

**Constructing the Apocalypse – Exploring Young People’s Climate Thoughts and
Emotions after Reading Apocalyptic Climate Stories**

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B.Sc. Psychology, M12 BSc Thesis Psychology 2022-202000384-2A

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July 4, 2023

APA 7th edition

Abstract

Recent research has started paying increasing attention to people's psychological responses to climate change. Many scholars have proposed the literary genre of "climate fiction" as a means for people to engage with their climate emotions. Yet, there is a prevailing belief among scholars that apocalyptic narratives, such as those commonly found in climate fiction, solely result in negative outcomes. In this qualitative interview study, apocalyptic climate story excerpts from climate fiction literature have been used as conversation triggers to explore how young people construct their climate-change-related thoughts and emotions. Eight participants were interviewed, and thematic analysis was conducted to identify relevant themes. On the basis of six distinctive themes, the results revealed that young people express and reflect on a variety of climate-change-related thoughts and emotions after reading the apocalyptic stories. The findings support claims that climate fiction can serve as a tool for individuals to explore their climate thoughts and emotions and argues against the notion that the impact of apocalyptic narratives is purely negative. Additionally, the findings of this small-scale study also suggest practical implications, such as promoting climate fiction in the context of climate communication. Further research should consider mixed-methods- and longitudinal approaches to gain a more holistic understanding of the issue.

Keywords: climate emotions, climate thoughts, climate fiction, apocalyptic stories, young people, qualitative research

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Climate change is one of the most pressing global issues, and its consequences are becoming increasingly noticeable (United Nations, n.d.). According to the World Health Organization (2019), the inherent consequences of global warming are projected to cause millions of deaths over the next few decades. Extreme weather events, rising sea levels, and other environmental impacts are and will be affecting people's lives and livelihoods worldwide (United Nations, n.d.). However, besides these rather overt ecological and economic consequences, it is important to also recognise the psychological aspects of climate change.

Over the last decade, scholars have increasingly investigated the psychological concept of climate emotions. According to Pihkala (2022), climate emotions entail “affective phenomena which are significantly related to the climate crisis.” In a recent study addressing the taxonomy of climate emotions, Pihkala (2022) suggested that these affective responses include a variety of feelings which range from positive emotions such as hopefulness and optimism to more negative emotions such as fear, guilt, and sadness. Moreover, climate emotions have a profound impact on how people behave and act with regard to climate change. For example, a study from Brosch (2021) demonstrated that climate emotions, both positive and negative, can reinforce sustainable and pro-environmental behaviour. Hence, the psychological impacts of climate change are critical and cannot be overlooked. Moreover, the United Nations (n.d.) projects climate change to remain a long-lasting problem which will not be resolved anytime soon. Therefore, it is important to understand how to help people in dealing with their emotions and thoughts regarding this modern issue.

With regard to the negative dimension of climate emotions, research has increasingly investigated the rather novel psychological construct of "climate anxiety". It should be noted that climate anxiety is also often referred to as “climate distress”, “eco-anxiety” or “climate

change anxiety” and is often used as an umbrella term for negative climate emotions (Wu et al., 2020). According to Pihkala (2019), climate anxiety refers to troubling emotions which are felt because of concerns about environmental problems and the risks they present. Similarly, Wu et al. (2020) define climate anxiety as “anxiety related to the global climate crisis and the threat of environmental disaster.” Moreover, climate anxiety can evoke unfavourable psychological consequences. For instance, research from Pihkala (2020) found that climate anxiety is closely related to existential anxiety. Furthermore, in some cases, climate anxiety has also been found to be associated with the development of diagnosable mental health conditions. For instance, recent research from Schwartz et al. (2022) has identified climate anxiety to be related to high levels of Generalised Anxiety Disorder and Major Depressive Disorder. However, despite the fact that negative climate emotions have a chance of developing into psychopathological conditions, it should be emphasised that such affective reactions are, for the most part, entirely understandable reactions to climate change (Clayton, 2020; Cunsolo & Ellis, 2018).

Scholars have also identified other forms of negative climate emotions besides climate anxiety. Climate emotions are expressed, for example, in the form of anger towards governmental institutions, or in the form of sadness about changes in one’s local environment (Du Bray et al., 2019). Feelings of climate-change-related anger have been labelled as “eco-anger” by Pihkala (2022). Furthermore, the climate crisis can evoke enhanced feelings of guilt and shame among people who feel like they are not sufficiently behaving in a pro-environmental way (Verlie, 2019). According to Kleres and Wettergren (2017), feelings of guilt may also occur among people living in the global north due to their awareness that industrialised countries, like those they live in, cause climate change. Hence, it becomes evident that negative climate emotions may pose a contemporary threat to well-being.

Moreover, those who are most susceptible to experiencing negative climate emotions are often young people in particular. This has been argued by multiple scholars who showed

that young people are the most at risk of suffering from climate distress (Hajek & König, 2022; Hickman et al., 2021; Pihkala, 2019; Wu et al., 2020). This appears to be the case because they are more likely than older generations to actually experience the long-term effects of climate change. Additionally, the lack of action from governments and corporations may contribute to feelings of hopelessness and despair, thus enhancing feelings of climate distress among the youth (Hickman et al., 2021). In many cases, young people even consider humanity and their future to be doomed (Hickman et al., 2021). The notion of young people being especially at risk of negative climate emotions is further supported by recent research from Swim et al. (2022) who showed that especially Millennials and Generation Z have higher tendencies of experiencing worry regarding climate change.

Existing climate emotions interventions suggest various approaches. For example, “eco-therapy”, which suggests therapeutic methods to take place outdoors in nature can help individuals to address and manage their climate emotions (Hasbach, 2015). Furthermore, joining groups can help people in coping with overwhelming climate emotions (Baudon & Jachens, 2021). Based on a depth psychological approach, Gillespie (2013) demonstrated that group conversations about dreams can aid individuals to deal with feelings of fear, grief, and frustration regarding climate change.

Furthermore, the recent cultural phenomenon of “climate fiction” has sometimes been suggested to be helpful in dealing with one’s experiences regarding climate change. Climate fiction, often abbreviated as “cli-fi”, is a relatively new form of fictional literature that explores the impact of climate change on society and the environment (Schneider-Mayerson, 2018). As stated by Goodbody and Johns-Putra (2018), cli-fi novels “are typically set in the future, telling of disaster and its effect on humans, or they depict the present, beset by dilemmas, conflicts or conspiracies, and pointing to grave consequences.” In fact, since the 2000s, climate fiction has become one of the most essential movements in English-language literature (Schneider-Mayerson, 2017). As of today, climate fiction can be considered one of

the most popular and critically acclaimed literature genres (Schneider-Mayerson et al., 2020). Interestingly, scholars have claimed that climate fiction stories can help readers to process their emotions related to climate change (Goodbody & Johns-Putra, 2018; Milkoreit, 2016). Additionally, Nikoleris et al. (2017) and Milkoreit (2016) also claim that climate fiction assists readers in envisioning hypothetical climate futures. Hence, literature within the realm of climate fiction may serve as a powerful tool for people to address their climate emotions and conceptualise their future.

