

The role climate fiction can play in affecting readers climate change emotions

A qualitative study

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Abstract

Since anthropogenic climate change continues to pose a high risk for the earth and its inhabitants, it is not surprising that this evokes all kinds of emotions such as *climate anxiety*. It has often been claimed that *climate fiction*, which is a loose umbrella term for fictional literature that deals with climate change and its consequences, could be a great tool to deal with difficult climate change emotions. This is because it has been hypothesized that this kind of literature is uniquely suitable to help readers comprehend climate change and its vast consequences on a cognitive and emotional level. However, there seems to be a research gap concerning the individual experiences readers of climate fiction go through. Therefore, this study aimed to qualitatively investigate 30 interviews with climate fiction readers. A Thematic Analysis was conducted to investigate how climate fiction readers describe the influence these novels might have had on their climate change emotions. This analysis resulted in 14 codes that were organised into the following five themes: *Heightened Awareness*, *Strengthened Negative Feelings*, *Limited Influence*, *Inspiration and/or Motivation to Act*, and *Intensified Connection*. Eventually, this study gives more insight into the kind of different climate change emotions that might be evoked by climate fiction. This paper concludes with concrete practical implications for the realm of positive and clinical psychology. Further, suggestions for future research about climate fiction in connection with climate change emotions are given.

Keywords: Climate Change, Climate Change Emotions, Climate Anxiety, Climate Fiction, Qualitative Research, Interviews, Thematic Analysis.

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Introduction

There is a scientific consensus that the process of changes to the earth's climate brought on by diverse natural and anthropogenic forces will have substantial impacts on all forms of life (IPCC, 2022). Undoubtedly, the subject of climate change causes a wide range of typically strong emotions in people (Hoggett, 2019; Siperstein, 2016; Stoknes, 2015). Often, it has been claimed that reading fiction is a great tool to deal with difficult emotions (Hillier et al., 2016; Moezzi et al., 2017). Climate fiction is a loose umbrella term for fictional literature that deals with climate change and its consequences (Goodbody & Johns-Putra, 2019; Johns-Putra, 2016; Schneider-Mayerson, 2017). Thus, it has been hypothesized that this kind of literature is uniquely suitable to help readers comprehend climate change and its vast consequences on a cognitive and emotional level (Goodbody & Johns-Putra, 2019; Iossifidis & Garforth, 2021; Malpas, 2021; Milkoreit et al., 2017; Trexler, 2015). Furthermore, multiple scholars hypothesized that climate fiction might raise awareness about and inspire people to act against climate change (Johns-Putra, 2016; Malpas, 2021; Milkoreit, 2017; Nikoleris et al., 2017; Schneider-Mayerson, 2018, 2022; Uildriks & Peeters, 2020; Özden and Özden 2021). Another hypothesis about climate fiction is that it might have a positive impact on the readers emotions such as sympathy and empathy (Death, 2022; Malpas, 2021; Schneider-Mayerson, 2020). Although there are a lot of hypotheses about climate fiction, there seems to be only one empirical study investigating the effect of climate fiction (Schneider-Mayerson et al., 2020). In this study, a few key attitudes and beliefs on global warming were significantly and slightly positively influenced by climate fiction, although these effects only persisted for about a month (Schneider-Mayerson et al., 2020). Consequently, there is still a need to get a better understanding of how readers perceive the experience of reading climate fiction. More specifically, it is unclear how readers of climate fiction describe the impact it has on their climate change emotions. Therefore, the aim of this study was to qualitatively investigate how climate fiction readers describe the influence these novels have on their climate change emotions. For this purpose, a preliminary discourse analysis and a thematic analysis were employed to investigate climate change emotions as discussed in the context of interviews.

Climate Change and the Emotions it Evokes in People

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Since anthropogenic climate change has been widely recognized as the biggest global challenge it has become a topic of continuous discussions in societies worldwide (IPCC, 2022). As a result, in 2018 the youth movement *Fridays for Future* was called to live by Greta Thunberg, in which young people are voicing their concerns about having to live with the consequences of climate change (Fridays for Future, 2023). Furthermore, some adolescents are uttering eco-reproductive concerns which entail that the decision to have children is critically considered in light of the acute climate crisis (Schneider-Mayerson & Leong, 2019). Thus, it has been claimed that climate change evokes different and usually relatively strong emotions in people (Hoggett, 2019; Siperstein, 2016; Stoknes, 2015).

An emotion that has recently gained more attention from various scholars is *climate anxiety* which denotes the significant experience of challenging emotions due to anthropogenic climate change and the threats it poses (Clayton & Karazsia, 2020; Pihkala, 2019, 2020). Although it is not a pathological disease nor an official diagnosis, it can encompass multiple symptoms such as insomnia and restlessness (Clayton & Karazsia, 2020; Pihkala, 2019). People are more prone to encounter the more severe manifestations of climate anxiety when specific conditions exist such as being close to environmental changes, a higher predisposition for anxiety, as well as a stronger connection to nature (Pihkala, 2019). Additionally, younger people, individuals earning their living from nature or being closely involved with climate research, as well as victims of climate injustice are more vulnerable to experiencing climate anxiety (Pihkala, 2019). Moreover, it has been found that climate anxiety is related to other complex emotional responses like grief, trauma, fear, powerlessness and helplessness, anger, guilt, shame as well as a feeling of inadequacy (Pihkala, 2019, 2020). As such, climate anxiety can lead to paralysis and an avoidance of the topic of global warming (Pihkala, 2020). However, when the suffering person has “enough time and space to deal with their emotions” as well as “enough constructive activity to help mitigate climate change”, climate anxiety can become an important resource to deal with the adversities of climate change (Clayton & Karazsia, 2020; Pihkala, 2019).

Climate Fiction

Cli-fi is short for *climate fiction* which is a term for all speculative fiction that features a changed or changing climate, sometimes as a major plot device and sometimes as a mere background

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phenomenon with no mention of the word *climate change* whatsoever (Goodbody & Johns-Putra, 2019; Johns-Putra, 2016; Schneider-Mayerson, 2017). Hence, the diversity of climate fiction can take various and vastly different forms ranging from dystopian and utopian stories over thrillers to romance novels (Death, 2022; Johns-Putra, 2016; Schneider-Mayerson, 2018). This has led some researchers to use climate fiction as a loose category or umbrella term for all literary pieces that explicitly, implicitly, or metaphorically discuss anthropogenic climate change instead of referring to it as a genre (Goodbody & Johns-Putra, 2019; Schneider-Mayerson, 2017, 2018). Climate fiction has existed for over sixty years, close to the time that climate change became a topic of public interest. Examples of the earliest cli-fi novels are *The Wind from Nowhere* (1961) and *The Drought* (1964) by J. G. Ballard as well as *Dune* by Frank Herbert (1965). In the late 2000s, climate fiction's popularity peaked as climate change became more evident and interesting to the public (Bellamy, 2021; Schneider-Mayerson, 2020; Trexler, 2015).

Climate change has been the topic of many different narrative formats such as movies, comics, novels, and short stories. Books demand and reward continuous involvement since it usually takes more time to read a book than to watch a movie, for example (Schneider-Mayerson, 2017). Furthermore, novels allow for the accurate representation, deconstruction, and understanding of the astronomically complex issues of the Anthropocene (Schneider-Mayerson, 2017). This might be because books allow readers to become a part of the plot by providing insight into the characters' thoughts and feelings. Novels seem to have more detail, a greater emphasis on character development, and a greater depth to the meaning of artwork than movies (Guntupalli et al., 2020). Reading also stimulates the imagination and provides an experience through which an individual can broaden their knowledge, identity, extend and intensify their interests, and develop a deeper understanding of themselves (Chettri, 2013). Therefore, this study will focus solely on climate fiction novels.

