

Compassion Focused Approaches to Understanding the Mental Health of Climate Scientists

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Abstract

As we face a future of rising global temperatures, and associated extreme weather events, distressing emotional responses are understandable. Climate scientists comprise a unique group, in that they must regularly confront the reality, and consequences, of climate change. In this paper, we explore how the principles of Compassion Focused Therapy (CFT) might be applied to comprehend the responses of climate scientists to climate change; by doing so, we aim to gain a deeper understanding of these responses in order to consider fruitful avenues for providing support and investigating this area further. We consider how flows of compassion, and blocks to compassion, might play a role in climate scientists' experiences. Additionally, we conceptualise a role for compassion towards the wider world and humanity more broadly. Finally, by applying the CFT Three Systems model to current understanding of climate scientists' emotional experiences, we seek to proffer a potential conceptualisation of them.

Key learning aims

- To formulate the emotional experiences of climate scientists from a Compassion Focused Therapy perspective.
- To explore how blocks to flows of compassions serve to negatively impact and/or maintain difficult emotional experiences of climate scientists.
- To consider ways in which the field of psychological therapy can support climate scientists through a difficult emotional journey, and how future research might explore this further.

Introduction

As human-caused climate and ecological disruption become increasingly evident, climate scientists' efforts to understand and address its impacts become more important. Scientists, however, pay an emotional cost in confronting unnerving truths within a social context that often resists acknowledging their insights. The unique social positioning and psychological burdens experienced by climate scientists may pose a risk to their mental health and, indeed, eventual departure from this line of work (Hoggett & Randall, 2018). In this paper we apply insights from Compassion Focused Therapy (CFT) to the experiences of climate scientists to aid therapeutic practitioners and climate scientists in managing the psychological burdens of working in this field.

Climate Scientists' Psychological Experiences

In a survey of 92 Intergovernmental Panel of Climate Change (IPCC) scientists, 61% reported feelings of anxiety, grief, or distress as a result of climate change, with 21% reporting that these feelings were frequent (Tollefson, 2021). The same survey explored the behavioural manifestations of these emotions. Of those surveyed, respondents reported that their experience and knowledge of climate change impacted decision making around where to live (41%), lifestyle (diet, transportation, and travel) (21%), and about having children (17%).

In the face of distress, climate scientists have expressed 'frustration', 'concern', 'sadness' (Clayton, 2018), and 'rage' (Renouf, 2021), as well as 'anger' and 'fear' (Duggan et al., 2021). These emotional responses are congruous with the current understanding of ecological distress (Hickman et al., 2021). These emotional reactions are not necessarily considered indicative of poor mental health, but instead could be considered understandable and rational responses to the threat of the climate emergency. Experiences of hope have been reported alongside painful emotions. Duggan and colleagues (2021) reported on language use in contributions to the 'Is this How You Feel' project. The 'Is this How You Feel Project' is a collection of letters from climate scientists in response to the question 'how does climate change make you feel?'. Duggan and colleagues (2021) reported that the terms 'hopeful' or 'optimistic' were noted 48 times in first time contributors. The use of these terms increased to 71 by second time contributors, painting a complex picture of 'hope' involving two types: 'logic based hope' and 'wishful hope'. Logic based hope was associated with being able to notice specific positive changes being made, and was thus linked to radical acceptance, similar to the notion of 'active' or 'constructive' hope which has been described elsewhere in the literature as an activating force (Macy & Johnston, 2012; Ojala, 2012). In contrast, 'wishful hope' was associated with negative statements about the current state of the world in relation to climate change. Wishful hope was also connected with a desire for future change rather than beliefs that such change is possible, or how this might come about.

A recent review sought to understand the current state of the literature studying the emotional impact of climate change on climate scientists (Calabria & Marks, 2023a). This review highlighted

a number of intra- and interpersonal processes in the mental health experiences of climate scientists. Intrapersonally, this experience can involve compartmentalising the self:

“weather patterns that delight me as a researcher chill my spine as a human being: I stare at the lines curving up and see the people who endure them” (Reay, 2018: p.303).

Interpersonally, graveyard humour and the role of the in-group was deemed to be important (Campbell-Lendrum-Bertollini, 2010). A double bind was also noted, with a desire from climate scientists to sound the alarm and remain, as society demands, dispassionate experts (Wang, 2018).