Despite various depictions of the future, one narrative that dominates the content of climate fiction is that of apocalypse and dystopia (Andersen, 2019). According to Fiskio (2012), apocalyptic and dystopian climate narratives are also frequently used outside of cli-fi in pop culture as well as in the public discourse regarding climate change. It is characteristic for those narratives to address scenarios such as the collapse of civilisation, societal disruptions, extinction of species, acts of violence, the emergence of authoritarian regimes, as well as the depletion of land resources (Ismail, 2022). However, such apocalyptic and dystopian portrayals of the future are repeatedly criticised by scholars and commentators due to various factors. For instance, Hulme (2008) claimed that such representations elicit negative thoughts and create distressing feelings such as hopelessness and anxiety. Similarly, Ismail (2022) emphasised that climate fiction psychologically overwhelms readers by presenting them with apocalyptic stories. Swyngedouw (2010) also criticises contemporary portrayals of apocalyptic climate stories for generating nothing but a constant sense of “pure negativity.” However, there is a lack of qualitative empirical research addressing how people indeed construct their psychological responses after reading apocalyptic cli-fi stories.

Therefore, the aim of this research paper is to investigate people’s climate thoughts and emotions after reading trigger material that includes apocalyptic climate fiction stories. Findings in this area may allow for insights regarding the design and refinement of climate emotions intervention strategies (Pihkala, 2019; Ojala et al., 2021). Moreover, this study

focuses on young people because, as aforementioned, research has found that they are most at risk of experiencing negative climate emotions. Consequently, the research question has been formulated as: “How do young people construct their climate thoughts and emotions after reading apocalyptic climate stories?” For this purpose, participants in this study will read apocalyptic climate story excerpts from climate fiction literature, on the basis of which an interview regarding their climate-change-related thoughts and emotions will be conducted.

Methods

A cross-sectional qualitative study was employed in which semi-structured interviews were used to explore how young people construct their climate thoughts and emotions after reading apocalyptic climate stories. For this purpose, interviewees were asked to read a one-page-long compilation of three excerpts from apocalyptic climate fiction short stories.

Participants

Prior to the recruitment of participants, ethical approval was granted by the Ethics Committee of Behavioural, Management and Social Sciences (BMS) at the University of Twente on March 28th, 2023 (approval number: 230282). The data was collected in April 2023. Participants were recruited via opportunity sampling from the researcher’s social network. Additionally, the study was advertised through the researcher’s personal social media accounts. Due to the research’s focus on young individuals, the inclusion criteria solely specified that participants must be between the ages of 18 and 25.

Eight participants were interviewed in total. The final sample consisted of four cisgender women and four cisgender men, with an age span of 20 to 23 years. Five participants were German while the remaining three participants were of Danish, Dutch, and Slovakian nationality. All of the participants were of Caucasian ethnicity. Regarding the interviewees’ occupations, six stated that they are university students. Two stated that they were employed at the time of the interview.

Materials

The online communication platform Microsoft Teams was used to conduct one-on-one interviews. Moreover, functions from Microsoft Teams were used to audio record, video record, and transcribe the interviews. The primary supervisor of this study also provided template versions of the information sheet and the informed consent letter. These provisional versions have been adapted accordingly to fit the research aims of this study. The final versions of the information sheet and informed consent letter can be found in Appendix A.

Climate Scenarios Compilation Sheet

As mentioned above, this research study aims to explore young people's climate thoughts and emotions after reading apocalyptic climate stories. For this purpose, a one-page-long sheet was created which includes excerpts of apocalyptic climate fiction short stories. Opting for brief, one-page-long reading material had practical considerations as the story excerpts could conveniently be read during the interviews without necessitating any prior reading from the participants. This method has been employed in similar previous research (Toivonen & Caracciolo, 2022). Additionally, in consultation with the primary supervisor of this thesis, it was also decided that approximately one page of text is adequate for the narratives to serve as conversation triggers.

The "Climate Scenarios Compilation Sheet" was compiled from short excerpts of three climate fiction short stories. The major criteria for the selection of excerpts were that their content depicts concrete and specific apocalyptic or dystopian aftermaths of climate change. It was decided to include three short story excerpts rather than just one in order to present the interviewees with a diversity of hypothetical apocalyptic climate futures. Specifically, the three story excerpts aim to trigger different perspectives as the first highlights resource scarcity, the second emphasises social inequalities, and the third focuses on the emotional impact and longing for a stable past. The "Climate Scenarios Compilation Sheet" containing all three excerpts can be found in Appendix B. For the reading material, the term "scenarios"

was used instead of “story excerpts” to enhance accessibility. Moreover, the use of the term “scenarios” also implies that the compilation sheet includes a collection of different narratives or perspectives. It suggests that the three selected story excerpts are not just standalone stories but represent a range of possible futures or perspectives on the effects of climate change.

The first apocalyptic story excerpt is from the short story “Hot Sky” by Robert Silverberg. The story is part of the climate fiction anthology book “Loosed Upon the World” edited by John Joseph Adams (2015). It is set in the post-apocalyptic west coast area of the USA where the environment has drastically deteriorated. In the selected excerpt, the protagonist is observing his surroundings through spy glasses while the narrator describes the devastating effects of climate change, such as the flooding of cities, dying forests, grasslands turning into deserts, and polar ice melting. The protagonist observes an iceberg, contemplates its size, and wonders how many days’ worth of water it could provide for San Francisco, implying the scarcity of resources in this grim reality.

The second apocalyptic story excerpt is from the short story “Sunshine State” by Adam Flynn & Andrew Dana Hudson. It is included in the climate fiction collection “Everything Change” edited by Manjana Milkoreit et al. (2016). The story is set in a near-future Florida where climate change has transformed the state into a dangerous and lawless dystopia, following the lives of two protagonists navigating the harsh realities of their environment. The selected excerpt from this story depicts a catastrophic event where rising seas and heavy rains lead to flooding and the destruction of levees. It highlights the stark contrast between the rich, who can escape by helicopter, and the rest of the population who either take their chances on crowded highways or seek shelter, only to find that the water does not reduce but continues to rise, causing further devastation. Hence, the excerpt addresses apocalyptic climate change effects such as heavy rainfall, floods, displacement, as well as social inequalities.

