PARENTAL DECISION MAKING IN THE FACE OF CLIMATE CHANGE

Parental Decision-Making in the Face of Climate Change

by

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Parental Decision-Making in the Face of Climate Change

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Declaration of Originality

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my committee.

I understand that my thesis may be made electronically available to the public.

Abstract

This thesis titled "Parental Decision-Making in the Face of Climate Change" explores the impacts of climate change on individuals considering parenthood and the complexities involved in navigating becoming a parent during the current climate crisis. The thesis includes a comprehensive literature review, methodology, and findings, focusing on how climate change affects mental health, the social interactions involved, and decision-making regarding parenthood. The literature review identifies solastalgia, ecological grief, and ecological anxiety as concepts used to understand and describe the environmental change and degradation caused by climate change on mental health. The research involves a qualitative study; a social constructivist research framework has been applied to understand the participants' perspectives on climate change and parental decision-making. Through purposive sampling, twenty participants were recruited; nineteen identified as women, and one identified as unsure (for the purpose of this project, I was interested in speaking to women and non-binary individuals who identify as gestational parents). Participants were located across Ontario and semi-structured synchronous or asynchronous interviews were conducted via Zoom or email. Thematic analysis of the data was carried out, resulting in five themes and eleven subthemes. Five themes were identified: the complexity of climate change and emotions, navigating stress, anxiety and (ir)responsibility, social interactions shaped by climate change – going beyond the individual, reproductive considerations outside of climate change, and climate change information to support decision making. As discussed in the media and existing literature, this research finds that participants are considering climate change when making reproductive decisions, to varying degrees. Participants in this project emphasized the complexities of decision-making around climate change and parenthood highlighting the need for additional research on the topic. This

study also suggests the need for more examination of the impact of climate change on emotional well-being, how climate change is impacting the world population differently (using an intersectional approach) and the potential role that healthcare providers can fulfill in patients' lives in navigating parental decision-making on the face of climate change.

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Chapter 1: Introduction

Background

The Lancet Commission on Health and Climate Change wrote in 2018 that "climate change is the biggest global health threat of the 21st century" (Watts, 2018, p. 2482). Recently, in 2022, the IPCC (2022) noted that climate change is harming the lives of billions of people worldwide and disrupting nature in myriad harmful ways, including loss of life, biodiversity and infrastructure. Climate change drastically impacts Canadians, particularly vulnerable populations, rural populations and those who live in the North (Government of Canada, 2018). The warming of Canada is happening at twice the rate compared to the rest of the world (Hayes et al., 2019). Climate change is a long-term shift in global and regional climate patterns, often referring to global temperatures rising since the mid-20th century (Alexandar et al., 2013). Climate change includes global warming, which can be attributed to human impacts such as the increase in greenhouse gases, such as carbon dioxide and methane (Alexandar et al., 2013). This study will explore the possible impacts of climate change on individuals considering parenthood both for those who have and those who do not have children.

Climate change dramatically impacts human health, including social relations, ecological health, and economic prospects (Gharabaghi & Anderson-Nathe, 2018). Climate change affects all areas of our daily lives (Costello et al., 2009; Galway & Field, 2023): our general health and well-being, rates and transmissions of diseases and illnesses (Woodhall-Melnik & Grogan, 2019); the availability of food and water (Berry, 2010; Diffey et al., 2022; Hayes, 2018; Ferreira, 2020; Gharabaghi & Anderson-Nathe, 2018; IPCC, 2022; Kuehn & McCormick, 2017; Lang, 2015; Sanson et al., 2019; Warsini et al., 2013), building and architectural design (Gharabaghi & Anderson-Nathe, 2018), and community planning and evacuation plans (Gharabaghi &

Anderson-Nathe, 2018). With increased global population comes increased vulnerability to the effects of climate change, such as population displacement and environmental damage (Costello et al., 2009; Houseknecht, 1987; Lang, 2015; McMichael, 2006; Park, 2005; Sanson et al., 2019; Schneider-Mayerson & Ling Long, 2020; Warsini et al., 2013; Woodhall-Melnik & Grogan, 2019). With climate change's increasing and accelerating impacts, we have also seen an increase in concern regarding the mental health effects of environmental changes (Fresque-Baxter & Armitage, 2012; Hayes et al., 2019; Rice, 2016; Shukla, 2013; Woodward, 2019).

Climate change impacts our mental health in myriad ways. We have connections and emotional attachments to where we live, the land we use, and our neighbours (Fresque-Baxter & Armitage, 2012). Disturbances in these places impact us significantly and can have long-lasting, physically and mentally damaging effects (Fresque-Baxter & Armitage, 2012). Hippocrates early noted the potential impact between emotional and mental health and climate change in the following way: "Climate affects the mood (liquids) existing in the human body" (Olszewski, 2020, p. 628). Solastalgia, ecological anxiety (eco-anxiety), and ecological grief (eco-grief) are specific concepts increasingly used to understand and describe the environmental change and degradation (including climate change) have on mental health (Albrecht et al., 2007; Albrecht, 2020; Craps, 2020; Clayton et al., 2017). Solastalgia describes the emotions people experience when environmental changes occur in a way that alters their quality of life Albrecht, 2020; Askland & Bunn, 2018; Eisenman et al., 2015; Elder, 2019; Galway et al., 2019; Kent & Vacanti Brondo, 2019; McNamara & Westoby, 2011; Padhy et al., 2015; Rose, 2020; Warsini et al., 2013). Ecological anxiety (or eco-anxiety) is the cultural response to witnessing environmental loss and catastrophe (Albrecht, 2020; Craps, 2020). Ecological grief (or eco-grief) is the psychological toll that the global climate catastrophe has on humanity, the loss of hope, and the

sense of impending disaster about the environment (Albrecht et al., 2007; Albrecht, 2020; Clayton et al., 2017; Guyatt, 2020; Hickman, 2020; Hogg et al., 2021; Panu, 2020; Pihkala, 2020). The literature review section will discuss each of these mental health impacts of climate change (Chapter 2).

Climate change is a threat to the current population's health and the health of future generations. Scientific evidence consistently and increasingly illustrates that children born today are at an increased risk of experiencing the health impacts of climate change (Cunsolo et al., 2020). The 2019 Lancet Countdown on Health and Climate Change stated that there are "potentially catastrophic health risks for a child born today if an adequate response to climate change does not occur, including increased rates of food insecurity and undernutrition, of diarrhoeal and infectious diseases, and of complications from air pollution, and increased morbidity and mortality from exposure to extreme weather events (e.g. heatwaves, flooding, wildfires and hurricanes)" (Cunsolo et al., 2020, p. 261). Canadians are increasingly aware of and affected by the current climate crisis (Bielski, 2019; Duggan, 2022; Snow, 2019; Stall-Paquet, 2020) and media coverage regarding family planning during climate change has increased over the last decade (Astor, 2018; Bailey, 2019; Feldberg, 2019; Irfan, 2019; Jenkins, 2020; Ludden, 2016; MacLeod, 2019; O'Reilly, 2019; Osaka, 2022; Paddison, 2019; Pasco Leahy, 2022; Rainey, 2019; Relman & Hickey, 2019; Savage, 2023; Scheinman, 2019; Schumer, 2022; Shead, 2021; Stopyra, 2017; Uda, 2022; Unruh, 2018; Weise, 2019; Wray, 2022d; Yang, 2018). There is, however, very little research connecting decisions and decision-making around parenthood and climate change (Blackstone & Stewart, 2012; Bodin et al., 2019; Carmichael & Whittaker, 2007; Kock & Prost, 2017; Morgan & King, 2001; Testa et al., 2014).

In a study in the United States regarding parenthood and climate change (participants aged 27 to 45 years of age), 11% of the participants cited worry about climate change as one of the concerns around parenthood, and 14.3% stated that it was a significant reason for not having children (Schneider-Mayerson & Ling Long, 2020). In a more recent Canadian survey (participants aged 16 to 25 years) by Galway & Field (2023), 39% of participants say that climate change is leading to hesitation about having children. Factors discussed in the existing literature speak to parental decisions in relation to climate change tangentially, including carbon footprint and emissions (Bongaarts & O'Neill, 2018; Guillebaud, 2012; Guillebaud, 2016; Nordstron et al., 2019; Schneider-Mayerson & Ling Long, 2020). Carbon footprint refers to the amount of carbon typically measured in tons, that is emitted during a process, by an organization or individual (Wiedmann, 2008), global warming (Brown & Chor, 2017), and the health of future generations (Ekholm & Olofsson, 2017) such as respiratory problems and other physical ailments (Cerutti, 2010; Cripps, 2017). Schneider-Mayerson & Ling Long (2020) noted these factors in their article and reported other reasons for not having children, including employment opportunities, familial attitudes, and financial considerations. The results of this study indicate that climate change is amongst a set of factors that influence reproductive decisions and decision-making. People of childbearing age are experiencing a range of emotional and mental health consequences due to their concern for climate change, including being concerned over the lack of action being done by policymakers (Galway, 2019; O'Reilly, 2019; Relman & Hickey, 2019; Scheinman, 2019; Young, 2019). While media coverage related to climate change and parental decisions is growing, there is (as noted in Chapter 2) a lack of published articles about climate change and parental decisions.

Purpose of the Study

This research project aims to understand the experiences of women and non-binary gestational parents in Ontario concerning parenthood during climate change. It is one leg of a two-legged project. One leg – this one – focusing on female and non-binary people who identify as potential or actual gestational parents, and the other focusing on male and non-binary people who self-identify as non-gestational parents. For this project, the term parenthood includes becoming a parent, to be a parent, to bear a child, or to become a gestational parent.

As discussed in Darwin & Greenfield (2022) participants are frequently referred to either men or women, or gender neutral terms such as new parents or expectant parents in reproductive research. Gender-additive language such as 'mothers and other birthing people' is rarely used (Darwin & Greenfield, 2022). This language may reinforce assumptions of heteronormative relationships as we continue to position the family as having one gestational parent and one no-gestational parent (Darwin & Greenfield, 2022). Adoptive parents are excluded when the term gestational parent is used as inclusion criteria (Darwin & Greenfield, 2022). However, as this is part of a two-legged project with the other dimension focusing on male and non-binary individuals, the term gestational parent was used to help differentiate which study group the participants identify themselves into. Upon reflection this might have been better if avoided.

This project is important to me as I am interested in the discussions and dynamics surrounding parenthood during the current climate crisis. I decided from a young age that I would not have children, but would have a child in the home with the right partner if that was important to them (but only adopt and not physically give birth to a child myself). I have known for a long time the benefits of providing a home to others in need. And now through the education I have received, I understand the environmental benefits of providing a home for

others while not contributing to the overall population of the planet, and the overall negative impact that humans are making on the planet. This project was brought to my attention by my supervisors at the beginning of my Master's education, in the winter of 2020. Dr. Helle Møller and Dr. Lindsay Galway were interested in examining parental decision-making during climate change from the perspective of prospective parents and people who were already parents across the gender continuums. I was supporting the early literature review work on this as a GA. Since I had an interest in women's sexual and reproductive health we agreed that I, under Møller and Galway's supervision would take the lead one leg of the project for my thesis- the perspective of people on the female gender continuum.

Research Question

This project responds to the following research question: "What is the experience of individuals making decisions surrounding parenthood during the current climate crisis?". My objectives with this project are threefold; first, to gain an understanding of participants' perspectives on the current climate crisis; second, to explore how climate change is impacting participants socially, emotionally, and mentally as someone who is contemplating parenthood for the first time, someone who is a parent, or someone who has chosen to not become a parent; and third, to identify perceived needs for additional knowledge and support (if any) when considering parenthood and their views on climate change-related policies impacting parenthood choices.

Significance of the Research

There is a dearth of research on climate change and parental decisions, and there is an increase in media coverage of this topic, as indicated in the literature review (found in Chapter 2 below). The growing understanding of how climate change affects human health and well-being should increase our understanding of the effects of climate change on mental health and the

efficacy of the present public health efforts and interventions. While the current research cannot define all experiences, the findings from this thesis and the overall project can add to the discussion about parenthood during climate change and its important implications. This includes a discussion of the important role that healthcare providers can fulfill when it comes to mental health and climate change, and the impact climate change is having on decisions regarding parenthood during climate change. Important to note that while there is a growing presence of climate change and parenthood both in the literature and the media, there was no research on the support services that could be provided in the context of climate change and parenthood. This will be examined further in the discussion section, including potential opportunities for future research.

Conclusion

In the following chapters, I will review relevant literature, introducing climate change, people or populations particularly vulnerable to the impact of climate change, impacts of climate change on health (including solastalgia, ecological grief and ecological anxiety), to be or to not be a parent, and finally, the growing media coverage surrounding the topic of climate change and parenthood (Chapter 2). Next, in Chapter 3 focuses on methodology and methods. Here, I situate myself as a researcher including insider and outsider in relation to the project and participants. I introduce and discuss social constructionist methodology, who the participants in the study are and the recruitment and procedures used for the project. I continue with discussion of the ethical considerations that apply to the project, how data collection occurred and finally the analytical methods used.

Chapter 2: Literature Review

Very little research has been done that speaks to all aspects of parenthood and climate change and even less bridging the gap between the discussion of mental and emotional impacts and responses in relation to decision-making around parenthood and climate change. During the initial extensive literature review (beginning fall of 2019 to fall of 2020), climate change (and similar terms) was searched, revealing knowledge of the impact of climate change on humans' physical and mental health, the changes to our ecosystems, and the impact on other species. The search began with a general Google search for climate change and parental decision-making, which informed terms to be used during the literature search using electronic databases. The literature search included the following electronic databases: GreenFile, Sociology Abstracts, PubMed, Psych Info, and OMNI Search. These databases were appropriate as the topic I am examining looks at both the social aspect of this decision and the environmental aspects of decision-making around parenthood. In each of these databases, I searched using the same terms; climate change (and like terms including global warming, greenhouse effect, environmental change, environmental impact, environmental effect, carbon footprint), parental decision (and like terms including parent, mother, father, reproduction, parental decision making, child bearing, birth, family planning), solastalgia (and like terms including eco-anxiety, eco-paralysis, climate anxiety, climate grief, eco-awareness, eco-grief), and mental health (and like terms including mental well-being, mental distress, mental illness, mental wellness, depression, bipolar, anxiety. A combination of these terms was used in each database to identify relevant literature on the topic. A total of 2188 articles were found. After an initial screening of the title, abstract, and full article for relevance, 84 articles were identified as relevant. An additional literature review was completed in the fall of 2022/winter of 2023, and an additional 654 articles

were identified. The same process of screening and reading articles for relevance was performed, and 26 articles were found relevant. For additional information about climate change and parenthood, I searched within the media including forums such as Conceivable Future (https://conceivablefuture.org/tagged/press) and online newspapers such as NY Times, CNN, The Globe and Mail, CBC, San Francisco Chronicle, CTV News, Washington Post, NBC News, Business Insider, and more. I also searched within the references list of research articles to find one study examining parenthood and climate change (Schneider-Mayerson & Ling Long, 2020). The lack of academic studies on the topic shows a void in the literature. Additional literature was provided by my committee relating to voluntary childlessness (Lee & Zvonkovic, 2014; Matthews & Desjardins, 2017; Peterson & Engwall, 2013; Stegen et al., 2020), the feminist perspective of climate change (Kaijser & Kronsell, 2014), and how climate change is related to whiteness and white privilege (McKibben, 2021; Ray, 2021). In the media, white women are depicted to be at the front line of the climate movement, and I am a white woman. For this reason, it is important that I be reflexive on my own white privilege and how this operates systematically in this research. In the literature review, I will discuss climate change and white privilege (McKibben, 2021; Ray, 2021), the intersection of race and gender with climate change, and how different groups respond to climate change (Kaijser & Kronsell, 2014).

In the following sections, I will introduce the issue of climate change and its impacts on human health, summarize key knowledge about 'vulnerable populations', the connections between environmental changes and mental health, and introduce media coverage of a movement of individuals who are standing up against climate change. Finally, I will discuss asynchronous data collection and how a similar study which employed grounded theory methodology using asynchronous data collection helped inform this study.

Climate Change

Climate change is one of our greatest challenges and concerns today (Bourque & Cunsolo Willox, 2014; Cianconi et al., 2020; Galway, 2019; Warsini et al., 2013). The United Nations Framework Convention defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (UNCCC, 2011, p. 1). Over the past ten years, it has been abundantly evident that population growth and the irresponsible use of the planet's resources are causing climate change, which is predicted to have disastrous effects on human health (Bodin & Bjorklund, 2022; Richie, 2014).

Human activity is the dominant cause of climate change (Allen et al., 2019). The increasing human population compounds the negative impacts of human activity on the planet and ecosystems (Ferreira, 2020). In 2018 approximately 61.7 million people were affected by disasters due to climate change, impacting food security, water security and increased diseases (Ferreira, 2020; McMichael, 2006). The data shows that human influence on our climate, including global warming, is the dominant cause, altering the way of life for humans and our natural systems (Allen et al., 2019). The damage to the Earth is long-lasting and can impact not only the environment itself but the living beings inhabiting the environment, including the health of humans across the world (Kuehn & McCormick, 2017; Warsini et al., 2013). Changes in our lives due to climate change are either direct or indirect (Raser & Swim, 2011). Direct impacts are natural disasters, including hurricanes, tornadoes, and other natural events that are life-changing and occur with little to no warning affecting many people (Clayton, 2021; Clemens et al., 2020; Lang, 2015; Raser & Swim, 2011). Direct impacts of climate change on physical health include, for example, vector-borne, water and foodborne diseases, increased heat and extreme weather

issues, and respiratory problems (Hayes et al., 2018; Naish, 2008). Indirect impacts are those that

have prolonged or adverse environmental conditions (and are not event-specific), including

drought or contaminated water, loss of land, or changes to the social and cultural environment

(Clemens et al., 2020; Lang, 2015; Raser & Swim, 2011). Indirect physical health impacts

include, for example, nutritional issues, water insecurity, dehydration that can cause kidney

problems, and melanoma caused by extended UV exposure (Hayes et al., 2018). Global

populations are impacted differently by climate change, including differences among women,

children, and infants (Olson & Metz, 2020), and individuals in the North or with strong

connections to the land (Government of Canada, 2018) and those who live in the Global South,

and/or live in the least wealthy countries (Kaijser & Kronsell, 2014).

People and Populations Particularly Vulnerable to the Impacts of Climate Change

Some people and populations are described as being at increased risk of the impacts of

climate change (Government of Canada, 2018). Within Canada, this includes children, seniors,

those who are chronically ill, low-income individuals or the homeless, disabled individuals,

people who live off the land and those who reside in the North (Government of Canada, 2018). A

common thread is that those who are most vulnerable to the impacts of climate change are made

up of communities and groups of people who are at a higher risk for poor health outcomes as a

result of the barriers they experience, whether social, economic, political, and environmental, or

due to disability or illness (Shivayogi, 2013). In Canada, the social determinants of health

include Indigenous status, education, employment, working conditions, health services, gender,

disability, race, job security, housing, and food security (Woodhall-Melnik & Grogan, 2019).

Social determinants of health ultimately impact the health (both physically and mentally)

outcomes of individuals and populations/communities during and after extreme weather events

(Woodhall-Melnik & Grogan, 2019). Women, infants and children are at an increased risk of the effects of climate change and environmental degradation (Olson & Metz, 2020). Women are at an increased risk of experiencing anxiety and depression from climate change, which can impair children's developmental trajectories (Olson & Metz, 2020). Infants are at increased risk of being born with low birth weight or being born premature (Olson & Metz, 2020), and youth (aged 15 to 24) are at an increased risk of experiencing the effects of climate change, such as post-traumatic stress disorder, anxiety, sleep disorders, phobias, and more, as they are still developing both physically and psychologically (Ballew et al., 2019; Gharabaghi & Anderson-Nathe, 2018; Olson & Metz, 2020; Sanson et al., 2019; Wu et al., 2020). The consequences of climate change on vulnerable populations, whether physical, mental or social, is a great concern (Boluda-Verdu et al., 2022; Bourque & Cunsolo Willox, 2014; Cianconi et al., 2020; Kirch & Petelle, 2019; Olson & Metz, 2020; Shukla, 2013).

Rural, remote, Northern residents and those that live off the land hold strong connections to the land and are more heavily impacted by climate change (Government of Canada, 2018). Often rural and remote populations rely on the land to hunt, fish and forage for food, and disruptions to this land lead to a decrease in culturally preferred foods (Kipp et al., 2019). Disruptions to natural ways of life can put these populations at increased risk for health problems (Bourque & Cunsolo Willox, 2014; Cunsolo et al., 2020; Fuentes et al., 2020; Kipp et al., 2019; Pinsky et al., 2020). In chapter three "Rural and remote communities" which can be found in the report Canada in a Changing Climate: National Issues, Vodden & Cunsolo (2021) highlights the issues along with climate change that various communities face, such as water issues, chronic illness and diseases, and mental health problems. However, as Rosen (2020) states "Indigenous people with close emotional and ancestral ties to the land are also likely to be disproportionately

affected by environmental change and extreme weather events" (p. 4). It is not only geography

that plays a role in these concerns but also the overall characteristics of these communities that

will lead to more sensitivity towards the identified issues, including the deep connection to the

land and how cultural practices may be disrupted (Kipp et al., 2019). An intersectional approach

is useful to highlight how different groups and individuals relate to and are impacted by climate

change differently (Kaijser & Kronsell, 2014).

Intersectionality is rooted in Black critical feminist theory, grounded in an understanding

of power and knowledge (Kaijser & Kronsell, 2014). Coined by Kimberle Crenshaw in 1989, the

concept of intersectionality was developed as a "way of framing the various interactions of race

and gender in the context of violence against women of color" (Crenshaw, 19991, p. 1296).