Compassion Focused Therapy

CFT was developed as a therapeutic intervention aimed at moving away from ‘schools of psychotherapy’ and towards a more complete biopsychosocial intervention (Gilbert, 2009). The ‘Three Systems Model’ is a central component of CFT, and posits that humans operate in three distinct, but linked, emotional regulation systems: ‘Threat’, ‘Drive’, and ‘Soothe’. The three systems derive from the work of Depue and Morrone-Strupinsky (2005), and LeDoux (1998), which provide evolutionary accounts of human emotions and their functions (Gilbert, 2009).

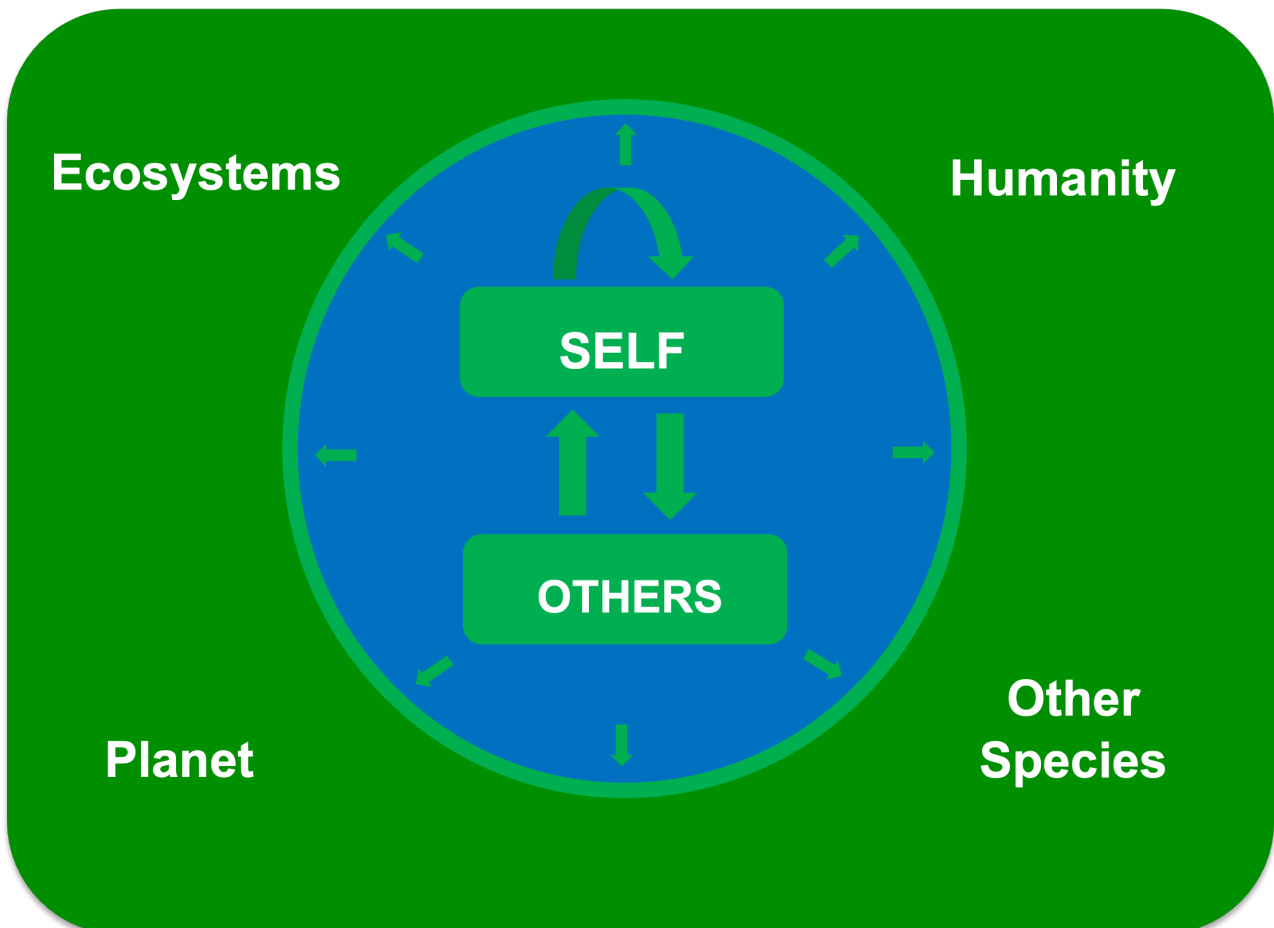
Gilbert (2009) posits that the ‘Threat’ system operates from a position of heightened sensitivity, where individuals attend to threats, and act to maintain their safety (e.g. enacting fight, flight, freeze, or appease responses). The ‘Drive’ system involves feeling energized and focused in the pursuit of things that individuals desire, including material possessions, status, and achievement (Gilbert, 2009). Finally, the ‘Soothe’ system may offer balance to ‘Threat’ and ‘Drive’, and is associated with safety and peacefulness. This system is affiliative in nature, and is associated with positive emotions that, unlike the ‘Drive’ system, are not based on activation or achievement, but entail a sense of contentedness and calm. Attachment theory is accounted for in CFT, as interpersonal relationships offer the opportunity for humans to “soothe each other” (Gilbert, 2009: p.202). The social aspects of human life such as caring for others and being cared for, and a sense of affiliation with others, are considered central to emotional regulation within CFT (Gilbert, 2014). Gilbert (2014) notes that the development of CFT began with the observation that many