It has been frequently theorised that climate fiction has the unique potential to help its readers deal with the subject of anthropogenic climate change and its far-reaching consequences not only on a cognitive but also on an emotional level (Goodbody & Johns-Putra, 2019; Iossifidis & Garforth, 2021; Malpas, 2021; Milkoreit et al., 2017; Trexler, 2015). This might be, among other factors, because climate fiction presents imagined future events that could expand readers' capacity for imagination by

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helping them picture the impacts, causes, and overall impression of global warming (Death, 2022; Irr, 2017). Another factor might be the narrative logic sometimes used in science fiction which is called *cognitive estrangement*. Hereby plot elements are given a sense of realism by being set within the framework of the made-up universe, which is assumed to be scientifically coherent (Death, 2022). Therefore, it is possible that the ambiguities, paradoxes, and uncertainties of everyday life can be captured well in climate fiction by depicting human protagonists who experience climate change and its political, cultural, social, and psychological ramifications (Death, 2022). Yet another factor might be *defamiliarization* which is a rhetorical device frequently employed by fiction writers to present familiar objects in an unfamiliar or unique way to compel the reader to adopt a different viewpoint (Gode, 2021).

The most prominent claim that has been repeatedly made by scholars is that climate fiction might raise awareness about and inspire people to act against climate change (Johns-Putra, 2016; Malpas, 2021; Milkoreit, 2017; Nikoleris et al., 2017; Schneider-Mayerson, 2018, 2022; Uildriks & Peeters, 2020; Özden and Özden 2021). These scholars have different theories about why that might be the case. For Johns-Putra (2016) it is the encouragement to face climate change and the highlighting of neglected perspectives about global warming made accessible to a wide public. Additionally, Malpas (2021) argues that climate fiction does not only represent the vast possibilities of risks and harms of global warming but also many chances to reconsider our social and economic systems. Milkoreit, (2017) introduces the *theory of imagination* which states that it is the collective imagination that is necessary to achieve change. Furthermore, Nikoleris et al. (2017), suggest that climate fiction facilitates the engagement with and the personal reflection regarding climate change. On another note, Schneider-Mayerson (2018) refers to the *availability heuristic* according to which people gauge the possibility of an event's occurrence based on how quickly examples or associations come to mind. Therefore, readers could be more likely to recall specific climate scenarios when they have read remarkable literary visions. Uildriks & Peeters (2022) suspect that cli-fi might reduce the distance people tend to perceive between them and the consequences of climate change which inspires climate actions. Finally, Özden and Özden (2021) only see climate fiction influencing human agency when the readers have enough opportunities for personal identification with the novel's protagonists

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and when additional tools and platforms to discuss climate change more holistically are offered. However, these are all theoretical claims and to date, the only empirical proof of the effect of climate fiction was produced in a study by Schneider-Mayerson et al., (2020). Here, he found a small but significant positive influence on several important beliefs and attitudes about global warming, but these effects only lasted for about a month.

Besides the claim that cli-fi can inspire readers to act against climate change, other theoretical assertions have been made about the impact climate fiction might have on emotions such as sympathy and empathy. For example, Schneider-Mayerson (2020) argues that cli-fi could help readers to empathize with climate migrants and other victims of climate injustice as it presents a unique opportunity to experience the consequences of anthropogenic climate change through the eyes of a minority. Similarly, Malpas (2021) states that especially for the younger generations this tool is helpful to learn about and understand the consequences of climate injustice. Moreover, Death (2022) believes that critical theorists can use climate fiction, especially Africanfuturist climate fiction, to challenge the mainstream, Eurocentric, and constrictive means of envisioning the future. Thus, it appears as if climate fiction has a huge potential to help its readers deal with all kinds of climate change emotions.

To conclude, there are many hypotheses about the role climate fiction can play in affecting readers' climate change emotions. However, to date, there is no qualitative research that investigates this role, and such a lack of diversified research disables drawing definite conclusions about climate fiction. Some of the benefits of qualitative research are that it enables one to grasp detailed participant perspectives, delivers experiences within context, and allows for an understanding of what is done with language (Doyle et al., 2019). Since stories are a convenient way of delivering information, interviews are a suitable method for collecting rich data for qualitative analysis (Doyle et al., 2019). Hence, the purpose of this study was to deploy a qualitative approach to explore interviews where readers discussed how reading climate fiction affected their climate change emotions.

Nevertheless, some empirical research has been done where the readers' emotions in response to climate fiction were analysed. For example, Schneider-Mayerson (2018, 2020) found that most emotions in response to cli-fi were rather negative than positive. Negative emotions that readers

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frequently mentioned were, for example, helplessness, sadness, guilt, scariness, nervousness, depression, anger, and worry. Positive emotions, on the other hand, were hopefulness, joy, and inspiration. Furthermore, positive emotions tended to be pleasant but hazy orientations toward the future, whereas negative emotions were frequently strong, immediate, and self-directed (Schneider-Mayerson, 2018). In her master's thesis, Albert (2022) classified the emotions reported in interviews with people who read climate fiction according to how the participants constructed their emergence. She showed that the readers were often quite positive before their reading experience, had a mixture of positive and negative feelings during their reading experience, and were rather feeling negative after they had finished reading. She also concluded that while reading cli-fi, some readers experienced climate anxiety due to a negative future made more concrete as well as identifying with the characters and the content. Surprisingly, in her master thesis, the readers mentioned positive emotions more frequently and explicitly compared to other studies with a similar research question (e.g., Schneider-Mayerson, 2018).

This Study

Concludingly, climate change evokes all kinds of climate change emotions that people sometimes struggle to deal with wherefore the question arises of how people can be aided in the process of dealing with their climate change emotions constructively. Here, climate fiction might be of help, for example, some researchers suggest that cli-fi might be a great tool in classroom conversations (Leavenworth & Manni 2021; Nilssen, 2020). However, there is a lack of qualitative research about how readers of climate fiction perceive the complex emotional impact these books might have had on their climate change emotions. Therefore, the aim of this thesis was to answer the following research question: *How do people describe the influence reading climate fiction had on their climate change emotions?*

Methods

Design and Procedure

This study was part of a larger research focusing on climate fiction in general, wherefore the data analysis was performed on a set of interviews previously conducted by a group of students at the University of Twente. This research was ethically approved by the Ethics Committee of Behavioural

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Management and Social Sciences at the University of Twente on the 11th of February 2022 under the approval number 220077. A team of ten bachelor's and master's psychology students from the University of Twente collected the data via semi-structured, 30 to 60 minutes long interviews during the period from February to May 2022. The members of this research team conducted one-on-one interviews which were audio and video recorded using Microsoft Teams (Version 1.5.00.15861). The transcripts were completely anonymized, including giving each participant a pseudonym as well as removing any names or locations that might have allowed the participant to be identified. The data will be stored in accordance with the University of Twente's data policy for up to 10 years after the study is complete. Although most of the interviews were conducted in English, some of the involved students opted to use their native language (e.g., German) in a few of them. Overall, 34 interviews were conducted wherefrom 4 were excluded from the data analysis of this study because they either did not include the relevant interview question number 15 (e.g., the interviewer forgot to ask this question) or because participants discussed books that do not represent climate fiction even by a wide definition.