Intersectionality provides an analytical framework to understand how overlapping social

identities contribute to discrimination and privilege (Crenshaw, 1991). This framework can also

examine the relationship between nature and society (Kaijser & Kronsell, 2014). The effects of

climate change are facilitated through economic, social, cultural and political processes and

shaped by structures and systems of power and privilege; there is a need for more social and

critical analysis related to climate change. An intersectional approach can shed light on the

structures and power that emerge between gender, race, culture, and other differences in

individual lives and the outcomes of these interactions (Kaijser & Kronsell, 2014). Currently,

there is a dearth of research on climate change using an intersectional approach (Kaijser &

Kronsell, 2014). It is known that the greenhouse gas emissions that are part of the cause of

climate change originate in the developed part of the world, but those who are most vulnerable to

the impacts of climate change are typically in the least wealthy countries of the world Kaijser &

Kronsell, 2014), in the global South, and are marginalized, live in low-income areas (Diffey et

al., 2022; Hartmann & Barajas-Roman, 2009; Helm et al., 2021; Kaijser & Kronsell, 2014), or

live in remote Northern often Indigenous communities internationally (Rosen, 2020) as well as in

Canada (Government of Canada, 2018). The overall carbon footprint of the world's poorest

countries is 100 times smaller than that produced by the privileged people who live in Europe,

North America, and other countries in the Global North (Uddin, 2017). The evidence is clear that

carbon dioxide (CO_2) is the primary cause of climate change, despite the fact that other

greenhouse gases and air pollution also have an influence on the climate (IPCC, 2021). Those

who are least responsible for climate change are often blamed because of a more intense

population growth, as an increased population can be seen as a key contributor to climate change

(Diffey et al., 2022; Hartmann & Barajas-Roman, 2009; Helm et al., 2021); and more people

getting access to the technical advances (fridges, air conditioners, cars, etc.) that the global north

have enjoyed for decades. Global environmental politics have long been characterized by the

"North-South" split, which refers to the disparities between the more industrialized economies of

the global "North" and the less industrialized and developing countries of the global "South"

(Uddin, 2017; UN Environment Programme, 2022). This does not only imply that the global

South's frequently least developed nations have made far less of a contribution to global

warming (Uddin, 2017). It also means that the direct advantages of using fossil fuels, such as

energy consumption, have not been distributed equally across least developed nations (Uddin,

2017). The UN Framework Convention on Climate Change (UNFCCC) has a worldwide

governing body known as the "Conference of the Parties" (COP), the 27 refers to the 27th session

of COP which was held in November 2022 in Egypt (UN Environment Programme, 2022).

Despite a challenging geopolitical environment at COP 27, nations delivered a package of

resolutions that reaffirmed their commitment to keeping global temperature rise to 1.5 degrees

Celsius over pre-industrial levels (Worth, 2022). But here Additionally, those impacted the most are often underrepresented when it comes to decision-making regarding climate change (Kaijser & Kronsell, 2014).

Impacts of Climate Change on Mental Health

Climate change and related weather events have been linked with various emotional responses such as sadness, fear, anger and mental health consequences, including elevated rates of depression and anxiety, increased alcohol and drug consumption, and increased suicide (Cunsolo & Ellis, 2018; Elder, 2019; Fritze et al., 2008; Galway & Field, 2023; Warsini et al., 2013). Women, children and the elderly are especially vulnerable to climate-sensitive mental health outcomes, such as depression and suicide (Ojala et al., 2021). When climate change events occur, new or additional mental health problems tend to develop among populations where there is already a reduction in social support and mental health support (Belkin, 2020; Cianconi et al., 2020). Children, in particular, will experience more post-traumatic stress disorder and depression than adults after climate disasters as their neurological and psychological systems are not fully developed (Belkin, 2020; Cianconi et al., 2020). Elderly populations may be more vulnerable to the effects of climate change as they may take medications that make them more vulnerable to heat (Belkin, 2020). Studies have recently linked higher rates of hospital admissions of suicide and self-harm to the increase in climate temperatures, specifically a rise in admissions among the elderly population and those who already suffer from mental health disorders such as schizophrenia and behavioural disorders (Belkin, 2020; Clayton, 2021; Mbewe, 2019). Even without the direct physical effects of climate change, the perceptions and fear of climate change can threaten mental health (Kim et al., 2014). Climate change impacts mental health directly or indirectly (Cianconi, 2020; Elder, 2019; Fritze et al., 2008). Direct impacts on mental health are

from extreme weather events such as tsunamis and hurricanes (Clayton, 2021; Fritze, 2008; Kim et al., 2014; Palinkas & Wong, 2020); indirect impacts are the loss of communities, support, places and people (Kim et al., 2014; Palinkas & Wong, 2020), and the experiences of solastalgia, eco-grief, and eco-anxiety (Hayes et al. 2018; Cianconi et al., 2020).

It is predicted that droughts will become more frequent due to climate change and cause additional concerns for the human population, anxiety disorders, and other mental health problems (Fritze et al., 2008; Kim et al., 2014; Palinkas & Wong, 2020). The mental health effects from extreme weather can be direct in the weather events themselves, such as hurricanes and tsunamis, and indirect in the loss of homes, communities and support, which may threaten mental health to a greater extent (Clayton, 2020; Clayton & Karazsia, 2020; Fritze et al., 2008; Henderson, 2015; Hogg et al., 2021; Kim et al., 2014; Pihkala, 2020). Mental health impacts can also affect physical health leading to reduced bodily functions, immune problems, reduced quality of life, and reduced productivity (Obradovich et al., 2018). Even without the direct physical effects of climate change, the perceptions and the fear of climate change itself may threaten mental health (Kim et al., 2014).

Mental health includes the emotional, psychological, and social well-being of a person, allowing a person to think, feel, and act, including how a person will handle stress, make choices, as well as be able to enjoy life (Fresque-Baxter & Armitage, 2012; Panu, 2020; Woodward, 2019). The definition provided by the World Health Organization for mental health "is an overall state of wellbeing that includes the ability to cope with daily stressors, and make contributions to one's family and community, is a critical component of population well-being and productivity" (Torres & Casey, 2017, p. 2). According to the 2016 Lancet report, mental health is identified as the "most neglected of all human health conditions and a failure of

humanity" (Olson & Metz, 2020, p. 3). Over the past few decades, research on mental health and climate change has increased; three key concepts and terms have emerged from this literature, solastalgia, ecological grief, and climate anxiety, these will be further discussed below.

The mental or psychological health effects caused by climate change can be difficult to detect or diagnose (Ferreira, 2020; Petroni, 2010; Usher et al., 2019). Mental health is depicted as invisible or unseen, which is no different regarding mental health impacts from climate change (Hayes et al., 2018). The media acknowledges climate change impacts mental health and the often-anxious feelings arising from the current climate situation (Barral, 2021; Contreras, 2020; Henriques, 2019). Authorities, including doctors, nurses, and other health professionals, have begun to acknowledge that mental health is linked to climate change, including The Lancet Countdown Report (Watts, 2021). According to Fairweather (2020), "climate change and physical health issues have been discussed far more widely than the mental health effects, yet these also play an important role" (p. 2352). Growing knowledge of the human impacts of climate change should continue to contribute to our knowledge of the mental health consequences of climate change and the effectiveness of the public health initiatives and interventions that are currently available (Belkin, 2020; Kirch & Petelle, 2018).

Psychologists play a key role in sharing their mental health knowledge with the public, providing a space that is judgement free, and providing us with the skills to appropriately handle the feelings of climate change (Diffey et al., 2022; Espinel et al., 2019; Usher et al., 2019). Physicians are also responsible for and play a key role in educating their patients on how to reduce greenhouse gas emissions and support them along with this process (Hanlon et al., 2011; Naish, 2008). Authorities play a vital role in how the community can manage climate change and mental health issues; they can educate and prepare various communities for upcoming

environmental traumas, provide support to those who have experienced environmental distress in the past, and prepare other medical professionals for the mental health effects of climate change (Espinel et al., 2019; Naish, 2008). Environmental problems have changed over the last few decades, and public health concerns have changed with it (Mackenbach, 2007).

Solastalgia

Solastalgia is a fairly new concept that describes the mental health effects of environmental and climate change (Albrecht et al., 2007; Elder, 2019; Moratis, 2007; Rose, 2020). The term Solastalgia was coined by Albrecht in 2003 to describe the distress caused by the transformation and degradation of one's home environment (Albrecht, 2020; Askland & Bunn, 2018; Eisenman et al., 2015; Elder, 2019; Galway et al., 2019; Kent & Vacanti Brondo, 2019; McNamara & Westoby, 2011; Padhy et al., 2015; Rose, 2020; Warsini et al., 2013). The term combines the words solacium (solace), nostos (returning home), and algos (pain) (Albrecht et al., 2007). Joining the Greek word for pain with the Latin word for comfort, referring to the distress that occurs when an environment no longer offers solace (Lewis, 2019). The concept was "developed to give greater meaning and clarity to environmentally induced stress" (Albrecht et al., 2007, p. 95). The relationships between the environment, ecosystems and humans are complex, and solastalgia captures the relationship between all three, specifically the lack of control and the negative psychological outcomes (Albrecht, 2007; Elder, 2019; Moratis, 2020; Rose, 2020). Described as "an intense desire for the place where one is a resident to be maintained in a state that continues to give comfort place" (Kent & Vacanti Brondo, 2019, p. 48), it is homesickness before leaving home (Elder, 2019, Glackin, 2011), and is "place-based lived experience" (Galway et al., 2019, p. 2). Nostalgia is another concept that describes feelings of displacement or stress for those who are no longer with their home, separated and

experiencing homesickness (Albrecht et al., 2007; Askland & Bunn, 2018; McNamara & Westoby, 2011). This same feeling can still occur in individuals who are not removed from their homes but simply experience a type of homesickness because the area around them no longer resembles what they used to know (McNamara & Westoby, 2011; Warsini et al., 2013). The feelings of both solastalgia and nostalgia describe changes to one's environment and are very place-driven (Albrecht et al., 2007).

Those who experience solastalgia are likely to have feelings of anger, distress, sadness, anxiety, and discomfort, which can escalate to more serious health and mental health problems (Askland & Bunn, 2018). Existing research has measured solastalgia using the solastalgia distress scale, "as a general tool to appraise the distress arising from people's lived experience of the desolation of their home and environment" (Higginbotham et al., 2016, p. 245). The scale comprises 81 items with 6 different components, one of which specifically measures feelings of solastalgia (Higginbotham et al., 2016). The distress scale examining solastalgia uses specific items such as "sad that familiar animals and plants are disappearing and sense of belonging undermined by change" (Higginbotham et al., 2016, p 251). Mental health challenges caused by climate change may not stop at one generation, and the consequences of exposure to either extreme or prolonged weather-related events can be delayed and transmitted to future generations through generational trauma (Albrecht et al., 2007; Cianconi et al., 2020; Elder, 2019; McNamara & Westoby, 2011). Distress over climate change can also be described by the experiences of eco-grief (ecological grief) and eco-anxiety (or climate anxiety) (Lewis, 2019, Wu et al., 2020), as discussed below.

Ecological Grief and Climate Grief

Another important concept in the climate change and mental health literature is ecological grief. According to Albrecht, ecological grief is the cultural response to experiencing environmental loss and destruction (including climate change), aligning with the themes of solastalgia (Albrecht, 2020; Craps, 2020). Ecological grief can also be referred to as climate grief (Craps, 2020; Neville, 2018; Panu, 2020) and is experienced often by ecological losses such as the loss of ways of life, species and ecosystems (Comtesse et al., 2021; Cunsolo & Ellis, 2018). "Ecological grief as a response to actual and past ecological loss or a reaction to future situations that trigger the current loss" (Comtesse et al., 2021, p. 4). A better understanding of climate change's emotional and psychological impacts will be enhanced by a better understanding of ecological grief (Cunsolo & Ellis, 2018). Research suggests that individuals are more likely to develop ecological grief if they have close working, living and cultural relationships with the natural environment, and ecological grief will differ in response to the type of climate change the individual experiences (Comtesse et al., 2021; Cunsolo & Ellis, 2018). To date, there is very little research examining ecological grief among youth or young people and little research examining ecological grief with decision-making about parenthood. People of colour and Indigenous people are at the front lines of climate change, and often face ecological grief, which is compounded by historical and ongoing racial and colonial trauma (Shain, 2021). Grief responses can be gradual and cumulative, and in a study involving Inuit communities ecological grief was experienced from witnessing the changes to the land, not having the ability to travel for food and hunting, and a deep concern for the loss of traditional Inuit life for future generations (Cunsolo & Ellis, 2018).

Ecological Anxiety and Climate Anxiety

Ecological anxiety (eco-anxiety) and climate anxiety refer to the psychological burden of the planetary climate crisis, the loss of hope, and the feeling of doom about the environment (Albrecht et al., 2007; Albrecht, 2020; Clayton et al., 2017; Guyatt, 2020; Hickman, 2020; Hogg et al., 2021; Panu, 2020; Pihkala, 2020). Eco-anxiety and climate anxiety are generally understood as "a chronic fear of ecological doom for self, family, community, future generations and our planet" (Rosen, 2020, p. 1). Eco-anxiety can be related to worrying about whether you are making the right decisions for the planet (Kirwan-Taylor, 2007; Wray, 2022a) and are often characterized by a cluster of feelings including fear, anger, sadness, hopelessness, or helplessness, powerlessness (Comtesse et al., 2021; Galway & Field, 2023). Individuals who experience eco-anxiety are often associated with engaging in pro-environmental behaviour, which is seen as an adaptive response to climate change (Comtesse et al., 2021). Some examples of pro-environmental behaviour include riding a bike, taking public transportation, keeping lids on pots to avoid wasting energy or participating in recycling programs (Homburg & Stolberg, 2006). The psychological burden of the planetary climate crisis is the anxiety or stress that comes from environmental changes, which can affect everyone and can be severe and debilitating (Ingle & Mikulewicz, 2020; Loney, 2019). For some, it can go as far as becoming so paralyzed by fear and anxiousness that they cannot act and function in daily life (Usher et al., 2019). This can lead to the development of anxiety disorders, such as generalized anxiety (Comtesse et al., 2021).

Sarah Jaquette Ray (who is an Associate Professor of Environmental Studies at Humboldt State University and author of The Ecological Other and A Field Guide to Climate Anxiety) notes that climate anxiety is an overly white phenomenon in the United States, not because people of colour care less about climate change, but because they (people of colour) have, and

continue to, face other crises in their lifetime (Ray, 2021). Black, Indigenous, and other people of colour make up a disproportionate share of the victims and affected communities (Ray, 2021). People who are oppressed and marginalized have evolved resilient traditions out of need (Ray, 2021). What is unique about climate change is that the people who have been protected against oppression and marginalization now realize the threats to their future (McKibben, 2021; Ray, 2021). Climate change is said to be the greatest threat to humans (McKibben, 2021; Ray, 2021; Watts, 2018). This claim ignores the significant threats, deep suffering and deaths caused by our history of colonialism, racism, and slavery that people have experienced much longer than climate change (McKibben, 2021). Racism against the environment exists both in Canada and elsewhere (Cullis-Suzuki, 2021). It is a form of environmental injustice that takes place when development, laws, or practices increase pollution or health concerns in Indigenous and coloured communities, whether on purpose or accidentally (Cullis-Suzuki, 2021). Intentional or accidental racial prejudice frequently shows up as "institutional racism" (Cullis-Suzuki, 2021). This phrase recognizes the political reality that gave rise to and now supports environmental injustice and imbalance (Cullis-Suzuki, 2021). Climate change also affects social classes differently, it is shown that 49% of lifestyle consumption emissions are attributable to the richest 10 percent of people (Roberts, 2018). Additionally, because the wealthy can afford to purchase property in regions perceived as livable (where climate change has yet to have a large impact), they are more, protected from any climate-related calamities, whereas the poorest and most vulnerable people are at the forefront of the global apocalypse in regions perceived as less livable (Roberts, 2018).

There is an increasing focus on the connection between mental health and climate change in the literature, but this body of literature has not been connected to those individuals who are

deciding to become parents in the current climate crisis. And little research has been completed

to indicate what (if any) supportive services are best suited for individuals who are struggling

with the idea of parenthood in the current climate crisis and where they can turn to for support.

To Be or To Not Be a Parent in the Context of our Changing Climate

Becoming a parent is a decision that is generally not taken lightly and can include

consideration of many factors, including changes to prospective parents' lifestyle, how it might

impact travel opportunities, individual pursuits, and financial responsibility (Carmichael &

Whittaker, 2007). Prospective parents are also beginning to consider additional factors when

making decisions about parenthood, such as climate change in general, the impacts of climate

change on potential children, and the ethical dimensions of contributing to population increase

(Beggs et al., 2019, Irfan, 2019; Ferreira, 2020; McMichael, 2006). It is also well understood that

an increase of people on the planet will increase carbon emissions for the population as a whole

(Nordstron et al., 2019). This study combined a detailed list on household expenditures with CO_2

emissions and compared the data from Swedish adults both with and without children (Nordstron

et al., 2019). The increase can be seen in two ways, first by increasing the population as a whole

thus increasing overall CO_2 emissions but also increasing the CO_2 emissions from those choosing

to have children as they use additional resources to raise children compared to those without

children (Nordstron et al., 2019). It has been found that choosing to not have children is up to

five times cheaper than other traditional green technologies for mitigating climate change

(Mendel, 2009; Wire, 2009). People who have children generally have a larger carbon footprint

than those who do not; it can be inferred that this increase is because of increased transportation

and food consumption (Nordstrom et al., 2019). If an individual has made the decision to be

"greener" and balance their carbon emissions, their decision around parenthood may be impacted

(Nordstron et al., 2019; Webb, 2009). Individually we all produce different amounts of carbon emissions, which is no different when we compare countries around the world. Each country emits different amounts of carbon dioxide into the atmosphere from using natural gas, oil, industrial waste, and coal combustion (Olivier et al., 2012). When looking at per capita emissions among countries, the industrialized global North such as Canada contributes a total of 15.32 metric tons, and the United States contributes 16.56 metric tons, whereas nations in the global South, for example Mexico contributes 3.77 metric tons, and Brazil contributes 2.19 metric tons (Olivier et al., 2012). When looking at the total for developed versus developing countries, developed countries contribute 52% of global greenhouse gas emissions, while developing countries contribute 48% (Wei et al., 2016). The global south is home to approximately 85% of the world's population (Veron, 2023), illustrating the imbalance of global greenhouse gas emissions as the global south (85%) contributes approximately the same as the global north (which is home to approximately15% of the world's population. The IPCC Report of 2021 demonstrates that human activity still has the power to influence how the climate is impacted and able to develop in the future (IPCC, 2021). Although other greenhouse gases and air pollutants also impact the climate, the data is conclusive that carbon dioxide (CO2) is the main source of climate change (IPCC, 2021). Arguments against personal responsibility for the environment frequently claim that the problem is so large that it would require a large number of people to change their behaviour (Bodin & Bjorklund, 2022). Therefore, the responsibility of action should not fall on individuals, as it takes too many people to change their own habits; it is such a large-scale problem that the ownership of change should really fall on industries and governments (Bodin & Bjorklund, 2022; Diffey et al., 2022; Richie, 2014). This research project explores how climate change in the Global North impacts people and their decisions around

parenthood. Specifically I ask participants from Ontario, Canada "is it okay to still have children?" (Irfan, 2019).

Changing Family Structures

In the mid-20th century, in the West a traditional heterosexual family was generally characterized by a stay-at-home wife whose job was maintaining a home and raising children (Morgan & King, 2001), maintaining social norms that parents are responsible for providing for their children until at least the age of eighteen (Blackstone & Stewart, 2012; Carmichael & Whittaker, 2007). The husband's role traditionally was to ensure the family had enough income to feed, clothe, and house the whole family (Morgan & King, 2001). Other changes to the family include the need for two parents to pursue paid work or dual-incomes while other families have stay-at-home fathers instead of mothers or same-sex families (Blackstone & Stewart, 2012; Carmichael & Whittaker, 2007). Families also form through adoption (Crist et al., 2022; Helm et al., 2021). For women who reject parenthood and choose to live their life childless, there is a desire to prioritize other aspects of life (Blackstone & Stewart, 2012; Carmichael & Whittaker, 2007). Today there seems to be a greater societal acceptance of childlessness in Western countries (Bodin et al., 2019; Stegen et al., 2020), and is more popular in developed countries such as Canada (Stegen et al., 2020). This trend is also apparent in countries that have strong gender equality, such as Sweden, where it is more widely accepted not to have children (Stegen et al., 2020).

Voluntary and Involuntary Childlessness

The literature that examines voluntary childlessness focuses on women, as women suffer societal pressure more than men, as they are the ones who physically birth the child, leaving the decision around parenthood ultimately up to them (Lee & Zvonkovic, 2014). Becoming a mother

is not a decision to be taken lightly and is by some described as one of the most important choices in a woman's life (Matthews & Desjardins, 2017). The tension between societal norms and pressures is often experienced by individuals, along with a sense of being misunderstood by friends and family members around their decision to be child-free (Helm et al., 2021). When it comes to our relationships, we debate whether or not to express these thoughts to our families or friends out of concern that doing so could be counterproductive (Diffey et al., 2022). Through semi-structured interviews the participants in a study by Helm et al. (2021) expressed that they felt pressure to have children from their family members with some family members expressing that they might change their minds about having children later in life (when it may no longer be possible). Some participants described future relationships with partners noting that the willingness to have children could change and that compromise would be possible, while others were worried that their decision around being childfree would cause a strain or even a breakup in a future relationship (Helm et al., 2021).

Becoming a mother can be seen as crucial for self-esteem, well-being, gender identity, as well as social positions, opinions and judgements from others (Matthews & Desjardins, 2017). Those who choose not to become mothers can be seen as not a "real" women and can be depicted as selfish, abnormal or even as child-hating (Matthews & Desjardins, 2017). Reasons for not becoming a mother range from not having an interest in children, monetary reasons, career opportunities, or concerns about overpopulation, all of which are often used in the description of voluntary childlessness (Peterson & Engwall, 2013). Involuntary childlessness is as described, involuntary, and can be caused by infertility or chronic illness (Letherby & Williams, 1999), or because of the financial barriers of accessing reproductive healthcare and technology (Dyer & Patel, 2012). Overpopulation has been cited as a concern for many young climate activists who

are considering having children because of the carbon footprint of reproduction (Bodin &
Bjorklund, 2022; Schneider-Mayerson, 2022). It has been suggested that one way to combat
overpopulation is for individuals to choose not to have children or to stop at one child (Crist et
al., 2022; Fu et al., 2022; Helm et al., 2021; McMullen & Dow, 2022). Sarah Conly, a
philosopher, has said that it is morally wrong to have more than one child because of climate
change (Fu et al., 2022). Participants in the study by Bodin & Bjorklund (2022) described a
doomsday feeling when talking about the future state of the planet and were concerned about
future generations having it worse off than we do. Participants explained that having a child
creates a carbon legacy with the child becoming an emitter, which could carry on to future
generations (Bodin & Bjorklund, 2022, Richie, 2014).

In the United States, some women who are planning to refrain from having children do so
because they "believe this is the only environmentally sound position they can take" (Ross &
Solinger, 2017, p. 234). Individuals in the United States are only approximately 5% of the
world's population but use approximately 24% of the resources; a child born in the United States
will create 13 times more ecological damage than one born in Brazil (Ross & Solinger, 2017).