individuals experience an absence of affiliative emotions. Gilbert (2014) notes that the skills needed in caring for others closely resemble those needed to care for oneself. As such, compassion flowing to others can cultivate compassion to the self, and allow for activation of the ‘Soothe’ system.

Climate Scientists and Flows of Compassion

Given the unique social lives of humans as a species, compassion can ‘flow’ between individuals, where a ripple of compassion between two people can lead to a greater chance of self-compassion (Brienes & Chen, 2012). Kirby and colleagues (2019) note the three directions in which compassion flows, i.e., 1) from self to self, 2) from self to other, and 3) from other to self. Figure 1 offers a conceptualisation of the flows of compassion from self-self, self-other, and other-self, where climate scientists comprise the ‘self’, and the ‘other’ represents an array of social actors: the media, the government, and the general public. A final flow is included from all individuals to wider systems (i.e. the planet, ecosystems, humanity, and non-human species).

Fig. 1: Flows of compassion



Self-Self

Interactions between the three CFT systems are integral to maintain balance, and ensure that an individual does not exist in an overly dominant system (Gilbert, 2014). Being over reliant on one system can be problematic. Evidence has demonstrated a proclivity for climate scientists to engage their 'drive' system, to the exclusion of affiliative soothing strategies (Jovarauskaite & Bohm, 2020). While effective for attempting to mitigate the impact of the threat of climate change, over reliance on the 'drive' system could lead to exhaustion, hopelessness, and the loss of drive (Gilbert, 2014). Over reliance on the 'drive' system could be seen as unsustainable in the long-term, as the realities of the slowness of social change become clearer, reactivating the 'threat' system (e.g. frustration, hopelessness, despair, or contempt toward others).

It can be distressing for individuals to be presented with barriers to acting in line with their morality (Jameton, 1984). The majority (81%) of climate scientists in an IPCC believe that it is their role to comment and engage with policy discourse (Tollefson, 2021). For those who have made moral decisions to engage in scientific communication and dissemination, feeling unable to act in line with their moral code could lead to feelings of moral distress (Morley et al., 2019).

An important act of self compassion is acknowledging one's own finite capacity to attend to, and engage with, suffering. As the limits of one's own ability to engage with suffering are brought to climate scientists' attention, the opportunity is presented to act. One action of compassion could be to distance oneself from this suffering, offering a reprieve. This space allows for a replenishing of resources: "I don't think I'd be in very good shape if I let myself think about it all the time" (Head & Harada, 2017: p.38).

In the face of this distress, a self to self flow remains, but the compassion flowing can be replaced by self-criticism, as noted by self-reported feelings of guilt and shame (Jovarauskaite and Bohm, 2020; Duggan et al., 2021). As an individual oscillates between active self-criticism and a lack of self-compassion, powerlessness pervades, as individuals "cannot take the right action or prevent a particular harm" (Morely et al., 2019: p. 653). This distress, reported as shame by Jovarauskaite and Böhm (2020), could lead to further distancing from one's own values, and the values of the in-

group (i.e. climate scientists), excluding climate scientists from a source of shared experience and support (Wakefield et al., 2017).

Other to Self

Findings have indicated a lack of compassion from others towards climate scientists. These 'others' include the media (Spies, 2017), the public (Cologna & Siegrist, 2020), government (Tangey et al., 2018), and other climate scientists (Herman et al., 2017). Kirby and colleagues (2019) note that in order to cultivate compassion to the self and others, two processes need to occur. First, one must be attentive to experiences of suffering, and second, one must take action to alleviate it. At present, suffering experienced by climate scientists is somewhat unattended to. This may reflect a desire to maintain vested financial or ideological interests (Campbell-Lendrum & Bertollini, 2010), while scientists are required to remain dispassionate experts (Hayhoe, 2021). The different 'others' noted above will each have unique qualities in the experience of their relationships with climate scientists. The public, for example, are allowed to distance themselves from, or not engage with, the data in a way that scientists cannot (Renouf, 2021).