Participants and Recruitment

The inclusion criteria for this study required participants to be 18 years or older as well as signing the written consent form and thus agreeing with the terms and conditions thereof. Moreover, participants in this study must have finished reading at least one climate fiction novel.

Multiple methods were used to recruit participants. First and foremost, the study was published with a reward of two credit points on SONA systems, a portal for students at the University of Twente. Moreover, all researchers gathered extra interview subjects using convenience sampling from the students' social networks. Additionally, the study was advertised by being shared on social media (e.g., Instagram, Reddit, and LinkedIn). An information letter was used to explain the study's specifics to participants who expressed interest in taking part (Appendix A). The participants were then sent an email invitation to join a Microsoft Teams meeting after agreeing on a time for an interview. Participants were shortly briefed on the purpose of the study before the interviews, and they were given an *Informed Consent* form to sign before the interview began (Appendix B). Demographic questions like age, gender, ethnicity, occupation, and education were also asked of the participants

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beforehand. The interviews lasted between 20 to 60 minutes. The research team recorded each interview, anonymised it, and translated it into English where the verbatim transcribed all spoken words while excluding all other sounds.

The demographic characteristics of the 30 interviewees were composed as follows: Their ages ranged from 20 to 69 with a mean age of 37. Furthermore, most of the participants ($n = 24$), identified as female, and only six identified as male. Most of the interviewees were German ($n = 18$), but there were also participants with other European nationalities such as French, English, Dutch, Romanian, Lithuanian, Belgian, Finnish, Swedish, as well as Norwegian. Thus, the great majority ($n = 29$) of the participants had a white Caucasian ethnicity. Most of the participants were university students ($n = 12$), whereas other participants came from a variety of professions such as that of a social worker, a program associate, and a news reporter. Hence, the educational level of the participants was rather high with the great majority possessing or still obtaining a bachelor's and/or master's degree. Another important piece of information about the participants' background is that all of them stated that they were mostly convinced of the existence of anthropogenic climate change which made most of them concerned for the future. Thus, no climate change deniers, for example, were among the participants.

Materials

Next to the already mentioned informational letter and informed consent (Appendix A and B), another material that was used in this study was the interview scheme which was previously created and tested in three interviews by the research team (Appendix C). The interview guide protocol consists of three parts with the first one elaborating on the interviewees' demographics and the second investigating the participants' opinions and behaviour in relation to climate change. Thirdly, 18 open questions, nine of which featured additional probes, were used to collect data regarding climate fiction and the subjects' experiences with reading it. With these questions, the amount and type of climate fiction, the participant's reading experiences as well as their motivations to read climate fiction were investigated. Additionally, it was explored whether the respondents perceived that their emotions, attitudes, thoughts, behaviours, and/or perspectives on the future and/or climate change changed because of the climate fiction they had read. In this context, the most important question for this research was question number 15 which reads as follows: "*Did reading climate fiction influence your*

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feelings with regards to climate change?” The participants were also asked whether they currently have climate anxiety, whether they had it in the past, and whether climate fiction has had an impact on it. The final question was whether the interviewees would like to add any more discussion points.

Data Analysis

To explore how readers of climate fiction describe the influence it had on their climate change emotions, this thesis employed a preliminary *Discourse Analysis (DA)* as well as a *Thematic Analysis (TA)*. The DA branch of qualitative research seeks to comprehend how individuals react to their environment and build themselves discursively (Wahlström, 2006). Thus, discourse is viewed as an active medium that people use to create and investigate various worldviews and social constructs since the social environment is perceived as being constructed in verbal interactions (Calliari, 2016; Gill, 2000; Potter, 2004, 2012; Potter & Wetherell, 1987). As a result, DA allows for more than just a content-level analysis as it enables adopting a critical perspective to advance and broaden our comprehension (Potter, 2004; Potter & Wetherell, 1987) of how climate change emotions are constructed in speech, for example. Therefore, DA was used to get an in-depth insight into how the participants constructed the role reading climate fiction might have had in affecting their climate emotions.

In the first phase, I carefully read all 30 transcripts of the interviews while paying attention to all parts where climate change emotions were discussed in the context of reading climate fiction which exclusively boiled down to answers given to interview question number 15 (see Appendix C). Afterward, I formatted all the answers from the respondents to question number 15 into one *Word document* to provide a better overview and to minimise the amount of data not relevant to this inquiry. This resulted in a five-page corpus which I then read carefully while drawing from discourse analytical methodology (e.g., Goodman, 2017; Potter 2004), concentrating on all the different ways the participants described the influences climate fiction had on their climate change emotions. I started to organize these different types of influences that participants perceived climate fiction had on their climate change emotions into different categories. This was done by paying attention to linguistic and rhetorical peculiarities which refer to everything ranging from the use of pronouns and metaphors as well as other special wordings, the application of active and passive language, and the

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choice of examples respondents use to bring a point across. Similar descriptions of the influence climate fiction had on the readers' climate change emotions were clustered into a category, to which a definition and frequencies were assigned. Eventually, it was noticeable that in hindsight the research question, the data, as well as the preliminary results all pointed to the usefulness of a *Thematic Analysis (TA)* as an additional analytical method. As opposed to DA, TA seems more suitable insofar as it allows for creating a broader picture of cli-fi reading experiences regarding the different aspects that emerge when cli-fi readers describe the perceived influence those novels had on their climate change emotions. Thus, a combination of DA and TA was used to explore the various ways in which cli-fi was described to influence the participants' climate change emotions from two different angles in order to gain a more detailed understanding (Braun and Clarke, 2006; Toivonen, 2022).

In the second phase, the corpus was subjected to TA which makes it possible to locate and classify patterns of meaning while permitting recognition of what is shared in the discussion of a subject, through the use of a structured framework (Braun & Clarke, 2006, 2012). Note that the TA was primarily used as an inductive technique with a data-driven strategy, which means that the codes and themes were derived from the interview themselves. In the following TA, the preliminary categories of the previous DA developed into groups with their specific *codes*. A code is a name given to a passage of text with the intention of highlighting and summarizing key ideas contained within a body of information (e.g., interview transcripts). Afterward, those codes were further related to wider patterns of meaning which are called *themes*. How exactly the specific codes and themes were developed in this study is described in detail in the two paragraphs below.