The third and final apocalyptic story excerpt is from the short story “Shooting the Apocalypse” by Paolo Bacigalupi. Like “Hot Sky”, this story is also part of the climate fiction anthology book “Loosed Upon the World” edited by John Joseph Adams (2015). The story explores the life of a photographer in a post-apocalyptic world, where he captures the despair and destruction caused by environmental disasters while dealing with his own conflicted thoughts. The selected excerpt from this story vividly portrays a scene where refugees, covered in dust, endure violently hot winds. They wish for a time before the intensified hurricanes and severe droughts plagued their lives, symbolising the devastating consequences of the climate crises.

Interview Scheme

The semi-structured interview scheme of this study consisted of three sections. The first section included general questions regarding the participants’ demographic information. The second section included three open-ended questions about the Climate Scenarios Compilation Sheet (e.g., "Q1: How was it for you to read these future scenarios?"). The last section included a short text to familiarise the participants with the concept and definition of climate emotions, as formulated by Pihkala (2022). Five questions were then formulated to address the participants' climate emotions (e.g., "Q4: How do you feel about your own future in a world impacted by climate change?" and "Q5) How would you describe your current emotions regarding climate change?").

Overall, the interview scheme consisted of a set of eight open-ended questions that addressed the key topic of interest. Moreover, additional probing questions were formulated to gain clarification when needed and to also explore the participants’ climate thoughts. All of the questions were designed to be asked in a logical sequence and to elicit detailed responses from the participants about their thoughts and feelings regarding the text material and climate change in general. The entire interview scheme containing all questions and probes can be found in Appendix C of this paper.

Procedure

Data collection took place online via video call on Microsoft Teams. The interviews lasted between 23 and 44 minutes. The information sheet of the study was sent to the participants about five days before the date of the interview. A link to the video call session was sent to the participants 15 minutes prior to the interview. All participants signed the informed consent letter before joining the video call. After being welcomed, the Climate Scenarios Compilation Sheet was digitally sent to the interviewees. Meanwhile, it was mentioned again that the sheet contained three excerpts from apocalyptic climate fiction short stories depicting hypothetical climate futures. In addition, it was emphasised that the participants may take as much time as they need to read the texts. After the participants finished reading, they were verbally informed that the interviewer would start audio- and video-recording the conversation. In accordance with the aforementioned interview scheme, demographics were inquired about first. Afterwards, the participants were asked the first question: “How was it for you to read these future excerpts?” After the first three interview questions which focused on the texts, the interviewer introduced the participants to the concept and definition of climate emotions as formulated by Pihkala (2022). At this point, the interviewer also mentioned that the following questions will focus more on this concept. After this, the fourth question “How do you feel about your own future in a world impacted by climate change?” was asked. After the participants answered the eighth and final question, the interviewer stopped recording and thanked the participants for sharing their answers.

Data Analysis

Reflexive Thematic Analysis according to Braun and Clarke (2019) was used to analyse the data collected from the interviews. This particular method was selected to identify and explore underlying meanings and patterns in the verbatim data. To incorporate this meaning-based approach, the analysis process followed the six-step guide formulated by Braun and Clarke (2006). During the first step, all interviews were transcribed. The

transcription process also served for an initial reading of the interviews and hence to become familiar with the data. Moreover, all interview transcripts were uploaded to the online software Atlas.ti 9 which served as the primary tool for conducting thematic analysis. It should be noted that, during this stage, all of the interviewees' names were replaced with pseudonyms to assure anonymity. Additionally, prior to uploading the transcript, all occasions in which the participants made statements that could lead to identifying them were removed from the transcript. During the second step, initial codes were created. Codes were used to label specific expressions in the data that the researcher considered insightful for answering the research questions. Here, the method of open coding was used which means that the codes were actively developed and modified during the coding process (Maguire & Delahunt, 2017). Clauses were the smallest codable unit of analysis. For example, the clause "... and that makes me feel really angry" was coded with "Anger / Frustration." An example of a longer text that included multiple sentences was "I would say that I do take some part of the responsibility and I do think I can do better. I definitely do. I could do a lot more than I do already, and I know that, and I am aware of that." This text was coded with "Acknowledging own responsibility." Lengthy text segments like these were also coded because they comprise a range of interrelated ideas and specify the participants' viewpoints. After coding, the third step comprised the search for themes. On the basis of the codes, potential overarching reoccurring themes regarding the participants' climate thoughts and emotions were identified. Specifically, codes were grouped into broader themes by considering an underlying shared meaning. Thus, the search for meaning-making patterns followed an inductive, data-driven approach. The following fourth step included reviewing the potential themes. The subsequent fifth step included the naming and defining of these themes. All of the theme names and definitions have been reformulated multiple times in order to precisely represent the meaning-making pattern. The sixth and final step included writing up the findings of the thematic analysis which will be addressed in the following section of this paper.

Results

The results of the thematic analysis include six themes on how young people construct their climate thoughts and emotions after reading the text material. An overview of all themes with their respective codes and frequencies can be found in Table 1. The resulting themes are also addressed more comprehensively below on the basis of several interview excerpts.

Table 1

Overview of Themes Regarding the Participants' Climate Thoughts and Emotions

Theme	Definition	Occurrence	Codes included	N
1. Problematising Accountability in a Changing World	Participants construct their thoughts and emotions with regard to the distribution of responsibility for climate change among different parties.	B	<ul style="list-style-type: none"> - Lack of initiative from responsible others - Acknowledging own responsibility - Anger / Frustration - Guilt - Capitalism as a cause of CC 	36
2. Despairing Visions of the Future	Participants constructed hopeless emotions and bleak outlooks on the future in the context of climate change while not referring to the reading material.	NST	<ul style="list-style-type: none"> - CC cannot (or is unlikely to) be overcome - Hopelessness / Pessimism - Fearful of the future 	20
3. Contemplation of Unequal Vulnerability Regarding Climate	Participants discussed the impact of climate change on themselves and others. Hereby, participants often expressed moral and ethical pondering with	B	<ul style="list-style-type: none"> - CC as a greater threat to others than to oneself - Unfairness - Acknowledging one's own privilege 	19

Change	regard to a perceived		- Doubts about getting	
Consequences	asymmetry in		children	
	susceptibility and		- Guilt	
	suffering from the			
	consequences of climate			
	change.			
4. Envisioning	Participants constructed	B	- Crisis can be	11
a Brighter	hopeful and optimistic		overcome	
Tomorrow	emotions towards the		- Hope	
	future and the		- Faith in humanity to	
	management of the		act	
	climate crisis.			
5. Perceiving	The participants	DST	- Considering the text	10
the Cli-Fi	expressed unease		material realistic	
Material as	regarding the text		- Uncomfortable	
Bitter	material as they		reading experience	
Forecasts of	considered the stories			
the Future	applicable to the future.			
6. Dealing	Participants emphasised	B	- Suppressing thoughts	9
with Climate	different ways of		about CC	
Change	emotionally and mentally		- Suppressing emotions	
Through	refraining from the topic		about CC	
Psychological	of climate change to keep		- Avoiding the topic of	
Avoidance of	negative emotions from		CC	
the Topic	arising.			

