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Climate Change-Related Thoughts and Cognitive Styles in Psychotherapy—A Qualitative Analysis of Therapists' Reports

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ABSTRACT

Background: Although several studies have examined climate change-related concerns affecting mental health, it remains unclear what specific cognitions are present in clinical samples. The present study examines (1) the thought content of patients with climate change-related concerns and (2) their cognitive styles, as reported by therapists.

Methods: This study is a secondary analysis of a nationwide survey of German therapists on climate change-related concerns in their patients. We qualitatively analysed reports from a subgroup of $N = 214$ therapists regarding patients' thought content and cognitive styles with structural content analysis.

Results: Therapists' reports revealed diverse themes of thought content as outlined in the literature, with the most prevalent categories reported by approximately half of therapists being *the deadly threat posed by climate change* (54.2%) and *helplessness in face of collective inaction and individual inability* (52.8%) as well as *the paralysis and disengagement from life goals* (48.1%) and *the immediacy, celerity, and irreversibility of climate change* (46.7%). The most commonly identified cognitive styles in the therapists' reports were *rumination* (50.0%), *catastrophising* (44.9%), and *self- and other-blame* (32.2%).

Conclusions: The findings indicate that recurring climate change-related cognitions in therapy correspond with established cognitive patterns and overarching themes such as loss and danger, commonly linked to depression and generalised anxiety. Preliminary associations with disorders like panic and adjustment disorder require further empirical validation. Clinically, assessing these cognitions may guide intervention adaptation and inform targeted psychotherapist training using relevant cognitive content.

1 | Introduction

Climate change is progressing, characterised by increasingly frequent records of high temperatures, extended periods of drought, and intense rainfall events worldwide (IPCC 2023). A growing body of literature shows that acute and chronic climate change-related consequences not only impact individuals' physical health (e.g., McMichael and Lindgren 2011), but also their mental health (e.g., Burrows et al. 2024; Lawrance et al. 2022). The experience and awareness of climate change-related consequences can lead to diminished well-being and a decreased sense of self-efficacy (Asbrand et al. 2023), as well as intense negative emotions related to climate change consequences, such as anxiety (Clayton and Karazsia 2020), grief (Cunsolo and Ellis 2018), or anger (Ágoston et al. 2022). In a representative German survey conducted in 2022, nearly 90% of respondents identified climate change as a threatening ecological problem. Around a quarter of participants indicated

Implications for Practice and Policy

- Integration into clinical assessment: The results of the study suggest that recurring content can be classified into overarching themes, such as loss and threat. According to the theory of content specificity, these themes are related to depressive and anxiety symptoms. Climate change-related cognitions should be systematically assessed as a diagnostic tool to identify clinically relevant content and refine diagnostic accuracy.
- Adaptation of existing therapeutic approaches: Given the overlap between climate change-related cognitions and established psychopathological patterns, existing therapeutic techniques—such as cognitive restructuring, emotion regulation, and meaning-focused techniques—could be effectively adapted to address climate-specific thought patterns.
- Development of standardised patient scenarios for therapists' training: The results of the study can inform the development of climate change-aware training modules for therapists, given the validation of the identified climate change-related cognitions based on relevant literature. Such recurring climate change-related cognitions could inform different standardised patient scenarios. These training modules could improve clinicians' skills and readiness to effectively treat climate change-related distress.
- Societal and political engagement: The study identified a broad range of climate change-related themes. As climate change progresses, such worries are likely to affect an increasing number of people. This underscores the urgent need for prompt and effective action by policymakers to address the psychological burden associated with climate change.

being afraid of and stressed by the consequences of climate change, with 5% feeling very stressed (Grothmann et al. 2023). Initial research has indicated that higher levels of climate change anxiety (CCA) are associated with increased mental health symptoms, particularly generalised anxiety disorder (GAD) and depression (Chan et al. 2024; Schwartz et al. 2022). This anxiety encompasses negative emotional and cognitive responses related to concerns about the environment as well as functional impairment in daily activities (Clayton and Karazsia 2020). Emerging evidence suggests that climate change has become an increasingly relevant topic within psychotherapeutic practice (Budziszewska and Jonsson 2021; Trost et al. 2024), with concerns related to climate change representing an additional stressor for existing mental health problems or even a specific reason for individuals seeking therapy (Brakemeier et al. 2025; Croasdale et al. 2023; Trost et al. 2024).

Recent surveys revealed that, while therapists reported to feel sufficiently equipped to manage the consequences of climate change, they would benefit from additional information and specific training in managing climate change-related mental health problems (Croasdale et al. 2023; Trost et al. 2024). Leading psychiatric and psychological associations have also identified a demand for further qualification and education in this emerging field (American Psychological Association 2022; Heinz et al. 2023). Cognitive theory offers a useful conceptual framework for diagnostic clarification and systematic adaptation of treatment strategies. In accordance with the theory of cognitive content-specificity (Beck 1976; Clark and Steer 1996), a fundamental principle of cognitive theory, the thought content and the used cognitive style have implications for diagnoses and treatment options (Clark and Steer 1996). The theory proposes that different disorders are characterised by distinct cognitive themes. Beck's cognitive model (Beck 1976), for instance, delineates a characteristic "cognitive triad" for depression, consisting of negative views of oneself, the environment and the future. This triad is characterised by specific cognitive distortions, including selective perception and excessive self-criticism. Depression has been shown to be associated with distortions centering on failure, loss, and hopelessness, often accompanied by repetitive thoughts, such as "I am incompetent; there is no point in trying," which may contribute to inactivity and social withdrawal (Beck et al. 1979; Clark and Steer 1996). In contrast, Beck (1976) proposes that anxiety is characterised by dysfunctional cognitive schemas, leading to an unrealistic assessment of threatening stimuli. Anxiety is therefore marked by cognitions focused on threat, harm, and danger, frequently linked to safety behaviours (Beck 1976; Clark and Beck 2010), with panic disorder involving catastrophic misinterpretations of bodily sensations (Clark 1986) and GAD characterised by persistent, ruminative worry (Wells 1995). Building on the advanced generic cognitive model by Beck and Haigh (2014), further associations have been proposed between specific cognitive themes and conditions, such as obsessive-compulsive disorder (e.g., "I am at risk of contracting a deadly disease"; Beck and Haigh 2014, p.16). However, the specific role of climate change-related cognitive themes in the onset, maintenance, or exacerbation of mental disorders remains insufficiently understood (Beckord et al. 2025; Ojala et al. 2021).