Braun and Clarke (2006) defined six phases of a TA. Since the familiarization with the data already took place the first step could be skipped. Afterward, initial codes were generated (2), however open coding was applied to allow for more flexibility and an inductive approach assured to retain the meaning of the data (Braun & Clarke, 2006). Thus, I paid attention to how the interviewees described that reading climate fiction had an influence on their climate change emotions and treated these as the fundamental components of the raw data. In this study, everything that the participants answered to question number 15 was coded as a perceived influence on cli-fi readers' climate change emotions. In the course of this, some participants described very complex emotional response patterns

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that they perceived after having read cli-fi that not only relate to emotions but thoughts and actions as well. However, as the later themes show those thoughts and behaviours were described as triggered by emotions and were thus also coded as a perceived influence on cli-fi readers' climate change emotions. The participants' answers to question number 15 (e.g., an uninterrupted speech turn of the participant) were then assigned codes to indicate certain key ideas. The smallest codable unit of analysis was a clause which is a group of words consisting of at least one subject and one predicate. As an example, take this clause from *Anna's* answer: "*it made me more aware*", which I would have coded as *Heightened Awareness*. In case this perceived influence on cli-fi readers' climate change emotions was constructed within a longer sentence, in which the structure added something to the meaning, I coded this longer sentence. To illustrate, the following sentence from *Anna* "*I think when reading it, it made me more aware of the feelings I already had,*", would have been coded as *Becoming more aware of one's own feelings about climate change*. Since cli-fi readers often constructed the perceived influence on their climate change emotions in more than one sentence, I coded many consecutive sentences with the same code. Therefore, I counted a code only once until a new code began. In that way, 12 initial codes were generated, but I constantly kept modifying the codes throughout this systematic process. Note, that sometimes within the uninterrupted speech turn of a participant there were multiple codes, and sometimes there was only one code apparent.

Afterward, the search for themes could begin, whereby themes are recognised as sharing an underlying unifying core and thus, form a group of patterns and/or meanings in the interview transcripts (3). To do this, I grouped the existing codes that seemed to have a common characteristic and described a logical and significant pattern in the data. Here, five themes were initially allocated and repeatedly reviewed which means that it was checked whether they worked in relation to codes as well as the other themes (4). Then the five themes were given names and a fitting and comprehensive definition was assigned to each theme (5). For example, take the answer of *Roland*: "*No. You're specifically asking about the book, so no. Ultimately, this is such a big puzzle with so many small pieces. The book was part of that, so I have to say that if you are really asking about change, that's nothing new to me. Also, that insects are dying, and the extinction of species is nothing new to me and accordingly it didn't change my thinking or my feeling about those topics. So yes, it confirmed my*

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perspective and attitude towards this topic, but it didn't cause any changes." Here the first five sentences as well as the last part of the last sentence would have been coded as *No additional influence on climate change emotions at all*. However, the first part of the last sentence until the comma would have been coded as *Reassurance of already existing thoughts and/or emotions*. Both codes share the same core idea, namely that climate fiction had a limited influence on their climate change emotions. Thus, both codes belong to the theme of *Limited influence*. Again, note that sometimes within an uninterrupted speech turn of the participants, there were multiple themes and sometimes there was only one theme apparent. To present an overview steps two to five were summarised in a table. Finally, the report was written in which each theme with its codes was explained, analysed, as well as exemplified (6).

These steps were repeated after receiving feedback from the supervisors. Therefore, two themes were merged after it appeared that one theme was after all merely a code. Moreover, two new codes and one new theme were generated. Eventually, the final analysis included five pages of data extracts coded with 14 codes that were organised within five themes of influences reading climate fiction was perceived to have on a person's climate change emotions.

Guba (1981) suggested four criteria of trustworthiness for qualitative research which are credibility, transferability, dependability, as well as confirmability. Credibility is established in this study by prolonged engagement, persistent observation, constant revision by triangulating the data with previous studies, and feedback meetings with both supervisors. Transferability is established in this study by exhaustively describing the situation observed. Finally, Confirmability and Dependability are established in this study by a thorough description of the steps that were undertaken in the method and results section.

Results

Table 1 provides an overview of the five themes that cover the types of perceived influence the 30 interviewees described climate fiction had on their climate change emotions. Within the very left column, the five themes of the perceived type of influence climate fiction had on the readers' climate change emotions are displayed. In the middle left column, the related definitions of the five themes of perceived influence are mentioned. In the middle right column, the 14 codes that belong to

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this specific theme are listed. Within the very right column, the frequency with which this theme was counted is provided. Overall, five themes of perceived influences of climate fiction on climate change emotions and 14 codes were identified and ordered from most to least frequent. Note that, in some cases, multiple types of perceived influences of cli-fi on climate change emotions (e.g., themes and codes) could be found within the same interview answer.

Table 1

Themes of climate fictions perceived influence on the interviewees' climate change emotions (n = 30)

Theme	Definition	Codes	Frequency (n)
Heightened awareness	The impact of cli-fi was described as a heightened awareness of known but also previously unknown emotions, thoughts and/or behaviours.	(1) Becoming more aware of one's own feelings about climate change.	11
		(2) Becoming more aware of one's own thoughts about climate change.	
		(3) Becoming more aware of one's own and other people's behaviours contributing to climate change.	
		(4) Discovering and checking new facts about climate change.	
Strengthened negative feelings	The impact of cli-fi was described as an intensification of (previous) negative	(5) Previous negative emotions were intensified, reinforced, and/or heightened.	9
		(6) New negative emotions	

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	emotions (e.g., anger, sadness, frustration, anxiety).	emerged or were triggered.	
Limited influence	The impact of cli-fi was described as reassuring or not existing.	(7) Reassurance of already existing thoughts and/or emotions. (8) No additional influence on climate change emotions at all.	8
Inspiration and/or Motivation to act	The impact of cli-fi was described as a stronger inspiration and/or motivation to act against climate change.	(9) Felt inspired and/or motivated to act against climate change in future. (10) Was inspired and/or motivated and already acted or tried to act against climate change.	7
Intensified connection	The impact of cli-fi was described as an intensified connection to climate change, other people, current privileges and/or nature.	(11) Intensified proximity to issue of climate change. (12) Intensified connection to the self and/or other people. (13) Intensified connection to nature. (14) Intensified thankfulness and/or appreciation for current privileges.	7

Heightened Awareness (n = 11)

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The first theme, *Heightened Awareness*, can be defined as a feeling of heightened awareness of known but also previously unknown emotions, thoughts and/or behaviours presented by the participants as a consequence of reading climate fiction. More specifically, multiple interviewees stated that they became more aware of the emotions they felt towards climate change while for others the awareness rather concerned specific thoughts about climate change. Yet again for other interviewees the awareness rather related to their own as well as the behaviour of other people that contributes to climate change. Further respondents stated that climate fiction even made them discover new facts about climate change they were not previously aware of. In the interviews, heightened awareness was often described with active words such as *thought*, *aware*, *attentive*, as well as *attention*. Another noteworthy observation was that climate change was often referred to as the *issue* or simply *it*, instead of directly referring to climate change. While it is common to use a subject and/or object pronoun to replace a noun to avoid repetition, it was apparent that no participant used the words *climate change* directly. This could be due to the rather common phenomenon of emotionally detaching from the climate crisis (e.g., Norgaard, 2011). Moreover, the respondents often came up with personal examples of what especially they paid more attention to without being probed further about it beforehand maybe to show how they noticed that they became more aware.

To further illustrate this theme, take the following excerpt from Cecilia's answer who read *The History of Bees* and was talking about the extinction of bees in the following quote.

Cecilia (The History of Bees - Maja Lunde): *"Sometimes some of the books have also raised topics that I had not been that much aware of because the mainstream media might be talking about the bigger things and not so much of the small effects that we have in life. So, I think it's changed in the fact that there has been some new, maybe some new details that I have not been aware of. And then I've looked into them and looked into the facts and kind of it's even if it's fiction that there are some facts behind. So that's what I also like about them."*

Typical for this theme she directly uses the word *aware*. Furthermore, she gives a reason for not being aware of the bees previously (e.g., mainstream media) and an example of what she became more aware of (e.g., bees) without being probed for it. This implies that the reading of this climate fiction

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novel provided her with new and previously unknown facts which in turn triggered other streams of thoughts, emotions, and possible behaviours.

