



# The experiences of parents raising children in times of climate change: Towards a caring research agenda

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## ABSTRACT

The nascent research on parenting and climate change has primarily put emphasis on parental responsibilities and provided advice for parents. However, so far, the parental perspective has been minimally studied and how parents themselves experience raising children in climate change times is yet to be explored. This article presents a preliminary understanding of the lived experiences of parents raising children in times of climate change. Following a descriptive phenomenological methodological approach, data was collected through open and conversational interviews with the participation of twelve parents. The findings indicated that parents experience sadness, hopelessness and anxiety about the future of their children. The larger systems that parents are embedded in create limitations to the extent to which and ways through which parents can act. In some instances, their actions contradict what they know or perceive to be the right action. This creates a sense of compromised integrity and gives way to feelings of guilt towards their children. The complex nature of climate change information and the prevailing uncertainty around global political decision-making processes are reflected in the experiences of parents as feelings of insufficiency and disempowerment. Based on the findings of this exploratory research, it is argued that parents need to be cared for in order to be able to become caring parents for their children in times of climate change. In line with this argument, a caring research agenda has been formulated with both discovery-based and interventionist dimensions and a series of research questions have been proposed.

## 1. Introduction

### 1.1. The stage: The urgency of climate change action

Living in times of climate change is very unsettling as we are increasingly experiencing the impacts in our daily lives. Thinking ahead and trying to imagine what to expect in the coming decades is undeniably a burdensome cognitive endeavour, particularly given the current uncertainties associated with political processes and stagnating action. The burden of this cognitive endeavour is topped up by feelings of loss for an increasing number of us who observe and anticipate the environmental changes in near and far locations – climate change-induced grief is becoming part and parcel of our experience with the current status of the world (Cunsolo and Ellis, 2018; Doherty and Clayton, 2011).

Based on the current outlook, unfolding possible futures are bleak. In a recent special report, the Intergovernmental Panel on Climate Change (IPCC) discussed the impacts of a global average temperature rise of 1.5 °C above pre-industrial levels on natural and human systems (IPCC, 2018). According to the report, human activities have already caused an approximately 1 °C temperature rise above pre-industrial levels and the increase is likely to reach 1.5 °C between 2030 and 2052 if the trend

continues at the current rate. The report also compared a rise of 1.5 °C with a rise of 2 °C. Although the risks are projected to increase with a rise of 1.5 °C, they will increase even more if the warming is not limited further; a 2 °C temperature rise implies a very substantial increase in risks for some impact areas. In an earlier report, the IPCC (2014) stated that if 'business as usual' continues, global temperatures will rise 3.7–4.8 °C by 2100, with catastrophic results. The IPCC (2018) stated that one to three decades from today are left for significant climate action if we are to limit the temperature rise, ideally to 1.5 °C; this is acknowledged as an urgency.

### 1.2. The scene: Climate change and parenting

Given this current outlook, the children and youth of today will be exposed to significant risks during their lifetime. There are three major reasons that cause concern about their coping ability (Sanson et al., 2018). First, children are more vulnerable to the direct socio-economic, environmental and health impacts of climate change. Second, most young people know about climate change and are worried about its impacts on their lives. Third, they will grow up in a world going through dramatic changes (resulting from the locked-in effects of climate change), including the significant lifestyle changes associated with the required rapid transitions to

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low-carbon futures or, in the case of a failure in action, impacts that could render the planet largely uninhabitable in their lifetime. These concerns bring into focus societal actors with care responsibilities to children, particularly, and arguably primarily, the parents of today.

Parenting and climate change form a nascent research area. The existing limited empirical and theoretical literature focuses on, for example, the impact and implications of being a parent on climate change (Murtaugh and Schlax, 2009), the responsibility of parents in regards to urgently needed climate change action (Cripps, 2017), advice on parental behaviour and parenting models (Sanson et al., 2018; Nche et al., 2019), the dilemmas faced by parents in managing health risks for children and undertaking pro-environmental behaviour at home (O'Sullivan and Chisholm, 2020), quantified measures of parental-worry levels about climate change (Ekholm and Olofsson, 2017) and complex interrelationships between how changing parenting practices respond to the broader socio-cultural context and influence the climate change impacts of certain sectors, such as agriculture (Burton and Farstad, 2020).

Articulating parental responsibilities and prescribing parental advice on how parents can and should help their children are important contributions to parenting and climate change research. Similarly, quantitative research on the worry levels and risk perception of parents provides a helpful backdrop for understanding parental psychology in regard to climate change. Empirical work on gender dimensions and parental dilemmas at the household level, as well as macro-scale dynamics between parental practices and sectoral-level climate change impacts, deepen our understanding of the complexities associated with parenting and climate change. This body of work, therefore, also underlines the importance of adopting a systemic and multi-scale perspective in parenting and climate change research in order to be able to identify and intervene in multiple leverage points in policy and practice across several knowledge domains.

