

Climate Fiction

How do viewers of an animated climate fiction film discuss their climate emotions?

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Abstract

Emotional distress in response to the climate crisis is rising within our society. It has been suggested that climate fiction could display a means to engage with one's climate emotions and provide a starting point for the discussion of them. This study analyses how participants discuss their climate emotions after watching the stop-motion animated short film "Migrants". The reflexive thematic analyses revealed five themes, which covered a variety of emotional expressions ranging from viewing the film as a metaphor for real-world problems and climate change with its consequences to a moral assessment of the issue. The main findings of this study include that that animated climate fiction short films have the potential to be used as a creative tool to explore and discuss climate emotions, to confront one's own moral values and to confirm one's own climate-friendly behaviour, and can promote meaning-oriented coping with climate emotions.

Introduction

In recent years, interest in climate fiction has grown significantly. The genre of climate fiction centres on anthropogenic climate change and focuses on the political, social, psychological, and ethical issues involved (Goodbody & Johns-Putra, 2019). It is often described as a subcategory of science fiction (Glass, 2013) and the stories can be set in the world as we know it or in the near future. The genre often includes science fiction and dystopian or utopian themes, presenting possible futures based on how people react to the effects of climate change (Goodbody & Johns-Putra, 2019; Milner & Burgmann, 2018). The genre spans through the media and can be found, amongst others, in books, films and digital media (LeMenager et. al, 2017). The issue of climate change has become a highly emotionally charged topic in our society (Mosquera & Jylhä, 2022) and emotional stress in response to climate change is widespread (Ojala et al., 2021; World Health Organisation, 2022). To help people deal with this emotional stress related to climate change, effective communication about its impacts and psychologically grounded interventions are needed (Mah et al., 2020). Some scholars argue, that climate fiction could be a means to help people cope with climate change (e.g.; Goodbody & Johns-Putra, 2019; Malpas, 2016; Milkoreit, 2017). However, although climate fiction has been much discussed, this has mainly been by literary scholars (e.g.; Goodbody & Johns-Putra, 2019; Mehnert, 2016). It lacks psychologically founded empirical studies, especially qualitative ones, with actual readers and viewers. One of the few empirical studies, investigating literary climate fiction, is by Schneider-Mayerson (2018; Schneider-Mayerson et al., 2020). Especially concerning climate fictional films, the studies are scarce and have solely focused on the level of concern, motivation for behavioural change, audience awareness and risk perception (Howell, 2011; Leiserowitz, 2004; Schwarzkopf & Pohlen, 2004). To the best of my knowledge, there are no studies that deal with animated climate fictional short films, even though animations are a

powerful tool to represent, manipulate and study emotions (Uhrig, 2019). The study presented here explored how participants understand and discuss an animated climate fiction short film. In particular, a focus is placed on their emotional response. Following a series of interviews, the possibilities, limitations and implications of animated cinematic climate fiction are discussed.

Emotional distress is widespread in response to the climate crisis, ranging from milder and more adaptive forms of emotions to pathological states that can include serious mental health problems (Ojala et al., 2021). Often, these pathological extents as an emotional response to climate change are referred to as climate anxiety. The American Psychological Association (2017) defines climate anxiety as a chronic fear of the demise of the world that can manifest in clinical disorders such as depression, anxiety disorders and post-traumatic stress disorders. Other researchers emphasise that climate anxiety is not just about fear, but a range of feelings that a person may experience when they become aware of the full extent of the climate crisis (Marks et al., 2021). Fear is one aspect of this, but anger, helplessness and grief are also common feelings in relation to climate change (Marks et al., 2021). A common view of climate emotions is that, although they have the potential to take on pathological proportions, they are not an unnatural reaction, as climate change poses a real threat and is accompanied by great uncertainty (Clayton, 2020). It is argued that they are even a rational response and can also be a useful tool to recognize approaching threats and to prepare for them (Barlow et al., 2019). This view is adopted within this study, and for this reason, the term *climate emotions* is used, referring to emotions related to climate change.

Research on coping strategies concerning climate emotions has identified different mechanisms. These include both cognitive and emotional strategies. For example, Ojala (2012, 2015) studied children's and adolescents' responses to climate change, identifying their coping strategies and their effectiveness. She identified three different coping strategies:

problem-oriented, emotion-oriented and meaning-oriented coping. The problem-oriented strategy involves gathering information and discussing it with others. This strategy is accompanied by a higher level of behavioural engagement and efficacy, but also by increased negative affect. Emotion-oriented strategies focus on getting rid of negative emotions through, amongst other things, denial and distancing (Ojala, 2012). This leads to both lower behavioural engagement as well as efficiency and is also associated with generally more negative affect. The meaning-oriented coping strategy involves engaging with one's own beliefs, values and goals to deal with negative emotions and was associated with both higher environmental engagement and life satisfaction, as well as positive affect (Ojala, 2012).