Note. The content of the column “Occurrence” indicates whether the respective theme occurred while the participants referred to the climate story reading material. DST indicates “during story talk”, NST indicates “not during story talk”, and B indicates “both during story talk and not.” The abbreviation “CC” refers to climate change. N indicates the frequency of themes.

Theme 1: Problematising Accountability in a Changing World

Within the theme *Problematising Accountability in a Changing World*, the interviewees constructed their thoughts and emotions regarding the distribution of responsibility for climate change among different parties. This theme occurred throughout the interviews both while the participants addressed the apocalyptic stories as well as while not specifically referring to the reading material. With 36 occurrences, this was the most present theme across the eight interviews. All participants recognised climate change as a man-made problem and considered society responsible for counteracting the climate crisis. Within this theme, it was common for participants to express feelings of anger, frustration, and disappointment due to a perceived lack of initiative and responsibility from actors they consider powerful enough to facilitate change. Specifically speaking, the participants' anger was oftentimes directed towards political and economic actors. An example of this can be seen in the following excerpt.

“Olivia”: I feel kind of mixed feelings of frustration and anger. It's just that in society, I think, there's a lot of focus on the individual person. So, people are somehow blaming each other for climate change, but we are not tackling it where it is really necessary. Thousands and thousands of container ships are on their way somewhere because of giant companies ... and rich people are always flying around in their private jets at the expense of climate protection.

In this extract, Olivia first expresses her troubling emotions and then goes on to explain that these emotions stem from the fact that "people", perhaps referring to society, are wrongly dealing with the issue of accountability for climate change. She expresses her frustration about the fact that society fails to acknowledge certain parties, other than the average individual, to bear a greater responsibility for climate change. Hereby, she refers to economic companies and “rich people”. Hence, it appears that Olivia's expectation of how

climate change responsibility should be addressed is incongruent with her personal perception of who should be held accountable. Besides addressing the accountability of external actors, it was common for participants in this theme to also address their personal responsibility for climate change. The following excerpt shows an example of this.

“Astrid”: I feel like the more educated you are about it, the more you are aware of what you do to contribute to things that are not good. I am definitely guilty of buying fast fashion and I am guilty of eating meat. Uhm, definitely not as much as I used to, but I definitely still do it and I feel like in those moments, you know that it's not - you know that you're not contributing, contributing to anything good.

This abstract demonstrates Astrid's reflexivity about her own responsibility for climate change. In doing so, she expresses feelings of guilt about the fact that her past and current consumption behaviour contributed to the climate crisis. Interestingly, however, Astrid says that “she still does it”, indicating her continuation of taking non-environmentally friendly actions. Even though she does not address it explicitly, her statements indicate an internal conflict. She is aware that eating meat and buying fashion is not good for the environment and even mentions feelings of guilt in this regard. However, she does it anyway. Similar to Astrid, it was common for participants in this theme to acknowledge their own responsibility by naming specific behaviours that might negatively affect the climate.

Theme 2: Despairing Visions of the Future

Within the second theme *Despairing Visions of the Future*, participants constructed hopeless emotions and bleak outlooks on the future in the context of climate change. This theme occurred at a later part of the interview when participants were talking about their general climate emotions. Hence, this theme is not in conjunction with the text material. Often within this theme, participants justified their negative emotions by stating that there is no prospect of change. Here, the interviewees increasingly displayed powerlessness and

explained that both individual and collective efforts are no longer sufficient to prevent climate change and its consequences. The following excerpt allows for an insight into this theme.

“Lucas”: Well, no matter how good we behave, climate change will still not stop. It's just happening, and I can't stop it. And say, if we all stop now, it won't stop, and we'll still just roll along. And this rolling along is just a metaphor for the fact that you can't just get off a train. The train is moving, and it doesn't stop at any station, and I think, I'll put it this way, that you have to accept that you're on this train and there's no way to get off.

Interestingly, Lucas' hopelessness is displayed by the metaphor of a train ride which he uses to articulate both his individual powerlessness and the inevitability of climate change. This is in line with statements from other interviewees, who have also considered the climate crisis to be unstoppable. Moreover, by stressing that one needs to come to terms with “being on the train”, Lucas displays acceptance towards his perception of an inevitable climate crisis. A similar example of this theme can be seen in the following excerpt.

“Mary”: But I have to say that my feelings about the whole topic are rather negative, yes ... because realistically speaking, I think the chances are rather bad for the climate than good ... There are these phases where I think to myself "Oh, I don't give a shit, I'll just die at 50, so be it". So, it's mostly rather negative.

As common within this theme, by saying that “the chances are rather bad”, Mary also expresses pessimism towards the future of the climate. Interestingly, however, she does not label this view pessimistic but considers it to be realistic. Even though Mary does necessarily emphasise the inevitability of climate change, she expresses her pessimism for the future by indicating that she occasionally feels indifferent toward the fact that she might die about 30 years earlier than the current life expectancy in Europe (UNICEF, 2022).

Theme 3: Contemplation of Unequal Vulnerability Regarding Climate Change

Consequences

The third theme *Contemplation of Unequal Vulnerability Regarding Climate Change Consequences* captures how participants discussed the impact of climate change on themselves and on others. This theme occurred both while the participants addressed the apocalyptic stories as well as while not specifically referring to the reading material. Hereby, participants often expressed moral and ethical pondering with regard to a perceived asymmetry in susceptibility and suffering from the consequences of climate change. As was common within this theme, participants often compared their own situation with that of others. In doing so, all participants considered younger generations and people who live in other countries to be more affected by the consequences of climate change than themselves. Thus, participants in this theme often pondered the benefits of their own geographical and socio-economic status regarding climate change. The following excerpt is an example of this theme.

“Dennis”: The first thing that will start to happen is that the people who are worse off will be affected, and these are people from the global south, who generally can’t do much about this situation because it’s a global problem with climate change and a lot of it comes from the industrialised countries. And I just think that, as a white person living in Germany, I probably won’t have such a hard time here for long.

In this excerpt, Dennis addresses a perceived imbalance of vulnerability regarding climate change. He expresses a sense of unfairness due to the fact that those who are actually impacted by the crisis do not bear responsibility for climate change. Interestingly, he also emphasises his own privileged status by estimating that he as a “white person living in Germany” will not be severely affected by the climate crisis. Acknowledging one’s own situation as privileged by addressing the topic of susceptibility was common within this theme

and demonstrated by all eight participants. The following excerpt shows another variation of this theme when Olivia was asked if she would consider herself susceptible to the scenarios in the reading material.