### 1.3. The frame: Understanding the experiences of parents

To make the best use of the findings from this emerging research and to expand its boundaries, understanding the experiences of parents raising children during times of climate change *from the perspective of parents* is also needed. This is because the capacity of parents to fulfill their parental responsibilities and to enact on various advice on parenting while negotiating the dilemmas they encounter is contingent on how they experience raising children in times of climate change. The specifics of what parents *actually* worry about, how *they live with and through these worries* and the *implications of these experiences on their parenting* are yet to be studied.

Starting with this framing, in this article I contribute into the emerging research on parenting and climate change by presenting a preliminary understanding of the lived experiences of parents raising children in times of climate change. The research is explorative in its nature, therefore, I am careful to not make generalisations. The main aim is to provide some pointers for future research on understanding parental experiences related to climate change. The following section presents an overview of the emerging literature on parenting and climate change, and positions the contribution made by this article within the literature. Section 3 explains the methodological framework of the empirical study and the methods used for sampling, data collection and explication. Section 4 reports the findings of the empirical study. Future research directions are discussed in Section 5, which is followed by my conclusions.

## 2. To be or not to be a parent: That is not the (only) question

Perhaps one of the first questions that comes to mind in regard to parenting and climate change relates to the very decision people make about becoming a parent. There, in fact, exist heated debates about whether people should even have children in the first place if they care about climate change (Hendrixson and Gies, 2015). This discussion is multi-faceted and highly complex, requiring in-depth and critical analysis of the rights and responsibilities of individuals, and private and public organisations, as well as those of governments, considering the ethical, legal and practical

dimensions; it is not likely to be settled soon or easily. Although this article focuses on people who are already parents, it is important to acknowledge that deliberating whether or not to have children is now perhaps more complex than ever and arguably requires considerations above and beyond individuals' abilities to meet basic parenting responsibilities. An older study found that the decision to remain childfree was only marginally affected by environmental concerns (Langdridge et al., 2005). This may change as the impacts of climate change become more widely experienced by people in their everyday lives. Nevertheless, most people become parents, and this is unlikely to change in the near future. In addition, those people who are already parents are implicated by climate change in multiple ways. It is therefore important to put an emphasis on understanding the multiple ways in which being a parent and parenting relate to climate change.

First and foremost, having children is associated with the significant 'carbon legacies' of individuals, ranging across several generations (although the significance varies across countries, is influenced by lifestyle choices and differs based on which future-emission scenarios are considered in calculations) (Murtaugh and Schlax, 2009). However, this is only from the perspective of population increase – the impact of becoming a parent; once a child is born, that child becomes an emitter. There is also another side of the coin that relates to how being a parent influences individuals' emissions. On this, a recent study in the Swedish context has found that parents emit significantly more greenhouse gas emissions than those adults who are not parents (Nordström et al., 2020). The increased emissions were mainly tied to increased transportation and changed food consumption. Ekholm (2020) found that, regardless of gender, becoming a parent increases individuals' worry about impacts on the climate. However, the findings of Nordström et al. (2020) implied that such increased worry does not automatically translate into becoming a greener person; on the contrary, the evidence suggests that becoming a parent increases individuals' emissions. Therefore, the conclusion from this paragraph is that by becoming a parent, an individual becomes a source of increased emissions, both in the short term and in the long term.

This brings into focus the topic of the responsibilities of parents in regard to climate change. Whether parents can be held directly responsible for increased emissions that relate to child raising and intergenerational carbon legacies, and if so, to what extent, is a politically and ethically delicate discussion. Although this discussion cannot be held at length here without losing the focus of the article, a note is necessary to highlight that the emissions generated by individuals are a systemic result. Shifting the responsibility for reducing or eliminating the emissions that can be directly attributed to becoming a parent solely onto individuals disregards the fact that in their choices, those individuals are, to a large extent, bound by the actions and decisions of politicians and businesses; they do not necessarily have the power to choose between alternatives as the alternatives either do not exist (e.g. an energy system that is fully based on renewable energy) or are not accessible to all (e.g. about three billion people rely on traditional fuels for cooking).

Do parents then have a responsibility to influence political and societal decision-making and institutional changes? Indeed, Cripps (2017) argued that, from a philosophical point of view, the parents of today have a special *shared* duty to their children and their indirect descendants by having caused their children to exist in a state of vulnerability to certain harms in the first place and, by bringing children into the world, they have caused the prospect of a whole line of descendants who will also be vulnerable. She highlighted that the parents of today have a more direct and primary responsibility for their grandchildren and great-grandchildren in the case of climate change as they may be *the only generation* who can act upon timely mitigation.

Besides this 'action responsibility', parents are also responsible to influence the behaviour of their children in a pro-environmental direction, at least to alleviate some of the indirect emissions attributable to their carbon legacy. In support of this, there is early empirical evidence that suggests that family-based discussions on climate change, regardless of parents' disposition and concern levels, predict more climate change-mitigating behaviour among children (Lawson et al., 2019). Similarly, Mead et al.

(2012) have found that parental perceptions of climate change risk and individual agency to influence mitigation are correlated with adolescents' risk and efficacy perception, as well as with information-seeking behaviour about climate change. Another study argued that parents should adopt an authoritative (eco-)parenting model in order to affect their children's ability to protect the environment, and mitigate and adapt to climate change impacts (Nche et al., 2019). Other researchers focused on parental advice and guidance. For example, Sanson et al. (2018) compiled a series of tips for parents to help their children in developing strategies to cope with climate change (see Table 1 in their article).