Among young adults that are considering parenthood in relation to climate change,
anxiety is often felt concerning the consumption of resources, as each additional person added to
our rapidly growing population, particularly in a Western setting, will add to our combined
consumption and thus eco-footprint (Wilmes, 2020). In Bodin & Bjorklund (2022) study,
participants had two overlapping issues when discussing climate change and reproduction; first
that having children negatively impacts climate change and the fear and worry for what the
world would be like for future children and future children being negatively impacted by climate
change. Future generations will live in a time when climate change impacts continue to grow

(Bowles, 2015; Morris, 2020; Pollack, 2018; Rice, 2016). An example of concern young adults feel is: "Children are the least responsible for climate change but will bear the greatest burden of its impact" (Pacheco, 2020, p. 562).

Reproductive Justice

There are three core values of reproductive justice, the right to have a child, the right to not have a child, and the right to parent a child (or children) in a safe and healthy environment (Ross et al., 2017). The framework extends the discussion of women's reproductive rights beyond legal and political issues by taking into account the influences of economic, social, and health variables on women's ability to make informed reproductive decisions (Ross et al., 2017). Reproductive justice "has inspired many women of colour and progressive white allies to imagine a world in which people's human rights are respected and protected when they make decisions about whether to become a parent" (Ross & Solinger, 2017, p. 5). Reproductive Justice calls for a world in which all women and parents have achieved human rights to have or not have children and to be in a safe environment that does not threaten one's health or the health of their communities (Ross & Solinger, 2017).

Climate Change and Parenthood in the Literature

Schneider-Mayerson & Ling Long published a study in 2020 titled "Eco-reproductive concerns in the age of climate change" which helped inform this project. In this particular study, the researchers were interested in the increasing concern over climate change and reproductive choices and the impacts on reproduction, environmental ethics, demography, and climate mitigation (Schneider-Mayerson & Ling Long, 2020). Almost sixty percent of the respondents (n=607) were very or extremely concerned about a potential child's lifetime carbon footprint (59.8% of respondents), compelling enough for some participants to factor the carbon footprint

into the decision-making process, with some participants considering a smaller family (Schneider-Mayerson & Ling Long, 2020). Respondents also noted they were concerned about the climate impacts on future generations, with 96.5% reporting feeling extremely concerned or very concerned and 6.3% of parents confessing they feel some regret about having children (Schneider-Mayerson & Ling Long, 2020). While this study was centred around climate change, some participants did discuss other reproductive capabilities (such as being able to conceive a child, physically carry a child, or give birth to a child), such as mental and physical health, partner preferences, and financial considerations (Schneider-Mayerson & Ling Long, 2020).

A more recent publication by Schneider-Mayerson (2022) with participants aged 27 to 45 (data collected through a survey using open and close-ended questions) describes two different rationales for the desire to have children given the changing climate. The first is the parental investment in environmental politics, and the second is seeing children as future environmentalists (Schneider-Mayerson, 2022). Parental investment in environmental politics is when the parents are more invested in environmental politics than non-parents (Schneider-Mayerson, 2022). There are two claims made within this category; first, those without children would simply give up on environmental politics and second, those with children will become more dedicated to environmental politics than those without children (Schneider-Mayerson, 2022). Participants who see children as future environmentalists refer to their own expectation that their child will become a climate activist or be able to contribute to the world in more sustainable ways (Schneider-Mayerson, 2022). Younger generations are more conscious of and engaged in effecting change, and hearing about improvements from future leaders and technical advancements that will help favourably affect climate change inspires sentiments of hope (Helm et al., 2021).

A similar study done by Bodin & Bjorklund (2022) with participants aged 17 to 90 used focus groups to examine decisions regarding parenthood during the current climate crisis. A few participants in the Bodin & Bjorklund study described limiting the number of children they wished to have as a way to reduce their 'environmental debt'. An example of this was shown by participants who generally believed that having two children is a compromise that allows the children to grow up with a sibling while also not contributing to overpopulation (Bodin & Bjorklund, 2022). Other participants in this study discussed having children as justifiable as long as you participate in day-to-day climate-friendly actions, such as choosing to shop secondhand or eating a plant-based diet (Bodin & Bjorklund, 2022). Another study by Fu et al (2022) demonstrated that climate change is a factor in reproductive choices and plans among young Chinese individuals. In this particular study, 173 individuals were interviewed; 34.1% said that climate change is a major influence on their reproductive decisions, 61.8% said that it was a minor influence, and the remaining 3.4% indicated that climate change has no influence at all on their reproductive decisions (Fu et al., 2022). When this study examined the reason behind the participants' concern over climate change and reproductive decisions, almost 60% said that they were somewhat, very or extremely concerned about the carbon footprint of having children (Fu et al., 2022). This study examined the reproductive concerns beyond the Western part of the world (participants were screened to ensure that they were Chinese citizens between the ages of 21 and 49), which is an important step in understanding this phenomenon, as nearly 20% of the world's population is Chinese, and 60% is Asian (Fu et al., 2022). (Fu et al. does not provide a definition of Asian, thus the statement that the worlds population is 60% Asian is directly from Fu et al. (2022).

More individuals may consider climate change in their reproductive decisions more than we have seen in previous years given the ongoing and depending climate crisis. This there is a need to understand the individuals' general experience with climate change information, where they access information and if there are any resources available to them or could be helpful in the decision-making process. As stated in the Schneider-Mayerson & Ling Long (2020) article, "very little empirical scholarship has been published on the relationship between concerns about climate change and individual fertility intentions and choices" (p. 3). This research confirms that among some individuals who are climate-concerned, climate change is a factor in their decision to have children and how many (Schneider-Mayerson & Ling Long, 2020). While various reasons for voluntary childlessness for women have historically existed and continue to exist, as I will describe next, growing media coverage is indicating a shift for voluntary childlessness in the face of climate change.

Climate Change and Parenthood in the Media

Climate change and parental decisions have been increasingly discussed in the media in the last five years, demonstrating collective community anxiety over the decision to have children in the current time of climate change (Astor, 2018; Bailey, 2019; Bielski, 2019; Duggan, 2022; Feldberg, 2019; Irfan, 2019; Jenkins, 2020; Ludden, 2016; MacLeod, 2019; O'Reilly, 2019; Osaka, 2022; Pasco Leahy, 2022; Paddison, 2019; Rainey, 2019; Relman & Hickey, 2019; Savage, 2023; Scheinman, 2019; Schumer, 2022; Shead, 2021; Snow, 2019; Stall-Paquet, 2020; Stopyra, 2017; Uda, 2022; Unruh, 2018; Weise, 2019; Wray, 2022d; Yang, 2018). A wide variety of actions related to parenthood and climate change are happening, such as petitions circulating in Montreal, signed by people choosing not to have children until climate change action is implemented by policymakers to stop the current state of the climate (MacLeod, 2019).

In the United Kingdom, "BirthStrike" is another example of a social movement focused on parenthood and climate change, "No Future No Children" in Canada, and in the United States "Conceivable Future" are others. "Conceivable Future"

(https://conceivablefuture.org/tagged/press) shares various articles and testimonies from women advocating for climate change before they have children.

Various media articles focus on the women's perspectives, how their biological clock may be ticking, but they feel an obligation to withhold having children because of the current state of the climate (Feldberg, 2019; Irfan, 2019; Paddison, 2019; Rainey, 2019; Scheinman, 2019; Stall-Paquet, 2020; Weise, 2019). The articles and others featured on "Conceivable Future" raise questions such as, "should we even have children when the Earth is suffering?" (Ludden, 2016), "is it ok to still have children" (Rainey, 2019), and "I don't know if I can have children in a world rapidly approaching unlivable temperatures, rising seas, and mass extinctions" (Szalay, 2018). The media links reproductive planning to climate change and how climate change can be a threat to decisions regarding parenthood (Astor, 2018; Bailey, 2019; Bielski, 2019; Feldberg, 2019; Irfan, 2019; Ludden, 2016; MacLeod, 2019; O'Reilly, 2019; Paddison, 2019; Rainey, 2019; Relman & Hickey, 2019; Scheinman, 2019; Stopyra, 2017; Unruh, 2018; Weise, 2019; Yang, 2018). As the media represents a collection of sources speaking to the connection between climate change and the decision to have children, the lack of academic research on how individuals are navigating the decision to have children demonstrates a disconnect from the realities of the general public.

Among the few discussing the connection between climate change and mental health is Britt Wray, who holds a Ph.D. in Science Communication from the University of Copenhagen and is the author of the "Rise of the Necrofauna: The Science, Ethics and Risks of De-

Extinction". Wray uses her platform as a broadcaster to focus on the planetary health crisis, and to provide a space for discussion covering topics such as post-traumatic stress from extreme weather events to coping with pandemics and anxiety, using her digital platform to provide a space for discussion. These topics can also be seen through her workshops, TED Talks, articles, and newsletters available on her website (https://www.brittwray.com/). People worldwide consider global climate change a serious threat, and media coverage indicates that young adults may decide not to have children as a result. However, there is little research on the relationship between environmental awareness and reproductive attitudes.

Conclusion

The lack of academic research as indicated in the literature review, and the growing media coverage on climate change as this informs reproduction decision-making indicates that people are thinking about what it means to have children during climate change. The research herein will address this knowledge gap by exploring how gestational parents are navigating parenthood in the context of climate change, how these decisions are being made, what factors are being considered, and the potential effects on mental and emotional health. This study will provide an opportunity to expand our currently limited understanding of parental decisions in the face of climate change and how potential parents' mental and emotional health are affected by this decision. This research may have implications in the future, with further studies on support systems that may be shown necessary to assist individuals with this decision-making process and the mental health aspect.

Chapter 3: Methodology

This research project used a qualitative research design grounded in social constructionism. In this chapter, I will start by situating myself within the research process,

discussing my own experiences (from an insider and outsider perspective) and the possible

influence on data collection and analysis. Next, I will discuss social constructionism, an

interpretive qualitative framework that enables me to get at the experiences and perspectives of

my participants (n=20). I will then discuss the recruitment methods and ethical considerations.

Data was collected using one of two interview methods: via Zoom/telephone or email. Finally,

data analysis was conducted using thematic analysis.

Research Design

Møller and Galway were interested in understanding parenthood decisions during climate

change. This project is one leg of the overall project, the other leg involved the interviewing of

people identifying as male (or non-binary non-gestational parent) being the other leg. My co-

supervisors Dr. Helle Møller and Dr. Lindsay Galway are conducting the overall project. Both

projects are using the same data collection methods, allowing the participants to choose to

participate synchronously or asynchronously (at their discretion). Supported by Møller and

Galway, I conducted data analysis for the leg of the project involving women and non-binary

gestational parents and the data analysis for the other leg was led by Møller and Galway.

Situating the Researcher

A feature of qualitative research is that the researcher is an integral part of the research

process (Creswell & Poth, 2018). During the research process, researchers can impact not only

the research design but also the interpretation of the data (Creswell, 2018). As qualitative

research involves the researcher paying close attention to detail, reflexivity on the researchers'

part is also important as this will impact the interpretation of results (Creswell & Poth, 2018).

Researcher reflexivity includes social, cultural, and political contexts (Creswell & Poth, 2018).

As part of the reflexivity process, I recognize that I am a crucial part of and can influence the

research. Our behaviour as researchers will always impact the participants' responses in the process, which will also influence the direction of the findings (Finlay, 2002). When conducting qualitative research, the researcher's background, personality, and behaviour will impact the interaction between the researcher and participants, Therefore, the researcher will inevitably also affect the data collection process and data collected (Finlay, 2002). Relationships are influenced by the topic of the study, as well as by the institutional setting in which it is conducted and the individual motives of the researcher and participants (Karnieli-Miller et al., 2009). Reflection is important during the development of questions, the way a question is asked, and the question itself (Jacobson & Mustafa 2019). Reflection is based on the researcher's social location, past experiences and personal history, and can affect how participants interact with the questions asked and ultimately the data collected during the interview process (Jacobson & Mustafa 2019).

The research aligns with my own voluntary childless experiences and interest in climate change. Before my acceptance into the Masters of Health Sciences program (with specialization in Social-Ecological Systems, Sustainability and Health), I had an inner dialogue regarding my choices to lessen my carbon footprint and not to have children because of climate change. Although my choice to not have children has other factors, including my decision to continue my education and travel the world, my own thinking aligns with the research on voluntary childlessness in the face of climate change as discussed in Chapter 2. As a middle-class, well-educated, white, heterosexual, cisgender woman, I have been privileged in many ways. I have the privilege of being well-educated about the current climate and making decisions regarding my own body and the individual choice to have children. This is a very privileged conversation with participants and was not taken lightly. I also recognize that others are not as privileged as myself and are not given the right to make decisions regarding parenthood. For these reasons, I

hold an insider perspective on this topic as it is often, middle-class, white women who consider climate change when thinking about parenthood and climate change. A different researcher who did not consider climate change in their decision around parenthood would be considered an outsider to this project.

Although my decision to not have children was made in my early teen years, and at that point, climate change was not a factor in my decision, over time, my reasons for not having children consider climate factors today. Before the research started, I discussed my project with two best girlfriends. To my surprise, this did not go as I expected. I had anticipated finding sufficient participants could be challenging but did not expect the amount of pushback I received from some of my close friends. Both were stunned that the decision to have children in the current state of the world is even a conversation that individuals will have with their partners and believed that if a woman (or man) wants to have children, they simply will.

I have strived to be environmentally conscious over the last eight years and recognize where I can make small changes that may have a ripple effect on the Earth's future climate. My previous academic experience did not expose me to climate change or the social decisions regarding parental choices; this was something I found throughout my personal life and lived experience.

My experiences and interests have therefore influenced the research question and the research as I think it is important to look at the experiences of individuals regarding their decisions and decision-making related to parenthood and climate change. I gravitated toward this project because of my interest in climate change, parental decision-making, and mental health. I also have a close connection with the mental health field, as my father suffers from mental illness. Because of this, I have seen first-hand the lack of support the mental health community

has in our region and wonder if mental health professionals are equipped to handle mental health

conversations around climate change. These concerns have led me to pursue this research topic

as there is a need to know more about the relationship between climate change and decision-

making around parenthood.

Insider/Outsider Perspective

Qualitative research allows the researcher to be a part of the study itself, allowing them to

be part of the experiences and meanings of those participating in the research (Dwyer & Buckle,

2009). The participants are not lost in a sea of numbers and statistics; rather, we have the ability

for the stories that are shared in the data collection to stay with us and for us to carry those

stories for a long time (Dwyer & Buckle, 2009). As researchers, we still need to be aware of our

own preconceptions and biases that may influence the understanding and interpretation of the

research (Dwyer & Buckle, 2009). The researcher plays a direct and intimate role in data

collection and analysis (Dwyer & Buckle, 2009). As noted above, I am both an insider regarding

this research and an outsider. An insider shares the participants' characteristics and experiences,

while an outsider does not fit into those shared values (Dwyer & Buckle, 2009; Kanuha, 2000).

When the researcher is an insider, participants are often more accepting of the researcher's role,

allowing them to be more open and provide a greater depth of data (Dwyer & Buckle, 2009).

More open communication can occur because of an assumption of understanding and shared

feelings (Dwyer & Buckle, 2009). Open communication can also cause problems with the

research process; the participant may make assumptions about the similarities between

themselves and the researcher and fail to explain their answers fully (Dwyer & Buckle, 2009). It

has been suggested that it is best to gather data with an eyes-open approach, assuming that the

researcher holds no existing knowledge of the study topic; the researcher may be part of the

culture that is being studied, but that does not necessarily mean the researcher understands the subculture of those participating (Asselin, 2003). Sandra Harding refers to the idea that your life experiences impact research as strong objectivity; one's life experiences will be how one views the world and thus research as well (Harding, 2005). I managed strong objectivity by attempting to facilitate each interview with no preconceived opinions or thoughts on what the participants shared. I allowed the participants to speak freely in the interview and listened to their answers to provide follow-up questions (when appropriate). I ensured that I responded to each answer in an appropriate way to ensure they were not being judged on their answers (I responded with a simple "thank you" instead of "good answer"). During the analytical process, I continued to reflect on how I interpreted what had been said or written during the interview and allowed myself to reflect on any of my own preconceptions or past history that I may have brought into the research. An example of this is after the first Zoom interview, I thought about the answers provided by the participant and ways in which I could respond differently and use more probing questions to ensure great depth in the participant's answers, specifically thinking of my history and ways to ensure that my own bias was not conveyed in the responses I gave to participants answers.

As this study is interested in examining the experiences of parenthood in the face of the climate crisis, I had participants who remained childless and participants who were already parents. I cannot speak to the realities of the pressure to have children, whether cultural or family pressure. In many respects, I am approaching this research as an insider, as climate change is one of my reasons for being voluntarily childless. I am privileged in that I can make decisions regarding my autonomy. I recognize that I fit into the group of participants who do not have

children as an insider, as I do not have or want children, and I am aware that one of the reasons

for this is climate change.

        This research takes up social constructivism (Creswell & Poth, 2018). The overall goal of

social constructivist research is to rely on the participants as much as possible with their views of

the situation (Creswell & Poth, 2018). With this interpretive framework, the questions used

during the interview were important and allowed the participants to construct their meaning of

the situation (Creswell & Poth, 2018).

Social Constructionism

        Sociologists Peter L. Berger and Thomas Luckman first discussed social constructionism

in their 1966 book *The Social Construction of Reality* (1966). Berger and Luckman cited Karl

Marx, Emile Durkheim, and George Herbert Mead as influences for their theory of social

constructivism (Andrews, 2012; Berger & Luckman, 1996). Particularly significant was Mead's

symbolic interactionism theory, which contends that social interaction creates an individual's

identity (Berger & Luckman, 1996; Galbin, 2014). Three intellectual movements came together

in the 1960s to facilitate the foundation of social constructionism (Gergen, 2011). The first was

an intellectual movement that cast doubt on social facts and exposed their political purpose

(Gergen, 2011). The second was a literary and rhetorical desire to analyze how language affects

our perception of reality (Gergen, 2011). Third, Thomas Kuhn led a scientific practice,

contending that rather than representing objective reality, scientific discoveries are affected by

and representational of the particular communities where they are generated (Gergen, 2011).

        The premise of social constructionism is that people learn about the world in a social

context, and what we consider to be reality is based on widely held presumptions (Andrews,

2012; Berger & Luckman, 1996; Burning & Cooper, 1999). Society is believed to exist as both a

subjective and objective reality (Berger & Luckman, 1996). Many things we take for granted and

think are objective realities are socially created, changing as society does (Berger & Luckman,

1996). Social norms may feel natural because they are so deeply established, yet they are not

(Andrews, 2012; Berger & Luckman, 1996; Burning & Cooper, 1999). Instead, they are

creations of a certain civilization and socialization.

    Social constructionists agree on three key points. The first is that knowledge is socially

constructed, and human interactions are the source of our social knowledge (Hare & Marecek,

1999). Social processes help shape what we believe to be true and objective and occur in both

cultural and historical contexts (Hare & Marecek, 1999). This means that no overarching truth

holds stronger value over another while allowing for the truth to be achieved within a specific

field or discipline (Hare & Marecek, 1999). Secondly, language is central to social construction,

emphasizing certain things while ignoring others (Hare & Marecek, 1999). Languages across the

world hold specific rules, and these rules help govern how we understand the world around us. It

is not one-sided; it allows us to express ourselves and the perceptions around us and what we

know (Hare & Marecek, 1999). Last, that knowledge goes beyond what we perceive it to be and

is politically driven (Hare & Marecek, 1999). Any community's knowledge production has

social, cultural, and political impacts (Hare & Marecek, 1999). Individuals within a community

accept these consequences and thus sustain the communities understanding of particular truth,

value and realities of the world around them (Hare & Marecek, 1999). This knowledge will grow

when the community itself grows (Hare & Marecek, 1999). Using the constructivist approach

and open-ended qualitative interview questions is appropriate because of the subjective nature of

the data. This approach allowed me to capture the multiple realities and experiences of the

participants. Thus, the research question guiding this project: "What is the experience of

individuals making decisions surrounding parenthood during the current climate crisis?" is

informed through a social constructionist model.

Participants and Recruitment Methods

Recruitment for my participants began in June of 2021. In order to participate in the

proposed research, prospective participants had to be above the age of sixteen (16) (age of

consent regarding reproductive choices is younger, 16, not 18; thus, participants as young as 16

do not need parental consent), identity as an individual within their childbearing years, be a

resident of Ontario, identify as either a woman or non-binary person, be the gestational parent,

and be considering climate change in their process of deciding about parenthood. Both persons

with children and without children were invited to participate. Twenty participants were

interviewed (nineteen participants identified as a woman and one identified as unsure [a term

used by the participant]).

Recruitment for participants who identified as male or non-binary non-gestational parents

began in March of 2021, I was not involved in this recruitment. During that recruitment phase, if

potential participants identified as women and non-binary gestational parents they were advised

that I would contact them at a later date. Recruitment for participants who identified as female,

or a non-binary gestational parent (or potential parent) began in June of 2021.

Recruitment was achieved with the use of social media posts (Appendix D - Promotional

Poster), and when available, text was used alongside the social media post (Appendix E -

Recruitment Text). A purposive sampling technique was used to recruit participants into their

applicable group. Purposive sampling is described as a non-random sampling strategy to meet

certain criteria within the research project (Patton, 2001). Purposive sampling technique

provided me with enough participants. Social media posts included posting to personal pages

(including Facebook and Instagram) and using posts and stories to invite participants to the

project. Climate change groups on Facebook were also asked to share on their page, and I asked

social media influencers I know to share on their stories on Instagram. Social media posts

allowed me to gain a wide audience of prospective participants.

Ethical Considerations

Before any data collection begun, an ethics application was submitted and approved by

the Research Ethics Board (REB) at Lakehead University for the project under the guidance of

Drs. Helle Møoller and Lindsay Galway (Appendix F - REB Approval). I completed my Tri-

Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2)

certification was completed before this project's start (Completed in 2019). The REB application

process ensured that the guidelines outlined by TCPS2 were met, including concern for welfare,

justice, and respect for persons (Government of Canada, 2014). The principles outlined in the

TCPS2 were respected by an electronically signed Consent Form (Appendix A) and a

comprehensive Information Letter (Appendix B). These two were used to inform participants

about the purpose of the study, potential benefits and harms, and the use of the information

collected. These forms informed participants of their rights as participants, such as not being

required to answer all questions and security measures that were taken to ensure the information

was protected. As outlined in the data collection section, all raw data; documents and recordings

(either video or audio) were stored on a secure VPN (LU FortiClient) and will be destroyed after

five (5) years. Consent forms were stored separately on a password protected Google Drive.