Olivia: I mean, a lot more people will be affected than me because I know that I am talking from a privileged position ... Especially the impact on the next generations, I mean, those are the thoughts you have before you go to sleep. I've actually already thought about what it would be like to have children later on. Like when it gets worse. What do you possibly do to them?

As demonstrated in Olivia's excerpt, participants in this theme did not only recognise imbalances of vulnerability with regard to factors like geography and socioeconomic status but also time. In doing so, Olivia ponders the potential of an increased impact on future generations. Hereby, she expresses feelings of doubt regarding her decision to get children in future due to potential moral and ethical concerns. However, Olivia does not specify such concerns and expresses indecisiveness and uncertainty by asking herself the question of what she might "do to them". Similar to Olivia's excerpt, expressing doubts about getting children and discussing the vulnerability of future generations was common within this theme.

Theme 4: Envisioning a Brighter Tomorrow

Within the fourth theme *Envisioning a Brighter Tomorrow*, participants constructed hopeful and optimistic emotions regarding the future as well as the management of the climate crisis. This theme occurred throughout the interviews, both while the participants addressed the apocalyptic stories as well as while not specifically referring to the reading material. Even though every interviewee recognised climate change as a global threat, interviewees within this theme expressed hope that this challenge can be overcome. Here, participants oftentimes expressed faith in science and society to collectively counteract the climate crisis. Participants, however, varied in describing the intensity of their optimism.

Oftentimes, participants explicitly mentioned that their optimism is very limited and stated that they are overall rather hopeless. Lucas, for example, labelled his optimistic outlook as “part-time hope.” Nonetheless, every interviewee expressed an optimistic meaning-making pattern at some point during their respective interviews. An example of this theme is given in the following excerpt.

“Ben”: I think we saw that again in the Corona situation. If it all really gets very, very serious, then somehow, we'll all be able to work together again. I think things will happen, but if it really does affect everyone, then people will wake up and show some, or even more commitment to the topic. And that's why I not only feel afraid but also have a good feeling that we as people or as a society will somehow manage to turn things around.”

Interestingly, Ben draws a comparison to the COVID-19 pandemic when discussing the management of a global crisis and expects humanity to act similarly with regard to climate change. He states that his optimism is reinforced through a feeling of trust in society to collectively counteract climate change once everybody is affected by it. Such expressions of trust in collaboration and togetherness in overcoming the climate crisis were common within this theme. However, Ben's expression of optimism appears rather unclear and generic as he does not specify on how exactly the climate crisis can be overcome and what “turning things around” exactly requires. Nonetheless, in accordance with this theme, he demonstrates a positive attitude regarding the management of climate change. Another example of this theme can be seen in the following interview excerpt.

“Amy”: I also experience hope when I notice that somewhere in society there is a rethinking. For example, my grandparents are somehow beginning to understand the problem and that there is a greater social consensus and even people from the CSU (German conservative political party) are now saying that climate change exists.

Similar to Ben, Amy also discusses how a shift towards agreement and collaboration within society has given her hope for overcoming climate change. She interestingly refers to her own grandparents and members of a major German conservative political party when talking about her perception of a phenomenon of rethinking. By doing so, she implies that she felt these people did not adequately acknowledge the existence of climate change at an earlier stage. However, it now appears as if more and more people's attitudes toward climate change are congruent with her beliefs, reinforcing her expressions of optimism for the future.

Theme 5: Perceiving the Cli-Fi Material as Bitter Forecasts of the Future

Within the fifth theme, *Perceiving the Cli-Fi Material as Bitter Forecasts of the Future*, the participants considered the text material realistic and applicable to the real future, despite the fictional and non-scientific nature of the literature. This theme occurred exclusively at the initial stage of the interview while the participants were asked about the reading material. It was common for participants in this theme to repeatedly express a feeling of unease that they had experienced while reading the texts. Additionally, some participants emphasised that the confrontation with the literature triggered them to ponder the fact that an apocalyptic future, as presented in the text material, may be imminent. It should be noted that this theme was created separately from Theme 2 as participants in this theme specifically linked their expressions of discomfort to the content of the stories. This can be seen, for example, in the following excerpt.

Mary: Uhm, the last two scenarios were a bit heavy – I'm already kind of familiar with these issues, climate change I mean, but sometimes it's a bit hard when you actually read into it. Somehow, I got a bit nervous and uneasy while reading because it will probably somehow become reality. Uhm, I think it's a subject that may concern you less in everyday life, but I think that when you read it like that, it somehow makes you realise that it's not so unlikely and that you can actually experience something like

that. I don't know when that would happen, but I think that certain things are irreversible, and we are definitely heading towards something like that.

In this excerpt, Mary expresses feelings of troubling emotions that she experienced while reading the literature. In discussing her feelings, she expresses that engaging in the process of reading such scenarios confronts her with the topic in a manner that differs from her everyday contemplation of it. Thereby, the process of reading climate dystopias triggered her expressions of discomfort and perhaps gave her a reality check. Even though Mary displayed uncertainty about when and how such stories may become reality, she still considers the literature as a worrying forecast of the future. This makes her abstract an exemplary demonstration of this theme. Another instance of the participants' meaning-making patterns in this theme can be seen below.

Ben: I'll put it this way, we've often heard about these scenarios and that it could go in this direction. And at first, I was like "Well, those are just dystopian thoughts", but somehow, if you think about it a bit longer, it really does go in that direction and that makes you a bit afraid to read it. Especially when you thought, like with Corona, that it could never get to that point ... like "Oh, it will never become so crazy". But [Covid] showed you that things you know from films and books can also happen in real life. Mhm, that's why I think it's actually pretty close to reality, yup.

This abstract demonstrates how participants in this theme occasionally expressed their discomfort while reading the text by referring to feelings of fearfulness. Ben mentions how he used to think that apocalyptic scenarios are "just dystopian thoughts". However, he states that begins to think that such apocalyptic stories are not "just" fiction anymore but that the future might indeed turn out to be apocalyptic. This is similar to the previous example from Mary, and such statements were typical in this theme. Oftentimes, participants discussed their

realisation that apocalyptic scenarios, such as those depicted in literature or other media, may become reality.

Theme 6: Dealing with Climate Change Through Psychological Avoidance of the Topic

The sixth and final theme *Dealing with Climate Change Through Psychological Avoidance of the Topic* captures how participants emphasised different ways of emotionally and mentally refraining from the topic of climate change. This theme occurred throughout the interviews, both while the participants addressed the apocalyptic stories as well as while not specifically referring to the reading material. In this theme, participants commonly explained their psychological avoidance of the issue by saying that they want to prevent negative thoughts and emotions. An example of this seems can be seen in the following excerpt.