While naming emotions can be helpful to channel emotions and understand fears (Pihkala, 2020), this can be quite difficult. The difficulty lies not only in the immensity of the perceived threat of climate change but also in the combination of negative emotions (e.g., fear, anger, sadness), which makes it even more difficult to recognise and name them. Pihkala (2020) concludes that there is a need to find creative ways to access these emotions and create spaces where they can be discussed. Some scholars point to features of climate fiction that provide indications that climate fiction may have the potential to display such a creative medium (e.g.; Goodbody & Johns-Putra, 2019; Malpas, 2016; Milkoreit, 2017, Nicholson-Cole, 2005). For example, Goodbody and Johns-Putra (2019) note that stories about climate change can “give expression to feelings of anxiety and guilt”, and Malpas (2021) argues that climate fiction is a medium for exploring hopes and fears related to climate change and additionally can confront yourself with these. In his study on the influence of climate fiction, Schneider-Mayerson (2018) concludes that climate fiction mainly evokes negative emotions. Emotions such as helplessness, sadness and guilt were often mentioned. While he says that these are often not only negative but also demobilising (Schneider-Mayerson, 2018), experiencing these emotions also creates access to them and the basis for discussing them.

However, he clarifies that while his results do not indicate the experience of positive emotions when reading climate fiction, the occurrence of those is not ruled out (Schneider-Mayerson, 2018).

For many people, climate change is an abstract phenomenon whose dimensions are difficult to understand. Especially for people in Europe and other Western countries, who feel and see the effects of climate change less clearly than people in the global South, who are already affected by consequences such as floods, extreme temperatures and loss of harvest (Sen Roy, 2018). Information and events are often only conveyed and perceived through media representation, e.g. in newspapers, on television or in social media (Swim et al., 2010). Moreover, this coverage is often problem-oriented (Hoppe, 2019), reporting on impacts and disasters such as floods and earthquakes. The abstractness and problem-focus can lead to uncertainty and difficulty in imagining a future with climate change (Milkoreit, 2017). Less often do we hear about possible solutions and what a future with climate change might look like. Climate fiction has the power not to only report the risks but also to show possible solutions (Malpas, 2021; Milkoreit, 2017). Furthermore, Nikoleris (2018) argues that through novels we can imagine solutions that would not be considered plausible through, for example, purely scientific information. Climate fiction can portray climate change in both dystopian and utopian ways, informing us about its effects if we do not act, but also about scenarios that could arise through systemic change (Constantino & Weber, 2021). Additionally, novels also explain the motivations and reasons of the actors and address emotional issues, such as loss, injustice and poverty (Nikoleris, 2018). An affective component is thus added to the purely informative one. In this way, the distance to the abstract phenomenon of climate change and its consequences can be bridged and at the same time provide the basis for discussions about climate emotions, e.g. uncertainty.

By humanising climate change, fictional climate stories support the reader or viewer

to see themselves in the context of climate change, i.e., identify with the characters in the stories and empathise with future conditions (Milkoreit, 2017). Through this connection, a shared cognitive-emotional experience can emerge. Caracciolo (2022) also argues that climate fiction and story sharing can create interpersonal bonds and build a sense of community. Stories allow us to understand our emotional experiences and regulate our social behaviour as they reinforce or critique widely held ideas (Caracciolo, 2022). Mehnert (2016) also states that climate fiction has the potential to provide insights into social impacts, reflect on political implications and play an active role in how we imagine climate change. This is particularly valuable as climate emotions have also often become a subject of normative scrutiny. Climate emotions are discussed not only in terms of how we actually feel but also how we should feel (Mosquera & Jylhä, 2022). Individuals are confronted with questions such as "Can I enjoy the summer heat without feeling guilty?" or consider whether they should have children in the future from an ethical perspective.

The medium of climate fiction films has received little attention in comparison to climate fiction literature, but visual media is also a tool to convey content and motivational messages, to condense complex information and can also be used as a basis to provide space for personal thoughts (Nicholson-Cole, 2005). Roland Emmerich's *The Day after Tomorrow* is probably the most famous film of cinematic climate fiction and was also the first Hollywood blockbuster about climate change. Weik von Mossner (2017) hypothesizes that it not only has shaped the way the public imagines climate change but also changed the audience's awareness of the risks associated with climate change. Besides being one of the most popular climate fiction movies, it is most likely also the most researched one. Five reception studies were conducted in four different countries investigating viewers' attitudes before and after seeing the film (Leiserowitz, 2004; Reusswig et al., 2004). One study also compared them to non-viewers. Conclusively, the results of these studies can be summarised

as moderately successful in sensitising their audiences and encouraging them to act in the short term, yet the results show that this did not persist in the long run (Leiserowitz, 2004; Reusswig et al., 2004). Another example is the documentary *The Age of Stupid* which mixes factual information with fictional components and covers the state of the world in 2055. In the process of the film, our present is described as *The Age of Stupid*, in which fossil fuels have been burned without thinking about consequences in the future. The film's distinctive feature is that it contains cartoons narrated by childlike voices informing about history. Gregg Mitman (2009) argues that this is an important tool, as it does not emotionally overwhelm the audience. Viewers' perceptions of the film are extensively studied by Howell, who conducted a three-part reception study. The study found that both concern and motivation to act increased immediately after watching the film. Participants also reported taking or increasing at least one action to mitigate climate change after watching the film (Howell, 2011). However, the follow-up study after 10-14 days showed that the increased concern and motivation did not last in the long term. In the context of this study, it should also be mentioned that the participants did not represent the general public, as they already had a high level of concern and motivation to act even before seeing the movie (Howell, 2011).