Transcripts and notes did not contain specific information to identify the participants.

Pseudonyms were used during the final copy of the thesis to ensure patient confidentiality. The

email address used is password protected, and only those on the research project had access to the password and the email account.

Raw data from this project's women and non-binary gestational participants are saved on a secure VPN (LU FortiClient) for five (5) years before being deleted. The electronic consent forms are stored separately from the audio recordings and transcripts. If the participant opted to participate in this study asynchronously, correspondence took place via an email address set up specifically for this study. The emails have been copied and are stored along with the other raw data and the original emails have been deleted.

An email interview was given as one of the options for participation in this project, and certain ethical considerations were important. Because no cues (verbal and non-verbal) would be available from the participant during an email interview, the participant was free to decline to answer any questions by leaving them blank in the email. In terms of ethics, the distress the participant faced participating in an email interview due to the sensitive topic was considered low risk. Lack of communication from the participant during the email process was taken as either withdrawal from the study or unwillingness to participate further. If the participant had not responded after three email attempts, it was taken as withdrawal from the project. As the Consent Form (Appendix A) outlined, participants knew they could withdraw at any time. As this is a sensitive topic, a phone number through which participants could seek mental health support was provided if the participant requested help (Canada 211, a community and social services helpline).

Data Collection

Data collection for this project was done through one of two methods, synchronous Zoom or asynchronous email semi-structured interviews and participants were given the option to

participate in the way that felt most comfortable and convenient for them (Brondani et al., 2011; Hershberger & Kavanaugh, 2017; Ratislavova & Ratislav, 2014). If participants felt more comfortable participating in writing, they had the option to select asynchronous email as their interview, or if they felt that participating via email was a barrier, they could have chosen to participate via video or telephone (Brondani et al., 2011; Hershberger & Kavanaugh, 2017; Ratislavova & Ratislav, 2014). The interview questions were tested during several pilot interviews to ensure the participants understood the questions and that no redundancies existed across the question guide (Appendix C)

My personal data collection approach was influenced by Schneider-Mayerson & Ling Long (2020), who utilised an online survey with both multiple choice and open-ended questions. Similar to Schneider-Mayerson and Ling long, I used open-ended questions that would allow the participants to share their answers freely and respond with their emotions to capture a rich data set. Another study by Hershberger et al. (20112) also interested in reproductive decision-making used asynchronous data collection, which proved successful as a data collection method for collecting this type of personal information.

Many benefits can be seen with the use of asynchronous data collection, allowing researchers to reach larger audiences by dismantling physical boundaries (Hawkins, 2018; James, 2016; Meho, 2006), for participants to participate if they have speech impairments that would otherwise exclude them from an oral interview (Ison, 2009), and it allows participants to spend more time reflecting prior to responding (Kralik et al., 2000; Pithouse-Morgan et al., 2012; Spencer et al., 2019). Moreover, previous research has illustrated that asynchronous data collection can yield rich data compared to synchronous methods (Ratislavova & Ratislav, 2014; Hershberger & Kavanaugh, 2017). Unfortunately, asynchronous data collection does not come

without challenges, as participants who do not have internet access will find it difficult to participate, and it allows for the participant to be dishonest or not genuine in their answers (Rautio, 2019; Williams et al., 2012).

The interview questions and probes focused on the participants' thoughts and feelings about climate change, parenthood in relation to climate change if a decision had been made to have or to not have children in the face of climate change, information (or lack of information) they have received about the topic, and where they have found that information. I gathered demographic information from the participants (as a questionnaire during the interview), (Appendix C) including geographic location, gender identity, age, relationship status, the highest level of formal schooling obtained, employment, political views, whether they currently have any children, and approximate household income.

The synchronous interviews were conducted via Zoom and were approximately thirty to forty-five minutes long. The semi-structured nature allowed flexibility for me to adapt to the conversation and focus the questions back on the overall research question (Adams, 2015). All oral interview sessions were audio/video-recorded with the participants' permission, then transcribed verbatim and returned to the participant for validation. If the participant selected email correspondence, it occurred via a set email address that was kept secure (parental.decisions.project@gmail.com). The email interviews took place over a few days to a few weeks, with most participants responding within a day. Seven participants participated in this project via Zoom, and the remaining thirteen participated via email (35% Zoom and 65% email). Full demographic breakdown can be found in Appendix G and H. Age of participants ranged from 16 to 45, with the largest number of participants being in the age range 30 to 34 (32% of total participants). The education of participants ranged from high school to Ph.D., with

50% of participants having a Bachelor's education. The employment of participants varied greatly, including part-time at Starbucks, nurse practitioner, registered practical nurse, dietician, and more. 20% of the participants were teachers. The average household income ranged from $25,921 or below to $214,368, and above, with most participants (35%) falling into the range of $97,069 to $150,473. Participants place of residence included 45% being from Thunder Bay, and others being from Orillia, Toronto, GTA, Sudbury and more. The location by region was equally split 50% from Northern Ontario and 50% from Southern Ontario. I also asked participants about race, 59% identified as white, 18% identified as Indigenous. I also asked if they identified as First Nations (10%), Inuit (5%), Metis (5%), prefer not to say (5%), and 75% did not identify as Indigenous. Participants were also asked to provide a value (from 1 to 10) for how interested they were in politics. Eighteen percent indicated that they were very interested, with a value of 10. Political leaning also varied with the majority (60%) saying they would vote NDP. Of the twenty participants, four expressed not having a strong interest in politics (indicating a value of 4 and below) (with two of these participants indicating they are unsure of the party they would vote for).

Data Analysis

Thematic analysis is a method for locating and encoding patterns of meaning in primary qualitative research; it identifies and groups the themes that the analyst considers crucial for describing the event under study (Braun & Clarke, 2006; Daly et al., 1997). Fereday and Muir-Cochrane (2006) describe thematic analysis as being "a search for themes that emerge as being important to the description of the phenomenon" (p. 82). The method entails "careful reading and rereading of the data" to identify themes (Rice & Ezzy, 1999, p. 258). Thematic analysis was performed using the 6-step framework developed by Braun and Clarke (2006).

Braun and Clarke (2006) outline the 6-step framework for thematic analysis; first is to familiarize yourself with the data, the second is to generate initial codes, the third is to search for themes, the fourth is to review the themes, the fifth is to define and name the themes, and finally the sixth step is to report and synthesize the data (Braun & Clarke, 2006). During the first step of the framework, I reviewed the notes that I took after each interview and transcribed each interview. Any initial thoughts or ideas I began to have were noted. During the second step, I generated initial codes using an inductive approach, where patterns and themes began to form. The features of the data that appear to be interesting and meaningful were noted. The codes developed in this stage were numerous and more detailed than the themes developed in later stages. After reviewing these initial codes, further examination of each interview was performed to ensure all relevant elements were accounted for. During the third step of this framework, I searched for themes. The initial codes previously developed in step 2 were then sorted into themes and subthemes, and the relationships between each of the themes were critically evaluated. A rough mind map was developed to help highlight some of the areas of repetition between themes and visually see the connections each theme had to one another and to the various subthemes. For example, participants discussed overpopulation in several different subthemes, in *Navigating Stress, Anxiety and (Ir)responsibility, and Missing Most Helpful Information, and Alternative Family Structures.* In the fourth step, the themes were examined to reflect upon the project's objectives and the connections to the main research question. For example, when I began to look more at the overpopulation piece, the participants were not discussing overpopulation in the same way in each subtheme but rather discussed it in different ways that I was then able to combine the overpopulation aspect with others. Here I could see places where it was appropriate to combine, eliminate, or separate initial themes, improving the

distinction between each and ensuring overlap and connections to one another as appropriate. During the fifth step, the themes were refined, and a table (Table 1) was developed to assist in the organization of the themes and subthemes, allowing for a deeper interpretation of the data. For example, I had two subthemes under "Responses to the Complex Emotions Surrounding Climate Change" I was able to combine and synthesize the two subthemes further, which ultimately created one theme instead of two subthemes, which I titled *Navigating Stress, Anxiety, and (Ir)responsibility*. Clear labels and definitions were developed. Finally, during the last step, reporting and synthesizing of the data analysis were reviewed and discussed for the overall theme classification. For example, the title of one subtheme was updated to reflect the most recent work, initially titled *A positive outlook for the future of climate change*, which was updated to *Remaining Hopeful*. Most of the coding was done inductively, guided by patterns, themes, and relationships; some coding was done deductively, informed by media coverage and literature. Similar themes to those identified during the review of the literature and the media coverage on the topic, emerged during data analysis. These themes will be discusses in the following section.

Chapter 4: Findings

During the interviews, participants were asked a series of demographic questions. These questions were generally asked at the end of the interview. However, during the recruitment and interview process, the participants appeared to fall into similar demographic characteristics; thus, for the last two interviews, the demographic information was asked at the beginning of the interview, providing the opportunity to fill in particular demographic characteristics that were not previously filled. A total of 20 (N=20) participants were interviewed; a full breakdown of the demographic data collected can be found in Appendix G and corresponding graphs in Appendix

H. It is important to highlight that there was room for improvement in the representation of two demographic factors. First, I had a limited number of participants who already had children (at the time of the interview). Second, only a single participant identified as "unsure" when asked about their gender. The potential limitations of demographic characteristics will be discussed later.

Overview of Results

In this findings chapter, I present data from the research exploring the experiences of twenty study participants navigating decision-making around becoming a parent within the context of climate change. The overarching question guiding this research was: "What is the experience of individuals making decisions surrounding parenthood during the current climate crisis?". Thematic analysis identified five themes and nine subthemes. The overview of themes can be found in Table 1. The themes and subthemes are described below and supported by quotations from interviews using pseudonyms. The excerpts were edited to remove fillers (i.e. "like", or "um", etc.) and corrected grammatically for clarity of meaning.

Table 1: Overview of Themes and Subthemes

Theme	Subtheme	Description
The Complexity of Climate Change on Human Emotions	Remaining hopeful	Some participants had positive feelings when discussing climate change.
	Experiencing climate change as negative and the cause of negative emotions	Various ways the participants view climate change as being problematic, as well as the negative emotions they associate with climate change.
Navigating stress, anxiety and (ir)responsibility	Navigating stress, anxiety and (ir)responsibility	The stress and anxiety parents and parents-to-be experience when thinking about climate change and parenthood, and examining feelings of irresponsibility for having children

Social Interactions Shaped by Climate Change – Going Beyond the Individual	Navigating discussions about climate change and parenthood	Who the participants discuss climate change and/or parenthood with, and the complex mix of feelings expressed during those conversations.
	The Intersection of Race and Gender with Climate Change	A few participants talked about how climate change disproportionately affects BIPOC populations and the gendered impacts of climate change.
Reproductive Considerations Outside of Climate Change	Becoming a parent: beyond climate change	Description of the various reasons to have children besides concern over climate change
	Alternative family structures	Examples of alternative family structures, such as adoption.
Climate Change Information to Support Decision Making	Information gaps and sources	Various climate change information sources, the role (or rather lack of role) that health care providers have in providing information surrounding climate change and parenthood.
	Missing and most helpful information sources about climate change and parenthood	Description of both information that is missing, and most helpful to date relating climate change and parenthood, and how this information influences decisions around parenthood.

While this research project is qualitative in nature one question was included in the interview process, that allowed participants to choose a numerical value using a scale. The questions asked participants about the extent to which climate change is a factor in becoming a parent (either for the first time or to have another child). Participants answers resulted in a range of values from 2, meaning that they considered climate change in relation to becoming a parent very little, to the highest value of 10 (indicating that they considered climate change extensively) in deciding to become a parent in the current climate crisis.

Ten of the twenty participants stated that climate change was a minor factor in their decision-making process (these participants selected a value of 5 and below). One participant

indicated that they rated climate change as a factor of 4 in overall decision making, simply because they have already made a decision not to have children: adding that they "probably still wouldn't choose to have kids either, because I would like the extra time to pursue what I'm interested in" (Claire), and Linda who already has children said they were "committed to having two children, but we were also very committed to not having more [children]". Participants discussed other reasons impacting their decisions about having children, including fertility, career, and finances but reiterated that climate change is also a factor. As Hazel stated, "it's [climate change] still significant". Ten participants indicated that climate change was a significant factor in their decisions about parenthood (and gave a numerical value of 5 and higher).

Two participants selected a value of 6 for how they would rate climate change in their decisions to have children, describing overpopulation as a primary concern. Hannah explained, "the world is already so overpopulated. I do not feel the need to introduce more people…". Anna who selected a value of 7 described her fears for the future about having children as a deciding factor saying: "What the future looks like for our world deeply influences my decision [to have children]". A few participants had a positive outlook on climate change, influencing their decision around parenthood, but most participants had more of a negative view of what the world would be like for the next generation. Michelle, who selected a value of 7, said that while climate change and systemic racism (being of Inuk/Inuit descent) weigh heavily on her decision around parenthood, she has some hope for the future: "I do have hope that potentially things could get better, and I could see hope for future generations". The highest values stated by participants were 8 and 10, describing climate change as a major deterrent to having children. Amber described not being concerned about the financial and emotional burden of having children but

said, "climate change is probably the only thing deterring me from having kids or wanting to have kids". In the following sections, I will examine each theme and subtheme I identified in this research, beginning with the complexity of climate change and emotions.

The Complexity of Climate Change and Emotions

Participants described complex feelings when discussing climate change and future generations, experiencing positive and negative emotions. The following sections will describe how participants are both *remaining hopeful* (subtheme 1) and *experiencing climate change as negative and the cause of negative emotions* (subtheme 2).

Remaining Hopeful

Some participants discussed feeling hopeful when thinking about climate change and the future. For example, Michelle shared, "I do have hope that potentially things could get better, and I could see hope for future generations". Participants spoke about *why* they felt hopeful about climate change and future generations. Hailey expressed, "new generations are coming up that are deeply passionate about stopping climate change, so who knows, there is still hope, and I don't want to discount that". Sources of participants' hope include seeing others taking positive environmental or climate action (both at individual and governmental levels), engaging in action themselves, seeing examples of technological innovation and climate solutions, and future generations being environmentally and climate-consciousness. Lindsay was specific in describing the work that is being done by Greta Thunberg and that Thunberg's actions inspired her hope: "Although I definitely think that there's some hope, in particular, thinking about Greta Thunberg, and the huge momentum she's brought". For Lilian, engaging in a climate strike herself inspired hope: "Sometimes a little bit of hope when I'm going to climate strikes, and I'm working with other activists". Similarly, engaging with climate change groups and organizations

shaped Kate's outlook on the future: "I have participated [in] (and organized) a number of lifelong learning experiences that focus on climate change, and this has brought me closer to activists and like-minded people who are very concerned". Relatedly, a few participants also spoke to the importance of leading by example, thereby inspiring hope. Lydia shared "I am vegan for ethical and environmental reasons… I care deeply for the environment and have switched to a zero/low waste lifestyle with my habits and products". Several participants described developments in technology, innovation and advances in climate change research and their impacts as reasons for feeling hopeful: "There is so much great technology and lots of research being done out there that makes me feel hopeful" (Jane). Amber discussed innovation as well, and said "I also feel excited when I'm hearing about innovation". Advances in technology and innovations speak to the hopefulness for future generations to make positive changes.

For some participants, beliefs they hold about future children and future generations inspire feelings of hope. Some described wanting to raise the next generation of humans and how they want to mould and educate them to help reduce the impact of humans on climate change. For example, Bree said, "I also recognize that for change to come, people will have to have and raise children who are environmentally conscious". To have and raise environmentally conscious children was also expressed by another participant, who said that being a child's primary teacher will provide the opportunity to shape and grow the child "I would also choose to have children because I will be their primary teacher and can help shape their views and opinions as they grow" (Harper). Participants were specific about educating their children through a social justice lens, teaching them in a more activist role, and educating them about climate change whenever possible. Lillian said, "if I had a child, I would be able to pass on some of the same values that I have, and I think they can make a really huge difference". Some participants found hope in

looking to the next generation and for others to continue working towards a positive climate change impact. Kate discussed that simply not having children isn't a solution to the climate crisis: "If parents that are aware and believe we need to take big steps to combat climate change don't have children, we rob the next generation of the leaders and voters [who could make a difference]". Hannah echoed the idea that future generations are more forward-thinking and climate-conscious than previous generations: "I think awareness of the decision to remain childfree as a way to positively affect the environment will lead to more young people making this decision. Youth today are more climate-conscious than ever before". There is hope for the future, hope for others to participate in positive changes towards climate change, and a general positive outlook towards climate change. Participants also spoke about some of the complex negative feelings they experience when thinking about climate change.

Experiencing Climate Change as Negative and the Cause of Negative Emotions

When speaking about climate change, specifically the interview question, "Can you describe how you feel when you think about climate change?" participants spoke at length about various negative feelings. Often multiple emotions were shared and interconnected. The most commonly discussed feelings included fear, anxiety, hopelessness, sadness, anger, and frustration over the lack of action to combat climate change. Many of these emotional experiences are shaped by, and connected to, perceptions about the future and future generations.

The feeling of fear was spoken about specifically for what the future may hold and fear for future children and generations. Claire expressed this clearly, "I feel incredibly uncertain and really scared about the future… I would not want my future child to suffer from [the effects of] climate change". Several participants spoke of fear in relation to the lack of action in response to climate change. For example, Ava conveyed, "I often begin to fear for the future and what we

will be experiencing due to the fact that we have turned a blind eye to our issues for too long.".

The feelings of fear, anxiety, stress, and hopelessness were often discussed "when I think about

climate change, I feel anxious and dread" (Sophia). The participants often spoke of the general

feelings of anxiousness surrounding climate change and how simply knowing too little or too

much caused them to feel anxious, worried and/or stressed. Amber said, "I was just taking so

many courses about climate change and environmental disaster and things like that, and that was

really stressing me out and making me feel really worried about the future". Knowing too little

or too much about climate change also elicited feelings of hopelessness and helplessness. Jane

expressed, "I feel like sometimes, the more I learn or hear about climate change, the more

helpless and hopeless I feel". Amber also discussed feelings of helplessness and experiencing a

sense of doom and gloom around climate change: "We're doomed kind of thing, and that really

like made me feel pretty hopeless and what is the future going to even, it's hard to think about

the future". Participants also expressed experiencing feelings of sadness when thinking about the

reality of extreme weather events and the predictions that such events will get even more

extreme and cause even more destruction to lives and property.

Feelings of sadness were specifically expressed when talking about environmental

degradation. Jane said, "I care so much about the quality of our drinking water and oceans. It

pains me to think about the microplastics in the ocean, lakes, etc. And how fish, birds, wildlife,

and even humans are ingesting them". In that connection, the significance of a healthy planet

was mentioned and how the environment participants experienced as children might not be

experienced by their own children which caused sadness. For example, Sarah said, "I do feel like

climate change is impacting how my little one is being brought up, such as not being able to

enjoy the outdoors as I did as a child".

Many of the participants also discussed feeling anger, including anger towards the world's populations and the selfishness of humans broadly "I'm angry at the selfishness and greed of the world… we constantly put our needs above those of other species of the Earth" (Bree). Stella echoed these feelings of anger regarding the selfishness of humans, "disgusted with how we as humans treat the planet and how climate change can impact our future which can impact future generations". Other participants discussed feelings of anger about the position of the government and believing that not enough action is being taken to make positive changes. For example, Lindsay doesn't "think governments and corporations, in particular, are doing enough to make a change". These feelings of anger expressed by participants are a perceived response to the lack of action they see from others.

Discussions about the emotions described above were often intertwined with discussions around urgency and climate (in)action. Jessica expressed this sense of urgency in the following way, "climate change comes up it feels like we're talking about what we need to do, or else it's going to get exponentially worse or is getting exponentially worse… there's really a sense of urgency". Although the sense of urgency is real, the list of what needs to be done to rectify the climate crisis seems so long and daunting for participants. A feeling of being lost or where to begin takes over: "I think the more information we get about climate change, the longer the list of things we need to make happen gets and the amount of time we have to make those changes gets shorter" (Hailey). Participants discussed the connection between individual action and collective action. As Kayla described, "it's not one person doing everything perfectly; it's millions and millions of people doing everything imperfectly, trying to do the best that they can". The need for governmental action, instead of such a large focus on individual action, was shared as well, with Lindsay detailing: "I don't think governments and corporations, in particular, are

doing enough to make a change… I can recycle every day, but it's really not going to make that much of an impact". Jessica described that she isn't impacted by climate change and won't necessarily see the effects from climate change, so why act now; "Climate change is something that doesn't have immediate effects. The lag between our actions and the consequences for the environment makes it hard to see how they are directly linked". Several participants discussed this lack of action from governments and corporations in relation to fear, anxiety, anger, and frustration. For example, Jane said, "I am fearful/anxious that we are not making drastic changes needed to be made by governments globally in order to sustain our land and resources".

Participants clearly expressed negative feelings when thinking about climate change and the future. The complexity of these emotions and experiences set the stage for challenging decisions around parenthood and climate change. Going beyond the individual emotions, we begin to see some responses, which will be described in the next theme I have identified.

Navigating Stress, Anxiety and (Ir)responsibility

Participants spoke about specific concerns they have for the future and future generations. The stress and anxiety experienced by the changing climate led some participants to believe that it was irresponsible to have children due to the hardship and unsafe world they would likely experience. Coupled with contemplations of whether children would want to be brought into this world, the unfair pressure that might be imposed on children from parents wanting future children to act and behave like them (as climate-conscious and social justice citizens), the added pressure on an already overpopulated world.

Participants discussed how they feel irresponsible for having children, and what that means for the Earth. As well as a sense of responsibility to have children to ensure that positive change towards climate change action is continued. The concern for the safety of future children

and future generations in connection to (ir)responsibility was brought up with Claire, who said she was "really scared to put a potential child into a world where we are unsure of a stable future due to climate change". Lillian expressed concern that the next generation may be faced with an uncertain future, which meant she was worried about bringing a child into the world; "a child into the world that you know they'll have to do is fight for a future". Jessica brought up a similar concern for the future when she discussed the quality of life for the next generations, "if you really love someone, you wouldn't do that to them … they can't have a good life". Jessica also expressed irresponsibility for adding more people was also tied to the world already being "so overpopulated. I do not feel the need to introduce more people to it". Overpopulation was also a concern for the resources we consume and how that will negatively impact the planet's health.