1.1 | Thought Content in the Context of Climate Change

Several studies have attempted to clarify content of thoughts within the context of climate change (Budziszewska and Jonsson 2021; Schwartz et al. 2022). Wullenkord and Ojala (2023), for example, grouped the content of thoughts into micro worries (self, family, friends) and macro worries (people in poorer countries, future generations, animals, nature) based on two cohorts of Swedish adolescents from the general population, with approximately 320 students in 2010 and 480 students in 2019/2020. The study showed that micro worries were more likely associated with climate pessimism, that is, belief that the "world will go under" and similar cognitions, but are less associated with behavioural consequences, whereas macro worries were more likely to result in pro-environmental behaviour. Budziszewska and Jonsson (2021), based on the principles of Spinelli (2015), identified the presence of existential concerns (e.g., death anxiety, spatiality, temporality, meaning, relatedness) as the main content of climate change-related thoughts in an interview study involving 10 Swedish patients in psychotherapy. The authors expounded

on *death anxiety* in relation to climate change, delineating it as an acute fear experienced by patients when they acknowledge the gravity of the climate situation and the impending ramifications of climate change. This accentuated awareness of existential threat is concomitant with emotional and physical proximity, thereby signifying that the impact of climate change is already perceptible in the present (*spatiality, temporality*). The concept of *meaning* in relation to climate change can, in some cases, lead to a state of meaninglessness, characterised by a sense of helplessness in the face of a global inaction to address climate change. Conversely, a sense of meaningfulness can emerge when individuals become involved in climate action. The notion of *relatedness* is regarded as a foundational principle that underlies all other concepts. From a positive perspective, this phenomenon can be interpreted as a sense of interconnectedness with the world. However, it can also signify a state of dependence on this world that is coming to an end. The antithesis of this concept is isolation. In the context of climate change, Budziszewska and Jonsson (2021) identify social isolation among patients who experience a lack of understanding from their fellow human beings or who perceive that their fears regarding climate change are not being taken seriously. Schwartz et al. (2022) used a reflexive thematic analysis to structure climate change-related thoughts in a group of 37 American students evaluated in 2020 who exhibited high rates of CCA and probable GAD or major depressive disorder (MDD). The researchers identified five distinct themes of climate change-related thoughts: (1) *The deadly threat posed by climate change* as (not specified) existential threat for humans (me, family and friends, and marginalised populations) and for animals. (2) *The immediacy, celerity, and irreversibility of climate change* with *immediacy* as experiencing the consequences already now and *celerity* as expecting the consequences in the near future, with an *irreversible* damage to the world. (3) *Chained events leading to global chaos* meaning expected social consequences of climate change, such as armed conflicts caused by migration and conflict escalation, including the use of nuclear weapon. (4) *Helplessness in face of collective inaction* includes the anger of participants at citizens' indifference and selfishness, the own helplessness and insignificance of individual actions. (5) *Paralysis and fewer collective actions* are defined as disengagement of typical goals, such as education, career or parenthood, and the inability of the study participants to engage in collective actions.

1.2 | Cognitive Styles in the Context of Climate Change

There are a few studies investigating the use of cognitive styles within climate change-related concerns (Giæver and Russell 2024; Orru et al. 2024; Wullenkord and Ojala 2023). Giæver and Russell (2024) analysed emotion regulation strategies in an international sample of 30 climate activists and identified methods to down-regulate and transform negative emotions related to their climate activism (self-care practices, e.g., meditation), as well as to cultivate positive emotions (e.g., cognitive reappraisal, acceptance). Wullenkord and Ojala (2023) identified distancing from climate change worry or related emotions (e.g., trying to think something else), problem-focused (e.g., thinking about what to do) and meaning-focused strategies (e.g., having faith in humankind to solve the problems) as modulating variables influencing well-being and climate action in two Swedish cohorts of students. They showed that highly concerned participants who engaged in meaning-focused coping exhibited lower pessimism, while those employing problem-focused coping were more likely to take action against climate change. Conversely, highly concerned participants distancing themselves from climate change-related concerns showed less eco-friendly behaviour. Beckord et al. (2025) examined cognitive emotion regulation strategies, such as *avoidance*, *catastrophising*, *rumination*, *blaming self* and *others,* in the context of climate change-related distress in a sample of over 900 German adults. The researchers found a higher amount of *catastrophising*, *rumination*, and *self-blaming*, as well as *refocusing on planning* positively and *putting into perspective* negativity associated with climate change-related distress.

1.3 | Aims

The aim of this study was to systematically characterise the climate change-related thought content and cognitive styles of psychotherapy patients and to situate these within established cognitive models of psychopathology. To this end, a secondary qualitative analysis was conducted on free-text responses provided by therapists in a nationwide survey of German therapists (Trost et al. 2024), in which they described patients' climate-related cognitions. In the initial analytical step, the thematic content of these thoughts was examined deductively, informed by the categories of Schwartz et al. (2022). This was done to validate the existing literature on typical thought content and to determine the extent to which similar cognitive patterns are observed in a clinically treated population. In a similar vein, the identified cognitions were coded with reference to established cognitive emotion regulation strategies. This was done to delineate characteristic cognitive styles associated with climate change-related distress. These styles were then compared to existing literature. Finally, these climate change-specific cognitive themes were mapped onto predominant cognitive themes of depression and anxiety disorders, as described in the theory of content-specificity (Clark and Steer 1996), with the goal of clarifying points of overlap and differentiation that may inform disorder-specific assessment, the targeted adaptation of interventions, and further resources for climate-aware training of therapists.

2 | Methods

2.1 | Participants and Procedure

The underlying data were examined in a nationwide, cross-sectional online survey among psychotherapists in Germany (Trost et al. 2024). The recognised therapeutic approaches in Germany are: cognitive behavioural therapy (CBT), psychoanalysis (PA), depth psychology (DP), and systemic therapy (ST). Inclusion criteria were (a) being a licensed psychotherapist or psychotherapist in training and (b) giving informed consent to participate in the survey. The study procedure was reviewed and approved by the institutional ethics committee of the authors'

institution. Data collection took place between February and April 2023.

For recruitment, we contacted all regional Psychotherapists' Chambers ("Psychotherapeutenkammern"), with which licensed psychotherapists need to be registered, and a random selection of 10% (in total, $n = 33$) of training institutions in each of the federal states to forward the online survey link to their members and trainees. In addition, all regional associations of statutory health insurance physicians ("Kassenärztliche Vereinigungen") and three professional associations of psychotherapists that operate across therapeutic approaches and throughout Germany were requested to distribute the survey. After a follow-up, commitments from eight out of 12 chambers, 27 out of a planned 33 training institutions, five out of 17 regional associations of statutory health insurance physicians, and two out of three requested professional associations distributed the survey to their members. For a more detailed description on the recruitment process and participating federal states, see Trost et al. (2024).

