Guardian, or Other Primary Caregiver Interview Guide

[Note: Email interviewee the informed consent form and contact information before commencing the interview.]

Thank you for meeting with me today. My name is Taylor Hirschberg, and I am a Sociology Honors student from the University of Colorado Boulder. I am conducting a research study focused on how caregivers support their adolescent children who are experiencing climate grief. I am eager to learn from you and to document any lessons in order to help other caregivers and adolescent children cope with climate grief.

I have a series of questions that I would like to ask you. The interview should take about 45-60 minutes to complete. After we have completed this open-ended interview, I will ask for you to take a 21- question closed-ended survey.

Is it okay if I record the interview?

[Confirm that the respondent is willing to be recorded as part of the informed consent process. Start the Zoom recording.]

Do you have any questions about the interview or the project before we begin?

Interview Guide

First, I need to ask you a few questions to make sure you and your adolescent qualify for the study:

1. Do you and your adolescent child speak English?
2. Are you age 30 or over?
3. Is your adolescent child between the ages of 12-17?
4. Is your adolescent child experiencing climate grief?

If no: Thank you so much for answering these questions and for your time today but you do not qualify for this study. Have a wonderful day.

If yes: Thank you so much for answering these questions and for your time. You do qualify for this study. Is it ok to proceed with the next steps of the interview?

Next, I'm going to ask you some quick demographic questions:

1. Where do you live - city and state?
2. When is your birthday - month, day, and year born?

3. What is your race/ethnicity?
4. What is your employment status and what do you do for a living?
5. What is your highest level of education completed?
6. What is your marital status?
7. How many children do you have and what are their ages?
8. And finally, if you are comfortable in answering this question, what is your average annual household income?

Okay, thank you so much! Now I'm going to turn to a series of open-ended questions. You can say as much or as little as you like, and I will just listen until we are ready to move to the next question.

9. What does the concept of "climate grief" or "climate anxiety" mean to you?
10. This study is about your child experiencing climate grief, but I want to ask you, first, have you had feelings of climate anxiety/grief?
    a. If so, what induced those feelings?
    b. How would you describe your personal experience of climate grief? What do you do to make yourself feel better if you are experiencing climate anxiety or climate grief?
11. Tell me about when you first noticed that your child was first experiencing climate grief/anxiety? Possible probes follow, if this doesn't come out in the story:
    a. How old were they?
    b. Did you notice the child was behaving differently? Or did the child come to you because of what they were experiencing?
    c. If the person has other children, ask if their other children have experienced climate grief.
12. How did it make you feel when you learned that your adolescent was experiencing climate grief?
13. What strategies have you used to support your adolescent that was experiencing climate grief/anxiety? How have those strategies changed over time?
14. Tell me about a time when you think that the strategy you used to help your adolescent who was experiencing climate grief was successful or especially helpful? Have you tried a strategy that did not work or that was clearly unsuccessful?
15. What advice do you have for other parents / caregivers who have children who are going through this?
16. Are there any interventions that you would recommend? For the home, school, or in communities, for instance, that you think would help with addressing climate grief?
17. Is there anything else that you want to share or say?
18. Are there other parents in your network who you might recommend that I reach out to for this study?

After the conclusion of the interview section: *Thank you for allowing me to interview you. I am so grateful to have had the opportunity to learn from you and look forward to interviewing your child.*

Survey

As the final step in this interview process, I'm going to share a 21-question survey on the relationship that you have with self in the natural environment. I will be sharing my screen so that you can see the survey. (If over the phone I will read the directions before and after each question after I have read it)

"Is it okay if I am able to continue to record while I administer the survey?"

Thank you for taking the time to complete this survey. It will be equally important to the research that is being done today.

Child Participation

Finally, as I mentioned in the earlier email, I am hoping to also speak to your adolescent child as well for this research. If you grant consent, then I would ask your child to complete an interview and this same brief survey. That interview would take approximately 30-45 minutes. This interview will be done separately from you but if you want to be present you are more than welcome to be as well. Your child's participation is completely voluntary. You can choose for them to be in the study or not.

If no: "Okay thank you for your time today and have a wonderful day."

If yes: "Okay, thank you. May we proceed with the interview with your adolescent child now? Or I can send a follow-up link to schedule at a time that is convenient for your family.

If you have any other questions, please let me know. I can be reached at Taylor.Hirschberg@colorado.edu.

Appendix E: Adolescent Interview Guide

Supporting Adolescent Children Who Experience Climate Grief

Adolescent Interview Guide

[Note: Email interviewee the informed consent form and contact information before commencing the interview.]