Despite the growing interest in climate fiction in emerging literature, there are only a few studies empirically investigating the emotional experience of climate fiction readers and watchers. Most studies consist of literature reviews and quantitative methods (Milkoreit, 2017; Schneider-Mayerson, 2018; Schneider-Mayerson et al., 2020). Filmic climate fiction is even less studied and most studies investigated viewers' level of concern, motivation for behavioural change, audience awareness and risk perception (Howell, 2011; Leiserowitz, 2004; Reusswig et al., 2004). In regards to animated climate fiction short films, this study provides a novelty. As it is already proposed that climate fiction may can provoke its viewers and readers to engage with their climate emotions (Goodbody & Johns-Putra, 2019;

Nicholson-Cole, 2005; Milkoreit, 2017), further research is needed concerning animated short films. Understanding the emotional impact can create opportunities to, for example, develop interventions based on climate fiction short films to help people understand climate change and its impacts and at the same time cope with this information emotionally. Furthermore, there is a lack of qualitative studies in the field of cinematic climate fiction. Yet, qualitative research displays a valuable tool for understanding experiences and delivering detailed descriptions of people's emotions (Bhandari, 2020). Therefore, this study aims to depict a valuable addition to existing research as it is investigating the emotional experience of viewers of a short climate fiction film. The following research question is asked: "How do participants discuss their climate emotions after watching a short climate fiction film?".

Method

A cross-sectional qualitative study was conducted to investigate how the participants discussed their climate emotions after watching a short climate fiction film. To do so, the participants watched a short climate fiction movie, followed by a semi-structured interview.

The Ethics Committee of Behavioural, Management & Social Science at the University of Twente granted ethical approval on the 14th of October 2022 (approval number 221228). The data was collected in October and November 2022.

Participants

Participants were recruited via SONA, a platform for students from the University of Twente. Students who participated in this study received two credit points. There were no specific inclusion or exclusion criteria, although all participants must be above 18 years of age. At arrival, an information letter (see Appendix A) was given to the participants and all participants signed an informed consent prior to participation (see Appendix B).

In total, 16 interviews were conducted. The participants' age ranged from 19 to 26.

Thirteen of them identified as female, and three of them identified as male. They studied either Psychology or Communication Science. The participants represented four different nationalities, but most of them were German.

Materials

The participants were shown the stop-motion animated short film “Migrants” directed by Hugo Caby, Antoine Dupriez, Aubin Kubiak, Lucas Lermytte and Zoe Devise available on YouTube. The film was made in the course of their graduation project at the Pole 3D school in France. The students wanted to address societal issues with their creation and were inspired by the ‘Aquarius’, a watercraft filled with refugees that were refused entry at Italian ports in 2018. They decided to make their movie around the issue of migration but within the context of climate change. The duration of the film is 8:23 minutes.

The plot of the film revolves around two polar bears who have to leave the Arctic due to ecological collapse. They flee on an ice floe and the current eventually drives them towards a heavily vegetated land area. There, they soon meet the brown bears native to the area. They do not want to coexist with the polar bears and will soon drive them away. A special feature of the film is that the protagonists are depicted as stuffed animals. The film not only shows the effects of climate change on the environment, nature and wildlife but also addresses the social and political consequences (e.g., flight and deportation). As for its fictional and animated characteristics, the chosen film was judged as well suited for this study.

Data Collection

The data collection took place at the University of Twente. The interviews lasted between 16 and 45 minutes and were mostly conducted in English, some of them were conducted in German in the case this language was preferred by the interviewee.

Demographic data was asked at the beginning of the interview, followed by two questions

regarding the participants' views and actions concerning climate change. The interview protocol was developed to explore the participants' experience watching the movie and its impact on their emotions. It was adjusted throughout the process of conducting the interviews as the initial protocol produced interviews that were insufficient in length. The initial protocol consisted of nine questions. The adjusted interview protocol consisted of 17 questions with additional sub-questions. First, questions were asked regarding the viewers watching experience, the emotions they experienced whilst watching (e.g., "Can you describe to me what you felt when you watched the video?"), and what made them experience these emotions (e.g., "Can you tell me something about what in the video evoked these emotions in you?"). Additionally, questions were asked related to specific scenes or the participants' perception of the protagonists (e.g. "What did you think about the last scene of the video, when the baby polar bear was picked up from the beach?"). Additionally, questions were asked regarding their feelings towards their future and climate change. The interviews were audio recorded and later transcribed. To preserve the anonymity of the participants, the audio recordings and transcripts were assigned pseudonyms. The data was stored according to the Data policy of the University of Twente.

Data analysis

Reflexive thematic analysis according to Braun & Clarke (2019) was used to analyse the data. This method was chosen to apply a meaning-oriented instead of a content-oriented approach. Here, the researcher has an active role in the production of knowledge and codes are defined as the researcher's interpretation of patterns of meaning throughout the dataset (Braun & Clarke, 2019). Thereby, the researcher's interpretation is not seen as a weakness, but as the strength of reflexive thematic analysis.