Participants expressed concern over the lack of resources the Earth may have to offer if we continue down the path we are currently on; this includes the number of people that occupy the planet: "That the world is going to be too hot or is not going to be enough water, land or whatever, and of resources" (Amber), and "you know the demand that one person has on the Earth, the resources that they use" (Kayla). Kayla continued to discuss the concerns with having multiple children and the consumption of resources "multiple kids, 5-6-7-8 kids, that's a huge demand that you're putting the ecosystem". Amber expressed similar concern with multiple children: "We need to stop having so many kids. There are just too many people on the planet that we can't support us all". Participants expressed these concerns regarding the future of the Earth, and for future generations and specific environmental concerns the future may hold.

Participants were specific about their concerns for future generations and how the environment will play a role. Expressing concern over "disease outbreaks, or any of the other issues associated with climate change" (Michelle) and "food shortages… will [my children]

experience water wars" (Hailey). Lydia discussed her concern over the changing weather patterns, "weather extremes and the awareness that climate change will only continue to get worse and more devastating". Participants spoke about the significance of the quality of life for the next generation, "if I did have a child, I'd want the best for them - and I worry that with the way things are going, their quality of life would be quite low due to the consequences of climate change" (Sophia). Other participants expressed concerns over the general state of the world for future generations. For example, Anna said: "What our world will be like for them in 50+ years What challenges are we leaving for them to figure out?". Concern for the future was a concern for many of the participants that brought up complex questions around (ir)responsibility related to both the climate crisis and parenthood in the context of climate change.

Social Interactions Shaped by Climate Change – Going Beyond the Individual

Humans are social beings. During the interviews, participants discussed the ways the topic of climate change is discussed alongside the topic of parenthood. First, participants discussed navigating *discussions about climate change and parenthood* (subtheme 4). Second, participants discussed how they saw *race and gender intersecting with climate change* (subtheme 5).

Discussions Around Climate Change and Parenthood

When asked whom participants speak to about climate change and becoming/not becoming a parent, participants listed various people, including friends, partners, family. In terms of how conversations advanced, tensions sometimes arose. Participants spoke about these conversations in ways to illustrate "good", "bad", and "ugly (categories I have developed as a way to describe the conversation's participants engaged in with others). Overall, when speaking to people of similar ages, such as friends and partners, participants reported the conversations to

be "good". Often characterized by a non-judgemental tone and more supportive and helpful overall. Examples of "bad" conversations included those with people who were already parents; in this example, participants expressed that they were not free to voice their concerns about having children in the context of the climate crisis. Conversations described as "ugly" tended to unfold with older generations, such as family members. In these conversations, participants overall felt very little support and that the conversations were dismissive.

Participants spoke about their discussions with friends, and generally, these discussions were supportive and helpful for participants. Kate said, "I found talking to friends the most helpful in this regard". Jessica discussed sharing similar views on climate change with her partner and how the conversations are generally very positive and productive "conversations that I've already had with my partner usually go pretty well…We have different upbringings but very similar views on climate change. So in that way, it's been a very productive conversation". Some of the conversations with partners were discussed with feelings of anger and isolation and expressed that it is a difficult topic to navigate. For example, Bree said, "I wouldn't bring it up with a partner as it's typically a difference of opinion and I try to avoid conflict". Lindsay described feelings of isolation from her partner, expressing that the difference in age elicits different viewpoints on the matter: "Having conversations with him is difficult because our viewpoints are very far away and because he's younger and just hasn't ever been in a long term committed relationship. And is not sure if he wants to have kids". Some participants felt that having the appropriate information and a strong foundation to justify their opinions, feelings, and concerns would help facilitate a productive conversation and support their decision-making. While some participants expressed being able to talk about climate change and parenthood with

many friends, others expressed a desire to avoid conversations (regarding climate change and parenthood) with friends who already have children.

Several participants described the "bad" conversations as those with friends who are already parents because of the challenging emotions and dimensions inherent in these conversations. Hailey expressed this as follows: "I honestly avoid sharing how I feel about it with friends with children because it is a sad topic. They [already parents] cannot take their choice back. Their children are already here … Having kids can be hard enough on its own". Lydia expressed: "We also have a lot of friends who are choosing to have children. Therefore, we stick to only the facts and how they align with our opinions so that we do not hurt their feelings". Avoidance of these conversations was also experienced by other individuals when it comes to family members, and how those conversations are often "ugly".

The conversations with family members under the heading "ugly" were generally described as conflictual, frustrating, dismissive, argumentative, and providing limited support offered by family members. Bree said, "discussing with family may cause a little anger and conflict … I feel slightly more judged discussing it with family as they tend to think I'm radical and that biological offspring is very important". Kate expressed the idea of having discussions about climate change and parental decisions with family members challenging: "This conversation would be very frustrating. Some of my right-wing family members are very dismissive and would think this discussion is entirely "blown out of proportion" and that I am overreacting". Several felt that an increasing age gap would predict these tensions; for example, Jessica said, "the conversations become a lot more, I guess, argumentative … when you're not on the same page, and when I'm talking to people in the older generation". When discussing becoming a parent with family members (regardless of within the context of climate change or

not), Anna conveyed that her family was expecting her to have a large family "I have encountered difficulty with discussing it with older generations who don't understand the climate change piece and are just eager for more family members". Participants also expressed that some family members view not having children as selfish: "They expect me to have children and that I am going to change my mind [about not having any]. My mom calls me selfish for not wanting to have kids" (Claire). Participants recognized that there is a generational aspect to how these conversations go, that they feel more support from those that fall within a similar age bracket or history, value system and/or educational background (regardless of age) as themselves, but participants also recognized that there are exceptions. A few participants expressed feelings of support when discussing this topic with older family members. Those who did said they feel understood by family members and supported in the decisions they have made "my parents and friends are understanding about my choice … my friends and family also know me well enough to know that I don't like living my life in the most traditional sense (Sophia). Overall, a wide variety of participants discuss their concerns and the nature of those conversations. Another important conversation to engage in that was raised by a few participants is surrounding climate change and the intersection with gender or race, discussed in the next sub-section.

The Intersection of Race and Gender with Climate Change

As discussed in the literature review, white women appear to dominate discussions about climate change and parenthood. For this reason, I feel that the two participants who discussed race and gender and the intersection with climate change is an important subtheme to examine. One participant highlighted a lot of inequities with climate change and how it disproportionately affects BIPOC individuals as well as females. When speaking about BIPOC voices with climate change, Michelle stated, "as a person of colour I've always thought about how environmental

issues disproportionately affect BIPOC and lower-income communities, who often face numerous oppressions". She continued, "I often see environmental movements lacking intersectional approaches and think it's vital to listen to and incorporate Black and Indigenous visions of environmental justice into my practices… I still think the environmental movement is very white and not intersectional enough" (Michelle). Lindsay echoed Michelle's concern about the lack of BIPOC voices in environmental movements and within the sources: "climate change as an issue try to dig in a little further so that I can see what is happening in different spaces that's not just being reported by like the same white reporters". While the sources and disseminators of information are important, Lindsay brought up that there are other important considerations: "As like a white settler like living in Canada it's also really important to recognize what it means to bring another… white child on to this land and like what that means". These participants raise points regarding systemic racism and the gendered aspect of climate change.

Only one participant discussed gender, pointing out how mothers often play multiple roles inside and outside the home, distinct from their male partners' roles. Michelle discussed observing a large proportion of climate activists who are women:

> I guess in relation to parenthood and climate change, parenthood is largely skewed gender-wise. Traditional mothers work double duty (working at work and at home). Furthermore, women are at the forefront of climate activism as those most impacted (especially women in the Global South) and as activists fighting for change. Thus, at the intersection of being a woman and a woman of colour, parenting in a world of climate catastrophe seems doubly hard (Michelle).

The discussion around the intersection of race and gender with climate change was limited; yet these participants raised some valid feelings and concerns. Outside of race, and gender, other concerns were raised outside of the topic of climate change on having a family, including what having a family means for the future and possible ways to have a family without giving birth themselves.

Reproductive Considerations Outside of Climate Change

Various considerations outside of climate change were spoken about by participants. This included considerations about becoming a parent that had nothing to do with climate change; *becoming a parent: going beyond climate change* (subtheme 6), and the possibility of having children despite climate change but perhaps considering *alternative family structures* (subtheme 7).

Becoming a Parent: Beyond Climate Change

Although climate change was clearly a key factor shaping decision-making and experiences of decision-making among nearly all participants, to varying degrees, considerations beyond the climate crisis were also discussed in relation to the decision about having or not having children, and about family structure and size. Other considerations shaping the decision-making process included whether one partner wanted children more than the other, whether having children is simply part of the human experience (and being part of a community of other parents), following societal norms and pressures, and whether the timing is right in the participants lives to have children. Interestingly, these other considerations were sometimes connected to climate change, further illustrating the complexity of decision-making around parenthood.

Some participants described their willingness to have children because of their partners' wishes and desires, negating their own wishes on the topic: "if [having children] is something that is extremely important to a partner, that could also cause me to change my mind" (Bree). Hannah described similar feelings she and her partner have with regard to having children and how they should be brought into the home when they are actively wanted, not simply for the sake of having children "…essentially we were both impartial to the idea of having children, and I don't believe children should be brought into a household where they're not actively wanted. My desire to reduce my footprint helped solidify the decision to live childfree". The desire to experience parenthood was also discussed in relation to being part of a community of parents and experiencing the joy and love of parenthood.

The centrality of parenthood to the human experience was also an important factor in shaping decision-making generally. Jane described aspects of parenthood that she wished to experience that outweigh the concerns she feels around climate change: "I would choose to have children despite climate change because I have always wanted to experience pregnancy, delivering a child and, of course, motherhood". Hailey described the rewarding type of love that comes from having a biological child: "It's part of the human experience. It's the fairy tale of experiencing a love so deep it's all-consuming". Harper echoed the desire to experience parenthood, many considerations were a factor in her decision, but ultimately climate change did not play a role in the final decision regarding parenthood: "I came to the decision on my own because of a personal desire to experience parenthood…when my partner agreed we decided to go ahead with the decision after considering our relationship, housing, employment and finances but not climate change as a factor". The inner drive to have children and be part of that human experience was a very important consideration for several participants, and to be part of a

65

community of parents. Hailey described seeing other friends go through this experience and wanting to be part of the community of parents: "In my life where some of my friends have already had children or at least thinking about starting a family… I would like to feel all of those things and be part of that community". The desire to be part of a community is experienced by others as societal pressure to become a parent.

Participants discussed both societal pressure and family pressure to have children. One participant stated, "the main reason I would have children despite climate change is traditional/societal pressure" (Sophia). Claire described the specific pressure they feel from family members "some reasons I would have a child are probably due to pressure from my parents and other family members". Hailey said she wants to have children so that her parents can become grandparents: "It would make my parents so happy, and I would love to see them with a grandbaby". Other participants discussed life's perceived natural progression: becoming an adult, being partnered, having a home, and finally becoming parents - as a reason to become parents. As Jessica described, "when you have a partner, and someone you want to share your life with, I think the most natural progression is to like want to share what you've created between each other". Some participants discussed the timing of having a family: "the reason why I would choose to have a baby during climate change would be if I felt the timing was right, meaning I'm in a good place physically and mentally where I am able to raise a child" (Sarah). Participants discussed considerations, not including climate change, that impacted (or is impacting) their decision, and some participants also described alternatives to family structure.

Alternative Family Structures

Participants discussed alternative family structures they may see for themselves in the future and what family structures may look like for others. When speaking about an alternative

family structure, participants highlighted two specific areas; first, there are children in the world who need a home (adoption), and second, family sizes should be smaller.

Bree was one participant who discussed adoption "there are other options, such as adopting children that have already been born". Hailey also expressed her feelings and concerns around bringing additional people into the world, when there are already others who need homes: "There are also many children that are already here that desperately need homes. I wonder if it's selfish to have your own child when there are so many that need you". For some participants, adoption seemed to be a way to have a family while reducing their impact on the planet by controlling the number of people that inhabit it. For example, Lydia said, "we feel that it is irresponsible mostly to bring a new child into this world; however, we feel that we could adopt with a more clear conscious". Another alternative family structure participants discussed is simply limiting the size of the family they would have.

One participant discussed smaller family sizes, specifically the replacement factor of children. The idea of the replacement factor is that you only have as many children as there are in your relationship; for example, if you are partnered, you would have two children between the two of you, and if you were a single parent, you would choose to have only one child. Ava discussed her opinions on the replacement factor and noted she limited her family size to align with her thoughts on the replacement factor, and ultimately impacting the negative effects of climate change:

> I know that my first two children will, be replacing myself and their father once we
> ultimately pass away… I think if I were to start having more children, it would have a
> bigger impact on my family's contribution to the ever-growing overpopulation of our
> planet and thus adding to the effects of climate change.

Kate, who is one of the few participants interviewed who already has children, said "we most certainly were committed to having two children, but we were also very committed to not having more". Kayla described her own family history, and seeing how many siblings she grew up with, and how her parents may have decided to have fewer children based on the amount of work it was: "I think if they were to do it [have kids] again they probably [would] only have one or two [children] because they didn't realize the demand that that was going to be having". We can see that climate change is a consideration for the ideas of alternative family structures. The information that is available to and the knowledge that participants have about climate change evidently impacts the decision they make about having children. The information and knowledge is from various sources, some being taught from an early age and some that are consumed daily as an adult.

Climate Change Information to Support Decision Making

In this final theme, two subthemes are discussed: *information sources and gaps* (subtheme 8) and *missing and most helpful information relating to climate change and parenthood* (subtheme 9).

Information Sources and Gaps

Participants discussed finding and receiving climate change information in various ways and from diverse sources to learn more about the issue and to support their decision-making around becoming a parent. Movies, documentaries, Netflix, and news media were identified as important sources of information for several participants. Some participants, such as Sophia, also expressed learning a lot from her peers: "My peers (friends who are passionate about the climate or people I know from volunteering)". Lillian discussed joining various climate change activist groups, providing her with information on climate change: "Part of Climate Straight Canada,

which is like a national network of climate justice groups across Canada and then Friday for

Future Toronto". Michelle, who discussed race, gender and intersectionality in relation to climate

change, was specific in the sources of information she felt were most helpful: "I also follow

several Black and Indigenous land and water defenders from whom I learn about more pressing

issues, including pipeline updates". Participants discussed how information sources have

changed; we now have more access to information because of social media.

Several participants noted that with the growing number of online and social media

platforms available, there is an increase in the information open to the public about climate

change. Jessica expressed this: "Definitely, a lot of social media… a lot of that information is

translated through to sort of media that is a bit more consumable for me, or easier to consume".

The importance of finding and having access to information from reputable or credible sources

was highlighted by several participants, as illustrated in the following set of quotes

> I suppose some information also comes from social media; however, I do always check to
>
> make sure it's actually a credible article or source (Hailey).
>
> I watch documentaries featuring a variety of topics, such as animal agriculture, plastics,
>
> and CO2 emissions, for a well-rounded understanding of climate change from not just
>
> one biased source (Lydia).
>
> Current events relating to climate change through reputable news sites (Harper).
>
> Following scientists such as Bill Nye - reading their books, watching their vlogs/etc. is
>
> also a source of information for me (Anna).

While some information is intentionally pursued, day-to-day activities also provide the

participants with rich information about climate change. A few of the participants employed as

teachers or early childhood educators discussed how their jobs offer an opportunity to learn

about climate change: "This year, I've been teaching first grade, and so as part of our science and social studies curriculum, we learned about climate change, we read stories about Greta, and we [students] made our own signs for Climate March" (Lindsay). Harper shared that her academic background was a source of information: "I get my background knowledge about climate change from my high school science education and my university degree in Science". Participants discussed having peers and social media as an important source and a large source of climate change information; they were shocked when asked if any information on climate change is offered by their healthcare providers.

All participants included in this study expressed that they have not received any information from health care providers on climate change (as a stand-alone topic and related to parenthood), "I don't believe that I have received any information from a health care provider about climate change and its relation to becoming a parent" (Harper). One participant shared an experience attending therapy and how a conversation about climate change and anxiety with the provider would be beneficial (but had not yet occurred):

> None. It was just weird that climate change is never a conversation. I get therapy as well. I always talk about activism [in therapy], but it's never a conversation [with my therapist]… it's really interesting to me that it's not more mainstream throughout healthcare and talking about climate change because it's a real-life threat and causes a lot of anxiety and health concerns as well (Lillian)

Hailey described the value of having healthcare providers offer more information and how she could see healthcare providers as a valuable source of information:

> I would be curious as to why there is a lack of information/discussion on the topic from healthcare providers. Or what healthcare providers, in general, think about

parenthood/climate change… just knowing you're not alone in your concern for how

climate change will affect your potential children is comforting

Overall, when asked about how much information about climate change had been discussed with

healthcare providers, all participants expressed they were disappointed. Participants continued to

discuss specific pieces of information they found lacking and described some helpful information

in navigating the decision around parenthood.

Missing and Most Helpful Information Relating Climate Change and Parenthood

Participants discussed a lack of information to support their decision-making around

becoming/not becoming a parent in the context of climate change. Specifically, participants

discussed lacking information about the environmental impacts of having a child and ethical and

climate-conscious ways in which to have and raise a family. Jessica discussed wanting to have

more information on the environmental impact of being present on the planet: "To have an

understanding about our planet, its resources, you know, thinking kind of seven generations

ahead and not just in your immediate lifespan". While Jessica spoke broadly about the impact of

humans on the planet in terms of resources used, another concern discussed by her was the waste

produced by humans, specifically the waste an infant creates. Participants were concerned with

other types of waste created by pregnancy, specifically, what to do with medications she would

no longer need: "Maybe more information on what you would do with [old

medication]…because you don't want to put [old medication] in the same for runoff water

(Kayla). Lindsay felt she needed more information about the impacts of how to raise children in

ethical and sustainable ways: "If you were going to have kids, what are some of the ethical ways

[to have children]…such as good cloth diaper companies or here is an example toys that aren't

made from plastics". Stella discussed wanting to know the effects of the current and future

environment on potential kids breathing and health: "I would like to know how climate change would impact our kids and their breathing". Information about population and overpopulation, particularly concerning greenhouse gas emissions, were also identified as important information for participants. Bree said, "I understand no one necessarily wants to discuss overpopulation…how helpful it is to reduce CO_2. I think more people would be inclined to adopt or not have children at all". Some participants described some of the missing information they wished they had when it comes to parenthood and climate change, and others described some specific and more helpful information they have come across, as well as how that has helped them navigate the decision-making process.

When asked about information and sources of information that were and/or would be most helpful to support decision-making around parenthood in the context of climate change, several specific ideas were shared. Information about what the future holds for future generations in relation to climate change and climate impacts was, perhaps surprisingly, only discussed by two participants. Some of the participants said they received some of the best information from discussions with friends, the news, personal day-to-day experiences, reflexivity work on their own, and social media accounts. For example, Lydia said, "The information I have found to be most helpful about the decision to have a child in relation to climate change has been from like-minded friends and social media accounts that I follow". Lydia also expressed that simply being provided with information that shows that people are struggling with the decision to become a parent (or to become a parent again) during the current climate crisis are not alone in this decision-making process: "a documentary with a focus on choosing to become a parent during this climate change emergency would be an excellent addition". Finally, some participants

questioned whether having more information would be helpful in supporting their decision-making process around climate change and parenthood.

Summary of Findings

The results suggest a relationship between parental decision making and climate change; five themes and nine subthemes were identified. The first theme: the *complexity of climate change on human emotions,* here some participants expressed hope for the future and connecting having children with this feeling of hope, because they feel the next generation can make a difference, and many participants associated climate change with negative emotions and concerns for the future and future generations if action is not taken to prevent further negative impacts of climate change. The second theme: *navigate stress, anxiety, and (ir)responsibility*, many participants connect the negative emotions they have when thinking about climate change to expressed ways in which they were navigating feelings of irresponsibility related to having children and the impact that will have on the planet. The third theme: *social interactions shaped by climate change – going beyond the individual,* many participants found it difficult to speak about their worries and concerns when thinking about climate change and parenthood. Participants described whom they felt it best to engage in those conversations with, and a few (2) speaking about their concerns and feelings about the intersection of race, gender and climate change. These two participants expressed concerns that certain populations are more heavily impacted by climate change, talking about the climate change impact on women with one noting how women in the global South face greater burdens. The fourth theme: *reproductive considerations outside of climate change;* many participants talked about the reasons they still want to have a family, such as experiencing the love of raising a child and the physical aspect of being pregnant and giving birth. Participants also talked about the societal pressure and familial

pressure they experienced, particularly from older generations wanting to have grandchildren. Some participants also mentioned they had thought about adoption, connecting it to the desire to have children and a family while choosing to positively impact climate change. In the fifth theme: *climate change information to support decision-making,* many participants expressed concerns about the sources of information relating climate change to parental decision-making and the important role that healthcare providers have an opportunity to fill.

Chapter 5: Discussion

The Complexity of Climate Change and Emotions

The participants in this project experienced many different emotions (both negative and positive) when thinking about climate change. This is consistent with the literature on climate change emotions broadly, which highlights some of the emotional responses and consequences of climate change, including sadness, fear, anger (Cunsolo & Ellis, 2018; Galway & Field, 2023), helplessness (Cunsolo & Ellis, 2018; Warsini et al., 2013), anxiety, and powerlessness (Galway & Field, 2023). Existing literature has also described some so-called "positive" feelings such as hope (Helm et al., 2021) and optimism (Homburg & Stolberg, 2006), for example, when seeing some technological advances that are addressing the climate crisis (Helm et al., 2021), or engaging and seeing others participate in pro-environmental behaviour (Homburg & Stolberg, 2006). Generally, the participants in this project described many negative emotions when thinking about climate change.

In relation to the 'negative' emotions, fear about the negative impact humans are having on the planet; what that means for the future, for future generations, and fear of what the state of the world would be like for the next generation emerged from my interviews. This leads to participants wondering whether having children is the right decision for themselves and the

planet. Some participants in this project expressed a desire to have children regardless of the

current climate crisis, a feeling echoed by participants in the focus-group research by Bodin &

Bjorklund (2022), where participants described climate change as having a negative impact on

their life, but still wanted to have children. National organizations have begun to form in support

of not having children because of climate change, such as No Future No Children (Canada),

Conceivable Future (United States), BirthStrike (United Kingdom) (McMullen & Dow, 2022).