Self-Other

The dynamic and reciprocal nature of compassion (or lack thereof) is highlighted (Jovarauskaite and Böhm, 2020). The authors distinguished between 'Morality-Based' and 'Consequence-Based' emotional responses to climate change in climate scientists. Morality-Based emotional responses included 'other-related' (e.g. indignation or contempt) and 'self-related' (e.g. guilt and shame) feelings. If climate change discourse is characterised by a poverty of respect between different groups (e.g. scientists, policy makers, media), it risks increasing the threat responses of each of the sectors as "contempt breeds contempt" (Kaufman, 1996: p.39). Compassion towards others, on the other hand, is associated with stronger social connectedness (Cozolino, 2006; Crocker & Canevello, 2012). Given the aforementioned lack of interaction between climate scientists and others, there is limited opportunity for climate scientists, policy makers, and the general public to experience the benefits of giving and receiving compassion.

Morality-based responses highlight climate scientists' perceived violation at the failure of "others' motivation or capacity to behave in a just and ethical manner" (Drescher et al., 2011; p. 9). The block in this flow of compassion from climate scientists to others is born from climate scientists witnessing others act in violation of moral decisions, breeding further feelings of contempt (Jovarauskaite & Böhm, 2020; Morley et al., 2019). Climate scientists employ strategies such as 'graveyard humour' (Head & Harada, 2017; Reay, 2018), and solution focused coping (Jovarauskaite & Bohm, 2020) to weather activation of the threat system. These strategies may also reflect a way of soothing emotional distress.

Self-other and other-self flows of compassion are, intrinsically, bidirectional. As such, a block in one direction may precipitate a block in the opposite direction. The inaction of others (including the public, the media, and government) demonstrates a block in compassion towards climate scientists. Climate scientists' distress remains unattended to, and unsupported. In the face of non-engagement from others, climate scientists are drawn to present their findings "in ever more catastrophic and apocalyptic terms" (Beck, 2012: p. 159). This attempt to increase the sense of threat in others by highlighting the proximity and urgency of the climate crisis risks backlash from others. Others may try to minimise the impact of 'threat' by seeking refuge in denial. Alternatively, these actions from climate scientists could cultivate an increasing sense of 'climate fatigue' as people turn away from the conversation completely (Beck, 2012). Compassion, in the first instance, involves attending to the suffering of others. In the climate scientist ('self') to other relationship, a poverty of understanding and engagement with each others' positions (including their defences) means that the initiation of flows of compassion are inhibited.