The six-step approach by Braun & Clarke (2006) is used to identify, analyse and

document themes. First, the data material was read repeatedly, to familiarise oneself with the data. During this process, initial ideas were collected, and the first concepts were noted down. Thereby, special attention was paid to any expression of emotions and the participants' explanation of them. These emotions could have been expressed both, directly or indirectly, and in response to a direct question about the experienced emotions or a question about the film or climate change in general. Secondly, the first codes were developed. An inductive approach was applied to create the codes, meaning that the coding was not influenced by a preconceived idea but the research question, knowledge of the subject and the data set itself were input for the coding (Chandra & Shang, 2019). The coded units varied in length. The shortest units that were coded were single sentences such as "While you watched the video, you start to realise a lot how big of a problem climate change actually is". This clause was coded with *Seriousness of issue* within the theme *Seeing connection to reality*. More commonly, longer units including multiple sentences were coded to specify the expressed emotions and to enable their further interpretation. An example of this is "Okay, I was confused. Eh, kind of sorry for them especially in one scene where the one baby polar bear went up to the brown baby bear and I felt like that's maybe a part where they can connect. And then they didn't and the polar bear was really down and sad afterwards because he really wanted to make a connection. I felt sorry for it.". This example would have been coded with *Emphasizing with protagonists* within the theme *Taking in different perspective*. During the coding process, the codes were revised several times and codes that were not sufficiently differentiated from each other were combined into one code. For this purpose, the transcripts were read repeatedly and codes were adjusted where necessary.

After the coding process had been completed, the codes were combined into groups of meaning-making patterns and relevant data material was assigned. Themes, within reflexive thematic analysis, represent patterns within the data that the researcher interprets from the

data (Braun & Clarke, 2019). In this process, the themes were repeatedly refined, checked for coherence and enriched with further details. In the last step, the themes were named, and clear definitions were developed. The final analysis included 140 data extracts coded with 14 codes and organised within five themes of discussion and expression of emotions.

Results

The results from the data analysis comprise five themes of the participants' discussion and expression of their emotions. In Table 1, the five themes are presented according to their frequency. More than one of the themes was presented in each interview, the most common theme was *Seeing the connection to reality* with a frequency of 43. In the following paragraphs, the themes are discussed and explained. Excerpts from the data are used for illustration. Some of the data extracts have been slightly altered to increase comprehensibility, as the participants were non-native English speakers.

Table 1

Theme	Description of	Codes included
	Climate Emotions	

<p>1. <i>Seeing the connection to reality</i> (n=43)</p>	<p>The participants described the occurrence of emotions on the basis that they had made a connection to reality and saw connections with climate change related issues.</p>	<ul style="list-style-type: none"> - Connecting to reality - Reference to climate refugees - Seriousness of issue
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<p>2. <i>Drawing a connection to oneself</i> (n=39)</p>	<p>Participants described how they considered themselves in the context of climate change and how their personal future could be affected by climate change.</p>	<ul style="list-style-type: none"> - Feeling powerless - Impact on own future - Referring to own experiences - Taking action

3. <i>Addressing the question of responsibility</i> (n=23)	The participants expressed negative emotions as they address the topic of responsibility regarding climate change.	<ul style="list-style-type: none"> - Anger because of inaction - Feeling responsible themselves - Human responsibility
4. <i>Putting oneself in other's shoes</i> (n=23)	The participants expressed their empathy for the protagonists of the film. They described how they imagined being in the protagonist's situation and explained how they would feel if they would be in their position.	<ul style="list-style-type: none"> - Emphasizing with protagonists - Taking in a different perspective
5. <i>Being confronted with injustice and one's own values</i> (n=12)	The participants described the injustice they perceived and discussed their own value system.	<ul style="list-style-type: none"> - Injustice - Incongruence with own values

Seeing the connection to reality

The participants described the occurrence of emotions on the basis that they had made a connection to reality and that they saw a connection with climate change related issues that were addressed in the film. It was often remarked that despite its fictional animated nature and “childlike” style, the film depicted the problems caused by climate change in reality. Interestingly, real-world examples were often given to discuss the issues presented rather than only referring to what they had seen in the film. This becomes clear in the excerpt of Sandra. Instead of discussing the film and how the bears might have felt, she talks about refugees and their expectations when they leave their homes. She has thought about what it must feel like to leave one’s home country, not only for the bears but for refugees in general.

Sandra: “Eh...it felt kind of like in the real world, it reminded me of that because it has some parallels with immigrants that come from other countries, I think. Because they also expect to live in a better world without war, but with better opportunities for them but then it’s completely different and they are excluded and don’t feel like it’s a new home and I think that’s sad to see even though it’s only a fictional video. And it was kind of shocking I think and it reminds me of what happens actually because I think a lot of the time when you are not impacted you don’t think about this too much and then it’s like, it came to my eyes again what’s going on.”

Within this theme, it was also common not only to talk about oneself but also to involve others. In Sandra’s excerpt this becomes apparent when she uses the expression “when you are not impacted you don’t think about this too much”. She is inferring from herself to others, assuming that others have similar experiences. In other interviews, participants switched from the pronoun “I” to “we” when talking for example about the

importance of remembering or the participants did not only refer to their own feelings but described how “everyone” felt when an incident was presented on the media.