A total of 624 psychotherapists opened the survey link, of whom 573 answered the items on experience regarding patients with climate change-related concerns. Of these, 410 therapists indicated experience with patients reporting climate change-related concerns and 214 therapists answered the open-ended questions about related thought content. The open-ended responses from this subgroup were qualitatively analysed for this research.

2.2 | Data Source

The survey was conducted online using the survey tool Qualtrics and included socio-demographic information about the participants, including age (*year of birth*) and gender (*female/male/diverse*) and work-related information, including level of training (*trainee* vs. *licensed*), therapeutic approach (*CBT, PA, DP, ST, or other*), work experience (*number of years working as a therapist including time as trainee, number of weekly treatment sessions*), and practice setting (*private practice, hospital, outpatient clinic, or other*). In addition, we assessed engagement in climate or pro-environmental advocacy groups and the degree of pro-environmental behaviour in everyday life (1 = *in no area of everyday life*, 4 = *in almost all areas of everyday life*). Therapists with experience of patients expressing concerns about climate change were presented with items about the number of such patients (seen in the last 12 months). The patients' socio-demographic characteristics *(predominant age, predominant family status)* and the most common diagnoses were enquired and summarised for the group of patients reporting climate change-related concerns, allowing therapists to endorse multiple answers. Therapists could describe the patients' thought content and cognitive styles they recognised in free-text responses ("Specify which cognitive styles you are aware of in your patients with climate change-related thoughts and feelings", with the predefined options of *"Rumination"*, *"Catastrophising", and/or "Other"* with an open-ended response option; for each cognitive style "What was the thought content?" was asked, with four open text response fields for each cognitive style). Further details of the assessment and procedure can be found in Trost et al. (2024).

2.3 | Data Analysis

The free-text answers of 214 therapists to the open questions on cognitive style and thought content were qualitatively analysed using Qualitative Content Analysis (Mayring 1994). The analysis was based on deductive category application, following the process of structural content analysis. If new content emerges, an inductive methodology can be employed to form categories (Mayring 1994).

First, we sought to deepen our understanding of the content of thoughts in patients with climate change-related concerns. To address this, we used the five distinct themes suggested by Schwartz et al. (2022) for their subsample ($n = 37$) with higher rates of CCA and probable GAD or MDD—described above—as fundamental dimensions to structure the free-text answers. After familiarising themselves with the dataset, the first two authors identified representative examples and specified coding rules to ensure consistency across the analysis, based on Schwartz et al. (2022). For example, the category *the deadly threat posed by climate change* was coded with the rule that existential threats to humans, animals, and nature due to climate change-related events and yet undefined future threat was mentioned in the statements. Prime examples were climate change-related events (e.g., heat, water scarcity, decline of insects) and further yet undefined future threat and diffuse existential fears (e.g., destruction of nature, fears for the world, fears about the future, existential fear). For further details and descriptions of categories, see Table 3. Contents of thoughts reported by therapists that could not be integrated into the five themes were marked with "other" and subsequently analysed inductively by the first author. Each of the 214 therapists provided free-text answers within one to 12 segments; segments were meaningful statement units and could be a sentence, a few-word statement, or a single word. The answers were analysed segment by segment, and a segment could be coded with more than one code. The data of the first 32 (15%) of the 214 therapists were jointly categorised by the first and second authors. Subsequently, they reviewed the fit of Schwartz et al.'s (Schwartz et al. 2022) categories, with ongoing refinement of categories in light of emerging additional aspects, discussed revisions, and independently analysed the remaining data. The inter-rater agreement was than measured, encompassing the entirety of the data. The inductive analysis led to the refinement of themes originally proposed by Schwartz et al. (2022) in certain instances where an aspect of the themes was identified as being particularly prevalent in the therapists' responses (e.g., the helplessness in face of *individual inability*). Additionally, novel themes were identified that extended beyond those described by Schwartz et al. (2022), emerging organically from the therapists' reports, including *motivation for pro-environmental behaviour*. Further, feedback from the research group was incorporated to finalise the structure of categories.

Second, we aimed to explore the cognitive styles these patients employ when dealing with climate change-related

concerns. Given the diversity of cognitive styles manifested in the responses to the patients' thought contents, these free text responses were deemed a suitable basis for the analysis of cognitive styles. To identify these cognitive styles, we used a selection of the cognitive strategies of emotion regulation provided by Loch et al. (2011) and Aldao and Nolen-Hoeksema (2010)—listed in Table 4—as fundamental dimensions to structure the free-text answers. The first and second authors also formulated important examples and specified coding rules for each category, based on the description of the previously selected strategies. The style of *catastrophising*, for instance, was identified in cases where there was a pronounced emphasis on the horror of climate change (Garnefski and Kraaij 2007) or when there was a conviction that a specific negative event would almost certainly occur and that this event would cause the greatest possible damage to those affected (Jenness et al. 2016). Prime examples are "the apocalypse is imminent", "humanity will die out", and "Germany is becoming uninhabitable". Further descriptions and identified examples of these strategies can be found in Table 4. The research group reviewed and discussed the results as described above.

To identify whether the coded segments were being interpreted in the same way, we calculated the inter-rater agreement (McDonald et al. 2019) with kappa values in MAXQDA 2022 (22.3.0) over coded segments for thought contents and cognitive styles in total and for each category. We evaluated kappa values according to Landis and Koch (1977), with values from 0.41 to 0.60 indicating "moderate agreement", from 0.61 to 0.80 indicating "substantial agreement" and from 0.81 to 1.00 indicating "almost perfect agreement" (p. 165). The qualitative analyses were carried out using MAXQDA 2022 (22.3.0).

To describe therapists' sociodemographic characteristics, we used frequencies and mean values, respectively.

3 | Results

Table 1 contains the descriptive statistics for the sociodemographic and work-related variables of the 214 therapists. On average, participants were 48.5 years old; the majority identified as female (86.4%), were licensed (87.4%), and working in private practice (80.8%) with adults (74.8%), with a workload of approximately 20 therapy sessions per week. The most frequently reported therapeutic approaches were CBT (57.0%) and DP (42.1%). Nearly a quarter of the therapists reported being engaged in environmentally friendly advocacy groups (e.g., psychotherapists for future, relevant political parties, or environmental organisations) and almost 85% reported engaging in climate-friendly everyday behaviours.

Therapists provided sociodemographic information on their patients with climate change-related concerns. Table 2 presents an overview of this information. They predominantly indicated young (69.6%) to middle aged (72.0%), highly educated patients (higher education entrance qualification, 72.9%; university degree, 65.0%) in relationships (59.8%) and without children

TABLE 1 | Therapists' socio-demographic and work-related information.