Thank you for meeting with me today. My name is Taylor Hirschberg. I am a Sociology Honors student from the University of Colorado Boulder. I am conducting a research study focused on how caregivers support their adolescent children who are experiencing moments of climate grief.

I interviewed your parent(s) for this study. Now I am eager to learn from you about how your caregiver supports you when you experience climate grief. This study is designed to help caregivers and adolescent children elsewhere who are coping with climate grief.

I have some questions that I would like to ask you. This should take about 30 to 45 minutes, depending on how much you would like to share. There are also no wrong or right answers and everything that you say will be kept private. You do not have to answer any questions you are not comfortable answering.

[Confirm that the child is willing to be recorded as part of the informed consent process. Start the Zoom recording.]

Do you have any questions about the interview or the project before we begin?

Interview Guide

1. First I am going to ask you two questions to make sure that you qualify for the study. Are you between the ages of 12-17?
2. Is one of your caregivers participating in this study?

Next, I am going to ask you a few demographic questions so I can know more about you.

1. Where do you live (city/state)?
2. When is your birthday - month, day, and year?
3. What ethnicity/race do you identify as?
4. What grade are you in school?
5. How many people are in your family (parents, siblings, etc.)?

Now I'm going to ask you some open-ended questions. You can say as much or as little as you like, and I will just listen.

1. As you know, I reached out to you and your caregiver for this project because of its focus on climate grief and anxiety. What does "climate grief" or "climate anxiety" mean to you?
2. When did you first experience climate grief/anxiety?
    a. What was that like?
    b. How has this feeling changed over time?

3. How did your parents first respond when you first began experiencing climate grief/anxiety?
    a. Have their responses changed over time as you have grown?
4. Now I would like to ask about what has been helpful or not helpful in terms of those responses, especially so I can learn to help other parents and kids.
    a. Can you tell me about a specific strategy that your caregiver used that was effective or especially helpful? b. What about an approach that was not effective or not helpful when you were experiencing climate grief?
5. Is your parent or caregiver your primary source of support when it comes to climate grief, or is there someone or something else that you turn to?
a. If necessary, ask about siblings, friends, teachers, coaches, or others who they may turn to.
6. What advice would you give another young person who is facing what you have felt? And what advice would you give to adults who are caring for children who are experiencing climate grief?
7. Anything else you want to add or share with me?

Thank you for allowing me to ask you these questions, and for your thoughtful responses. Please know that I will be writing my honors thesis over coming months, and I so appreciate your contribution.

Survey

Now, as the final part of this interview, I am going to administer a 21-question survey on the relationship that you have with the self in the natural environment. I will be sharing my screen, with your permission, so that you can see the survey. (If over the phone I will read the directions before and after each question after I have read it.)

Is it okay if I continue to record while I administer the survey? If not, I can mark down your responses on this sheet of paper.

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 (as shown below if conducted on Zoom).

1-Disagrees strongly.
2-Disagrees a little.
3-Neither agree nor disagree.
4-Agree a little.
5-Strongly agree.

Please respond as you really feel, rather than how you think "most people" feel. Respond if you feel comfortable.

Thank you again for everything that you have done for me today. I know that your help today will be very useful for the research that I am doing.

Do you have any other questions or any final thoughts you want to share? If anything comes up ask your parents to get in touch with me so that I can answer any further questions?

Appendix F: Nature Relatedness Scale

Nature Relatedness Scale

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think "most people" feel.

1 Disagree strongly	2 Disagree a little	3 Neither Agree or disagree	4 `Agree a little	5 Agree strongly

1. I enjoy being outdoors, even in unpleasant weather. ____
2. Some species are just meant to die out or become extinct. ____
3. Humans have the right to use natural resources any way we want. ____
4. My ideal vacation spot would be a remote, wilderness area. ____
5. I always think about how my actions affect the environment. ____
6. I enjoy digging in the earth and getting dirt on my hands. ____
7. My connection to nature and the environment is a part of my spirituality. ____
8. I am very aware of environmental issues. ____
9. I take notice of wildlife wherever I am. ____
10. I don't often go out in nature. ____
11. Nothing I do will change problems in other places on the planet. ____
12. I am not separate from nature, but a part of nature. ____
13. The thought of being deep in the woods, away from civilization, is frightening. ____
14. My feelings about nature do not affect how I live my life. ____
15. Animals, birds and plants should have fewer rights than humans. ____
16. Even in the middle of the city, I notice nature around me. ____
17. My relationship to nature is an important part of who I am. ____
18. Conservation is unnecessary because nature is strong enough to recover from any human impact. ____
19. The state of non-human species is an indicator of the future for humans. ____
20. I think a lot about the suffering of animals. ____
21. I feel very connected to all living things and the earth. ____