Drawing a connection to oneself

The participants described the impact that climate change will have on them and their own future. They also addressed the extent to which they are adapting decisions about their future based on climate change and its impacts, and the extent to which the consequences of climate change are already affecting them. Often, they talked not only about themselves but also about other people and species. In this context, the participants frequently mentioned that they perceive themselves, as being part of the human species, as part of the problem, but that they perceive the influence of their own agency in mitigating climate change as limited. Thus, they presented the conflict of being part of a problem, suffering from it themselves but not having any significant influence on the solution. Thereby, reference to the brown bears representing humanity was often made. Larissa’s excerpt exemplifies this. She interprets the depiction of the brown bears as the embodiment of humans.

Larissa: “Because that’s the thing actually, I have noticed with mostly humans. That when we see videos like that, I say ‘we’ because I am taking it to comparison with myself, my family, my friends. Like the polar bears they were like bear-like and they were in a very bad environment. They were like in a sad situation and I felt like ‘oh it’s so sad’, like getting heartaches from how the polar bears are treated. And then I noticed the brown bears and like I said how I despise them. But the thing is, how much can I despise them? Because they are in human form, so basically they are representing us, they are representing me, my husband, my family. So it’s like, I despise them but they are like mirrors of us. So how much can I actually despise them? So yeah, that’s probably why I felt so different about the brown bears.”

She describes, that when seeing such movies, one is often declined to feel empathy for the oppressed and an aversion to the oppressors. She describes that at first, she also rejected the brown bears, who in this case represent the oppressors. Subsequently, she questions to what extent she can reject the brown bears as they represent humanity and she, therefore, is a part of the oppressing species herself.

In a variation of this theme, the consequences of climate change for the participants themselves were also discussed, but the participants distanced themselves from their own involvement in the issue. The participants talked about their own actions, and their own responsibility and discussed their own part in climate change. The participants often legitimised their behaviour by saying that they only have a limited influence or pointed to external reasons. The excerpt from Christopher is an example of this.

Christopher: “Usually, I have little regard for climate change. I wouldn’t say I’m denying the problem or something but also, I always feel like I really don’t care. I know that things are bad but it’s not like I myself can change a lot about that. And I also have a negative emotion towards it because I feel like they (politics and institutions) are using it to rip people of financially.”

He expresses that he has little interest in the topic of climate change and says that he cannot change much about it. In addition, he says that politics and institutions also gain financially from climate change. He thus gives an external reason to behave in a less climate-friendly way. Distancing yourself personally from the issue of climate change can be a mechanism to cope with the related consequences (Ojala, 2012).

Addressing the question of responsibility

Within the theme *Addressing the question of responsibility*, the participants

expressed negative emotions as they tackle the topic of responsibility concerning climate change. Anger, sadness and guilt were thereby the most commonly expressed emotions. Participants acknowledged that humanity bears a great, if not the greatest, responsibility for climate change. Sometimes, they included themselves in the collective responsibility of humanity, sometimes they referred to a detached entity such as “people”. Often displeasure was expressed about the inactivity of others and especially the inactivity in politics and large institutions. An example of this is seen in the excerpt of Tatjana:

Tatjana: “I think anger. I noticed that I get a bit more loud, I really don’t want the world to be that bad and I know that a single person or a tiny group cannot change the world. And that the government and other institutions need to do something and that the people themselves need to do something and, I don’t know, if you are talking to people and they still don’t know how to separate the garbage and I don’t know, use their cars and everything without thinking about it. I’m like please, think about what else you can do. Like, put it on a scale if it’s worth it or necessary or if it isn’t.”

In this excerpt Tatjana expresses her anger. She notices herself raising her voice and getting angry. There is a slight contradiction in her statement. On the one hand, she expresses that the individual cannot do much, but in the next sentences, she addresses those who, in her opinion, are not doing enough. She makes the statement that individuals have a limited range of influence and that she sees the greatest need for action in politics and large institutions. This was very common within this theme. However, Tatjana expresses her displeasure that she has the impression that others do not see their responsibility and she thinks that others act thoughtlessly. This suggests that her anger is not only directed at politics or institutions but that she also sees the responsibility of individuals. Her expression “they still don’t know how to separate the garbage” implies that she views this as something that one should know, and also should do. Subsequently, she uses an appeal “please, think

about what else you can do”. Commonly, the participants only talked about others and did not discuss their responsibility.

Putting oneself into other's shoes

The participants expressed feeling empathy for the protagonists of the film. They explained being emotionally triggered as they imagined being in the protagonist's situation and understood how they would feel if they were in the same position. Christopher explains how he usually isn't that sensitive to information about climate change.

Christopher: “Well, normally I am the type of person, you see a lot of news about climate change and how we should reduce CO2 and all these things that affect our climate, and normally I am not really that vulnerable to it and I'm like ‘Ehm, yeah whatever’. But in this case, I saw it harmed other animals and then, I don't know, that triggered something in me that eh yeah I don't know how to explain it, I found it very sad for them that they had to struggle like that because of climate change.”