While current parents have significant responsibility for influencing political action to address climate change and educating their children as pro-environmental individuals, these responsibilities cannot be fulfilled in isolation from all systemic influencers of parental experience and behaviour. In addition, there is currently very little understanding of how such complexities influence the experiences and behaviour of parents. In fact, there are quite complex decisions parents have to navigate in household management that relate to emissions that they can control to a certain extent. For example, Nicholls and Strengers (2018) have found that health policies about infant care during extreme hot weather and policies on energy saving are at odds in the Australian context, and there is a need for integrated, cross-sectoral policymaking in order to provide consistent advice and guidelines for parents on more adaptive practices at home. O'Sullivan and Chisholm (2020) also pointed that there are similar mismatches between different policy instruments in the USA, New Zealand and Germany that leave parents confused and disoriented in balancing the provision of optimal care for young children during extreme weather events, reducing energy consumption and managing energy-related household expenses. They also argued that there is a need for systemic policy measures and behavioural advice that support parents across multiple vulnerabilities, such as energy poverty, the added stress of care responsibilities and isolation. According to them, the matter requires going beyond investing in cooling measures and putting effort into building social infrastructures for support and tapping into public facilities which can operate as 'cool hubs' for multiple households at the same time.

In addition to such micro-level complexities that parents face, there are also macro-level complexities that influence the relationship between parenting and climate change. Parenting practices are not temporally or spatially static; they dynamically change in response to changes that take place in the broader societal context. The question of how changes in the broader social context influence the challenges and responsibilities of parents in regard to climate change is significantly understudied but arguably central to discussions on the extent to which parents are directly responsible and can act upon their relevant responsibilities. A rare example of such macro-level complexities that influence parental practices is briefly discussed in a case study looking at how cultural lock-in influences the greenhouse gas emissions of dairy/beef farmers in Norway (Burton and Farstad, 2020). This study found that changing expectations about parenting, recreation and spousal roles are driving farmers towards intensification and therefore contributing to increased emissions, highlighting the importance of understanding and addressing the broader societal context within

which farming families operate. This rare evidence demonstrates the importance of contextualising parental responsibilities about climate change within the dynamics of broader societal circumstances.

Based on this overview, it can be inferred that the questions about parenting and climate change cannot be easily reduced to quantified accounts of the emissions caused by becoming a parent and raising children. Additionally, the responsibilities parents have in relation to climate change are varied, and meeting these responsibilities involves significant complexities. Although there is some emerging and important work on these complexities, research so far seems to have focused on observable, measurable and external factors. This article contributes to the emerging literature on this with its focus on how parents experience raising children during times of climate change.

### 3. Research design

#### 3.1. The methodological framework: Descriptive phenomenology

The central research question I pursued in this research was 'What are the lived experiences of parents raising children during times of climate change?' This question required summoning a qualitative methodology that could handle the subjectivities and messiness associated with the experiences of individuals but which still could enable theorising about the *shared essence* of the experience and variations related to it. I adopted a phenomenological inquiry approach due to its suitability for exploring human experience holistically (Creswell and Creswell, 2018). Phenomenological methodologies account for people's understanding of their lived experiences of a phenomenon, question the meaning made of the phenomenon being experienced and try to capture the essence of the shared experiences of a phenomenon (Bhattacharya, 2017). In other words, instead of measuring human experiences of the world, phenomenology aims to articulate the meanings associated with experienced phenomena (Christensen et al., 2017).

The specific methodology adopted in this research is descriptive phenomenology (Giorgi, 2012). In descriptive phenomenology, in contrast to interpretive methodologies, the aim is to describe as accurately as possible a phenomenon from the perspective of the people who experience that phenomenon (Groenewald, 2004). The researcher works with descriptions of others; however, by reflecting on the meanings presented in these descriptions, they become able to perceive the unity of those meanings and develop an understanding of *the others'* world (Giorgi, 2012). Descriptive phenomenology, in other words, unveils the *raw* form of experience and relies on accounts of the individuals. Interpretive phenomenology, however, stems from taking a critical stance towards the descriptive approach, seeing it as 'naïve'. Researchers using interpretive phenomenology aim to deepen the understanding of an experience by interpreting their findings with references to the contextual circumstances research in which participants are embedded (Matua and Van Der Wal, 2015). I argue that these two main approaches to phenomenological inquiry serve different types of research questions and intentions, make different assumptions about the legitimate and expected roles of researchers in making sense of the world and are not necessarily in competition with each other in terms of the sophistication of the findings they entail as long as the choice of approach is justified with references to the aims of the research and the associated research questions. I chose the descriptive approach because I was interested to find out how parents experience parenting with reference to a globally significant, long-term, systemic issue, underlined with an increasing risk to themselves and their children, and the associated ongoing political uncertainty, regardless of their socio-cultural-political contexts or the different parenting styles they may have. Descriptive phenomenology is suitable for a generalised conception of a phenomenon that enables others to know about its distinct and essential features (Lopez and Willis, 2004), and thereby, it serves the purposes of this explorative study.