The distress concerning climate change can be described using concepts of ecological grief and

ecological anxiety (Lewis, 2019; Wu et al., 2020). Although there is no consistently used

definition of ecological anxiety (or climate anxiety) in the literature, future-oriented concerns,

feelings of anxiousness about an uncertain future, fear about possible threats of the future, and a

cluster of related emotions around climate change, including fear, anger, sadness, hopelessness,

helplessness, and powerlessness (Comtesse et al., 2021; Galway & Field, 2023). Additional work

has similarly reported people who describe fear as a fear of not doing the right thing for the

planet (Kirwan-Taylor, 2007; Wray, 2022a). Another way fear is experienced by those

represented in the literature is fear that having children might not be the best choice for both

themselves and potential children - since additional children would negatively impact climate

change and, thus, future generations (Bodin & Bjorklund, 2022). Participants in this project

spoke about fear about the future, expressing fear that we are leaving the planet in a state that

will not support the next generation. Participants also highlighted other negative emotions,

including anger.

Anger was most commonly expressed when participants spoke about a lack of action by

governments acting to change the trajectory of climate change. The anger expressed by

participants is supported by survey research conducted by Galway & Field (2023). Survey

participants connected anger with the lack of governmental action and noted its impact on daily functioning and affecting mental and emotional health. According to Galway & Field (2023), 4 in 10 Canadians expressed that their emotions regarding climate change have a detrimental influence on their everyday lives. Conversely and similar to participants in this study, it has also been reported that people feel a sense of connection, comfort and relief when people in powerful positions (such as politicians) act in response to the current climate crisis (Diffey et al., 2022; Shadijanova, 2023). Emotions around climate change are complex. While the participants broadly described negative emotions relating to discussions of climate change, a few participants did talk about some positive feelings associated with climate change.

Feelings of hope were described by participants in this research as well as in the literature. Hope is expressed by Helm et al. (2021) in terms of future generations being more aware of and involved in making changes towards climate change. Similar to previous research (Helm et al. 2021; Homburg & Stolberg, 2006), while mentioned, positive feelings were not the predominant experiences for participants in this project. Participants who talked about positive feelings primarily focused on hope and optimism for the future in terms of how they felt they could make a difference through leading by example and the small changes in their daily lives (such as recycling and being a vegetarian). As Mackendrick (2018) has noted people feel empowered when they take charge of their health by gathering knowledge and exercising their moral responsibility as citizens in all aspects of life (MacKendrick, 2018). Homburg & Stolberg (2006) previously reported that engaging in pro-environmental behaviour such as: recycling daily in one's home, using public transportation, riding a bicycle for transportation or walking to one's destination may elicit positive feelings associated with actions to help prevent climate change from worsening (Homburg & Stolberg, 2006).

It comes as no surprise that some participants in this project who believed that having children may be one of the ways to address climate change expressed that they experienced hope for the future. Helm et al. (2021) reported that their participants felt that actions to mitigate climate change led by younger generations and future leaders as well as technological advances could help climate change problems – and that these elicited feelings of hope. Bodin & Bjorklund (2022) also described a key theme for hope "a younger generation would give birth to a new Greta Thunberg, Nelson Mandela, Bill Gates, or someone who in the future would solve the climate issue, or other global crises" (p. 6). Echoing the literature, my participants also spoke about looking towards the future for change and for future generations to make a difference, which future aligns with the research by Schneider-Mayerson (2022) who found that the opportunity to educate the next generation and make positive changes toward climate change brought hope to individuals. Participants in this project did not discuss environmental politics; however, the second category was described by many participants when discussing hope for the future. Schneider-Mayerson (2022) participants described this second rationale as an opportunity to educate and allow future generations to make a difference and contribute to the world in more sustainable ways. As described by Schneider-Mayerson (2022), the opportunity to educate the next generation aligns with the participants' comments in this project, who spoke of an opportunity for future generations to make positive changes toward climate change.

Navigating Stress, Anxiety and (Ir)responsibility

Unsurprisingly, some participants in this project felt that it would be irresponsible to have children, adding a burden to an already overpopulated world. This resonates with the literature that sees overpopulation and the impact of the growing population on the environment over the past decade (Bodin & Bjorklund, 2022; McMullen & Dow, 2022; Peterson & Engwall, 2013).

Many worldwide view climate change as a significant concern, and some are considering not having children as a result (Lockwood et al., 2022). Overpopulation and having children are often considered bad for the environment (Bodin & Bjorklund, 2022; McMullen & Dow, 2022; Peterson & Engwall, 2013). Participants in this project described overpopulation as a concern for the future and as one of the reasons to not have children or only have one biological child. This aligns with the survey done by Bodin & Bjorklund (2022) and has been reported widely in research (Crist et al., 2022; Helm et al., 2021; McMullen & Dow, 2022). This idea was expressed by participants in this project when they discussed the consumption of resources an additional person would consume. Participants in this project discussed specific concerns about the future, including water shortages, food scarcity, harsh weather conditions, and general uncertainty about the future. These findings are consistent in the literature where various sources describe that people are concerned over constant water and food shortages (Gharabaghi & Anderson-Nathe, 2018; Hayes, 2018; Lang, 2015; Wray, 2022c), weather disasters and extreme weather events (Berry, 2010; Kuehn & McCormick, 2017; Sanson et al., 2019; Warsini et al., 2013), and increased exposure to diseases (Ferreira, 2020). As discussed in the literature and by participants, overpopulation is a concern and a reason, for some, not to have children. In the Bodin & Bjorklund (2022) focus group, respondents expressed their interest in limiting the number of children to reduce their environmental impact on the planet

Adoption, as an option to fulfill the desire to have children and a family, came up in the narratives of some of my participants, mirroring research by Crist et al. (2022) and Helm et al. (2021). Participants discussed how they felt they could lessen the burden on the planet by having a smaller family, or by providing a home to children in need. This was viewed as a way to ensure they did not have more children than would replace themselves (and their partners). For

individuals who are considering parenthood, the replacement factor was discussed as a way to have biological children, while not further negatively impacting the planet. The idea with the replacement factor is that you only have as many children as replace you, for example, if you are single you have one child, if you are partnered you and your partner have two combined, if you have been separated and are newly partnered you could have three (eg. One to replace each of you, your ex and your new partner – this could only be the case if your new partner does not have children of their own when you get together). The idea of a smaller family size discussed by participants aligns with arguments made by Bioethicist Travis Rieder, who said that one way to reduce carbon emissions and prevent future climate disasters is to have a smaller family (Reider, 2016). A few participants in this project described wanting a family through adoption instead of having their own biological children to have a clear conscious regarding the impact of humans on the planet. While adopting does not impact the resources that individuals will use in their lifetime, it does provide an opportunity to positively impact overall resource consumption by limiting the number of people on the planet (Reider, 2016). As noted above some felt that having children (and educating them about climate change) gave them hope for the future – some also saw it as a way to ensure that the next generation itself would have hope and knowledge for continuing positive work towards climate change. In essence participants expressed feeling a mix of responsibilities – both for and against having children. At the same time participants noted that the responsibility should not fall on individuals but rather that governments and large corporations carried great responsibility in order for any change to happen and to make a difference. However, when participants discussed the important role of governments in combating climate change, they were faced with negative emotions such as anger as they believe that governments and large corporations are not doing enough, and are pushing the responsibility

of climate change onto individuals. As reported by several authors many people feel that the ownership of change should truly rest with companies and governments; individuals shouldn't bear the burden of action alone (Bodin & Bjorklund, 2022; Diffey et al., 2022; Richie, 2014). As a result of multinational businesses, such as those that manufacture fossil fuels, producing the majority of CO_2 emissions, it is frequently said that individual actions have minimal impact on lowering carbon emissions (Bodin & Bjorklund, 2022; Diffey et al., 2022; Richie, 2014). Overall, the decision around parenthood among participants in the context of climate change is complex. The social dynamics and discussions around parenthood in the current climate are also complex, with participants in this project and other research projects discussing whom they have these conversations with and their experiences during those conversations.

Social Interactions Shaped by Climate Change – Going Beyond the Individual

The quality or type of interactions participants experienced when discussing climate change and parenthood with others varied. Experiences seemed to be different depending on the age or relation. Young people often feel the weight of climate change more at the same time they are often more aware of, and learning about breakthroughs from the next generation of leaders and newer technological innovations that will positively influence climate change (Helm et al., 2021). This is reflected in it often being young people who are on the forefront of climate change actions (Pachero, 2020). Some participants felt the conversations centred around climate change and parenthood were easy and that they benefited from engaging with others, whether friends, family, colleagues, or partners. Many participants described meeting challenges when introducing the topic of climate change and parenthood, so they avoided those conversations with some people, particularly older family members. The findings from 23 age-specific focus group (groups of four to six participants approximately the same age) research conducted by

Bodin & Bjorklund (2022) also illustrate that climate change and reproduction discussions can often be complex, sensitive, and provocative and vary by age. Participants in this project found it challenging to have conversations with about climate change and reproduction with people who are already parents and family members, who found to be judgmental about their decision to think about climate change in their decision around parenthood. Diffey et al. (2022) has also noted that it can be challenging to have conversations about parental decision-making in relation to climate change with particular people. The results of this project are supported by the work of Diffey et al. (2022), who used a hybrid participatory action-research and stakeholder analysis involving 23 16- to 29-year-old people. Participants discussed whether or not to express concerns about climate change to families, friends, or coworkers out of concern that doing so could be counterproductive stating "Our feelings can also impact our relationships and working lives. In our relationships, we wrestle with whether or not to discuss these feelings with our families, peers or colleagues, unsure about whether opening up will do more harm than good" (Diffey, et al., 2022, p. 502). Similarly, the people interviewed by Helm et al. (2021) described being misunderstood by family and friends and feeling pressure from family members to have children.

As described by participants in this project, the experiences and feelings surrounding climate change vary across individuals as we all face different challenges and experiences based on age, race and gender (Romero, 2018). Two participants in this project discussed the intersection of race and gender. While this research was not aimed at examining the intersection of race/gender and climate change these two comments are nonetheless significant. Environmental issues disproportionately affect low-income communities, including BIPOC individuals, and women (Olson & Metz, 2020). As discussed in the findings Michelle who identifies as Inuit, spoke about systematic and intersecting challenges she faces as an Indigenous

woman noted that "at the intersection of being a woman and a woman of colour parenting in a world of climate catastrophe seems doubly hard".

Populations at increased risk of the impacts of climate change are those in rural communities, people experiencing homelessness, people living with disabilities, and those who live in the North (Government of Canada, 2018), women, children, and seniors (Olson & Metz, 2020). Indigenous Peoples who rely on the land as a way of life for hunting, fishing, and foraging for food will often experience poor health and a decrease in traditional foods because of environmental contaminations to waterways and land (Simpson et. al., 2009; Kipp et al., 2019). People of colour and Indigenous peoples are frequently on the front lines of climate change and often experience ecological mourning and grief exacerbated by past and present trauma (colonial, structural, racial, intergenerational) (Hansen, 2021; Shain, 2021). Racial discrimination exists in the development of environmental regulations, in law enforcement, in the location of polluting businesses, and in the targeting of communities of colour for the disposal of hazardous waste (Cullis-Suzuki, 2021). Indigenous people, black people and people of colour have faced this disregard of grave risks to their being, excruciating suffering, and fatalities brought on by our history of racism, colonialism, and slavery, for a lot longer than climate change (McKibben, 2021). The experiences of Indigenous People were discussed by one non-Indigenous participant, who raised concerns over giving birth to another white settler on Indigenous land. With the demographic data collected it is evident that participants are predominantly white (13), with a few identifying as East Asian (1), Indigenous (4), or South Asian (2) (See Graph 7 of Appendix H). No participants identified as Black, Latino, or Middle Eastern. This may be one reason why only two interviewees spoke about the particular impacts on BIPOC people. At the same time it has been noted in the literature that there has seemed to be a relationship between whiteness and

reported experiences of eco-anxiety (Ray, 2021), but, as Ray (2021) writes, people of colour are not less concerned about climate change than white people (in the United States), rather people of colour may be less involved in climate activism or express this concern less because they have experienced and are now experiencing other significant challenges including oppression, racism, discrimination, inequities, etc. The data collected here does not allow in-depth discussion of the perspectives of various BIPOC populations however it is important to point out that racism also manifests as environmental racism and trauma and that this may shape decisions around parenthood. This would be an important future topic for attention and of study in relation to climate change.

Gender was discussed specifically in this project by one participant, who addressed mothers' roles compared to fathers. She spoke about how mothers often hold two jobs at home and work. Moreover, she mentioned that women are often depicted as activists for climate change and are often those most heavily impacted by climate change. As discussed by Cousins (2020) the individualization of the environmental movement has impacted and reinforce gender inequalities as it places a greater burden on women (on whom the burden of household labor and care already falls). This is particularly the case for mothers who have the task of protecting their families from harm. as (Cousins, 2020), and it disproportionately women who are racialized and live with lower income as they often face greater exposure to environmental hazards (Cousins, 2020). It is not surprise then that women often face more negative impacts of climate change, including anxiety and depression (Olson and Metz,2020). Ross et al (2017) describe reproductive justice as a contemporary framework that highlights three core values, the fight to have a child, the right to not have a child, and the right to parent a child (or children) in a safe and healthy environment. Participants in this project rather than discussing having children (or not) as a right

felt that they were responsible for having children (or not) in order to address climate change and also felt responsible for maintaining a healthy environment that potential children could be raised in (whether they felt able to totally live up to that responsibility or not). All of which created feelings of stress and anxiety.

Adding to feelings of stress for some participants were consideration of the effects of economic, social, and health factors on women's capacity to make informed reproductive decisions, expanding the topic of women's reproductive rights beyond environmental/climate, legal and political problems (Ross et al., 2017). The economic considerations included refraining from having a large family because of the cost associated with raising many children. The social factors included the societal and familial pressure that participants expressed they experience from some individuals in their life to have children even though the ultimate choice was their own. And the individual health factors were discussed by one individual when speaking of possible fertility issues they may not know about because of not having attempted to bear children at the time of the interview (the participant did not have any children but expressed interest in having children in the future).

These findings support the idea that groups and individuals experience the effects of climate change differently, and that some populations are at an increased risk of the adverse effects of climate change. To fully understand these complexities around climate change, future research is needed, ideally with an intersectional approach.

Reproductive Considerations Outside of Climate Change

Many of the participants in this research highlighted the desire to experience motherhood, parenthood, raising a child, and being part of a community of other parents as a consideration on which climate change had no bearing. An example of the desire to experience motherhood is

described by Britt Wray, who recently had her first child: "What I sense more deeply is that I want to have a baby in order to experience what many describe as the deepest registers of love that humans are capable of feeling" (Wray, 2022b). Britt Wray is important to discuss here as she is a researcher and author at the forefront of many discussions about climate change and mental health and is now a new parent herself. A participant in this project discussed the particular kind of love they felt was connected to having a biological child and wanting to be part of that human experience and be part of a community of parents (this participant was not a parent at the time of the interview but wished to become one in the future). Moreover, a participant in Bodin & Bjorklund (2022) described the dream of having a family and their own children as central, despite concerns around climate change. An author online, O'Reilly (2022), spoke about a hypothetical situation. One evening, she was snuggled on the couch with her dog and thought: "How actual parenthood, I suspect, would redefine every superlative sense of love, pride, and responsibility I've ever experienced". The love and opportunity of raising a child proved to be an important facet for many participants in this project, while many also discussed remaining voluntarily childless. The decision to remain voluntarily childless could allow individuals to devote their time and attention to other areas they view as more important, as previously discussed in the literature (Blackstone & Stewart, 2012; Carmichael & Whittaker, 2007). Some reasons for voluntary childlessness, in addition to and outside of climate change, expressed by participants included wanting to focus on a career and be financially stable, which in turn provides financial freedom to enjoy other aspects of their lives, such as hobbies, individual pursuits or travel; this aligns with previous articles (Carmichael & Whittaker, 2007; Schneider-Mayerson & Ling Long, 2020; Stegen et al., 2020). The decision to remain voluntarily childless

is not met without its challenges. In this project, participants described how they experience

societal pressure to have children.

In recent literature, the media, and in my own social circles, there appears to be a broader

or growing acceptance of being voluntarily childless. This may be due to changes in societal

values and customs (Stegen et al., 2020). One trend on social media in the past few months I

have encountered many times is the term D.I.N.K. (McGuinness, 2022; Palmer, 2022). In the late

1980, The Los Angeles Times wrote about "the millions of baby-boom couples who work for

wages and, so far, don't have children" coining the term DINKs (dual income no kids) in their

reference to these couples (Finke, 1987, paragraph 3). Participants in this project did not discuss

this term, but as noted above, similar ideas and values around other aspects of their lives were

discussed. For example, the potential, financial struggle people who have children may

experience, the desire to travel more, and the pursuit of personal interests were all expressed by

participants. Individuals who have children have a larger carbon footprint, because of increased

transportation and food consumption (Nordstrom et al., 2019). For couples in previous

generations, having children was a normal and expected step; however, Gen Z has a different

outlook (Mariotti, 2022). For some, having children is much less important than increasing their

income or engaging in meaningful activities like hobbies and travel (Carmichael & Whittaker,

2007: Mariotti, 2022; Wenfeng & Bingkun, 2021). Some members of this upcoming generation

are unaffected by social norms, regardless of whether lifestyle or financial considerations are

what lead them to adopt the DINK way of life (Mariotti, 2022; Wenfeng & Bingkun, 2021).

While some participants discussed voluntary childlessness and the desire to experience other

aspects of life besides parenthood, other participants described wanting to be a parent but

limiting the number of children they would have as discussed below.

Climate Change Information to Support Decision Making

Participants in this project expressed that healthcare providers should play a role in providing climate change information to support decision-making around parenthood and expressed concern over the lack of support they have received relating to climate change from those in healthcare positions. Diffey et al. (2022) discussed healthcare providers' vital role in helping people cope with challenging and complex feelings around climate change, specifically the important role of mental healthcare workers (psychiatrists, counsellors or researchers). These professionals can hold space for discussions around climate change and its associated emotions (Diffey et al., 2022). They could also support young people as they navigate decision-making around having children or not in the context of our changing climate (Diffey et al., 2022). However, one of the interviewees in this project said she has yet to experience that space in her therapy sessions. Participants in this project ultimately expressed that they do not receive information on climate change or climate change and parenthood from healthcare providers, ultimately expressing the need for information related to the overall impact children make on the planet. Mental health professionals play several vital roles in supporting people with their mental health around climate change (Espinel et al., 2019; Usher et al., 2019). A "chronic fear of environmental doom" is how the American Psychological Association characterizes eco-anxiety (Clayton et al. 2017, p. 68). Even though research on eco-anxiety is still in its early stages, and has yet to be included in the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders), its development and research is at a crucial phase (Baudon & Jachens, 2021). These various roles include providing advice on the effects on mental health to the leaders in public health, participating in community emergency response, providing consultation to public health, educating and preparing patients for possible storm impacts (Espinel et al., 2019) and overall

play a role in easing and addressing the suffering brought on by climate change (Usher et al., 2019). With the change in our environment, we need to experience a change in the healthcare services related to climate change (Mackenbach, 2007). The results of this project support the need for more research, not only on climate change and parenthood but also on the services offered by healthcare providers.

A recent study by Sanderson & Galway (2021) included interviews with nineteen healthcare workers in Northern Ontario who self-identify as a 'climate change leader'. Using thematic analysis, Sanderson & Galway (2021) had four main themes emerge; "(1) climate change as an emerging and profound health challenge, (2) the interconnectedness of climate-related health concerns impacting the North, (3) feelings of uncertainty around engaging in climate action, and (4) adopting mitigation in the North" (p. 3). Participants expressed that engagement with climate change within their healthcare role could be broadened to protect and promote health but felt somewhat uncomfortable engaging in it (Sanderson & Galway, 2021). As discussed, participants in this project have yet to receive any information or support regarding climate change from healthcare professionals; Sanderson & Galway (2021) provide a possible explanation for why that might be. Participants discussed that climate change impacts on health are complex and highly interconnected (Sanderson & Galway, 2021). One participant in this project described being shocked that she has yet to get information and support from her healthcare provider, especially given that they are aware of such terms as ecological anxiety and solastalgia. As described in Sanderson & Galway (2021), the healthcare providers interviewed viewed climate change as a profound health problem impacting physical, mental and psychosocial well-being (Sanderson & Galway, 2021). Given how the participants in Sanderson & Galway (2021) view the importance of climate change on health, it comes as a surprise that

the participants in my project have yet to receive support from the providers in their lives (at the same time though they have yet to seek out this information directly). As many participants in Sanderson & Galway (2021) also the participants in this project, believe that climate change is one (and a significant one) of many threats to human health. The participants in this project did not expand on who they thought would be best suited in the healthcare role for providing climate change information to patients, but those in Sanderson & Galway (2021) said public health professionals are "better situated to integrate climate change into their work, engage in climate action and advocate for climate action" (p.5). As we continue to experience the adverse effects of climate change, additional research should continue to be conducted. Individual experience with climate change and healthcare information is important, highlighting the fact that participants do not see healthcare providers as a source of information. The literature discussed the critical role healthcare workers could fill for individuals during the current climate crisis and additional information, support, and services communities need, as well as additional research on who has and will continue to be impacted more by climate change.

Conclusion

My research explored the complexities surrounding climate change and decision-making in relation to parenthood. This work taught me that it is highly emotional for many participants to consider the impacts of climate change on their decision about whether to have children or not leading many participants to experience negative emotions including eco-anxiety and climate anxiety. Participants also expressed some feelings of hope about the future, and wanting to provide the next generation with a space to continue make positive changes towards climate change. Specifically, age, gender and race are all factors that participants navigate in making their decisions around parenthood. Offering support through various sources and a supportive

social network such as friends, peers, occupational support, and using social media as a source of support, provided participants with a foundation for navigating climate change and choosing to become a parent. An area of support discussed by participants that they feel is lacking is support on climate change and parenthood from healthcare professionals.

In the concluding chapter, I first discuss the strengths and limitations of this project, including how COVID-19 impacted my research. Hereafter I discuss the implications and significance of the study. As methodological implications were not really part of my research focus, I have omitted it from the general findings, however I do want to provide a brief review of how the use of social constructionist methodology contributes to the literature as well as what asynchronous data collection meant for the participants and how it can also contribute to the literature. Therefore, this is discussed under significance of the study.

Chapter 6: Conclusion

Strengths and Limitations of this Study

The primary strength of this study is its contribution to the academic field of climate change and parental decision-making. As noted, only a few academic studies have examined this topic to date, highlighting this work's relevance. The growing media attention to the topic indicates that it is an area that should be explored more and include a wider variety of voices and perspectives thus far that have yet to be heard. As discussed in the above chapters, climate change and parental decision-making is a topic discussed previously but is relatively new in the literature.