Variables	*N* = 214
Age in years, *M (SD)*	48.5 (11.9)
Gender, % (*n*)	
Female	86.4 (185)
Male	11.7 (25)
Diverse	1.9 (4)
Work-related variables	
Level of qualification, % (*n*)	
LPTs (with approbation)	87.4 (187)
PiTs (in training for approbation)	12.6 (27)
Practice setting, % (*n*) (*multiple answers possible*)	
Private practice	80.8 (173)
Hospital	10.7 (23)
Outpatient clinic	10.7 (23)
Other	8.4 (18)
Weekly therapy sessions, *M* (SD)	19.8 (8.7)
Type of licence, % (*n*)	
Psychotherapist for adults	74.8 (160)
Psychotherapist for children and adolescents	20.1 (43)
Psychotherapist for adults, additional qualification for children and adolescents	2.3 (5)
Physician psychotherapist	1.9 (4)
Other	0.9 (2)
Years of professional work, *M (SD)*	14.8 (9.5)
Therapeutic approach, % (*n*) (*multiple answers possible*)	
CBT	57.0 (122)
DP	42.1 (90)
PA	13.1 (28)
ST	5.6 (12)
Other	2.3 (5)
Environmental engagement	
Engagement in advocacy groups, % (*n*)	23.4 (50)
Climate-friendly everyday behaviour, % (*n*)	
In almost all areas of everyday life	17.8 (38)
In many areas of everyday life	66.8 (143)
In a few areas of everyday life	15.0 (32)
In no area of everyday life	0.5 (1)

Abbreviations: CBT = cognitive behavioural therapy, DP = depth psychology, LPT = licensed psychotherapist, PA = psychoanalysis, PiT = psychotherapist in training, ST = systemic therapeutic approach.

TABLE 2 | Psychotherapist-reported characteristics for patients with climate change-related concerns.

Variables	*N* = 214
Age in years, % (*n*) *(multiple answers possible)*	
Young age (< 14–24)	69.6 (149)
Middle age (25–59)	72.0 (154)
Old age (> 60)	19.6 (42)
(Intended) educational degree, % (*n*) (*multiple answers possible*)	
Basic school certificate	15.9 (34)
Intermediate school certificate	37.9 (81)
Higher education entrance qualification (A-Levels)	72.9 (156)
University degree	65.0 (139)
Assumed family status, % (*n*) (*multiple answers possible*)	
Majority of such patients is in a relationship	59.8 (128)
Majority of such patients is not in a relationship	32.2 (69)
Majority of such patients is too young for a relationship	17.3 (37)
Having children, % (*n*)	
Majority of such patients have children	30.4 (65)
Majority of such patients do not have children	50.0 (107)
Majority of such patients are still a child themselves	18.7 (40)
Most frequently assigned diagnosis, % (*n*) *(multiple answers possible)*	
Depression	52.3 (112)
Generalised anxiety disorder	12.6 (27)
Adjustment disorder	11.2 (24)
Panic disorder	7.9 (17)
Somatoform disorders	7.5 (16)
Posttraumatic stress disorder	6.5 (14)
Agoraphobia	0.9 (2)
Other	4.2 (9)

(50.0%). The therapists provided the diagnoses they assigned to patients with climate change-related concerns. The three most common diagnoses given to these patients were depression, GAD, and adjustment disorder.

3.1 | Categories of Thought Content

The analysis of thought content was based on the five themes identified by Schwartz et al. (2022) for their subsample ($n = 37$) with higher rates of CCA and probable GAD or MDD. Regarding the thought content of patients with climate change concerns, Table 3 shows Schwartz et al.'s (2022) themes and our extensions, where applicable, and examples of therapists' statements. Additionally, kappa values for the inter-rater agreement between the two raters are listed. Figure 1 shows the frequencies of identified categories. Eight (3.7%) of the 214 respondents did not report any codable thought content. In the responses of the remaining therapists, we identified one or more of Schwartz et al.'s (2022) five categories.

The most frequent identified categories, reported by around a half of the therapists, were *the deadly threat posed by climate change* (54.2%) and *helplessness in face of collective inaction and individual inability* (52.8%), followed by *paralysis and disengagement from life goals* (48.1%) and *the immediacy, celerity, and irreversibility of climate change* (46.7%). Through the iterative analysis of therapists' responses, we identified aspects of Schwartz et al.'s (2022) themes that were disproportionately represented, such as *individual inability* within the category of *helplessness in face of collective inaction,* resulting in the category of *helplessness in face of collective inaction and individual inability.* Further, within the category *paralysis and fewer collective actions*, we observed that approximately 20% of therapists reported *questioning family planning* ("I would like to have children, but I don't want to bring any into this world", "You shouldn't have children because of the climate catastrophe", *"Was it responsible that I had children*?"; 20.6%) and *extreme fatalistic statements,* including suicidal thoughts ("See no point in continuing to live", "It would be better if everyone died"; 19.6%), among their patients. This phenomenon led to the category *paralysis and disengagement from life goals*. Additional themes not explicitly covered by Schwartz et al.'s (2022) categories emerged from the inductive content analysis: concrete thoughts about *motivation for pro-environmental behaviour (*"I want to join forces with others to protest", "I eat vegan", "I'm not flying anymore"; 21.0%). Additionally, examples of *cynicism* ("Berlin is finally by the sea"; 0.7%) emerged.

For 82.1% of the individual statements, we were able to clearly assign one category. However, for 17.9% of the individual statements, we assigned two or more of Schwartz's thought categories due to their less unambiguous nature (e.g., "I will die in the near future" was categorised under *the deadly threat posed by climate change* and *the immediacy, celerity, and irreversibility of climate change*). Kappa values showed substantial inter-rater agreement across all categories ($\kappa = 0.72$) and from moderate ($\kappa = 0.59$) to substantial agreement ($\kappa = 0.80$) for the individual thought content categories.

3.2 | Categories of Cognitive Styles

The analysis of cognitive styles was based on the cognitive emotion regulation strategies provided by Loch et al. (2011) and Aldao and Nolen-Hoeksema (2010). Table 4 lists the categories of cognitive styles, their descriptions and examples of cognitive styles reported by therapists that they recognised in their patients with climate change-related concerns. Frequencies of cognitive styles are shown in Figure 2.

The three most frequent cognitive styles we identified were *rumination* (50.0%), *catastrophising* (44.9%) and *self- and*

TABLE 3 | Description of the themes of thought content verified in therapists' reports regarding their patients with climate change-related concerns.