Another notable commonality within this theme was that multiple respondents described the awareness as coming *suddenly* and *unexpectedly*. However, it appears as if the awareness disappeared as quickly as it came since it was mentioned multiple times that the awareness *wore off* after a while; speaking of it as if it overcame them and then disappeared from them. What is more, the awareness was even referred to as *it* or was used as the subject performing the action denoted by the verb (e.g., extract below). This implies that the awareness was something that happened to the respondents, something over which they did not seem to have much control. Take the following quote from Anna who read the climate fiction novel *Parable of the Sower* by Octavia E. Butler as a typical example.

Anna (Parable of the Sower - Octavia E. Butler): “*I think when reading it, it made me more aware of the feelings I already had. Uhm... But I wouldn't say that the awareness necessarily continues on so long. It's more of after the reading and when talking about it, it's a big awareness, but it wears off after a time.*”

Strengthened Negative Feelings (n = 9)

The second theme, *Strengthened negative feelings*, can be defined as (previous) concerns, and herewith associated negative emotions (e.g., anger, sadness, frustration, anxiety) that were described by the participants as intensified due to having read climate fiction. Sometimes respondents expressed that cli-fi intensified their already previously existing negative emotions and sometimes respondents expressed that cli-fi triggered new negative emotions within them. As an example of the latter, take the excerpt from *Lia*.

Lia (Participant does not remember the name of the cli-fi book): “*Maybe at the time that I was reading, but after no, because I think like it's too negative. So, after I stop reading it. So, after the feeling of stress and very angry and what can we do, we all going to die after it goes.*”

Normally, the respondents interchangeably used the verbs *contributed*, *heightened*, *reinforced*, *enforced* or the adjective *very* to describe the increase in negative emotions due to having read climate fiction. Further, in some manifestations of this theme, the participants used the words *probably* or

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maybe, and in other occurrences, participants used words such as *definitely* to describe their negative emotions being reinforced by climate fiction. The negative emotions that were mentioned by most interviewees were stress, anxiety, fear, as well as frustration. *Lia* reports the typical negative emotion of *anger* but also names *stress* which is an emotion that was not voiced often. It remains unclear what emotions she refers to with ‘*we all going to die*’, but it could be hopelessness and fear. Generally, her response remains short and vague as it appears that the negative emotions made her freeze as only after they disappeared, she could act again. This kind of short description of negative emotions was given by multiple other participants as well. However, there were also respondents for whom the negative emotions had a different impact. For example, *Laura* did not perceive the negative emotions as something to avoid but something to face upfront.

Laura (The Word for World Is Forest - Ursula K. Le Guin): “*Yes, definitely. Well, it's definitely enforced my fear, but I think if something is true and you're afraid, it's not necessarily a bad thing. I didn't want to shy away from the topic.*”

Limited Influence (n = 8)

The third theme, *Limited influence*, can be defined as not perceiving any new changes regarding one’s climate change emotions due to having read climate fiction as described by the participants. Here, interviewees either stated that climate fiction simply confirmed what they already felt and/or knew concerning climate change or that it did not add anything new to their feelings and/or knowledge about it. This theme is unique in the sense that participants who gave a response that belongs to this theme did not mention other aspects that were assigned to other themes. So, while some themes were often mixed together this theme only occurred alone. The interviewee *Roland* gives a good exemplary answer of why climate fiction might not have influenced his climate change emotions.

Roland (The History of Bees - Maja Lunde): “*No. You're specifically asking about the book, so no. Ultimately, this is such a big puzzle with so many small pieces. The book was part of that, so I have to say that if you are really asking about change, that's nothing new to me. Also, that insects are dying, and the extinction of species is nothing new to me and*

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accordingly it didn't change my thinking or my feeling about those topics. So, yes it confirmed my perspective and attitude towards this topic, but it didn't cause any changes."

Typical for this theme, he makes use of totality words such as *nothing* or *always* which might imply a certainty the reader felt toward climate fiction not having an impact on his climate change emotions. Another commonality for this theme was that the respondents explained why climate fiction might not have influenced their climate change emotions without being further probed about it. For example, some said it was because there was no new information (e.g., *Roland*), others said it was because they were not emotionally involved in the story, and yet others said that the book they read was *hard* to understand. Sometimes respondents gave constructive criticism to explain how to improve the role cli-fi can play in affecting climate change emotions. For example, one participant said he would have wished the cli-fi book he read would have given a more hopeful outlook on possible future scenarios. This could imply that they felt that climate fiction should have affected something within them which might have been due to the circumstance of engaging in a qualitative research study or simply because they personally would have wished for it.

Inspiration and/or Motivation to Act (n = 7)

The fourth theme, *Inspiration and/or Motivation to act*, can be defined as participants describing to feel inspired and/or motivated to act against climate change due to having read cli-fi. Within this theme, some interviewees reported that they felt inspired and/or motivated to act somehow against climate change in an undefined future and some interviewees said that they felt inspired and/or motivated and thus already acted or tried to act against climate change. What is noticeable about this theme is that active language was used more frequently, for example, words such as *inspired*, *motivated*, and *acted* were applied more in this case. Another noticeability was the use of the words such as *having* and *must*, which underlined the sense of urgency and duty the respondents described to feel. Take the excerpt from *Rita* as an example of an interviewee who reported that they felt inspired and/or motivated to act somehow against climate change in an undefined future. She also read *The History of Bees* by Maja Lunde and thus was also referring to bees in the following quote.

Rita (The History of Bees - Maja Lunde): *"And then I would say. Oh, this is really I've never thought about, but maybe I can do something for this to... I don't know, I have a balcony."*

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Maybe I could change something there. I can grow flowers there, which bees need or something. You know you don't always have to change the whole world at once, but if you change it drop by drop, why not? It harms nobody."

Typical for the theme *I* was used exclusively as a pronoun which aligns with the phenomenon that within this theme the respondents were exclusively talking about their own actions against climate change and not those of others. Normally words such as *can* or *could* were applied which makes it clear that acting against climate change is a vision of the undefined future rather than a planned action. Interestingly, it almost seems like *Rita* wants to justify her thoughts on making her balcony bee-friendly as she adds '*It harms nobody.*' This could imply that she is still debating with herself about what, how, and if to change something to act against the bee extinction. Moreover, *Rita's* answer stood out, because she used a metaphor that almost sounds like a rhyme within the penultimate sentence. Presumably, she refers to taking on the fight against climate change step by step to not overwhelm oneself.

Take the excerpt from *Lotte* as an example of an interviewee who felt inspired and/or motivated and thus already acted or tried to act against climate change.

Lotte (Memory of Water - Emmi Itäranta): "*I... yeah, I tried to not do unnecessary things such as pre-washing the dishes before putting them in the dishwasher and yeah... I mean... just one individual probably does not have too much of an impact, but if everyone - if every individual would do these kinds of actions, I think that would be already pretty effective. Yeah."*

What becomes immediately apparent, is that the specific topic of climate change, on which the climate fiction novel was written, was also the primary focus of the readers' inspiration and/or motivation to act. For example, *Rita* read about bees and was thus inspired to help those insects, while *Lotte* read about water and was thus motivated to use it more consciously. Similar to *Rita*, *Lotte* also employs noticeable wording in her penultimate sentence. She seems to imply that every person should do their (small) part in the fight against climate change which appears as a hopeful outlook to the future. Both mention taking on little steps, but while this sounds rather like a justification to the self in *Rita's* case it sounds more inspiring to others in *Lotte's* case.