Christopher makes a distinction between the person he “normally” is and how he felt when he watched the film. Differing from all other participants, he explains that he usually isn't bothered by information about climate change but that the film triggered something in him. He indicates that he cannot identify what in the film triggered him and he also expresses not knowing exactly how to describe his experience. However, others reported that they were surprised that such a “childish” film had affected them so emotionally. Maïke gives a visual description of this phenomenon:

Maïke: “It was definitely sad and ehm made me think as well because I definitely heard that people have to flee but never really took that perspective and this made me

feel like I can. I felt like I was these bears running around and trying to flee and not being excepted and having a horrible time.”

She begins by describing how, although she knew that people had to flee, she had not taken their perspective into account beforehand. She then indicates how the fictional representation enabled her to do so and describes very vividly how she could imagine herself actually being one of the polar bears. Christopher had difficulties explaining what made the difference between the film and other climate change content, but describes that it triggered something in him. Maïke, on the other hand, described very clearly how she was able to empathise with the protagonists through the film. This could indicate that the fictitious representation offers an approach to visualize the effects of climate change and enables viewers to feel emotional and access different perspectives. This phenomenon was not only evident in relation to the polar bears, but some of the participants were also able to feel empathy for the brown bears. The excerpt of Lia illustrates this well:

Lia: “They were the kind of mean ones, but I could understand it that they are, because it is their environment, and they are also not used to that these polar bears are coming into their environment. I know that the polar bears don’t have a choice so it’s not their fault that their environment is melting down, but I can understand that they didn’t want them there because that’s something new they don’t know and what is happening so yeah they were kind of the bad cops in that situation.”

Lia verbalises her understanding for the brown bears and lists arguments for their behaviour. She also expresses her understanding for their behaviour. Simultaneously, she states that she also understands the Polar Bears and gives arguments for their behaviour. She does not only look at one side of the situation but puts herself in the position of both parties

and expresses her understanding for both sides. Thus, she does not look at the situation one-sided and only from the perspective of the victims but looks at the situation as a whole.

Being confronted with injustice and one's own values

Within this theme, the participants commonly expected a positive outcome of the film. When they realised that there would be no positive ending, they described how they developed negative emotions. The emotions that were most often expressed in this context were feeling upset and angry. These were often directed against the brown bears. An incomprehension of their behaviour was expressed. This is depicted in the excerpt of Nina.

Nina: "I think it was more over the whole video. Like the topic that was addressed and not a specific scene. If I had to name one, it would be when they realised that they were not accepted. Yeah, the topic itself is kind of shocking and sad and makes me angry. Because I think it's...I cannot put into words how angry it makes me feel that we are all humans, but we don't accept each other even though the others need help. Because we want to have our privileges or because we are so biased, and only rely on stereotypes. And I think it's completely wrong to behave in such a way."

Nina expresses that she has negative emotions about the topic presented. The emotions she names are anger, sadness, and shock. She explains that these emotions are so strong that she cannot find an expression for them. The inability to name emotions was common within this theme, Participants expressed that they were unable to verbalise their emotions. This resonates with previous research by Pihkala (2020), who states that climate emotions are often a mix of various feelings and are difficult to name when unexplored. Also, within this theme, it was common to reference humanity, and how we treat others that are in need. Often a lack of understanding was verbalised and the wish that we treat each other more kindly. Nina doesn't talk about the movie anymore but draws the connection to

humanity. This indicated that she puts the movie into the context of real-world problems. She also uses the pronoun “we” indicating that she includes herself as being part of the problem, but then states that it is “completely wrong to behave in such a way”.

Discussion

This study discussed different expressions of climate emotions observed in an interview setting after participants watched a short animated climate film. The thematic analysis of the 16 interviews revealed five themes about the emotional expressions of the participants. The themes ranged from viewing the film as a metaphor for real-world problems and climate change with its consequences to a moral evaluation of the topic.

Overarching the themes was that the participants expressed their emotions not only towards the film but also in regard to climate change in real-life. Meaning, that they accessed and discussed their climate emotions not only concerning the film but also regarding the actual consequences of climate change. The issue was discussed in-depth rather than on a baseline level. That means that the participants not only thought about what was shown in the film but also went beyond what was shown in the film and thought further, i.e. climate change in real-life. This could indicate that the participants were dealing with the complexity of the issue and support the claim that climate fiction is a means to understand the multidimensionality of climate change (Goodbody & Johns-Putra, 2019; Mehnert, 2016). Overarching the themes was also, that climate change was addressed as a collective issue rather than an individual problem. The participants pointed to the responsibility of politics and big institutions but also addressed that every individual has responsibility for their actions as well.

The theme *Seeing connection to reality* involved associating what was depicted in

the film with the consequences of climate change in the real world. A connection was made between issues that were addressed in the film and climate change related problems in reality. Through the film, phenomena were recognised related to climate change and participants were reminded of its consequences. Interestingly, when explaining these phenomena, the participants often used real-life examples to support their statements rather than referring to what they had seen in the film. The participants talked about information they knew from the news or other sources and referred to non-fictional images or videos they had seen in the media.