Theme names	Description of the themes	Examples of statements therapists reported regarding their patients with climate change-related concerns	Kappa, κ
Themes based on Schwartz' five themes of thought content			overall kappa $\kappa = 0.72$
The deadly threat posed by climate change	Massive existential threat that humans, animals, and nature are confronted with through natural catastrophes (e.g., heat, fire, storms) and yet undefined events resulting in general worries about future	"Worries about future", "Worries about children and grandchildren", "The sea level is rising", "Decline in insects", "It's getting warmer and warmer"	0.66
The immediacy, celerity, and irreversibility of climate change	Noticeability of climate change immediately and in the near future as well as reflection the irreversibility of damage caused by climate change.	"The rain is much too heavy", "I am ill because of climate change", "Poor harvests due to lack of water", "Everything will be over in 30 years anyway", "Worries about children", "I am dying soon", "Irreversibility of previous climate changes"	0.58
Chained events leading to global chaos	Chain reactions triggered by climate change-related events (e.g., drought, resource scarcity) that society is or will be confronted with	"Civil war", "Famine", "Migration", "What will happen to me if more and more climate refugees come here?", "There will soon be a climate war"	0.76
Helplessness in face of collective inaction *and individual inability*	Description of helplessness often paired with blaming people or politics for inaction or feeling guilty by doing too little to protect climate	"Lack of understanding towards fellow human beings", "Distrust of social elites", "Why doesn't anyone do anything?", "Anger at people who don't care about the climate", "I am insignificant, guilty conscience"	0.80
Paralysis and *disengagement from life goals*	Desperate to fatalistic tone with questioning everything including life goals	"End of the world", "We will all die cruelly", "Everything is pointless", "Can I still bring children into this world?", "I have burdened my children with a life in a world that is going to hell", "Suicidal thoughts because there is no future", "It no longer makes sense to do an apprenticeship or to study"	0.64

Note: Additional perspectives named by therapists or slightly changed focus in themes are italicised in theme names. Kappa values were calculated using Brennan and Prediger's (1981) formula for nominal scales (agreement vs. disagreement).

other-blame (32.2%), whereby *blaming others* (49.3%; e.g., "The politicians are corrupt and don't want any changes, for example, no speed limit", "The older generation is to blame", "Politicians are not doing enough to combat climate change", "Humans are too stupid") emerged more often than *self-blame* (33.3%; e.g., "Feelings of guilt", "Anger over missed opportunities", "It's our fault", *"Shame"*, "We didn't fight enough"). In addition, we identified *avoidance/thought suppression* strategies in the responses of approximately 20% of the therapists, with 12.5% ($n = 5$) of therapists' responses including *denial* of the existence of climate change (e.g., "Everything about climate change is nonsense", "There have always been droughts and floods", "Experts are wrong", "There is no man-made climate change", *"Scaremongering"*). Further, around 20% of therapists' responses depicted *problem-solving/refocus on planning* strategies to cope with climate change.

In 93.7%, a clear assignment of segments to a single category was possible, while 6.3% were coded with two categories of cognitive styles (e.g., "how will climate change develop in the future?" was categorised under *problem-solving/refocus on planning* and *rumination*). Kappa values showed substantial inter-rater agreement across all categories ($\kappa = 0.76$) and substantial agreement ranging from $\kappa = 0.67$ to $\kappa = 0.77$ for the individual cognitive style categories.

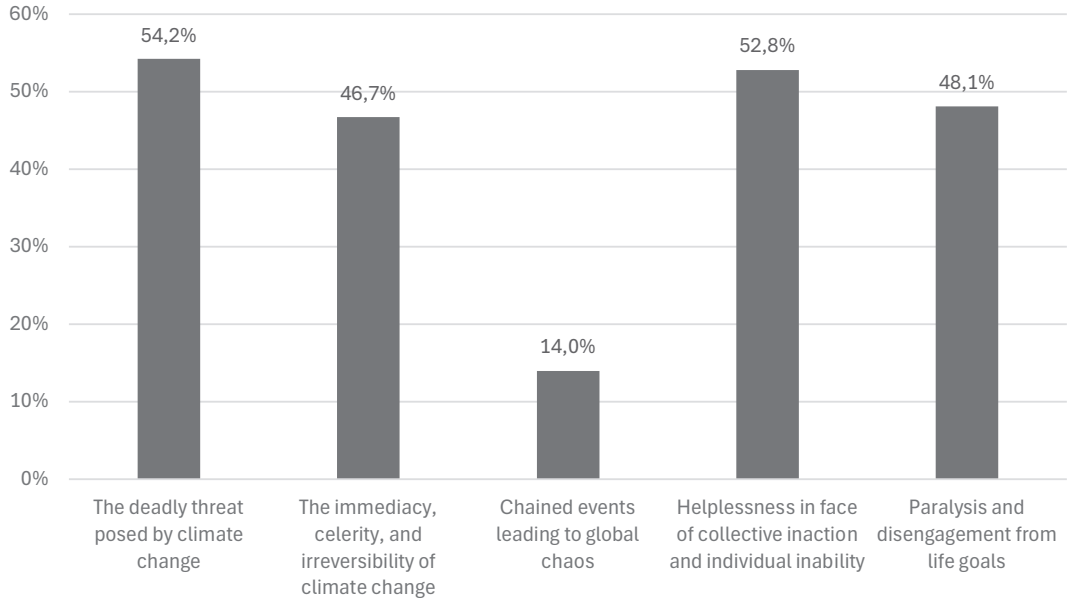

FIGURE 1 | Frequency of identified categories for content of thought.

4 | Discussion

To our knowledge, this is the first study to qualitatively analyse the thought content of patients with climate change concerns and their cognitive styles as reported by their therapists. Based on a deductive approach, we verified content themes and cognitive strategies in the free-text reports of therapists regarding their patients with climate change-related concerns. The following section will contextualise the identified themes within the relevant literature about climate change-related cognitions. Further, in accordance with the theory of content-specificity, the climate change-related categories identified were categorised within the context of the predominant themes of depression and anxiety disorders articulated by this theory.

With regard to thought content, we could verify the range of Schwartz et al.'s (2022) categories that were identified using inductive content analysis of free text responses about climate change-related worries from 37 participants with elevated CCA alongside probable MDD and/or GAD. Interestingly, four out of the five given themes were reported by approximately half of the therapists, suggesting that the self-perceptions of affected individuals and the external observations of therapists align on core concerns regarding climate change-related worries.