In order to achieve an understanding of the worlds of others through their descriptions, two interrelated methodological attitudes are essential: phenomenological reduction and bracketing. Phenomenological

**Table 1**  
The list of the participants.

No	Code name	Gender	Location	Age	Ages of children
1	Blue	M	Finland	46	10, 13
2	Emerald	F	Finland	45	8, 14
3	Endogeny	M	Finland	42	6, 15
4	Poppy	F	Australia	36	1, 7
5	Nils	M	Finland	44	7, 9
6	Petunia	F	Finland	41	10, 12
7	Smirne	F	Turkey	37	4, 8
8	Jenny	F	Australia	37	2
9	Sam	F	USA	39	<1, 3
10	Oscar	M	Netherlands	43	6
11	Cathy	F	Finland	41	9
12	Laminaria	F	Finland	41	9, 13

reduction and bracketing are required to deliberately open up oneself to the subjectivities of the phenomenon and leave aside one's perceptions, judgements, theoretical constructs, preconceptions and past knowledge about the phenomenon (Christensen et al., 2017; Fouche, 1993; Hycner, 1985; Groenewald, 2004). Phenomenological reduction and bracketing are complemented by immersion into raw data through repetitive exposure until an understanding of the whole is established (Giorgi, 2012; Holroyd, 2001).

### 3.2. Sampling, data collection and data explication methods

#### 3.2.1. Sampling

The phenomenon studied in this research is parenting during climate change times. As I was interested in understanding the meaning of this experience for those who are living this experience, the sampling was guided by looking for people who have this experience (Englander, 2012). This required me to work with participants who were not only parents but who were also aware of climate change and actively concerned about the implications of climate change on their children. In order to attract concerned parents who would be interested in participating in the research, a brief open invitation explaining the research aim was sent through online and offline social networks requesting interested parents to initiate contact. As climate change is a global issue, participation was not restricted geographically. In addition, as this was an explorative study, I assumed that some geographical diversity could help reduce the risk of drawing premature conclusions about the shared essence of the parents' experience by providing a set of local variations, such as the extent of the already felt and expected impacts of climate change, cultural practices of parenting and the political environment. A total of twenty-three parents contacted me expressing their interest in participating. Further information was sent to these candidates about the research, including information on the purpose, the methods, and the considerations and procedures related to research ethics. These twenty-three respondents were briefed about the voluntary basis of their participation, the potential risks for vulnerable participants and a checklist for self-evaluation of their potential vulnerability in the context of the research. A total of twelve respondents consented and participated in the research. Table 1 presents the list of participants, along with their self-chosen code names and basic demographic information.

#### 3.2.2. Data collection

Open and conversational interviews were used as the primary instrument for data collection aligned with the phenomenological approach. Phenomenological interviews do not start the interview process with a traditional initiation question (Englander, 2012). Instead, the initiation questions should target descriptive responses about the phenomenon studied (Giorgi, 2012). My initiation question was 'How is it to be a parent during times of climate change?' I also used four main questions as prompts when necessary and as appropriate during the interviews:

- What impacts of climate change do you think your children might experience during their lifetime?
- What kind of conversations do you have with your children about climate change and its impacts?
- How do you prepare your children to cope with the negative impacts of climate change that they might encounter in their lifetime?
- What are your thoughts and feelings now, based on what we have talked about in this conversation?

The longest and shortest interviews lasted for 24 and 52 min respectively, the rest lasted for an average of approximately 40 min. Six of the interviews were held face-to-face and the remaining six used an online audio-visual meeting platform. The interviews were audio-recorded with the consent of the interviewees and filed with the date of the interview and the code name of the participant. After each interview, a memo was written describing the interview context as well as non-verbal and paralinguistic cues. In these memos, I also included any thoughts and feelings that arose during the interview for the purpose of using these as material for

reflection upon in order to identify and alleviate any risk of breaching phenomenological reduction and bracketing during data analysis. Particular attention was paid by the researcher to note down thoughts and feelings about her perception, feelings and opinions on parenting styles and the particular actions and feelings expressed by parents.

It has been argued that the construction of themes is a better way to theorise than coding in phenomenological research as it enables a more narrative grounding for the story of the lived experience and allows for the better articulation of meanings than single words (Saldaña, 2015). I followed the process guidelines articulated by Sundler et al. (2018) in regard to qualitative thematic analysis in descriptive phenomenological research. The three main phases of the process articulated by them are: achieving familiarity with the data, searching for meanings and themes, and organising themes into a meaningful whole.

To immerse myself in the data, I first listened to each interview, then transcribed it while I was listening a second time. Using the transcriptions, I then developed a mind-map for each interview, mapping the responses of each interviewee across four categories prompted by the interview questions: (1) the climate change impacts that parents are aware of, (2) the conversations parents have with their children about climate change, (3) the ways in which parents prepare their children to cope with the impacts of climate change and (4) the thoughts and feelings of parents.