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Intensified Connection (n = 7)

The fifth theme, *Intensified connection*, can be defined as an intensified connection that the participants described to feel toward climate change, other people, current privileges, and/or nature presented because of reading cli-fi. For example, some respondents mentioned that they felt closer to the issue of climate change in the sense of proximity and involvement while another interviewee stated feeling more united with other people struggling with the same issues. Yet another respondent pointed towards an intensified connection that was felt toward nature. Furthermore, different respondents mentioned that they felt more appreciation and thankfulness for a specific privilege (e.g., trees, water, and knowledge) they were making use of. It appears that the specific topic of climate change, on which the climate fiction novel was written, was also the primary focus of the readers' intensified connection. Take as an illustration the excerpt from *Emma* who read *Once There Were Wolves* by Charlotte McConaughey.

Emma (Once There Were Wolves - Charlotte McConaughey): *“And it's just so... I don't know. I think I when I go on walks right now, I feel even more connected to the nature around me. Like I'm already someone who's connected to nature. But. I don't know. This made me kind of appreciate everything even more. I think appreciate the trees that are there. Yeah, kind of feeling for them. I don't know. It's hard to describe. Yeah.”*

What is typical for this theme is a description that includes a lot of adjectives, metaphors, and examples. This makes their answers rather inspiring or motivating in themselves as it in turn evoked mental pictures as well as emotions in the reader of their answer. At least this was the case for me as I found myself also wanting to experience a sense of deeper connection to nature and/or other people. However, typical for this theme the respondents did not specify how long these feelings lasted. Normally, the respondents also gave explicit personal examples to illustrate to what and how they felt an intensified connection. Another similarity for excerpts from this theme is that the respondents read about possible consequences of climate change in a climate fiction book but felt grateful for not yet having to experience those consequences themselves.

Discussion

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The aim of this study was to investigate how climate fiction readers describe the influence reading a climate fiction novel had on their climate change emotions with a preliminary discursive and a thematic analysis. Eventually, this analysis resulted in the following five themes: *Heightened Awareness*, *Strengthened Negative Feelings*, *Limited Influence*, *Inspiration and/or Motivation to Act*, and *Intensified Connection*.

Overall, the results of this study show a diverse and complex variety of influences on climate change emotions that were constructed by readers of climate fiction. Most participants presented climate fiction as exerting some kind of influence on their climate change emotions. Only eight participants could be classified as solely demonstrating a limited and/or neutral influence of climate fiction on their climate change emotions as represented in the theme *Limited Influence*. Thus, the majority of participants presented climate fiction as having an influence on their climate change emotions that could range from a rather positive influence (*Heightened Awareness*, *Inspiration and/or Motivation to Act*, *Intensified Connection*) to a rather negative one (*Strengthened Negative Feelings*). The participants constructed answers to the question of whether and how cli-fi influenced their climate change emotions, where those four themes appeared in all kinds of different variations. Sometimes those combinations of themes within a single answer appeared conflicting or contradictory, for example, when the respondent *Julia* gave an answer where the themes *Strengthened Negative Feelings*, as well as *Inspiration and/or Motivation to Act*, and *Intensified Connection* were presented. However, this is consistent with the premise that many people have conflicting emotions and thoughts concerning climate change as a whole (Hoggett, 2019). Generally, the number of themes that represent a positive influence was numerically superior to the ones representing neutral and negative ones (3:2), but also the frequency with which these themes were mentioned was numerically higher (25:17). Hence, similar to Albert's master's thesis (2022) the climate fiction readers in this study mentioned rather positive influences more frequently compared to other studies with a similar research question (e.g., Schneider-Mayerson, 2018). However, it is important to note that both, hers and this study, made use of the same transcripts of interviews and thus drew from the same sample of participants. In the following paragraphs, each theme will be discussed and related to previous research on its own to present more detailed conclusions.

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The most prevalent theme in this study was *Heightened Awareness* which directly relates to one of the most prominent claims that scholars make about climate fiction which is that it has the unique potential to raise awareness for climate change (e.g., Johns-Putra, 2016). While the theories about why that could be the case differ vastly among researchers, the seemingly only empirical proof of the effect of climate fiction was produced in a study by Schneider-Mayerson et al. (2020). In this study, the researchers found a small but significant positive influence on several important beliefs and attitudes about global warming, but these effects only lasted for about a month. Thus, a heightened awareness of known but also previously unknown emotions, thoughts, and/or behaviours due to having read cli-fi is something that is in alignment with previous literature and can now also be confirmed by a qualitative study. More knowledge about what exactly determines to which the awareness relates to could be of use. Nevertheless, this study adds more detailed insights into the exact nature of such an awareness. For example, awareness was related to thoughts, emotions, behaviour, and/or facts for different climate fiction readers in this study. Additionally, the remark that many interviewees made about the awareness wearing off after a while aligns with the previous findings of the Schneider-Mayerson et al. study (2020) where the effects only lasted for about a month. Here, further knowledge about the appearance and disappearance of the state of heightened awareness after reading cli-fi would be of value.

The second most prevalent theme was *Strengthened Negative Feelings* which is also commonly discussed in previous literature (e.g., Schneider-Mayerson, 2020). Mostly emotions such as *worry*, *sadness*, and *fear* were reported in such studies. However, in this study also emotions such as *stress* and *anger* were mentioned which could have been due to the qualitative nature where respondents could answer more freely. What is more, this study gave insights into how some participants constructed a *reinforcement* of already pre-existing negative emotions and others presented the appearance of *new* negative emotions. As mentioned in the introduction, climate anxiety is an emotion that occurs more prevalent recently (Clayton & Karazsia, 2020; Pihkala, 2019, 2020). Although no respondent mentioned climate anxiety directly some did talk about *fear* and *anxiety* that they presented as being heightened due to having read climate fiction. Moreover, this sample might have been especially prone to climate anxiety since most interviewees were rather young and

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educated which are predisposing factors for experiencing it (Pihkala, 2019). While some participants reported those feelings as unbearable others said explicitly that they did not want to shy away from climate change consequently. Some researchers pointed out that under the right circumstances (e.g., time and space) such negative feelings can become an important resource to manage the adversities people feel because of climate change (Clayton & Karazsia, 2020; Pihkala, 2019). Moreover, it is important to note that most interviewees who constructed cli-fi as having this impact of strengthened negative feelings additionally presented other influences such as an inspiration to act against climate change or an intensified connection to nature. Although this might appear contradictory, climate change is a topic that reportedly evokes many different emotions that are all equally valid and important (Hoggett, 2019; Siperstein, 2016; Stoknes, 2015).

The third theme, *Limited Influence*, initially appeared surprising since the introduction covered many scholars that are making different claims about the effects of climate fiction. However, this study shows that climate fiction does not always seem to have an impact on its readers' climate change emotions. In this study, respondents presented different reasons for the limited influence of cli-fi on their climate change emotions. For example, some claimed to already be very knowledgeable about climate change and thus did not feel like those books added any new knowledge or value to their emotions about climate change. Additionally, some respondents described that the characters were not emotionally involving or the plot too hard to follow. Thus, there seem to be some circumstances that determine whether, how, and when, climate fiction impacts the climate change emotions of its readers. At this point, it is impossible to say whether these factors rather concern the climate fiction itself or the individual reader, but as such, it remains an important task for future research. Moreover, simple confirmation of climate change emotions might also feel validating for readers which also could be further investigated in another qualitative study.