The theme identified most often in the current study was *the deadly threat posed by climate change*, including worries and fears about death and threats to self, humankind and nature, a concern also identified by Schwartz et al. (2022). The study by Marczak et al. (2023) surveyed more than 30 Norwegian adults who reported that climate change affects their daily lives. Through thematic analysis, the researchers identified 16 emotionally charged themes, including *uncertainty about the future*, *catastrophic visions of the future*, and *the loss of species, landscapes, ways of life, and future opportunities*, which can be associated with *the deadly threat posed by climate change*, as identified in our study. Similarly, Budziszewska and Jonsson (2021) described intense fear regarding recognising the seriousness of the climate situation in their sample affected by environmental worries. In the narratives of the 10 Swedish patients, fear co-occurred with moments of mortal dread or apocalyptic foreboding, meaninglessness and giving up hope (Budziszewska and Jonsson 2021). We identified similar fatalistic statements (e.g., "we will all die cruelly", "I see no point in continuing to live") based on free text answers of therapists.

The theme of *helplessness in face of collective inaction and individual inability* had two major facets. On the one hand, the awareness of collective inaction in our sample of therapists was often reported combined with the cognitive style of *other blaming*. Marczak et al. (2023) identified relating themes such as *ignorance and other people's (family, friends, the general society's) perceived lack of concern and action about climate change* and *human species or human nature perceived as a destructive force* and *lack of engagement or deliberately harmful conduct of people in power*. These themes evoke emotions such as frustration, anger, isolation and shame. The highly stressed sample of Schwartz et al. (2022) similarly identified culprits like ignorant or selfish citizens, billionaires, or states. On the other hand, one's own vanishingly low ability to influence these systems in our sample was mostly combined with the cognitive style of *self-blaming*, including the feeling of guilt. Similarly, Marczak et al. (2023) found that *personal responsibility for climate action* was associated with shame and distress in their sample. Schwartz et al.'s (2022) highly stressed sample also reported a vivid expression of insignificant impact of individual actions.

The theme *paralysis and disengagement from life goals* in our study included a consistently desperate tone of meaninglessness ("everything is pointless") and questioning of life goals. A notable life goal that emerged with a high degree of frequency (by slightly more than 20% of therapists) was the process of questioning one's own family planning. This subject is also identified by Marczak et al. (2023) in their theme *children, reproduction, and future generations*. In this context, the researchers primarily analysed emotions such as fear and sadness. In Schwartz

TABLE 4 | Description of cognitive styles identified in therapists' reports regarding their patients with climate change-related concerns.

Strategies of emotion regulation	Description of these strategies	Examples of strategies therapists reported regarding their patients reporting climate change-related concerns	Kappa, κ
			overall kappa $\kappa = 0.76$
Rumination	Cognitive style that repetitively focuses on negative (experienced or anticipated) events or emotions and the possible causes, implications, and consequences of those	"Worry about the future", "Fear of the future", "Worry about children/ grandchildren", "Depressed, frustrated, helpless thoughts", "Rumination about own way of life", "How will things continue", "Everything is getting worse and worse"	0.77
Catastrophising	The tendency to magnify an experienced or perceived threat and overestimate the seriousness of its potential consequences. It is a cognitive bias that involves the belief that a certain negative event is almost certain to occur and that this event will cause the greatest possible harm to those affected	"We will drown", "We will die of thirst"; "I will die in the near future", "This is the end of the world", "Everything will be over in 30 years anyway", "This will end in a catastrophe"	0.69
Self- and other-blame	Cognitive style that relate to the causal attribution of a negative event (here: related to climate change) to oneself or to others.	"Guilt", "Overestimating one's own responsibility and guilt for climate change", "Personal responsibility", "Self-doubt", "What did I do wrong", "We didn't fight enough", "My children will hate me for bringing them into this world", "I hate my parents", "The older generation is to blame", "Politicians do nothing", "Anger at people who don't care about the climate"	0.75
Avoidance/Thought suppression	Cognitive efforts to de-emphasise climate change or using different forms of denial and avoidance of distressing thoughts	"It's better to shield yourself", "I don't want to hear about it anymore", "I don't want to think any further", "It's too late anyway", "Climate change is nonsense", "The politicians are kidding us"	0.70
Problem-solving/ Refocus on planning	Conscious attempts to change a stressful situation or to control its consequences. In relation to climate change, this can mean environmentally friendly behaviour but also sharing thoughts and emotions with interaction partners.	"How do I deal with those around me who have a different attitude?", "Which jobs are still needed?", "I have to protect my house against storms and floods", "I'm going to the 'last generation' [protest movement] and become active", "Find out other people's thoughts on this", "Self-calming", "Talking to others", "I need to prepare, for example, stock up, get weapons, etc."	0.67
Functional reappraisal	Cognitive reorientation fostering positive emotions instead of downregulating uncomfortable emotions.	"Solidarity thoughts", "Protest thoughts", "Social togetherness", "Motivation for change", "Responsibility", "How can I shape the future?"	0.69

Note: Strategies of emotion regulation listed and described based on Loch et al. (2011) and Aldao and Nolen-Hoeksema (2010).

et al.'s (2022) study, highly distressed individuals expressed worry about "everything" in relation to climate change. The participants also reported on family-related life goals and educational or career-related goals. Additionally, the researchers documented the motivations for climate action. However, given that the survey was conducted during the period of the Coronavirus Disease 2019 (COVID-19) pandemic, when public life was subject to restrictions, and the capacity for collective action was diminished. Budziszewska and Jonsson (2021) describe this paralysis as the negative pole of a tension that exists between meaninglessness, passivity, and resignation on one side, and meaning, activity, and hope on the other. Budziszewska and Jonsson (2021) also found the positive side of tension: meaning, activity and hope. When relatedness with humans and nature was felt by the Swedish patients, they expressed feelings of meaning and responsibility resulting in climate activism, which

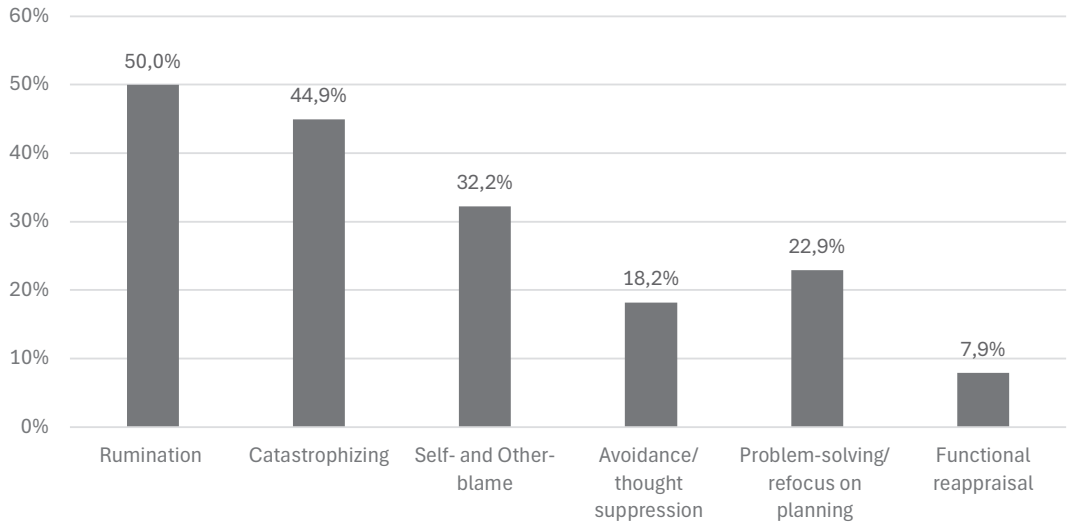

FIGURE 2 | Frequency of identified cognitive styles.