Following the development of the mind-maps for each interview, I compared them in order to identify similarities and differences across the first three categories and to develop a general overview on what parents know about the impacts of climate change; if they have conversations with their children about them, what kind of conversations they have; and how they prepare their children for living with the impacts of climate change. The 'thoughts and feelings' (which were expressed throughout the interviews, not only as a response to the fourth question) category was separately analysed by first extracting the units of meaning from the transcribed text, prompted by the notes on the mind-maps under the 'thoughts and feelings' category, then grouping these units of meaning under themes that represented the essence of the lived experience of parents. Finally, a composite summary is provided.

The findings reported in the following section reflect the steps of this analysis; they start with the objective (the documentation of findings regarding the first three categories) and move on to the subjective (descriptions of the themes that emerged from the parents' lived experience).

## 4. Findings: The lived experiences of the parents

### 4.1. The impacts parents mentioned

Without exception, the interviewed parents indicated that their children will experience the impacts of climate change during their lifetime, while some also mentioned that the impacts are already occurring, particularly referencing extreme and abnormal weather events. When prompted to provide more detail on the types, extent and timing of the impacts that they thought their children might experience, the responses from parents varied greatly. There was no single impact that was consistently mentioned by all the parents, but the majority referred to potential issues related to food security; one parent (Emerald) indicated that her grandchildren may face hunger, and another (Poppy) mentioned that certain foods may not be available for her children. The other impacts that parents mentioned their children may experience included species extinction, floods, a sea level rise, water shortages, extremes of heat and drought, the displacement of masses of people, social conflict, the lowering of the standard of life, decreased mobility, having to make a conscious choice to not have children of their own, the loss of a sense of place due to the disappearance of certain species from their home location and outdoors becoming hostile, resulting in a reduction in exposure to nature.

In general, parents' responses about the impacts their children might experience reflected the content of the general knowledge available to the public through different sources of media. The responses mostly lacked context-specific references and did not include details about the potential



extent or timing of the impacts they mentioned, the interrelationships between impacts or second-order impacts that may arise as a result of direct impacts. For example, one mother (Poppy) explicitly stated that she was not able to imagine her children as adults and that it was hard to imagine her children's life beyond her own. Another one (Jenny) expressed that she is not sufficiently informed to discuss the impacts in more detail. Two parents (Endogeny, Emerald) mentioned that they did not want to think about the worst-case scenarios.

There were a few exceptional exchanges however. For example, one mother (Petunia), who is in an intercultural marriage, mentioned that her children might be exposed to racism as a potential second-order impact resulting from increasing social tensions if they choose to continue living in their current home country. She also articulated in detail why she thought her children are likely to witness a great war. Another parent (Oscar) mentioned losing opportunities for scientific discoveries (such as finding a cure for a disease) due to species extinction as a potential second-order impact. One mother (Smirne) discussed food security, a sea level rise and water shortages with locality-specific references and reasoning. All the impacts mentioned by one mother (Sam) included locality-specific references and examples. She was also one of the two parents who, with references to her professional work on climate and energy, stated that the worst-case scenarios are coming and that they are coming sooner than previously predicted. The other parent (Laminaria) referred to the latest IPCC report while stating that the situation is worsening faster than predicted and also mentioned that the effects of climate change are not only ecological and social but also psychological:

‘A lot of the political discussions we're having are totally beside the point. With the IPCC report that came out last year – evidence that everything is going quicker, that we're reaching tipping points much quicker – what I would expect presidents to do at the moment is to almost these whole speeches to really pull the countries together and make people aware that big steps are needed and that we really have to change everything we're doing and activate people. I don't see any of this. So, at the moment the situation is pretty dire.’ (Laminaria).

#### 4.2. Conversations parents have with their children

Not all parents were actively having or planning to have conversations with their children about climate change and its impacts or any other environmental issue, regardless of the age of their children. Among those was one father (Blue) with two children aged 10 and 13. He indicated that he only talks with his children about this when they ask questions and expressed that he would like them to hear other adults talking about this. On the other hand, Sam, who is a mother of two very young children, indicated that she is explaining to her older child (aged three) where electricity comes from. Similarly, Smirne described how she enforces certain environmental principles upon her children (e.g. always filling up and carrying a non-disposable water bottle when away from home) while at the same time explaining to them the reasons behind those principles. Part of Endogeny's desire to raise his children with civic responsibility and morality involved having conversations with them about this topic. Similar to Smirne, he indicated that the conversations were formulated in a thematised and contextualised way (e.g. why they are not eating meat was discussed during dinner). All of the parents who actively hold or plan to hold conversations with their children indicated two main considerations to be important: giving information suitable for the age of the children and giving information in a way that does not infuse fear or anxiety in the children. These parents indicated that this balancing act was challenging for them. Some of these parents mentioned trying to control the information their children are exposed to from the outside in order to be able to maintain this balance. For example, Laminaria indicated that she and her husband do not watch the news when their children are around.