Recruitment, as previously described, was done via social media posts to my pages and various Facebook Climate Change Groups. Using public social media groups and my social media platform for recruitment allowed me to reach a wide variety of people (I have a following

of approximately 3000 people on my page). Within my followers, I can see a breakdown of age, gender, and location. This allows me to target my products and posts to those interested in my brand, unfortunately using that platform for this project also limited the reach to those who identify as women between the ages of 27-35 and reside in Thunder Bay, which comprised a large number of the individuals who ultimately participated in the project. I contacted other content creators and asked them to use their social media platforms for recruitment for the project. Both of the ones I could get help from were white, cis-gendered, heterosexual women. Using my own platform and the other two social media platforms of friends for recruitment could have led to some demographic characteristics being homogenous. In hindsight, reaching out to other content creators who fall outside of the demographic information that I and the two others already tapped into for participants would be beneficial. Creating a specific social media platform for this (for example a specific Facebook page or group, or creating aTikTok account with various videos on the project) may have been useful as well and may have reached a wider audience. Similarly, reaching out to clinics or counselling services to display posters and have information sheets available may have also helped recruit a more diverse group of participants. Through the use of various Facebook Climate Change Groups, I was able to recruit a few participants for the project. Public Facebook groups only provide demographic information for who visits the pages if you are an administrator.

Looking at the current media coverage I discussed in the literature review, I realize that the pictures and names depicted are often of white women, which holds for the participants I recruited (65% of participants identified as white). As my participants were recruited via social media (i.e. various social media groups such as climate change and BirthStrike Facebook groups), I acknowledge that the majority of my participants are similar to me; privileged white

women, who are already discussing this concern, and who are in a privileged position to be making their own decisions. This is important to note as this project represents a slightly skewed population: white, privileged, middle-class women. This can be seen as a limitation; many of the voices in this project represent similar voices and would potentially educate others on a one-sided view of the world around them. The full demographic breakdown is available in Appendix H. Demographic information was collected as it was discussed by Schneider-Mayerson & Ling-Long (2020), that climate change is rarely described as the only consideration and that employment, cultural, financial considerations, reproductive capabilities and familial attitudes all impacted participants opinions on having children. A limitation of this is that less privileged populations will be underrepresented (specifically those already underrepresented in the various media coverage I have discussed), ultimately limiting the project's relevance to populations well-represented in the participant pool. Participant included in this project still provide rich data as very little research has been done on this topic before (as discussed in the literature review section).

With the growing popularity of social media pages/posts and the COVID-19 pandemic, it felt appropriate to use an online presence for recruitment. Using only social media pages and posts did limit the reach of possible participants. Providing more diverse voices to the conversation around parenthood and climate change would have been beneficial. If, during the recruitment stage, I was able to target demographic-rich environments, this would have provided additional voices to the project. Snowball technique was an option during the initial recruitment stages, as I was still determining how many participants I could get. As I recruited all twenty participants with purposive sampling, snowball technique did not need to be used. As described

previously, all twenty participants were recruited in June of 2021, and interviews began within two weeks of recruitment.

COVID-19 and its Impacts on the Research

Given the COVID-19 pandemic, social media recruitment and asynchronous data collection proved beneficial, it allowed me to recruit twenty participants quickly. Participating asynchronously also allowed the participants to participate within the comfort and safety of their own homes instead of in a public place (it is important to remember that interviews were conducted in the Summer of 2021 when many public health restrictions were still in effect).

Implications and Significance of this Study

As noted in the literature review, there is a lack of research on climate change and parental decisions and growing media coverage and interest in this topic. This thesis contributes to a small body of literature on the experiences of those thinking about being a parent during the current climate crisis; in-depth interviews account for some of the voices represented and point to several important implications. Specifically, there may be a role for healthcare workers to provide information on the topic of climate change generally (Espinel et al., 2019; Hanlon et al., 2011; Naish, 2008; Sanderson & Galway, 2021; Usher et al., 2019). Our findings also highlight the need for supported decision making processes around having children in the context of the climate crisis and the related emotional response impacts. The findings from this project provide a starting point for community services to look at the development of services related to parental decisions during climate change. The findings from this project highlight the complex relationship between climate change and parenthood as experienced by the project participants. Areas of research that can be advanced in terms of healthcare services are; additional research on the relationship between various healthcare providers and their patients, what information the

patient thinks the healthcare provider can offer in terms of climate change, what healthcare providers specifically should provide in their role.

Further studies that include participants in the LGBTQ+ community and finding more participants with children would be beneficial. Additionally, as the voices in this project are mainly white (65%), more representation from Indigenous and People of Colour (as they are often impacted more by climate change) and individuals in lower socioeconomic backgrounds would provide richer data. Furthermore, as this was part of a two-legged project, a future comparison of the participants in the two projects would be helpful to guide future research.

Methodological Significance

This research contributes to the body of literature focusing on research using a social constructionism and the benefits of asynchronous data collection, a methodology on which less work has been published. It also contributes to the growing research and literature on climate change and decision-making around parenthood. Three key points shape the theory of social constructionism. The first is the belief that knowledge arises from human relationships, the second is that language is central, and the third is that knowledge construction is (I would say can be) politically driven (Hare & Marecek, 1999). In other words, knowledge is socially constructed within the groups we are part of and with whom we interact and engage. In this way, community knowledge is produced by people with a variety of social, cultural and political backgrounds, who together create social meanings which may or may not be politically driven (Hare & Marecek, 1999). Participants shared beliefs about the impacts having a child would have on the environment moreover, many believed that smaller family sizes were indications of being more environmentally conscious or aware. The idea that knowledge is socially constructed within social groups played out among the participants in this study. Participants wanted to

educate the next generation (or community members) about the impacts of climate change and ensure that community members continue to understand the value and importance of climate change work. In this way what could be seen as socio-political values to the next generation to ensure that future generations continue to do work towards curbing the impacts of climate change. As Berg & Luckman (1966) discussed, lived experiences are different for all; different areas of our lives shape how we perceive the world. A few participants raised important points when discussing the impacts of climate change on marginalized groups and the importance of a closer examination of gender and race on how climate change is navigated by families. Finally, as many of the participants discussed the impact of climate change, they discussed ways in which they hope to make a change and resist dominant forms of the forming family by either choosing voluntary childlessness or choosing to have a smaller family.

Thirteen of the twenty interviews conducted for this research were done via email (asynchronously). At the end of each interview, participants were asked about their thoughts on the interview style they chose to participate in and their thoughts on the interview question. Participants agreed with the sentiments expressed in the literature about asynchronous data collection; participants who chose asynchronous participation expressed that they felt more comfortable with this interview process, and participating via email allowed them to participate at their own pace (Brondani et al., 2011; Hershberger & Kavanaugh, 2017; Ratislavova & Ratislav, 2014). Hannah described that participating in the interview on her own time worked well while allowing her to "think about my answers, which is not always the case in verbal interviews." In other words the asynchronous method allowed participants to reflect on their answers before engaging as previously described (Hawkins, 2018; James, 2016; Pithouse-Morgan et al., 2012). It is not common when using asynchronous interviewing for participants to

receive all interview questions simultaneously (Bampton & Cowton, 2022). However in this project, Anne described that getting them all individually allowed her time to collect her thoughts and felt that "[the interview] was more personalized than a typical survey". A statement supported by Ratislavova & Ratislav (2014) who said that their participants had "more time to think and consider their answers and can review their responses and reflect on them, which helps them engage in more careful communication" (p. 3). Still, a few participants stated that they would have preferred receiving all the questions at once. Hannah, Stella and Michelle said that getting all the questions at once would have been beneficial because it would have limited the time they needed to spend on the interview.

These findings agree with those obtained by Ratislavova & Ratislav (2014) and Schneider-Materson & Ling Long (2020), who describe many benefits of using asynchronous data collection. Overall, there can be cost savings when conducting asynchronous data collection; the data does not need to be transcribed since it has already been done so with the interview itself; thus, the interviewer does not need to spend time doing so (Ratislavova & Ratislav, 2014). Some participants may prefer to express themselves in writing, thus offering richer and more personal data for the project (Ratislavova & Ratislav, 2014).

Conclusion

This project sought to explore the complexities of climate change on becoming a parent using the research question, "What is the experience of individuals making decisions surrounding parenthood during the current climate crisis?". This study contributes to the limited but growing body of literature through an exploration of the complexities of navigating parenthood during climate change. People worldwide consider global climate change a serious issue, and media coverage and surveys indicate that young individuals may decide to forego

having children (Lockwood et al., 2022). The participants discussed climate change and other aspects of life in ways that are shaping the decision around parenthood during the current climate crisis. As discussed, there are many different factors, and the decision is complex. Ultimately, for a few participants, climate change is a huge factor in the decision around parenthood during the current climate crisis.

As indicated in the growing media coverage on climate change and parenthood it could appear that many individuals are considering climate change regarding their reproductive decisions. As described by participants, healthcare professionals have yet to play an active role in navigating the emotions around climate change and decisions around parenthood during the current climate crisis, but the literature indicates how important healthcare professionals' role is in our changing environment. This is evident by the small literature review, which also discusses how healthcare providers have an opportunity to play a vital role. Continued research on climate change, the impact of climate change on human health, and the complex role of climate change on decision-making around parenthood are all areas that need to be researched.

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Appendix A – Consent Form

Consent form

Project Name: Parental decision making in the face of climate change

Name of Participant (please print) _____

By signing this consent form I agree to the following:

- I understand that the purpose of the research is to explore the experiences of people who are making decisions around parenthood in the face of climate change.
- I have discussed the details of this research, including any potential risks in participating, have had all potential questions answered and agree to participate.
- I understand that I may ask questions of the researcher at any point during the research process.
- I understand my participation in this study is completely voluntary and that I may withdraw at any time (up until the submission of data) and for any reason without penalty of any kind.
- I understand that I can choose to not answer any questions asked as part of the interview and that I do not have to give a reason.
- Unless explicitly agreed to otherwise, I understand that information I provide will never be attributed to myself individually.
- I understand that the findings from this research will be shared in academic publications, conference presentations and in a Master of Health Sciences Thesis.
- I agree to have this interview recorded (if I participate in an oral interview) (please circle one): Yes No
- I would like to receive a copy of the findings summary (please circle one): Yes No
  Findings summary should be sent to the following email address
  parental.decisions.making@gmail.com

_____ _____
Participant's Signature Date

_____ _____
Interviewers Signature Date

Appendix B – Information Letter

Information letter
Project name: Parental decision making in the face of climate change

Dear Potential Participant:
We are inviting you to participate in a study that explores how people are making decisions about parenthood in the face of climate change, how climate change impacts them socially, emotionally and mentally and whether they feel they have the information, knowledge and support (socially, emotionally and mentally) they need in the decision making process.
Your time and help are truly appreciated. This sheet gives some basic information on the research, what you can expect, how the data will be handled and used. If anything is unclear or you want more information, please feel free to ask any question you wish, our contact details are at the end of this document. Thank you for your interest in this research project.

Purpose
This purpose of this qualitative study is to gain an understanding of how people are making decisions about parenthood in the face of climate change, the potential social, mental and emotional impact involved and the information, knowledge and support they have found helpful or lacking in the decision making process. We hope the findings of this research will help equip health and social service providers with knowledge about the information and support needs of persons contemplating parenthood in the face of climate change. At the end of the interview we are hoping to get your feedback on the interview questions and process.

What Information will be Collected
The information that will be collected through the interviews is three fold. During the first part of the interview we will discuss the theme of parental decisions. This will include your thoughts about climate change and how it impacts you - socially, emotionally and mentally - as someone who is contemplating parenthood for the first time, someone who is a parent, or someone who has chosen to not become a parent. Then we will ask you what kinds of knowledge, information and support you have found helpful or lacking in this decision making process. Finally we will ask some questions about you; such as your age, gender identity, and if you have been or could be the person who bears and births a child/children or not, if you have any children and whether you live in a rural or urban location. At the end of the interview we ask for your feedback on the interview questions and process.

What is requested of me as a participant?
We are inviting you to participate in an interview. The interview can be conducted orally via Zoom/telephone, or written via email, whatever works best for you. The Zoom/telephone interview will take approximately one hour. The email interview will take approximately 30 minutes to one hour if you choose to respond to all the questions in one sitting. We may send one or two follow-up emails with clarifying questions. You may also choose to respond to the questions over several emails as a correspondence between you and the interviewer. Regardless of the method you choose we will allow up to one month for the written interview to be finalised.

With your permission the oral interview will be audio recorded otherwise notes will be taken. If you choose the written correspondence, the researcher will email you the interview questions from a study email address. Correspondence will take place only via the email given, and all conversations will be saved as a secure password protected file. After you have read this information letter and before the interview begins (whether oral or written), we will ask you to sign the electronic consent form accompanying this letter. Please ensure to ask any question you may have before signing.

What are my rights as a participant?
As a participant you are under no obligation to participate, you are free to withdraw from the study at any time (up until the submission of data) without prejudice to pre-existing entitlements. You are also free to decline answering any questions asked without any negative consequences. Lastly you are free to elaborate on or delete any information from the transcript sent back to you. This study aims to maintain the highest standards of ethical conduct and integrity. Centrally, this means that in participating in this research you should feel that you, and your contribution to this research, have been treated with respect. Participation is entirely voluntary and all information offered will be treated in good faith. All questions about the research, its aims and outcomes will be answered openly and honestly.

What are the risks and benefits?
The risks are minimal for this study, there is no direct harm to participants. However, some people may experience stress, anxiety, sadness or anger because of the topic discussed. These feelings may also be what has prompted you to participate. You are not obligated to disclose anything during the interview that you are not comfortable with, and you can decline discussing any topic during the interview at any time. Participants will benefit by having a platform through which they can share their thoughts and feelings about contemplating new or additional parenthood in the face of climate change. A 25$ gift card will be given to participants as a small thank you for your willingness to participate. If you think you would like psychological support now or during the interview Canada 211 (https://211ontario.ca/211- topics/mental-health-addictions/) has a list of services available and we will also have a list to local supports that we can provide at the time of the interview.

How will my confidentiality be maintained?
In all cases, nothing you say will be linked to you individually. Your confidentiality will always be the number one priority. Only the primary investigator, and research team will have access to the interview transcript, notes, and consent form signed by participants. Only the primary investigator and Research team will have access to the raw data (audio recordings, email correspondence, and the signed electronic consent form).

Where will my data be stored?
Raw data (audio recordings, email correspondence and the signed electronic consent forms,) will be electronically kept in a secure Lakehead University VPN platform and de-identified transcripts in password protected computer files. The raw data will be stored for a minimum of five (5) years following the completion of the project and then destroyed.

How can I receive a copy of the research results?
A copy of the final research findings can be provided to you upon request.

What if I want to withdraw from the study?
If you would like to withdraw from the study please contact Dr. Helle Møller. Participants are able to withdraw from this study only up until the submission of data (once the transcript has been reviewed and accepted [or review has been declined] or the written interview is complete).

Research contact information
The research team comprises: Drs. Helle Møller and Lindsay Galway and Student Researchers Natalie Jurcik (MHSc Candidate) and Lauren Hooks (MPH Candidate) all Department of Health Sciences. If you have any questions regarding the research project, or interview, please contact Dr. Helle Møller @ hmoeller@lakeheadu.ca or (807) 343-8965.

Research ethics board review and approval
This study has been approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team please contact Sue Wright at the Research Ethics Board @ research@lakeheadu.ca or (807) 343-8283.
If you have further questions about these processes or feel uncomfortable with any aspect of them, please let us know as soon as possible.
If you are interested in participating, please find attached the Consent Form. Please complete and send back to the research team through this X E-mail address.
Thanks again for your time and interest
Sincerely
Dr. Helle Møller _____
Dr. Lindsay Galway _____
Natalie Jurcik _____
Lauren Hook _____

Appendix C – Interview Guide

1. Would you tell me a little bit about yourself and why you chose to participate in this interview/project?

2. Can you describe how you feel when you think about climate change?

   Probes
      a. Why do you think you feel that way?

3. Please think out loud and tell me about your decision-making experience surrounding parenthood or becoming a parent in relation to climate change.

   Probes
      a. What are some reasons you would choose to have children despite climate change?
      b. What are some reasons you would choose NOT to have children in the face of climate change?
      c. Do you feel that you can discuss your feelings about climate change and thoughts on whether or not to have children with anyone? Why? Why not? Who? (family, friends, partner, colleagues, care providers).
         i. Can you describe what these conversations were like (difficult, easy, emotional, supportive [or not]).
      d. If you have made a decision to have children - or not - in the face of climate change, can you talk a little about when you came to that decision, and what, if anything specifically, led to that decision?

4. On a scale from 1-10 (with 1 being not at all and 10 being very much) how much of an impact does climate change have on your decision to have or not to have children?

   (Please circle) 1. 2. 3. 4. 5. 6. 7. 8. 9. 10

   Can you explain why you assigned this value?

5. Where do you have/get your information/knowledge about climate change from?

6. What information about climate change, if any, have you found most helpful in your decision-making process about becoming a parent? Where did that come from?

   Probes
      a. What information about climate change and becoming a parent/having children, if any, have come from health care providers? (whom – E.g. what kind of provider?)
      b. Is there information about climate change in relation to becoming a parent/having children that you feel you need right now that you have not found a source for yet, if so what is it?

PARENTAL DECISION MAKING IN THE FACE OF CLIMATE CHANGE

7. Is there anything you want to discuss, comment on, or raise in relation to parenthood and climate change that we have not talked about?

Demographic Information

- Geographic location
- Gender identity (do you identify as a man, women, non-binary, other?)
- Will (could) you be or were you the one who gives birth or gave birth to a child Y/N
- Age?
- Relationship status?
- Highest level of formal schooling obtained?
- Employment?
- On a scale from one to 10 how interested would you say you are in politics? (with one being not at all and 10 being very much).

  (Please circle) 1. 2. 3. 4. 5. 6. 7. 8. 9. 10

    o If there was a federal election tomorrow do you know which party you would be most likely to vote for? - which party?

- Do you have a child/children (adopted/biological, step children or are you a caregiver to a child/children)? If yes, age(s)
- Approximate Household before tax Income bracket?
  Up to $25,921
  $25,921 to $48,535
  $48,535 to $97,069
  $97,069 to $150,473
  $150,473 to $214,368
  Over $214,368

About methodology

The first question is only posed to people who participated in an oral interview. The second question is only sent to people who participated in a written interview.

1. Can you tell me a little about your experience of participating in this interview and your thoughts about the questions posed.
2. Can you tell me a little about your experience of doing a written interview via email and the questions posed? Can you please elaborate on what worked well, not so well? This research method is new to us, so we are hoping to get your feedback on this process.

Appendix D – Promotional Poster

Appendix E – Recruitment Text

Parental decision making in the face of climate change

If you are or have been contemplating parenthood, and climate change
is or was a factor in your decision making process

we would very much like to speak with you!

Some people are choosing not to have children due to climate change, others are choosing to have children because of climate change and still others are conflicted about having children or not in the face of climate change.

We are interested in how people are making decisions about parenthood in the face of climate change, and whether they feel they have the information, knowledge and support they need in the decision making process.

If this speaks to you, we are inviting you to participate in an oral interview (using Zoom or a telephone) or a written email interview. The oral interview will take about an hour, the written interview will respond to the same questions as the oral but can be completed over a longer time-period.

During the interview we will discuss your thoughts on climate change, how it impacts you - socially, emotionally and mentally, as someone who is a parent, someone who has chosen to not become a parent, or someone who is contemplating parenthood for the first time.

If you are interested in knowing more, have questions or would like to participate please contact us at parental.decisions.project@gmail.com

The research team include:

Dr. Helle Møller and Dr. Lindsay Galway
Master of Health Sciences Student Natalie Jurcik and Master of Public Health student Lauren Hook

All from the Department of Health Sciences at Lakehead University

Appendix F – REB Approval

January 25, 2021

Principal Investigator: Dr. Helle Moeller **Co-Investigator**: Lindsay Galway

Student Investigators: Natalie Jurcik, Lauren Hook Health and Behavioural Sciences\Health Sciences Lakehead University

955 Oliver Road

Thunder Bay, ON P7B 5E1

Dear Dr. Moeller and research team members:

Re: Romeo File No: 1468365

Granting Agency: SRC SSHRC Research Development Fund Romeo Reference #: 1467781

Research Ethics Board

t: (807) 343-8283 research@lakeheadu.ca

On behalf of the Research Ethics Board, I am pleased to grant ethical approval to your research project titled, "Parental Decision Making in the Face of Climate Change".

Ethics approval is valid until January 25, 2022. Please submit a Request for Renewal to the Office of Research Services via the Romeo Research Portal by December 25, 2021 if your research involving human participants will continue for longer than one year. A Final Report must be submitted promptly upon completion of the project. Access the Romeo Research Portal by logging into myInfo at:
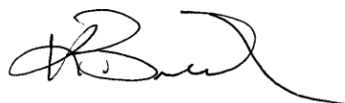
https://erpwp.lakeheadu.ca/

During the course of the study, any modifications to the protocol or forms must not be initiated without prior written approval from the REB. You must promptly notify the REB of any adverse events that may occur.