Similarly, to the first theme, the fourth theme, *Inspiration and/or Motivation to Act* can be directly linked to one of the most prominent suggestions that scholars make about climate fiction which is that it has the unique potential to inspire people to act against climate change (e.g., Özden and Özden 2021). Again, the apparently only empirical proof was produced in a study by Schneider-Mayerson et al., (2020) where the researchers found a small but significant positive influence on

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several important beliefs and attitudes about global warming. As such this theme aligns with the previous literature since participants in this study also described a feeling of inspiration and/or motivation to act against climate change that they perceived after having read cli-fi. Within this theme, there was a difference between readers who discussed that they wanted to try to do something in an undefined future and those who claimed that they already did something explicitly. It remains unclear how those individual differences occur which could also be an important topic worth investigating in the future. A theory could be that those who say that they want to change something in the undefined future feel socially compelled to give this desirable answer based on the social norms the society opposes on individuals, especially those living in wealthier European countries (Mosquera & Jylhä, 2022).

The last theme, *Intensified Connection*, is something that is only indirectly discussed in previous literature. For example, when researchers suggest that reading climate fiction could raise the awareness of climate change, an intensified connection to climate change and nature itself is somewhat implied. Some scholars also mentioned the possibility that climate fiction could enhance emotions such as empathy and sympathy toward minorities (Schneider-Mayerson, 2020; Malpas, 2021). While this was something that could not be observed within this study, the reason for this could be the manner in which the question of focus of this study was asked. Question number 15 is posed as followed: ‘*Did reading climate fiction influence your feelings with regards to climate change?*’ This might not have probed readers of climate fiction to think about feelings for victims of climate injustice, for example, but solely on climate change and their emotions regarding this topic. Alternatively, Death (2022) claims that there is a current lack of challenge toward the mainstream, Eurocentric, and constrictive means of envisioning the future within climate fiction which could explain the missing emotions of empathy and sympathy. However, empathic emotions were described by respondents at other points in the interview and thus it could well be solely due to the way question number 15 was posed. Nevertheless, additional aspects that were mentioned by respondents were an intensified connection to other people struggling with the same issues as themselves as well as current privileges. In the analysis, it was theorised that the specific topic of climate change, on which the climate fiction novel was written, was also the primary focus of the readers’ intensified connection.

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Because this was not the case for all respondents, further research could give additional insights.

Overall, however, this theme seems to show that readers take away important resources from having read cli-fi but that have been mostly neglected in hypotheses about climate fiction so far.

Strengths and Limitations

The originality of this study is one of its key advantages since only a few empirical investigations into the readership impact of climate fiction had been carried out prior to this study (Schneider-Mayerson, 2018; Schneider-Mayerson et al., 2020). More specifically, this is one of the first studies that employed a qualitative method to investigate the role climate fiction might play in affecting the readers' climate change emotions. As such this study presents a valuable addition to prior research as most previous findings resulted from studies within a quantitative context. Through interviews with open questions, the participants had the chance to freely express their experiences with climate fiction (Doyle et al., 2019). This provided more detailed data on individual experiences that were thematically analysed to grasp all the different nuanced influences cli-fi had on emotions. Another strength of this study is the variety of the participant's backgrounds. Although most of them were from Europe they were from different European countries and thus at least moderately culturally diverse. What is more, the participants possessed a wider range of differing professions as well as a bigger age range (20 – 69).

Nevertheless, the aforementioned findings should be viewed in light of some limitations that this thesis presented. First of all, more than half of the interviewees (16 out of 30) only read one book of climate fiction, which was *'The History of Bees'* by Maja Lunde presumably because it was a number-one bestseller for a longer time in Europe in 2021. Although climate fiction is usually very diverse literature as presented in the introduction, most participants only experienced a single aspect of it which might have influenced the results. Second, there was not much variability in the participants' sociodemographic backgrounds. For example, most of the participants reported being well-educated and female, as well as believing in the existence of climate change and worrying about its consequences. Thus, this sample represented a certain part of the world population wherefore the transformative power of the results of this study should be considered critically. However, this sample does, in fact, correlate with the population that usually tends to read climate fiction (Schneider-

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Mayerson, 2020). Lastly, the interviewees reported in retrospect and sometimes a considerably long time after they have read their climate fiction novel about their experiences. Hence, it might be that the respondents either forgot specific parts or got the impact of climate fiction mixed up with other influences such as the media for example.

Future Implications

Taking on a more psychological perspective, climate fiction might have the potential to be applied in different clinical and positive psychological contexts. Since the consequences of the advancing climate change will be more and more visible in the near future (IPCC, 2022), accounts of peoples' well-being being undermined by climate anxiety might increase as a consequence. As a result, researchers in the field of bibliotherapy have made their first forays into using fiction to help individuals deal with the issue of climate change and its attendant problems with their mental well-being (Rudd et al., 2020). Bibliotherapy denotes the therapeutic use of books in the treatment of mental illnesses and has been found to promote personality growth and development as well as to decrease anxiety and increase resilience and mindfulness (Lenkowsky, 1987; Sharma et al., 2014). Thus, some scholars argued that bibliotherapy which utilises climate fiction novels with a positive perspective of the future might potentially reduce young individuals' worry over climate change (Wakeman, 2022). The results of this study seem to support the claim that climate fiction novels could be helpful tools to feel and process such a wide range of different emotions that are typically evoked by climate change in a safe and controlled context. Among others, this is because themes one, four, and five (*Heightened Awareness, Inspiration and/or Motivation to Act, Intensified Connection*) illustrate how most interviewees of this study reported rather positive influences that reading cli-fi had on their climate change emotions. More specifically, when asked the respondents mentioned different resources and coping strategies that they perceived cli-fi provided them with that could aid them in dealing with their concerns about climate change. For example, an intensified connection to other people experiencing the same struggles with climate change could arguably help a person to feel less alone and consequently more empowered. Also, the simple confirmation of one's thoughts and/or emotions regarding climate change (*Limited Influence*) could arguably be helpful, also for experts of climate change, to feel validated. Discussing climate fiction in a structured context allowed the

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participants to express a range of different emotions, also negative ones (*Strengthened Negative Feelings*). However, as previous scholars already mentioned under the right circumstances, climate anxiety can become an important resource in dealing with the extent of climate change (Clayton & Karazsia, 2020; Pihkala, 2019). Such circumstances refer to having enough time and space to deal with one's emotions as well as sufficient productive activity to lessen climate change which could be provided in bibliotherapy. Moreover, it is important to refrain from seeing negative emotions evoked by climate fiction as something to avoid. As Pihkala (2022) mentions in his recent article, feelings such as climate anxiety are natural responses when faced with the possibilities of loss and grief. In fact, there are no such things as 'bad emotions', all emotions are valid and should be felt instead of suppressed as this is more beneficial for one's well-being in the long run (Bohlmeijer & Hulsbergen, 2018). What is more, the art of living does not equal an absence of negative experiences but instead exists in seeing the good in the bad and focusing on the positive aspects, especially in hard times (Bohlmeijer & Hulsbergen, 2018).