Seven of the twelve parents interviewed (Blue, Emerald, Endogeny, Petunia, Nils, Cathy, Laminaria) mentioned about the difficulty of having instructive conversations with their children as they thought their

own behaviour was not congruent with what they believed to be the right behaviour. This significantly influenced Blue, who felt that he was not yet a good role model, therefore he was not comfortable talking with his children about the right behaviour they should adopt. Similarly, Endogeny stated ‘Having those conversations is sometimes difficult since, as a family, we are not consistent in every way; we still have a car, we still fly. When you cannot model your behaviour on it [your advice] or when it is impractical, so to speak, it's like we're slave owners telling our children that slaves are people too’. Two of these parents (Blue, Emerald) also pointed to the emotional difficulties that arose when responding to children's questions about the state of things as they felt guilty or responsible. For example, Blue referred to a recent encounter during a vacation when his children asked why the corals were white and not colourful; he stated ‘How can I tell my kids that we killed them?’ Emerald, who is from South America but who permanently lives in Finland, when referring to her children's questions regarding the ecosystem damages caused by oil explorations in the Amazon, said ‘How can I explain to a child that these beautiful creatures are being ruined because we need oil to fly there soon?’ As another difficulty, Cathy mentioned the peer pressure on both her and her child. She explained that she has quite detailed conversations with her child about the causes of climate change (and other environmental issues) and what is the right behaviour, also enacted, for example, by the active effort put in by Cathy to reduce her and her child's consumption. Cathy reported that her child responded to her behavioural direction well; however, the peers around her and her child made her feel judged for not following conventional (consumerist) behaviour. She was particularly concerned that she would lose her influence on her child's pro-environmental behaviour as he grew up into teenage-hood and encountered certain types of bullying that would challenge his thus far well-adapted behaviour (such as wearing clothes from second-hand stores or carrying non-disposable utensils with him).

#### 4.3. Preparing children to cope with the impacts of climate change

Similar to having conversations, not all parents were actively preparing or planning to prepare their children to cope with the impacts of climate change that they might encounter during their lifetime. One cross-cutting reason mentioned by three parents in this group (Poppy, Jenny, Emerald) was associated with the requirement of keeping things together on a daily basis for their family and the dominance of the short-term and immediate risks their children face (e.g. accidents, harassment, bullying) on their worry scale. Allocating time to being properly informed about the issues and linking this information to long-term planning was not seen as possible with the current pace of their life. However, these parents mentioned certain general life skills that they teach or plan to teach to their children (e.g. flexibility, collaboration, empathy, resilience) as relevant for equipping them with skills for coping with the impacts of climate change.

The strategies of those parents who actively prepare or plan to prepare their children varied across a spectrum that covered well-defined and concrete actions, and employed a general educational approach, underlined by environmental and social values. One mother (Smirne), who was not satisfied with the schooling system in the country where she lives (Turkey), went as far as to found a co-operative school together with other parents in order to send her children to it. The school is established upon certain ecological and social values which are demonstrated both in the governance of the school and in the curriculum. For example, the decision-making processes are democratic, involving all parents in the co-operative, parents collaborate to make non-disposable school supplies and sustainability teaching is embedded in all courses, the concepts of resource economics are integrated into mathematics courses and life-cycle thinking is integrated into discussions about materials and the production of school furniture. The school also employs pedagogies of experiential learning to teach children about the importance of natural systems and being part of

them. This mother also mentioned teaching her children how to grow food and stated that she intends to make them landowners so that they can grow their own food if need be. On the other hand, Petunia and Nils, who live in a country known for its high-quality education system (Finland), demonstrated high reliance on and trust in schools preparing their children while acknowledging their responsibility as parents. Laminaria put emphasis on giving her children a sense of agency so that they can make small changes and observe that those changes can have a positive impact. She indicated that there is a need for two types of strategies in preparing children. First is equipping them with the psychological dexterity and resilience to keep sane when an actual crisis happens and the other is giving them the skills and knowledge related to living with and taking action against changes that are not immediately and directly visible but are known to be happening. Nils, Sam and Laminaria indicated that they would like to teach their children the importance of political awareness and activism. Some parents mentioned the current uncertainty in the political arena about which actions will be taken and when, which to a large extent will determine the extent of the impacts their children might encounter, as well as the uncertainties associated with climate science, and they related this to the difficulty of making concrete plans. For example, Laminaria stated, this is 'The weirdest moment to be alive. At the same time, we have everything and everything is at stake, and it's crazy to live that. How are you going to deal with this with regard to your children because you cannot prepare them? You don't know what kind of a world we'll be in, but at the same time, you have to psychologically prepare them for a different world, for a different way of being'. For Endogeny, communicating these uncertainties to his children, although challenging, was a way of showing them the importance of education and self-learning in order that they can stay safe and have a positive impact.

#### 4.4. Parents' feelings and thoughts

The interviewed parents expressed their feelings and thoughts during their responses to the first three of the prompting questions while they responded to the specifics of the questions. These reflect their feelings and thoughts across several categories: the information available to them, the impacts of climate change in general, what their children might experience specifically, issues of power and justice, the current political climate and politics in general. Some of these are not reported here as they were considered to be irrelevant for the scope of this research while some of the relevant ones suited the above accounts better and therefore have been incorporated into them. However, some of their responses reflected feelings and thoughts about their experience of both living and of raising children during times of climate change. With the prompt of the final question and through probes formulated with references to their earlier responses, these feelings and thoughts were further opened up. During the final analysis of the mind-maps, these were identified as *units of meaning* and clustered to develop the themes that capture the lived experience of the parents (Groenewald, 2004); a total of three themes emerged. Below, the three themes are presented with a selection of units of meaning that represent the themes in their raw form as quotes.