Best wishes for a successful research project. Sincerely,

Dr. Kristin Burnett

Chair, Research Ethics Board

/sw

Appendix G – Demographic Information and Alias

Participant Number and Alias	Age	Gender Identity – Would you give birth in the relationship?	Relationship Status	Do You Currently Have Children – If yes Age(s)	Education	Employment/Study	Average Household Income	Location by City And Region	Race and Identify as Inuk/Inuit, Metis, First Nations, or None	Political Interest and Party
1- Amber	22	Woman – Yes	Single	No	Undergraduate Degree	Part time at Starbucks	Up to $25,921	South Kingston	White and Prefer not to answer	7-NDP
2- Jessica	24	Woman – Yes	Partnered	No	Bachelor Degree – Fine Arts and Education	Self-employment	$97,069 to $150,473	Toronto	East Asian - No	10-NDP
3- Hannah	36	Woman – Yes	Married	No	BA, B. ED	Teacher	$97,069 to $150,473	Thunder Bay	White – No	6 - Unsure
4- Michelle	24	Woman - Yes	Single	No	Bachelor of Arts	Contract underwriting assistant at an insurance firm	$25,921 to $48,535	Markham	Inuk/Inuit	10-NDP or Liberal
5- Kayla	26	Woman – Yes	Partnered	No	Bachelor – Business – Human resources and marketing	Full Time (not specified)	$48,535 to $97,069	Thunder Bay	White-No	6-NDP
6- Anna	31	Woman – Yes	Married	No	Bachelor	Registered` Early Childhood Educator	$25,921 to $48,535	Thunder Bay	Metis/European -Metis	7-NDP
7- Lindsay	30	Woman – Yes	Partnered	No	Doctoral Candidate	Contractual Teacher	$48,535 to $97,069	Toronto	White-No	8/9- Green
8- Kate	45	Woman – Yes	Married	Yes – Ages 8 and 6	PhD	Contract	$97,069 to $150,473	Orillia	White -No	9-Liberal
9- Sarah	24	Woman – Yes	Partnered	Yes – Age 5months	Some College	Currently on maternity leave	Up to $25,921	Peterborough	Indigenous – First Nations	2-Unsure

|										
10- Hailey	31	Woman – Yes	Common Law	No	Post Secondary	Full Time (not specified)	$48,535 to $97,069	Thunder Bay	White - No	8-NDP
11- Bree	18	Woman – Yes	Single	No	High School	Not Answered	Over $214,368	Thunder Bay	White - No	9-NDP
12- Sophia	23	Woman – Yes	Single	No	Bahclors Degree – Currently obtaining masters	Not Answered	Up to $25,921	GTA	South Asian – No	9-NDP
13- Ava	34	Woman – Yes	Common Law	Yes- 8.5, 7 and 2.5	College Diploma	Registered Early Childhood Educator	$48,535 to $97,069	Thunder Bay	White - No	8-NDP
14- Harper	33	Woman – Yes	Married	No – stepchildren 22, and 17	Bachelors Degree	Teacher	$97,069 to $150,473	Sudbury	Indigenous – First Nations	4- Unsure
15- Hazel	28	Woman – Yes	Partnered	No	Masters	Full time Dietitian	$97,069 to $150,473	Thunder Bay	White - No	9/10 – NDP
16- Stella	25	Woman – Yes	Partnered	No	Bachelor of Arts – Psychology	Full Time Addictions Counsellor	$48,535 to $97,069	Thunder Bay	White – no	5- liberals
17- Lillian	16	Woman – Yes	Single	No	High School	Not provided	$97,069 to $150,473	Toronto	White - No	9-NDP
18- Claire	16	Unsure	Single	No	High School	Summer Employment (not specified)	$25,921 to $48,535	Toronto	South Asian - No	5-NDP
19- Jane	33	Woman - Yes	Single	No	BScN	Casual – Northern Nursing	$48,535 to $97,069	Thunder Bay	White - No	3- Unsure
20- Lydia	28	Woman - Yes	Engaged	No	College diploma, currently enrolled in University	Registered Practical Nurse	$97,069 to $150,473	Penetanguishene	White - No	3-NDP

Appendix H – Demographic Graphs
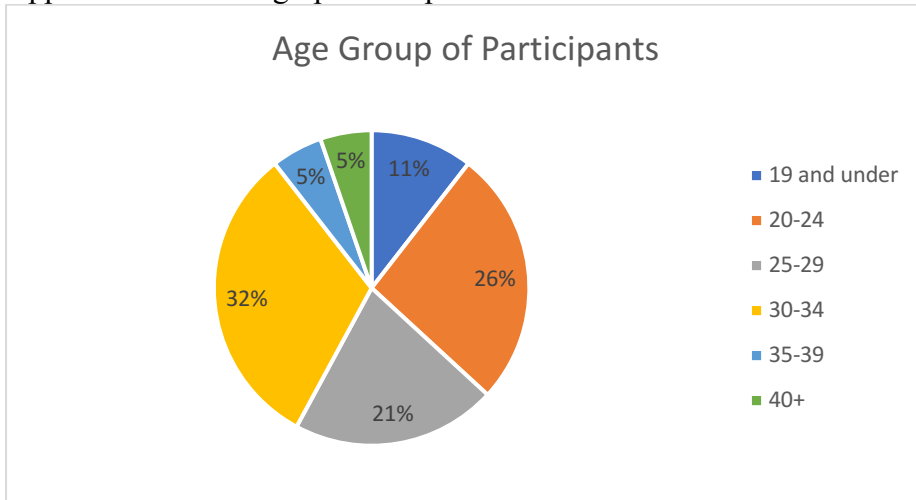
Graph1: Age Group of Participants
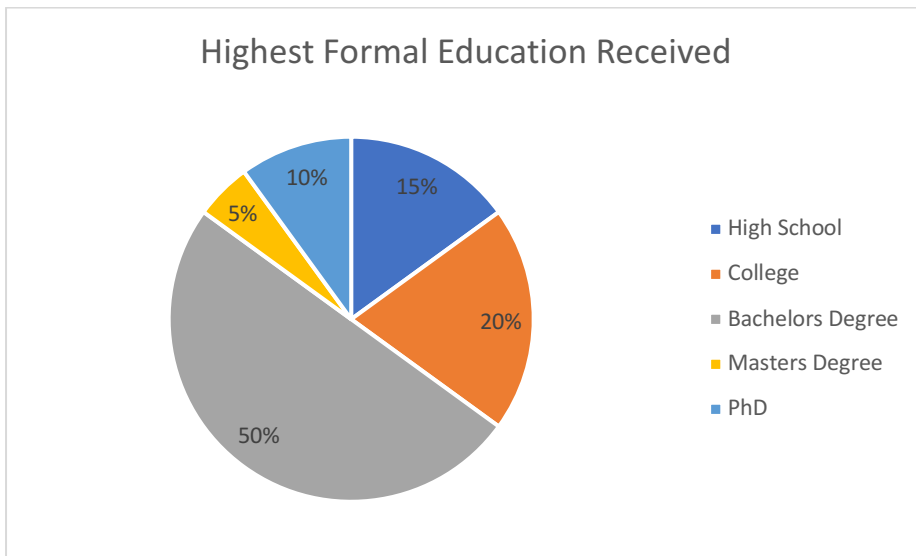
Graph 2: Highest Formal Education Received
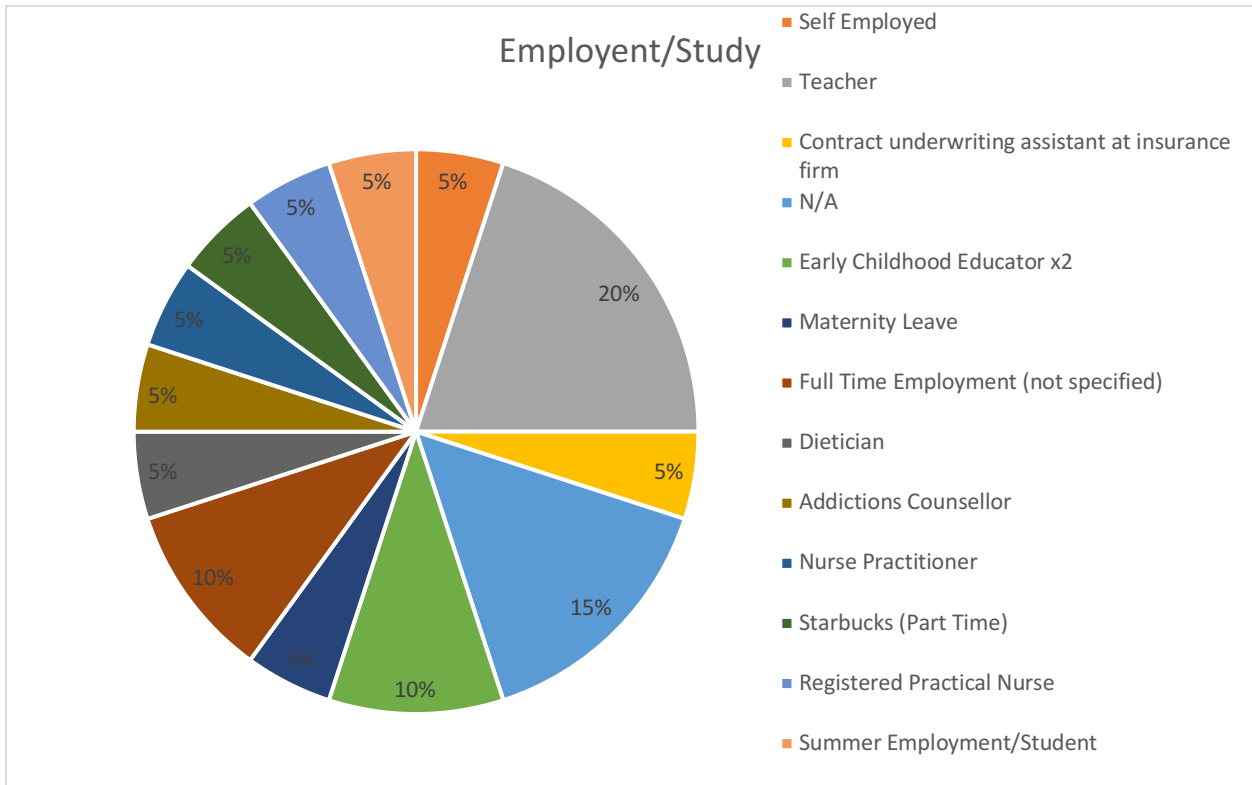
Graph 3: Employment or Study of the Participants
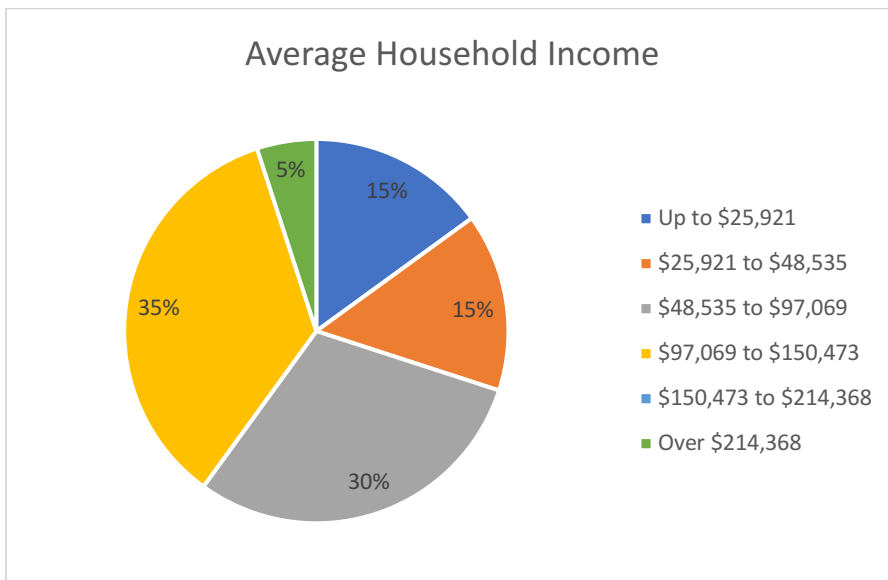
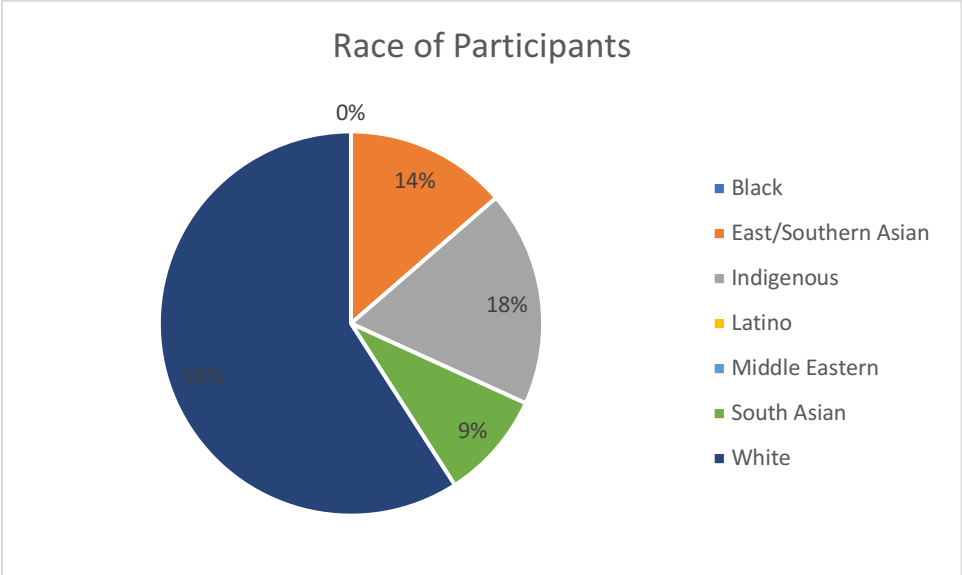Graph 4: Average Household Income
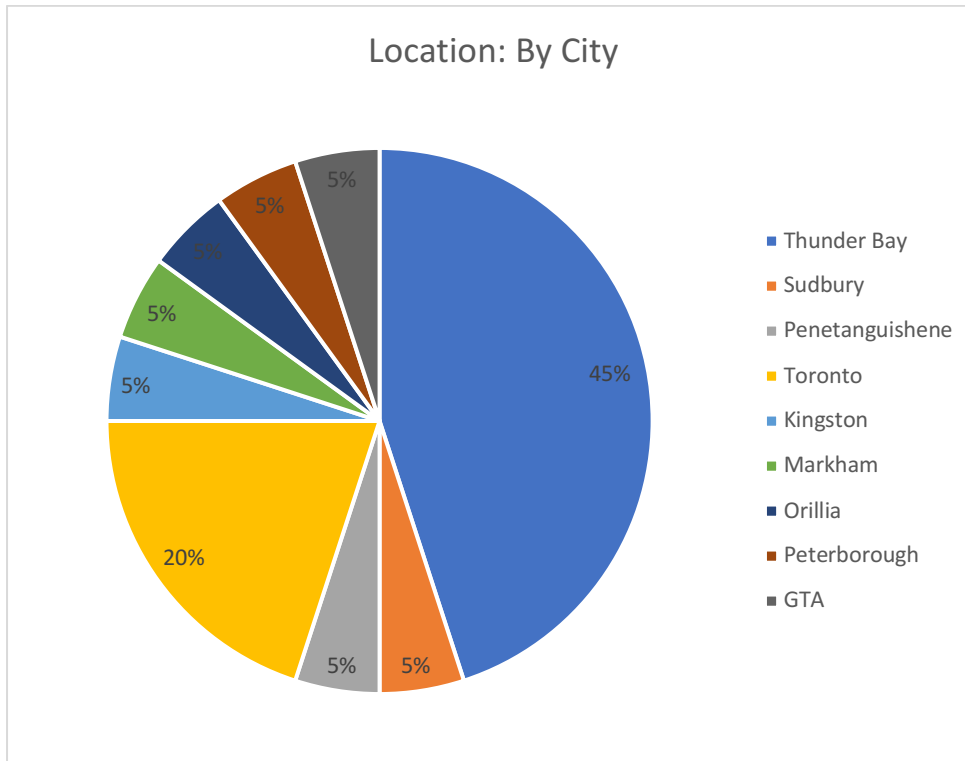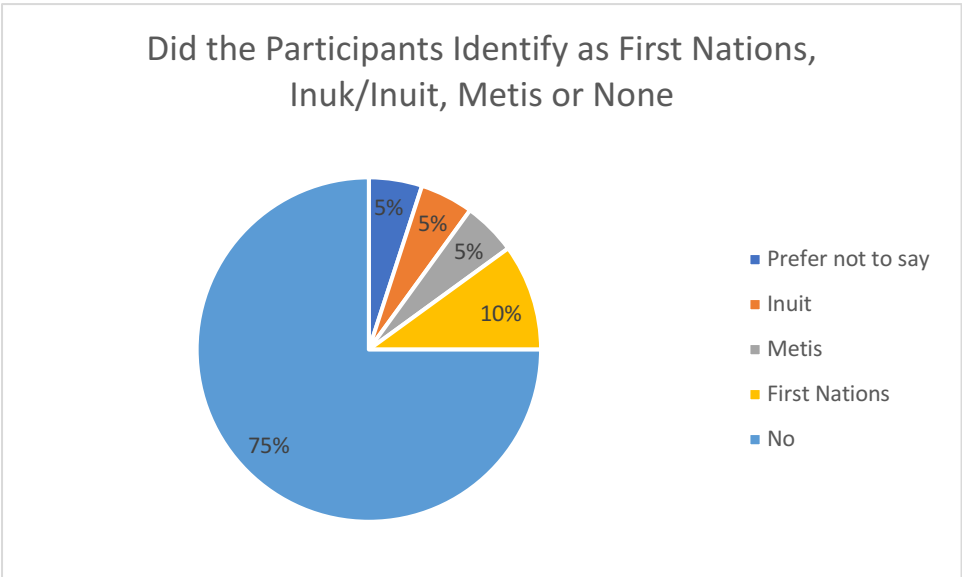
Graph 5: Location of Participants Home (by City)
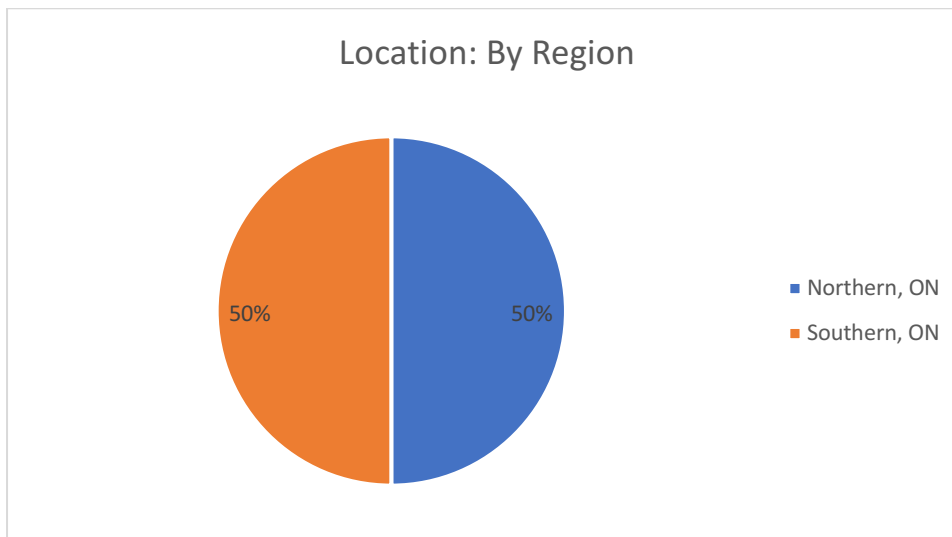
Graph 6: Location by Region. Traditionally, Northern Ontario begins at the French River, Lake Nipissing, and at the Mattawa River, which includes Sudbury (Government of Ontario, 2022).
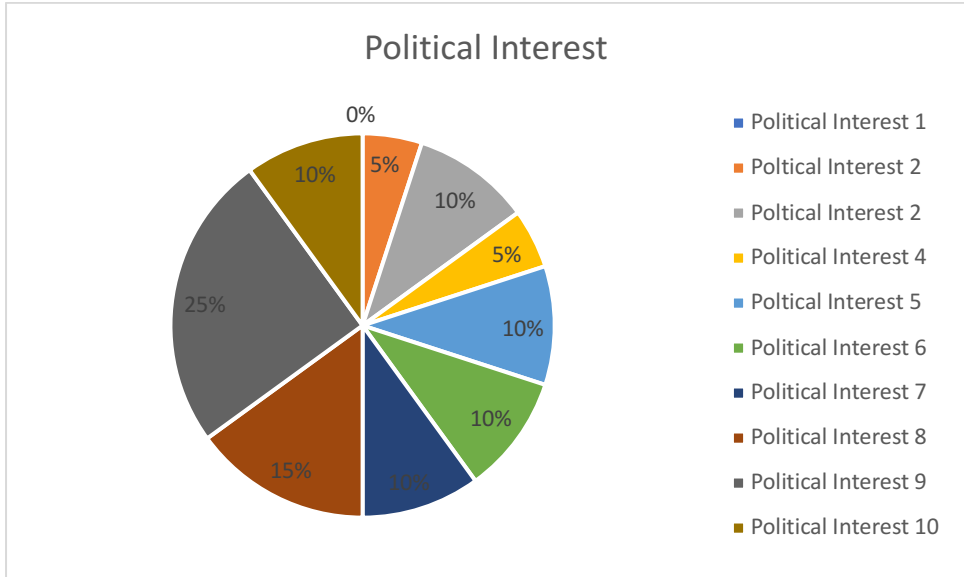
Graph 7: Race of Participants

Graph 8: Did the Participants Identify as First Nations, Metis, or Inuk/Inuit

Political Interest

- Political Interest 1
- Poltical Interest 2
- Poltical Interest 2
- Political Interest 4
- Poltical Interest 5
- Political Interest 6
- Political Interest 7
- Political Interest 8
- Political Interest 9
- Political Interest 10

0%
5%
10%
5%
10%
10%
20%
15%
25%
10%

Graph 9: Political Interest

Political Party

- Liberal
- Conservative
- NDP
- Bloc Quebecois
- Green
- Unsure
- NDP or Liberals

0%
10%
5%
20%
5%
60%
0%
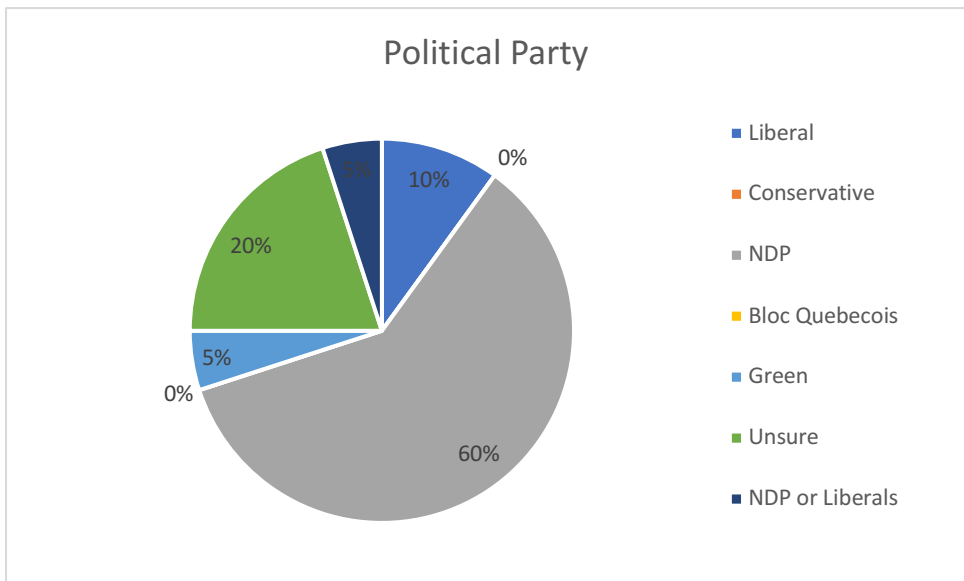
Graph 10: Political Party