Olivia: It all frustrates me anytime I think about it, think about climate protection. But I think that's also part of this stoicism that I'm trying to live right now, I guess. In the end, I just try not to let myself be influenced too much by negative thoughts. Even if the topic is actually important to me in everyday life.

As shown in this excerpt, Olivia states that she experiences a lot of frustration about the topic but tries not to get overly influenced by negative thoughts with regard to climate change. Moreover, she also stresses that the topic is indeed important to her, thereby displaying feelings of inner conflict about the fact that she psychologically tries to refrain from the topic. Interestingly, she also explains that her current life philosophy of stoicism is fundamental to these efforts. However, it remains unclear whether she actually adopted this philosophy to deal with climate change or because of other reasons. Another excerpt of this theme can be seen below.

Dennis: I think that I somehow suppress this whole topic of climate change and that I am not really facing it ... In the end, I think I block out these feelings of anxiety, so they will not dominate my life.

This excerpt also captures how interviewees in this theme addressed psychological avoidance as a way of dealing with climate change. Dennis specifically states that he refrains from the topic in order to counteract feelings of anxiety. Interestingly, the wordings “repressing”, “suppressing” or “blocking out” personal emotions and thoughts with regard to climate change were repeatedly used by participants within this theme. In Dennis’ case, he states that he suppresses climate change and goes on to explain that he wants to prevent feelings of anxiousness from controlling his life. However, Dennis expresses reflexivity about the fact that he might not adequately confront the issue. By saying that he “somehow” suppresses the topic and “thinks” that he blocks out his feelings, he expresses uncertainty about his own internal ways of dealing with the topic.

Discussion

The purpose of this study was to gain a better understanding of how young people construct their climate-related thoughts and emotions after reading future apocalyptic climate stories. Accordingly, the research question has been formulated as “How do young people construct their climate thoughts and emotions after reading apocalyptic climate stories?” Overall, the findings of this qualitative empirical study provide evidence that young people express a variety of climate change thoughts and emotions in the context of reading and discussing apocalyptic stories. Specifically, a thematic analysis applied to eight interviews found six distinctive themes with regard to the participants’ climate thoughts and emotions. These meaning-making patterns were labelled as follows: (1) *Problematising Accountability in a Changing World*, (2) *Despairing Visions of the Future*; (3) *Contemplation of Unequal Vulnerability Regarding Climate Change Consequences*, (4) *Envisioning a Brighter Tomorrow*, (5) *Perceiving the Cli-Fi Material as Bitter Forecasts of the Future*, and (6) *Dealing with Climate Change Through Psychological Avoidance of the Topic*. Even though all participants displayed glimpses of optimism at some point during the interview, the themes predominantly comprised negative expressions regarding climate change.

The results are congruent with claims about young people being at risk of experiencing negative climate emotions in general. The resulting themes indicate that the young participants largely experience a comprehensive variety of negative climate emotions. As such, expressions of feelings like anger, despair, frustration, and hopelessness dominated the participants' meaning-making patterns. Therefore, the results of this study align with previous claims that emphasised young people being prone to experience negative climate emotions (Hajek & König, 2022; Hickman et al., 2021; Pihkala, 2019; Wu et al., 2020).

Furthermore, this research's findings align with previous scholarly findings on climate emotions. For instance, an essential characteristic of the theme *Problematising Accountability in a Changing World* was that participants expressed feelings of anger and frustration due to a perceived lack of responsibility from political actors. This pattern is consistent with findings from Du Bray et al. (2019) who found that people feel angry due to political inaction with regard to climate change. However, the results of the present study show additional insights which slightly differ from Du Bray et al. (2019). This is because, besides political inaction, participants have also repeatedly emphasised their anger and frustration towards a lack of responsibility and initiative from economic companies and wealthy individuals. Nonetheless, these expressions of anger and frustration further support the notion that people might experience "eco-anger", as Pihkala (2022) formulated in his climate emotions taxonomy.

Furthermore, the findings of this study align with prior research from Kleres and Wettergren (2017) regarding the experience of climate-change-related guilt. During the present study, the interviewees repeatedly explained their feelings of guilt due to them living in highly industrialised countries which are in large part responsible for climate change. These expressions of guilt emerged in the themes *Contemplation of Unequal Vulnerability Regarding Climate Change Consequences* and *Problematising Accountability in a Changing World*. The present findings are consistent with the work of Kleres and Wettergren (2017)

who found that people living in the global north may experience feeling of guilt due to their own home country's contribution to the climate crisis.

Despite these similarities, the results of this study also differ from other academic findings and claims regarding climate emotions. For instance, past research has repeatedly claimed climate-related anxiety as a common manifestation of climate emotions (Pihkala, 2019; Pihkala, 2020; Schwartz et al., 2022). Wu et al. (2020) also assumed that young people might be the most at risk of experiencing such climate anxiety. However, the analysis of the participants' interviews in this study revealed only a few indications of such anxiety among the interviewees. Rather than displaying feelings of anxiousness, participants frequently expressed hopelessness, guilt, frustration, and anger as distressing climate emotions. Nonetheless, it is crucial to acknowledge that emotions are complex and multifaceted, and individuals may experience and express them differently based on their unique circumstances. Therefore, factors such as the interview setting, or the presence of the interview may have led to rather limited expressions of anxiousness among the participants.

Additionally, the findings of this study appear to be consistent with previous scholarly claims on the leverage of climate fiction. All eight participants repeatedly drew connections to the reading material while discussing their climate-related thoughts and emotions. Hence, these results appear to further support the claim that climate fiction can serve as a tool for people to explore their psychological responses regarding the issue of climate change (Goodbody & Johns-Putra, 2018). Moreover, insights from the theme *Perceiving the Cli-Fi Material as Bitter Forecasts of the Future* support previous research from Vieira (2013) who emphasised that dystopian narratives could provoke people to think about alternative climate futures. Accordingly, the present study supports these claims on climate literature and complements them by means of a qualitative empirical approach. Nonetheless, further empirical research is necessary to fully address such claims, considering this study's limitations which will be discussed in a later section of this paper.

At this point, however, it should be emphasised that the findings of this study challenge prevailing beliefs from scholars who claim that apocalyptic narratives are solely overwhelming and purely negative in their impact on individuals (Hulme, 2008; Ismail, 2022; Swyngedouw; 2010). Contrary to this perspective, the analysis of the participants' responses suggests that reading apocalyptic climate stories can serve as a valuable tool for individuals to explore and engage with their climate-change-related thoughts and emotions. While it is true that the participants expressed distressing emotions such as despair, frustration, and anger, the study findings also revealed that engaging with apocalyptic stories provides an opportunity for reflection and introspection. Therefore, this study stands in disagreement with the notion of apocalyptic narratives being inherently negative and counterproductive. Instead, it argues for their potential to evoke important engagement with psychological responses to climate change.