##### 4.4.1. Theme 1: Parents experience sadness, hopelessness and anxiety

'I feel extremely sad. For your kids, you always want to be there, but you can't in this case. It's against everything that being a father means. I cannot protect them.' (Blue). 'I'm a fatalist. Not that it is inevitable, but I'm not sure if we'll be able to do something unless there's a big shake up of things.' (Emerald). 'I feel grief because I cannot do much. It doesn't matter how much effort I put into minimising my impact, it is a tiny drop in the ocean.' (Smirne). 'I'm actually depressed all the time. Not only about the future but about today. Since I learned about what's going on, my world has collapsed.' (Cathy). 'To be honest I haven't yet

digested the latest IPCC report. I read the headlines. I cannot fully admit it to myself. I mean, I can but I can't. It just makes me hopeless. I don't want to feel that way.' (Sam).

##### 4.4.2. Theme 2: Parents feel guilty and that their integrity is compromised

'That's the interesting part for me. Why are my actions slow and not really proactive? I'm freaking out about my children's future but it doesn't really change my behaviour very much. Why is that?' (Nils). 'I don't practice in absolutely consistent ways, based on what I know; that's a bit troubling.' (Endogeny). 'Even if I can find a way to explain why all of this is happening, we also need to think about the consequences of our decisions. It's sometimes very difficult to do.' (Emerald).

##### 4.4.3. Theme 3: Parents feel insufficient and disempowered

'I need to prepare myself. I get very emotional, and I don't want my children to see me like this [crying].' (Blue). 'I don't think I am strategic enough. Yes, I do send my kids to an alternative school, but beyond that, I'm not thinking about how I could prepare my kids for a world with a changed climate.' (Smirne). 'I'm not even preparing myself. I'm just hitting the wall when it comes to climate change.' (Poppy). 'I need to first inform myself. I need better knowledge.' (Jenny). 'If you're not engaged, not doing anything at all, you can feel fairly hopeless. Small things we can do, like being active politically. But that's difficult when the change needs to happen at a global level.' (Sam). 'The information ... There's a lot of that, and it makes you heavy because you don't really know what are the best ways of handling things, doing things.' (Nils).

#### 4.5. A composite summary

Parents experience sadness, hopelessness and anxiety about the future of their children in the face of climate change. Having to operate within the limitations of systemic affordances, parents act in ways that clash with their values or their thoughts on what are the right ways of acting. This creates a sense of compromised integrity and gives way to feelings of guilt towards their children, which, in some cases, inhibits their capacity to implement preparatory measures for their children's long-term resilience. The vastness of climate change as a global phenomenon, the ever-changing and complex nature of climate change-related information and the prevailing uncertainty around global political decision-making processes are reflected in the experiences of parents feeling insufficient and disempowered. Needless to say, the themes that reflect parents' experiences are also systemically related and create positive feedback loops which are likely to exacerbate and amplify one another and, therefore, the *overwhelmingness* of the overall experience.

The themes described above are not all encompassing for all the parents interviewed but apply to the majority. Individual experiences of course vary; some themes are more pronounced for some parents, and there were experiences only highlighted by one or a few (hence, these have not been clustered under a theme). Therefore, the three themes above have sufficient commonality to reflect the interviewed parents' experiences of raising children in times of climate change.

The high-level responses given to the first question (about impacts) by the parents created an impression that what the parents were articulating was not the specific impacts that their children are likely to experience first-hand but instead what they may witness happening in close or distant parts of the world. This, in a way, indicated a cognitive and/or emotional distance that may have resulted due to several factors including the knowledge limitations that parents have about the expected impacts of climate change in and around their locality and the strategy of avoiding having to consider futures in which their children are living *less-than-desirable* lives due to a changed climate. Despite this distance, the findings indicate that

raising children in times of climate change could be considered a significant and unique experience for parents of today.

## 5. Towards a caring research agenda

The findings of this research contribute to the emerging literature on parental perspectives of raising children in times of climate change. The study is also significant as the first in this emerging literature which used a phenomenological lens to understand lived experiences of parents. Despite this significance, the findings of the study should also be considered high-level and tentative due to the exploratory nature of the inquiry. This piece of research is important in that it has demonstrated that the nascent research area of parenting and climate change should pay attention to understanding the lived experiences of parents as a key prerequisite to formulating parental advice or policies on the issue. Indeed, parental experiences of raising children during times of climate change is not an isolated and internal affair that only takes place in the emotional realm of parents, it has significant interlinkage with the policies in place, the behavioural advice parents receive and to the very materiality of caring for children (such as using air-conditioning to keep the indoor temperature healthy conflicting with the desire to reduce energy consumption or taking children to visit their relatives living in another country conflicting with reducing air travel).