helped them to overcome climate anxiety (Budziszewska and Jonsson 2021). Similarly, Marczak et al. (2023) found that *collective climate action* was associated with positive emotions, such as excitement, love, energy, hopefulness, and gratitude. In our analysis, about a fifth of therapists reported that their patients had thoughts about *motivation for pro-environmental behaviour*.

Schwartz et al. (2022) highlight the *immediacy, celerity, and irreversibility of climate change*, emphasising that it is already being experienced, with little time left before catastrophic and permanent damage occurs. This theme is echoed by Budziszewska and Jonsson (2021), who identified spatial and temporal dimensions as important in their sample, and by Marczak et al. (2023), who found *time pressure around climate change mitigation* as an emotion-evoking theme. In our sample, nearly half of the therapists reported the same theme and similar examples of thought content for their patients. The theme *chained events leading to global chaos* included reactions triggered by climate change-related events that society is or will be confronted with. Although Budziszewska and Jonsson (2021) did not explicitly mention this theme, it is inherently connected to their category of *relatedness to all other beings*. Swedish patients reported the choice between solidarity or conflict when handling climate change consequences. In contrast to the other themes, *chained events leading to global chaos* ("famine", "civil war") appear to have played a subordinate role in our study. Notably, only 14% of therapists reported *chained events leading to global chaos* as thought content for their patients. This observation may be consistent with results reported by Wullenkord and Ojala (2023), who found a stronger relationship for the prevalence of micro worries, that is, worries about oneself and one's family (including related future generations like own children and grandchildren) and distress, than for the relationship between macro concerns, that is, societal issues, unrelated future generations, people in poorer countries and distress.

In our analysis of therapists' reports, we identified several cognitive strategies for emotion regulation, drawing on Loch et al. (2011) and Aldao and Nolen-Hoeksema (2010). The most frequently reported strategies among therapists' reports were *rumination* and *catastrophising*, followed by *self- and other-blame* and *problem-solving/refocus on planning*. *Avoidance/thought suppression* and *functional reappraisal* were reported less often in our sample. In the context of climate change, there is also literature confirming that rumination about climate change is associated with negative consequences for well-being (Wullenkord and Ojala 2023). Ojala (2012) conducted a study involving 348 Swedish children, adolescents, and young adults from the general population in 2009 to explore their coping strategies concerning emotions related to climate change. She found coping strategies included avoidance strategies, such as minimising the seriousness of climate change, and distancing oneself from its consequences (Ojala 2012). These resemble the *avoidance/thought suppression* identified in our study, with statements like "Climate change is nonsense" or "I don't want to hear about it". Further, she found problem-focused strategies that encompassed both individual and collective activism, which were similarly observed in our therapists' reports ("I have to protect my house against storms and floods", "I'm going to the 'last generation' [protest movement] and becoming active"). Meaning-focused coping strategies included positive reappraisal. While we identified *functional reappraisal* in our study, it was less common among the patients as reported by their therapists. According to Ojala (2012), emotion-focused and problem-focused strategies were more frequently employed in the context of regulating worry, while meaning-focused coping was significantly more prevalent in fostering hope. Thus, the lower prevalence of *functional reappraisal* (as equivalent to meaning-focused strategies) in our sample may be a correlate of higher burden or level of distress among patients. Consistent with the findings of the present study, Beckord et al. (2025) reported a significant association between catastrophising, rumination, and self-blaming and climate change-related distress. Their examination of cognitive strategies in this context revealed a positive correlation between these strategies and the intensity of climate change-related distress experienced. While the present study indicated a higher prevalence of *other-blaming*, this phenomenon may be attributable to the diminished capacity to act independently in the face of climate change (Asbrand et al. 2023). Beckord et al. (2025) also found that a positive association exists between refocusing on planning and climate change-related distress. While catastrophising, rumination, and self-blaming and other-blaming

align with the common "maladaptive" strategies, refocusing on planning is usually associated with less distress (Aldao and Nolen-Hoeksema 2010). Beckord et al. (2025) argued that the positive association between refocusing on planning and climate change-related responses may reflect increased climate change awareness. This awareness initially prompts cognitive engagement but only becomes adaptive when it results in actions to address climate change (Beckord et al. 2025). We identified several further cognitive strategies for regulating emotions and thought content that cannot be easily classified as either adaptive or maladaptive. The effect of these strategies depends on various contextual factors related to an individual's situation ("flexible emotion regulation"; Aldao et al. 2015). For instance, a recent study explored, in a general Italian population, worrying about climate change (*rumination*) as a moderating factor between CCA and eco-paralysis (Innocenti et al. 2023). Their results showed that climate change worry guides individuals to the ability to translate anxiety into actionable responses and prevents them from eco-paralysis. Similarly, research by Verplanken and Roy (2013) has linked ecological worrying (*rumination*) with pro-environmental attitudes and an openness to new ideas. Additionally, climate activists benefit from cognitive strategies such as *avoidance* of climate change-related information and emotional distancing from climate change-related emotions (Frick et al. 2022). Furthermore, we identified examples of problem-solving strategies such as "I need to prepare, for example, stock up, acquire weapons, etc.," which cannot be classified as solely adaptive.

In summary, our findings indicate that the identified themes emerged in slightly modified forms across diverse, yet highly stressed, samples (e.g., Marczak et al. 2023; Schwartz et al. 2022). Cognitive styles such as *rumination*, *catastrophising*, *self-blame, blame of others*, and *refocus on planning/problem-solving* appeared consistent in the context of climate change-related concerns (e.g., Beckord et al. 2025; Wullenkord and Ojala 2023). In line with the theory of content-specificity (Beck and Haigh 2014; Clark and Steer 1996; Tsolakis 2025), the subsequent discussion addresses the identified cognitions within the predominant cognitive themes of depression and anxiety symptoms.