The findings of this study allow for three different practical implications. Firstly, the findings of this study have practical implications that can be broadly applied to the context of professionals working with young adults. The results show that professionals working with young adults should be aware and understanding of the wide variety of young people's climate emotions. By recognising the diversity of these emotions, professionals such as educators, for example, can foster a more inclusive and empathetic environment. However, even though this study's findings contribute to the understanding of young people's climate-related thoughts and emotions, it is important to acknowledge that they represent a small-scale investigation. Thus, additional research and collaboration between researchers and professionals who work with young people is crucial to advance insights in this domain and ensure its broader impact on society.

Secondly, another implication may involve the promotion of climate fiction as a valuable tool for facilitating discussions and exploration of climate thoughts and emotions. Even though the reading material in this study only comprised short climate story excerpts,

the findings demonstrate the potential of cli-fi as a tool for exploring climate emotions. Climate fiction, such as the apocalyptic stories used in this study, can trigger individuals to express and reflect on climate-change-related topics. Therefore, the results suggest that incorporating climate fiction into educational settings, such as reading groups or classroom discussions, can create a platform for individuals to address their climate thoughts and emotions in a meaningful way. By supporting and advocating for the use of climate fiction, it is possible to promote engagement and raise broader public awareness of climate issues.

Thirdly, the results indicate the need for adequate support systems. This may include creating safe spaces for dialogue and peer support, establishing community-based initiatives, and connecting young individuals with existing organisations that focus on climate action. The findings can also assist in developing or refining targeted interventions, such as reading groups, that specifically address the emotional needs of young people in relation to climate change. For this, however, it should again be emphasised that additional research findings need to be considered due to the present study being a small-scale investigation.

Limitations

Despite these implications, it is important to acknowledge at least three potential limitations concerning this study. The first limitation concerns the sampling method. Participants were recruited per opportunity sampling from the researcher's social networks. This specific sampling method may lead to biases and limit the diversity among the participants. The participants of this study may share similar characteristics, backgrounds, and viewpoints with regard to the topic of climate change. Hence, the results may fail to capture the experiences and perspectives of underrepresented groups whose voices and experiences are crucial in understanding young people's meaning-making patterns toward climate change. A second potential limitation concerns the potential of a self-report bias. The study relied exclusively on self-report data through interviews. However, this data collection may be subject to biases such as social desirability and memory recall. Participants may have been

tempted to provide answers that they perceived as more socially acceptable regarding their thoughts and feelings towards climate change. The third limitation concerns the interview scheme. While the first half of the interview questions addressed the participants' experiences with regard to the reading material, the latter half addressed their climate thoughts and emotions in general. However, additional probing questions could have been implemented which specifically evoke the participants to link their general thoughts and feelings with regard to the apocalyptic climate stories. Doing this may have allowed for a better way of analysing and interpreting the leverage of apocalyptic climate fiction literature.

Directions for Future Research

Based on the limitations and findings of this study, several recommendations for future research can be made. For instance, instead of using short cli-fi excerpts, future research could focus on analysing the participants' thoughts and emotions after reading full-length apocalyptic climate fiction stories. This can provide a more extensive understanding of how individuals construct their climate emotions in response to a complete apocalyptic narrative including the development of plot, characters, and setting. Additionally, besides focusing on climate literature, future research may also investigate climate thoughts and emotions after participants were exposed to other forms of trigger material, such as apocalyptic movies, paintings, or games, for example.

Moreover, it would be useful to extend the current findings by using a mixed-methods approach. Combining qualitative interviews, such as those in this study, with quantitative measures allows for a more holistic understanding of people's climate thoughts and emotions. Researchers obtaining additional quantitative data, for example via surveys or psychophysiological measures, can reveal new findings about the participants' cognitive and emotional responses to climate fiction literature and climate change in general.

Another recommendation is that future research may compare the participants' thoughts and emotions evoked by apocalyptic climate fiction literature with those generated

by non-fictional climate information. By doing so, researchers can better investigate the unique impact of apocalyptic climate fiction on individuals' climate thoughts and emotions. Hence, it can help to create more strengthened and robust statements about the leverage of apocalyptic climate fiction literature.

Finally, future research addressing the topic of climate-change-related thoughts and emotions should consider conducting longitudinal studies. Following participants over an extended period of time may provide crucial insights into how young people's climate emotions evolve over time. By doing so, researchers may be able to capture changes in the participants' psychological responses toward climate-change-related issues. Hence, longitudinal observations may allow for a more nuanced understanding of the dynamics regarding climate thoughts and emotions as well as the factors that influence them.

Conclusion

The findings from this study undeniably revealed first insights and assumptions regarding the variety of young people's climate thoughts and emotions after reading apocalyptic climate stories. It was shown that young people's meaning-making patterns towards arguably the greatest challenge of the 21st century comprise topics such as accountability, vulnerability, despair, hope, and psychological avoidance. Additionally, the present study contributes to a growing body of claims suggesting that climate fiction may evoke people to address their psychological responses regarding climate change. Most notably, however, the present results challenge claims regarding the solely negative inherent impact of apocalyptic stories. Instead, this study demonstrated the value and potential of apocalyptic stories as a catalyst for rich and meaningful engagement and reflection on climate thoughts and emotions.

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Appendix A

Information Sheet and Informed Consent Letter

Figure A1

Information Sheet

UNIVERSITY OF TWENTE.



Information Sheet

Research Project: ***How do Young People Construct their Climate Emotions on the Basis of Hypothetical Future Climate Scenarios?***

The genre of climate fiction -fiction that depicts how people experience and deal with climate change- is becoming increasingly popular. Yet, not much qualitative empirical research exists on the topic; we do not know much about the *experiences* of people who have read cli-fi.

This research project, conducted at the **University of Twente**, at Psychology, Health, and Technology, investigates the experiences and perceptions of people who read a short, one-page-long work of climate fiction that depicts hypothetical future climate scenarios. Assistant Professor Heidi Toivonen is the PI of the project, supervising students of psychology who conduct interviews and analyze the data as parts of their course assignments and theses.

The research involves collecting online one-on-one interviews, mostly in English but also in the native language of the participant if that is not English and the interviewee is fluent in it. The data is collected for the purposes of students writing their research module assignments as well as Bachelor's and Master's theses and can eventually be used for scientific publications by Dr. Toivonen and possibly other scholars.


Naturally, participation in this research is voluntary. The interviews will last for 30-45 minutes. The participant will be asked questions about their experiences of reading a one-page-long work of climate fiction and their perceptions of climate change, especially regarding their own future. The participant can decline to participate and **withdraw from the research at any time**, without any negative consequences, and without providing any reasons.