Therefore, the first item on the future research agenda is conducting more studies focusing on the subjectivities and complexities of parenting in times of climate change. These studies, at least some of them, should account for the implications of local and cultural circumstances on parents' experiences. It can be hypothesised that parents' experiences differ in scale or scope depending on the degree to which they are currently exposed to the direct impacts of climate change in their geographical localities. Similarly, how the cultural norms of parenting and different parenting styles influence their experiences is a worthy research topic to pursue.

The findings of this research can be interpreted as indicating that *parents need to be cared for* in order to become parents who care for their children in times of climate change. Care is a form of labour and an ideal that guides normative judgment and action (Held, 2006). It is also a type of activity that includes everything done to maintain, contain and repair our world (Tronto, 1994). Repairing our world, in the context of this article, means attending to the urgency of climate change action detailed in the introduction of this article by focusing on parents and parenting as significant intervention points for systemic transformations to post-carbon futures. Given that care is relational, a research agenda for caring parents should also be a research agenda for caring research.

A caring research agenda then, should leverage the current experience of parents, which appears to be one of sadness, guilt, disempowerment and distancing/postponing, in order to help parents to attend to the urgency of climate change action through mitigating their and their children's current and future carbon footprint and by contributing to household- and societal-level adaptation strategies. Therefore, a caring research agenda, in addition to discovery-based research, should also have a strong *interventionist* dimension. An interventionist research agenda not only deals with questions that aim to discover how things are but also discovers how things *could* and *should* be. In other words, it brings forth solution-oriented politics with which to intervene in the investigated phenomena. Such a research agenda also requires wider political, values and worldview changes to enable a paradigm shift to a culture that valorises and prioritises care (Cohen and MacGregor, 2020).

In order to specify some research questions and demonstrate the interrelationships between both a discovery-based and interventionist caring research agenda in the context of parenting and climate change, a framework explaining the three types of knowledge required for changing systems (Pohl et al., 2007) is useful. These three types of knowledge are: systems knowledge, target knowledge and transformation knowledge. Table 2 explains these three types and maps research questions onto each type of knowledge. The research questions are not exhaustive. They serve to exemplify the nature of questions corresponding to each type of

**Table 2**

Research questions for a caring research agenda.

Type of knowledge	Explanation	Research Questions
System knowledge	Knowledge about the genesis and possible further development of a problem and about interpretations of the problem in the life-world	<p>What are parental experiences of raising children in relation to climate change?</p> <p>What specific challenges do parents experience in relation to climate change?</p> <p>How do current community-level, societal, organisational and institutional structures support parents in addressing their parental challenges in regard to climate change (and to what extent do they do this)?</p> <p>What do parents need to become caring parents for their children in relation to climate change?</p> <p>What does being a caring parent mean for parents in relation to climate change?</p> <p>What do parents desire for their children's future as the climate changes?</p> <p>How do parents desire their children to be cared for by their communities and governments while growing up during times of climate change?</p> <p>What policies are needed to provide the support needed by parents to care for their children's future as the climate changes?</p> <p>What social, technological and political innovations can support parents to become caring parents for their children in times of climate change?</p>
Target knowledge	Knowledge that relates to determining and explaining the need for change, desired goals and better practices	
Transformation knowledge	Questions about technical, social, legal, cultural and other possible means of acting that aim to transform existing practices and introduce desired ones	

knowledge. They are also high-level questions. Several questions can be added to this list and the questions can be multiplied through contextualisation and scoping.

## 6. Conclusions

The mitigation of future climate change and adaptation to locked-in climate change require urgent action across all levels of society, by all actors in society. The climate has already warmed by 1 °C compared to pre-industrial levels. Currently we are on track for higher degrees of warming; according to current estimates, the temperature rise will reach 1.5 °C between 2030 and 2052. At the moment, it is uncertain whether human society will be able to limit the temperature rise to this level; however, achieving this target will require significant lifestyle changes. If human society fails to meet this target, then the scale of required adaptation will multiply and the risks of systemic collapse increase. More so than us, the children and youth of today will be exposed to these challenges (along with the currently unborn near-future generations).

The nascent research area of parenting and climate change has so far discussed the responsibilities of parents to care for and educate their children, generating some solid advice. It has been argued that the parents of today have a shared special responsibility towards not only their children



but also to their descendants due to the possibility of being the only generation who can take action towards the timely mitigation of climate change. Starting from the position that, in order for parents to be able to fulfill their responsibilities and act upon advice, it is important to understand how parents experience parenting under the special circumstances of a changing climate, this article presented the findings of an explorative phenomenological study of twelve parents.

The findings indicated that parents who are concerned about the implications of climate change on their children experience sadness, hopelessness and anxiety in relation to their children's future. They feel guilt and that their integrity is compromised because they believe that they cannot model the right behaviour. The parents feel insufficient and disempowered because they do not think that they have the necessary resources and capabilities to prepare their children for the future.

Based on the findings of this exploratory research, it is clear that parents need informational and psychological support in order to be able to implement the parental advice provided in earlier research in relation to their special responsibilities to their children, their indirect descendants and the current and future society in regard to acting on climate change and preparing their children for the impacts and implications of a changing climate. Given that research on parenting and climate change is a nascent research area, there are multiple directions that both discovery-based and interventionist research can take in order to understand the experiences of parents and to develop solutions to support parents.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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