Alternatively, there are interventions such as *creative reading* or *leisure reading* done together with other individuals in so-called *reading groups* (Shipman & McGrath, 2016). While bibliotherapy is usually done one-on-one with one's therapist, reading groups provide the benefit of combining the advantages of reading and those of peer support groups (Shipman & McGrath, 2016). So, leisure reading may assist an individual in coping with distress and/or in the recognition of the self in literary characters. Moreover, creative reading might facilitate the exploration, expression, and resolution of difficult thoughts and feelings and allows individuals to view a problem or situation in a more indirect manner (Shipman & McGrath, 2016). Reading groups, on the other hand, provide for both an individual subjective and a shared experience. As a result, those groups can be understood to recreate an *interpretative community* that negotiates the meaning of the text together. Furthermore, they might give individuals a common frame of reference since universalising a dilemma might reduce a sense of isolation while facilitating social bonding. Finally, meeting with others who share core lived narratives can help individuals to strengthen and verify their own views and beliefs (Shipman & McGrath, 2016). Thus, a climate fiction reading group for climate-concerned people could help those individuals to deal with their complex and conflicting emotional responses they

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might experience regarding the climate crisis. While the participants in this study discussed positive and neutral influences on their climate change emotions they connected to reading cli-fi, they also frequently mentioned strengthened negative emotions. Hence, a reading group where the members primarily talk about their experience of negative emotions in relation to cli-fi might negatively affect the mood of the whole group (Schuman, 2010). Therefore, more research is needed about the effects of climate fiction reading groups and whether, for example, a guided or unguided reading group is better or worse.

Lastly, the *broaden and build theory* of positive psychology states that intentionally experiencing more positive emotions can put a person on an upward spiral of positivity (Fredrickson, 2009, 2013). More specifically, positive emotions widen the array of thoughts, action urges, and perceptions that spontaneously come to mind which in turn spurs the development of resources, placing people on positive trajectories of growth positivity (Fredrickson, 2009). There are ten representative positive emotions, namely, joy, gratitude, serenity or contentment, interest, hope, pride, amusement, inspiration, awe, as well as love (Fredrickson, 2013). Especially the positive emotions of *gratitude*, *interest*, and *inspiration* are reflected by several themes found in this study such as *Heightened Awareness*, and *Inspiration and/or Motivation to act*, and *Intensified Connection*. Thus, it could be argued that intentionally reading climate fiction to experience more positive emotions could help people in starting such a spiral of growth. Nonetheless, more research is needed that investigates the circumstances that determine whether an individual might or might not perceive such positive influences due to reading climate fiction to make such claims more justifiable.

Conclusion

This study investigated how climate fiction readers describe the influence reading a climate fiction novel had on their climate change emotions. Five diverse patterns in discussing the influence of cli-fi on climate change emotions were described by the interviewees. Those themes reflect how participants in this study perceive climate fiction as having a complex and sometimes conflicting influence on their climate change emotions. Nonetheless, there were also interviewees who discussed that climate fiction had a limited and/or neutral influence on their climate change emotions. Hence, more research into the exact nature of the specific circumstances is needed to understand how the

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differences in perceiving influences from cli-fi on one's climate change emotions occur. Finally, this study ended with giving practical suggestions for interventions that involve climate fiction for the clinical and positive psychological domain.

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Appendices

Appendix A: Informational Letter

UNIVERSITY OF TWENTE.



Information Sheet

Research Project: *Narratives in Managing Climate Change Agency and Emotions: Experiences of Reading Climate Fiction*

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 climate fiction. 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.

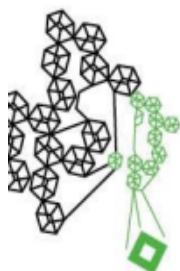
The research involves collecting online one-on-one interviews, mostly in English but also in the native language of the participant if that is not English and the interviewee is fluent in it. The data is collected for the purposes of students writing their research module assignments as well as Bachelor's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

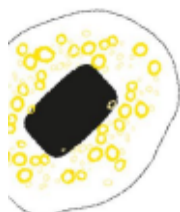
Naturally, participation in this research is voluntary. The interviews will last for 30-60 minutes. The participant will be asked questions about their experiences of reading climate fiction books and perceptions of climate change. The participant can decline to participate and **withdraw from the research 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 220077). 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 h.k.toivonen@utwente.nl



Appendix B: Informed Consent**UNIVERSITY OF TWENTE.**

FROM:
H.K. Toivonen
P (+31) (0)6 189 20135
h.k.toivonen@utwente.nl

DATE
24-2-2022
OUR REFERENCE

PAGE
1 of 2

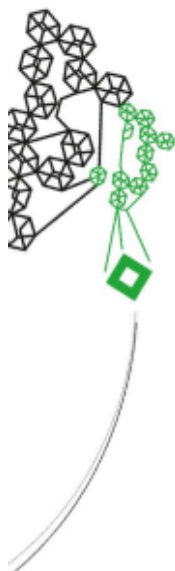
SUBJECT
Consent for Participation in Interview Research

1. I volunteer to participate in a research project concerning climate fiction reading. I understand that the project is designed to gather information about people's experiences and thoughts on climate change-themed fictional books 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. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end 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 30-60 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.



Appendix C: Interview protocol**Climate-Fiction: Interview Protocol**

Ask for their age and gender without assuming that people identify with the traditional binary division.

Ask for occupation and education.

Make sure you know their ethnicity and where they live in the world. Note that nationality is not ethnicity!

1. How would you describe your views on climate change?
2. How would you describe your actions in terms of climate change?

Next, we will move on to talk a little bit more about climate fiction or cli-fi, the kind of fiction that deals with climate change more or less directly.

Just to check, do you have an idea of what kind of literature we are talking about now?

3. How much climate fiction have you read?
 - a. More than one: Could you tell me the names of some climate fiction books that you have read?
 - b. One: Which book was it?
4. How long have you read climate fiction?
 - a. When did you read your first book of climate fiction?
5. How much do you read in general?
 - a. Mostly cli-fi or something else?
6. What was the latest climate fiction book you read and when was it?
7. How was the reading experience (of the last cli-fi book you read)?
8. What is the best cli-fi book you have read?
 - a. Why it is the best?
9. How do you decide which cli-fi books to read?
 - a. That is, where do you hear about books to read?
10. What do you think has made you read climate fiction?
11. Do you discuss these books with other people in person or online?
 - a. Which topics are addressed in these discussions?

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12. How have your experiences of reading climate fiction been in general?
13. What kind of emotions have you felt when reading cli-fi?
14. How realistic do you think are the scenarios depicted in the cli-fi books that you have read?
15. Has reading climate fiction influenced your feelings with regards to climate change?
16. Has reading climate fiction changed anything in your thoughts about climate change?
17. Currently, researchers are very interested in negative feelings related to climate change, for example, climate-change related anxiety or “climate anxiety”. Have you experienced anxiety because of climate change?
 - a. If yes, has reading climate fiction had an influence on your climate anxiety?
 - b. Do you think climate anxiety impacts how you think and act with regards to climate change?
18. Has reading climate fiction changed the way you perceive your chances to do something about climate change?
19. Has reading climate fiction changed something concrete in your actions with regards to climate change?
20. Has reading climate fiction influenced your perception of the future?
 - a. If yes, in what way?
21. Is there something else you would like to add about climate fiction reading or climate change that we have not yet discussed?

Many thanks to you for your time and for your interesting answers!