The interviews will be audio- and videorecorded. The interview data will be fully anonymized upon transcription, and all interviewees will be referred to with pseudonyms throughout the analysis and in the final written works produced from the data. Individual participants cannot be identified from the assignments, theses, or articles written using this data.

The BMS ethical committee / Domain Humanities & Social Sciences at the University of Twente has approved this study (application number 230282). The data will be stored safely according to the data policy of University of Twente until 10 years after the research has ended.

Responsible researcher and contact person for questions about the research and rights of research participants: Assistant Professor Heidi Toivonen [REDACTED]

Note. Privacy-relevant information has been blacked out for this document.

Figure A2*Informed Consent Letter – Page 1*

The image shows a document titled "UNIVERSITY OF TWENTE." at the top. On the left margin, there are two hand-drawn sketches: one of a cell with a nucleus and another of a molecular structure. The document contains the following text:

FROM:
W. Amoo
[Redacted]

DATE
21-3-2023

PAGE
1 of 2

SUBJECT
Consent for Participation in Interview Research

1. I volunteer to participate in a research project concerning climate emotions and climate fiction reading. I understand that the project is designed to gather information about people's experiences and thoughts on a climate-change-themed short story as well as about how people think about climate change.

2. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without any negative consequences. If I decline to participate or withdraw from the study, no one will be told and it will not affect my relationship with University of Twente.

3. I understand that most interviewees will find the discussion interesting and thought-provoking. Nevertheless, if at any point during the interview, I begin to feel uncomfortable, I reserve the right to refuse to respond to any question or to terminate the interview.

4. Participation involves being interviewed by a student of psychology from University of Twente, using the Zoom or Teams video call platform. The interview will last approximately 30-45 minutes. Notes will be written during the interview. The interview will be recorded, and the anonymized transcript made on the taped video call will be used for research purposes.

Note. Privacy-relevant information has been blacked out for this document.

Figure A3*Informed Consent Letter – Page 2*

UNIVERSITY OF TWENTE.

DATE
21-3-2023

PAGE
2 of 2

5. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions. If requested, I can have access to the transcript of my interview by email. I can also request that the final thesis will be sent to me when it has been accepted.

6. The data will be destroyed 10 years after the end of the project (that is, in March 2033), or any time at my request.

7. No one outside of the project or not involved with writing assignments, theses, or papers using this data, will have access to the raw notes, recordings, or transcripts.

8. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I give my consent to participate in this study.

9. I have been given a copy of this consent form.


Signature of the participant

.....

Signature of the interviewing student

.....

Signature of the supervisor, Assistant Professor Heidi Tolonen



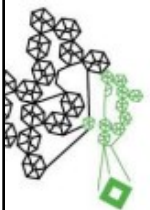
Appendix B

Climate Scenarios Compilation Sheet

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**Scenario 1 - Excerpt from "Hot Sky" by R. Silverberg**

[...] "He lifted his spyglass again and took another look toward the oncoming dinghies. Chugging along hard, they were, but having heavy weather of it in the turbulent water. He looked quickly away before he could make out faces. The berg, shining like fire, was still oscillating. He thought of the hot winds sweeping across the continent to the east, sweeping all around the belly of the world, the dry, rainless winds that forever sucked up what little moisture could still be found. It was almost a shame to have to go back there. Like returning to hell after a little holiday at sea, is how it felt. It was worst in the middle latitudes, the temperate zone, once so fertile. Rain almost never fell at all there now. The dying forests, the new grasslands taking over, deserts where even the grass couldn't make it, the polar icepacks crumbling, the lowlands drowning everywhere, dead buildings sticking up out of the sea, vines sprouting on freeways, the alligators moving northward. This fucking lousy world, Hitchcock had said. Yeah. This berg here, this oversized ice cube, how many days' water supply would that be for San Francisco? Ten? Fifteen?" [...]

**Scenario 2 - Excerpt from "Sunshine State" by A. Flynn & A. D. Hudson**

[...] "The seas rose, and the rains came. The levees broke. The waters prevailed upon the earth. Rich and poor alike sought shelter, but the rich happened to have helicopters. A lot of people took their chances on the highways. Others sheltered in place, hoping it was just another storm. But when the rains died away, the water didn't drain—it rose, bubbling up out of lawns and drains like a salty, stinking sweat." [...]

Scenario 3 - Excerpt from "Shooting the Apocalypse" by P. Bacigalupi

[...] "Timo didn't think he'd ever forget the scene. The tent walls sucking and flapping as blast-furnace winds gusted over them. The dust-coated refugees all shaking, moaning, and working their beads for God. All of them asking what they needed to give up in order to get back to the good old days of big oil money and fancy cities like Houston and Austin. To get back to a life before hurricanes went cat 6 and Big Daddy Drought sucked whole states dry." [...]

Appendix C

Interview Scheme

Age:

Nationality:

Gender identity:

Education:

Occupation:

Together, we will now read short excerpts from three climate fiction stories that describe hypothetical apocalyptic future scenarios due to the impacts of climate change. I want to emphasise that you can take as much time as needed to read these excerpts. If there is any uncertainty about specific terms used in these texts, please do not hesitate to ask.

[After the participant has finished reading]

I will now start recording this interview and ask you a few questions.

Q1: How was it for you to read these future scenarios?

Q2: Could you describe what you felt while reading these future scenarios?

P2a: Why do you think you felt this way?

P2b: Was there anything in particular that stood out to you in the texts?

P2a: How did you feel about the character(s) in the story excerpts?

Q3: How realistic would you consider such apocalyptic scenarios?

P3a: Do you think you will experience such scenarios in your lifetime?

P3b: How does that make you feel?

P3c: How do you feel about future generations in general?

Q4: How do you feel about your own future in a world impacted by climate change?

P4a: Why?

Over the last few years, researchers have increasingly investigated the concept of “climate emotions”. Climate emotions are defined as “affective phenomena which are significantly related to the climate crisis” (Pihkala, 2022). They include various feelings ranging from positive emotions such as hopefulness and optimism to rather negative emotions such as anxiety, fear, guilt, and sadness. I would now like to explore more deeply your emotions with regard to climate change.

Q5) How would you describe your emotions regarding climate change?

P5a: How would you consider the balance between positive and negative emotions?

P5b: Could you elaborate on your positive emotions?

P5c: Could you elaborate on your negative emotions?

P5h: (if not mentioned) How do you feel regarding your own responsibility?

Q6: Do you feel like these emotions have an impact on how you behave?

P6a: How do you feel about your personal chances of changing something with regard to climate change?

Q7: What do you feel is your biggest concern about climate change?

P7a: Why?

Q8: Do you have any feelings or thoughts about climate change that have not been talked about yet?

Thank you very much for participating in this interview and sharing your answers!