Referring to real-life examples was also observed when the participants talked about their climate emotions. Here, they did not exclusively talk about the emotions they had felt while watching the film but also about the emotions they previously had felt when confronted with information about climate change. This was especially common in the theme *Drawing a connection to oneself*. The film reminded them of what they had seen or heard about before and encouraged them to engage with the accompanying emotions. This supports the research claim that climate fiction could provide a means of identifying and naming emotions (Goodbody & Johns-Putra, 2019; Malpas, 2021). Participants described what they thought the impact of climate change would be on them and their future. Frequently mentioned emotions were hopelessness, anger and the feeling of having no control. The participants increasingly mentioned that it is not in their power to change anything. However, they also frequently explained the impact that climate change is already having on them and the extent to which they are already adapting choices regarding their future. The film led the participants to engage with and discuss their emotions in depth. Goodbody & Johns-Putra (2019) drew a similar conclusion, emphasising that stories about climate change enable one to express negative emotions.

Engaging with one's emotions and discussing these in-depth also applies to the theme

Addressing the question of responsibility. Some participants could identify themselves with the polar bears as they, for example, compared being soothed by their parents as a child to the little polar bear seeking shelter with the big polar bear. The brown bears were perceived as a representation of humanity and participants verbalised the similarities between the behaviour of the brown bears and the behaviour of humans, e.g. how refugees are treated in Europe. Thus, the participants did not identify with the brown bears on an individual level, but on a collective level, as being human as well. This is in line with previous findings on cinematic climate fiction (Nicholson-Cole, 2005). Nicholson-Cole noted that an emotional connection to climate change can be enhanced by identifying with the characters in a story. The participants recognised their own, or humanities responsibility and understood the complexity behind it. Thereby, it was often referred to a collective responsibility rather than to an individual responsibility. Mehnert (2016) also underlined the potential, in relation to literary climate fiction, to provide insights into social impacts and reflect on political implications.

The theme *Being confronted with injustice and one's own values* included an assessment of moral constructs. For example, the participants could not understand the behaviour of the brown bears and related it to the injustices that occur in connection with climate change. Participants often referred to themselves as part of the problem and frequently used the pronoun "we" instead of just talking about themselves. Thus, they saw themselves as part of a group, species or society. Along with this, however, an increased willingness to act was also verbalised in some cases. In the study of Howell (2011) who examined the effect of the climate fiction documentary *The Age of Stupid* on its viewers, increased motivation and willingness to act were observed. However, a lasting effect could not be established.

In addition, positive emotions were also mentioned when it came to the participants'

own actions. It was described that they recognised the value of their actions and through the film saw that they were contributing to a good cause. The participants for example described how they are eating a plant-based diet, using public transport or bikes instead of cars or limiting air travel. And how seeing the movie confirmed their contribution to a good cause. Hence, the participants were confirmed in their actions as well as in their values. Laura described it as follows: “Touched. A bit sad. But also happy in a way, cause I am contributing, I am happy that I am contributing to a good cause. It’s mixed feelings. I can see the urgency but it also feels good.” Ojala et al. claim (2021) that coming to terms with one's values helps to cope with negative climate emotions and results in an increased environmental commitment. This could be an indication that climate fiction is a stimulus to deal with one's values and to reflect on them, i.e. it may stimulate meaning-oriented coping with climate emotions (Ojala, 2012). However, in a variation of this theme, a few participants distanced themselves from the issue arguing that they have no or just a very limited influence, or they gave external reasons to justify a less climate-friendly behaviour, e.g. that other’s do not behave differently or that politics and large institutions use climate fiction to profit from financially. This could indicate that the participants applied emotion-oriented coping strategies, which involve getting rid of negative emotions by distancing yourself from the issue (Ojala, 2012).

Within the theme *Putting oneself into other’s shoes*, some were able to gain a different perspective through the film. Even participants who said they were not normally sensitive to information about climate change were able to empathise with the reality of others. Some expressed that they did not know what made the difference between the film and the information they had been exposed to before. Others described in detail how they imagined being one of the polar bears and how they must have felt. Empathy was expressed not only towards the polar bears but also towards the brown bears. The participants put

themselves in their shoes and tried to understand their actions. Thus, they approached the issue from multiple perspectives and considered the complexity of the problem. In this way, fictional representations can offer an approach to illustrating the effects of climate change and allow viewers to feel emotions and adopt different perspectives. The fact that this was an animated film may have enhanced this effect, as animation offers the possibility of presenting complex issues in a simplified way so that viewers can understand them. In the context of the documentary *The Age of Stupid*, Mitman (2009) has argued that animation is a means of not overwhelming the audience. Some participants described the film as "childish". The impression of watching a children's film may have made the message of the film less overwhelming. Animated films are also a less confrontational medium than live-action films because the smallest details can be fine-tuned and they offer more opportunities to communicate through symbolism (Heise, 2014).

The setting in which the film was viewed and the subsequent interview could have influenced the detailed discussion. The prompting questions may have led to a deeper engagement and encouraged in-depth thinking. This could be seen as a limitation of the results, but it could also provide an incentive for further research. Phikala (2020) underlines the importance of discussing climate emotions to name, recognise and engage with them. First of all, climate emotions are a natural reaction to a real threat (Clayton, 2020) and should be treated as such, but they also have the potential to the development of serious mental health problems (Ellis & Albrecht, 2017). As climate change was seen as a collective problem rather than an individual problem, the possibilities of group discussions shouldn't be undermined and further researched, e.g. in classrooms or universities.