Themes of failure, loss, and hopelessness are closely associated with depression (Beck and Haigh 2014; Beck et al. 1979). According to therapists, patients have made statements reflecting these themes, including feelings of personal inadequacy, loss of meaning or purpose, and despair about the future. Empirical evidence increasingly supports links between climate change-related consequences and depressive symptoms (e.g., Chan et al. 2024; Schwaab et al. 2022; Schwartz et al. 2022). Consistent with these findings, therapists in our study most frequently reported depression among patients expressing climate change-related concerns. Perceived psychological and physical threats and helplessness represent overarching themes linked to anxiety symptoms (Clark and Beck 2010; Clark and Steer 1996). Such themes were reflected in statements concerning personal physical harm, endangerment of loved ones, or fears about intensified climatic events. The recurrent theme of uncertainty, particularly concerning lifestyle, career, and family planning, aligns with GAD (Beck and Haigh 2014), which has been increasingly linked to climate change in recent empirical research (e.g., Chan et al. 2024; Schwaab et al. 2022; Schwartz et al. 2022). In the present study, therapists second most frequently reported GAD among patients expressing climate change-related concerns. Some statements indicate potential associations with other disorders, including panic disorder (e.g., emphasis on physical symptoms, such as "the changing weather intensifies my pain"), post-traumatic stress disorder (PTSD; e.g., reference to acute events, such as "the water is rising"), obsessive-compulsive disorder (e.g., exaggerated attribution of responsibility, such as "it's my fault"; Jones et al. 2012), and adjustment disorder (e.g., frustration with social indifference, such as "it would be better if all people died"). With the exception of PTSD (e.g., Zenker et al. 2024), these possible associations have received little attention in research to date.

4.1 | Implications for Practice and Research

In light of the escalating climate crisis and the observation that recorded cognitive content predominantly reflects realistic concerns rather than exaggerated fears, an initial important implication is to identify at-risk groups early and develop preventive interventions. These interventions could include psychoeducational approaches that promote environmentally conscious behaviour and self-care.

Given prior evidence linking climate-related cognitions to psychological symptoms (e.g., Marczak et al. 2023; Schwartz et al. 2022), and the current study's observation of recurring climate-specific thought patterns in therapeutic contexts, these results have distinct implications for clinical practice and psychotherapist training. First, the identified cognitions map onto overarching themes such as loss and danger—core features of depressive disorders and GAD (Clark and Steer 1996). Preliminary findings further suggest that cognitions related to climate change may also be associated with panic disorders (thought content: physical sensations), obsessive-compulsive disorders (thought content: excessive responsibility for the climate), and adjustment disorders (thought content: uncertainty). Although these pathways require empirical substantiation, the systematic assessment of climate-related cognitions may help identify clinically relevant content and refine diagnostic accuracy. The findings further suggest—aligning with recent literature (e.g., Brakemeier et al. 2025; Williamson et al. 2025)—that established approaches such as cognitive behavioural therapy could be effectively adapted to incorporate climate-related themes without the development of entirely new therapeutic frameworks. Such adaptations involve the targeted use of established methods—cognitive restructuring, emotion regulation, acceptance-based strategies, and meaning-oriented techniques—to address climate-specific thought patterns. Lindhe et al. (2023), for example, evaluated an individually adapted internet-based CBT programme, which incorporated traditional CBT modules, such as cognitive restructuring, emotion regulation, and stress management, as well as climate-specific content (e.g., nature connectedness). The programme achieved moderate to large reductions in depression, stress, and climate-related distress compared to a waitlist group. Third, the results of this study can be used to develop climate change-specific training for psychotherapists. For instance, the frequently referenced thought content could be integrated into standardised scenarios depicting individuals expressing concern over climate change. Scenario-based training

utilising standardised patients represents an established and evidence-based pedagogy in professional mental health education for developing clinician competencies (Dawood et al. 2024; Williams and Song 2016). These scenarios could be used for exercises on how to deal with patients reporting different climate change-related concerns. Gebhardt et al. (2025) developed a one-day training concept with role-playing involving standardised patients who displayed a wide range of emotional responses to the climate crisis and addressed various intervention skills. Training participants reported significant competency gains.

Concomitant research is necessary to identify individual and systemic factors of vulnerability and resilience in relation to climate change-specific stressors. Longitudinal studies could help identify potential development of climate change-related psychological impacts over time, as well as the efficacy of developed training courses and adapted interventions.

4.2 | Strengths and Limitations

To our knowledge, this study is one of the first to survey a large sample of therapists regarding their patients' climate change-related thoughts and cognitive styles. Results were found to be largely consistent with results of previous research in highly stressed samples (Budziszewska and Jonsson 2021; Schwartz et al. 2022) and provided a professional, external perspective to the discussion of the impact of climate change on mental health. Further, the deductive approach, using the provided categories as a framework, gave structure to the data, while the combined inductive strategy prevented the omission of other relevant aspects in the data. However, it is important to acknowledge several biases inherent in therapists' assessments of patients' perceptions: first, therapists' own beliefs and attitudes about climate change may have influenced their participation in our study. Therapists with a special interest in environmental issues may have been more likely to participate, biasing the sample. Second, therapists may selectively remember patients' comments related to climate change and attribute them to the group of patients with climate change-related concerns. To mitigate this issue, the survey offered free-text answers and multiple answers questions to provide the opportunity for differentiated responses. Third, the order in which questions about patients' thoughts and cognitive styles were asked may have influenced therapists' responses. Although cognitive styles were analysed based on the therapists' free-text responses, *rumination* and *catastrophising* may have been overestimated since these categories were explicitly queried in addition to open-ended questions. Future surveys would benefit from querying a broader range of cognitive styles. Furthermore, therapist responses were often brief and limited to a few words or a single word. This required categorisation with insufficient contextual information, which introduced interpretive flexibility. Advancing research on cognitions related to climate change would benefit from a broader context that allows for more nuanced differentiation of cognitive styles and thought content.

5 | Conclusion

This approach was intended to enhance the discourse on climate change in the context of mental health problems and therapeutic support. The findings highlight the presence of a range of recurring climate change-related thoughts in therapy and show that both affected persons and therapists recognise similar concerns as significant. Additionally, various cognitive styles associated with climate change-related concerns were identified and compared to existing literature. The integration of our qualitative analysis with the predominant cognitive themes described by the theory of content-specificity, especially in relation to depression and anxiety, offers valuable insights into climate change-related mental health challenges. While these results have practical and research implications, further investigation is needed to deepen our understanding of both transdiagnostic and disorder-specific cognitive themes linked to climate concerns.

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Ethics Statement

The study was approved by the ethics committee of the Catholic University Eichstätt-Ingolstadt in December 2022 (ethics approval number: 122–2022). All participants gave digital informed consent to participate in the study and received no financial compensation. All methods were carried out in accordance with the Declaration of Helsinki.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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