This study showed evidence that the participants applied a meaning-oriented coping mechanism. In this context, it could be valuable to investigate different representations of climate change and its consequences. The film used in this study did not show a positive

ending but focused on the problems and difficulties. It did not show solutions but depicted a problem-oriented representation of climate change. It would be worth investigating if a solution-oriented representation would elicit the experience of positive emotions such as hope and optimism.

A limitation of this study are the demographics of the participants. More concretely, the participants were exclusively well-educated students who studied either psychology or communication sciences. Therefore, possibly more knowledgeable about emotions, their own but also the emotions of others. The age range of the respondents was also limited, as only one specific age group was interviewed, namely young people. The younger generation will be more affected by climate change and are at a stage where they are shaping their future, thus they may also have stronger emotions towards the issue of climate change. Further research could investigate if similar themes would emerge with a more diverse sample. When evaluating this study, the high number of participants for a qualitative study should be taken into account. In addition, this study dealt with a still very minimally researched medium of climate fiction, the animated short film, and the detailed discussion of the participants' emotions provided insightful findings.

This study investigated the discussion of climate emotions after watching a short climate fiction film, and a variety of themes that emerged regarding the expression of emotions. Most participants started to expand on real-life immediately rather than talking about the film and also more commonly talked about real-life when they were elaborating on their emotions. They took the film for a conversation trigger, which underlines the potential of animate climate fiction short films to facilitate access to, and experience one's own climate emotions. The emotions described were often negative, and positive emotions were only mentioned in the context of the confirmation of one's climate-friendly actions. This could be due to the problem-oriented focus of the film and shows the need for studies on films with a

solution-oriented focus, as these might elicit the imagination of possible positive future outcomes and the experience of positive emotions, hence reducing negative feelings such as anxiety and hopelessness. However, it also shows that animated climate fiction short films have the potential to be used as a creative tool to explore and discuss climate emotions, to confront one's own moral values and to confirm one's own climate-friendly behaviour, and can promote meaning-oriented coping with climate emotions.

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Appendix 1: Information Letter

Information Sheet

Research Project: *Affecting emotion: Using climate fiction to address viewer's emotions.*

Climate change presents us with major challenges and represents a threat to people and our environment. Even though storytelling hasn't been widely used to communicate climate change related issues, attention for it is rising. Especially in the genre of film, little qualitative empirical research has been done.

This research project, conducted at the University of Twente, at the Department of Psychology, Health, and Technology, investigates the experiences and emotions of people who have watched a climate fiction short film. Lyzka Platzek-Haase is conducting this research in the framework of her master thesis, supervised by Assistant Professor Heidi Toivonen.

The research involves conducting one-one-one interviews, mostly in English but also in the native language of the participant if the interviewee is fluent in it. The interviews will last 30-60 minutes (including watching the video). The participants will be asked questions about their experience watching the video and emotions they felt. 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 interviews will be referred to with pseudonyms throughout the analysis and in the final written paper. Individual participants cannot be identified.

The BMS ethical committee; Domain Humanities & Social Sciences at the University of Twente has approved this study (Application number 221228). The data will be stored safely according to the data policy of the University of Twente.

Responsible research and contact person for questions about the research and rights of participants is Lyzka Platzek-Haase (l.l.platzek-haase@student.utwente.nl). Furthermore can her supervisor, Heidi Toivonen (h.k.toivonen@utwente.nl) be contacted for further questions.

Appendix 2: Informed Consent

SUBJECT

Consent for Participation in Interview Research

1. I volunteer to participate in a research project concerning climate fiction. I understand that the project is designed to gather information about people's experiences, emotions and thoughts on climate change -themed fictional films 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. 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 video tape will be used for research purposes.
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 assignment, thesis and/or research article will be sent to me when it has been accepted/published.
6. The data will be destroyed 10 years after the end of the project (that is, in February 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

10. Now, that I have participated in the study, I confirm that I still agree on the above described terms and conditions.

.....

Signature of the participant

Appendix 3: Interview Protocol

General Questions:

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

Questions about the video:

1. How was watching the video for you?
2. How would you describe the atmosphere of the video?
3. Can you describe what you felt when you watched the video?
4. Can you tell me something about what in the video evoked emotions in you?
5. How would you describe the polar bears in the video?
6. How did you feel about the polar bears?
→ Why ?
7. How would you describe the brown bears in the video?
8. How did you feel about the brown bears?
→ Why?
9. What did you think about the last scene of the video, when the baby polar bear was picked up from the beach?
10. Was there a scene or aspect of the video that stood out to you?
→ Why?
→ Which emotion was evoked by that scene?
11. How do you feel towards your own future regarding climate change?
12. Could you describe the emotions you feel when thinking about your own future and climate change?

13. 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?
14. If yes, do you think climate anxiety impacts how you think and act with regards to climate change?
15. How do you deal with negative emotions regarding climate change?
16. Do you think that videos or movies like the one you just watched could change anything about how you feel towards climate change and your own future?
17. Is there anything you would like to add regarding climate fiction, climate anxiety or climate change?