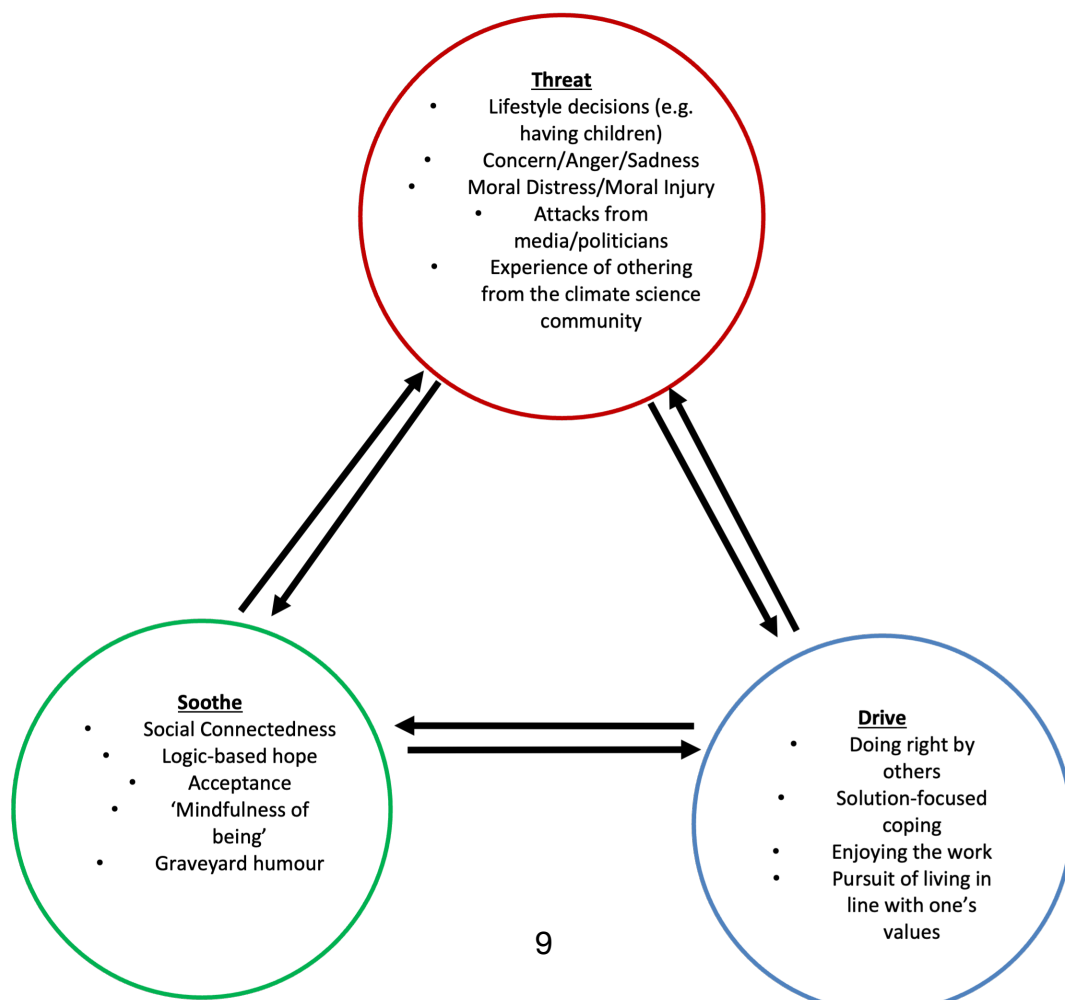
CFT and Climate Scientists

Compassion Focused Therapy can offer a model to conceptualise climate scientists' psychological experiences. Whilst Climate scientists' soothing systems may be activated by contact with the natural world, for others, greater connectedness to nature could contribute to climate anxiety (Whitmarsh et al., 2022). Climate scientists are more likely than the general population to have core beliefs and values relating to the health and wellbeing of the planet, other species, and other people, which may compound 'ecological distress' and activation of the threat

system (Verplanken et al., 2020). This increased distress in those who endorse ‘green identities’ is present alongside realistic interpretations of the threat to life on Earth that the climate and ecological crises represent, and a commitment to acting in ways that may mitigate this threat. The ‘green identities’ endorsed by climate scientists, and the beliefs and distress encapsulated within that, could be seen as evidence for a final flow of compassion. That is, from climate scientists to the planet, ecosystems, other species, as well as humanity in its entirety (figure 1).

Figure 2 seeks to adapt the CFT Three Systems model (Gilbert, 2014), to demonstrate the complexity of the emotional burdens, and coping strategies, of climate scientists. It is hypothesised that attacks from the media or politicians, or being ‘othered’ by their peers, could engage climate scientists’ ‘threat’ systems, contributing to their emotional distress, and impacting their behavioural decisions (Calabria & Marks, 2023a). Similarly, the desire to engage with the work, and a leaning towards solution-focused coping in order to do right by future generations could engage the ‘drive’ system. Finally, hope, living in line with one’s values, and acceptance seem important for engaging the ‘soothe’ system.

Fig. 2: An adaptation of Gilbert’s Three Systems Model of Affect Regulation (Gilbert, 2009) to conceptualise the emotional experiences of climate scientists.



Future research would benefit from exploring the role of social connectedness within the climate science community. Moving forwards, considering the impact of values and acceptance-based psychological interventions in supporting climate scientists to tolerate distress, and sustain engagement with the important work that they are doing will be important. Given the centrality of 'soothe' as a affiliative system in Gilbert's (2014) model, future research might explore the utility and impact of spaces where climate scientists can be with likeminded others, share their views, be heard, be restored, and help to balance out any reliance on the 'drive' system. Spaces like Climate Cafes could serve to meet this need (Climate Psychology Alliance, 2020). Climate Cafes are affiliative, soothing spaces, where people's eco-distress can be heard and validated by others (Calabria & Marks, 2023b). By inviting climate scientists into this space, they may be afforded the opportunity to notice their own emotional expression of eco-distress, as well as that of others. From here, compassion can be modelled in the group, and extended to wider society (Calabria & Marks, 2023b).

Political discourse can be seen as a contributing factor to the mental health and wellbeing of the world's climate scientists. If we are to support their vital work, a shift away from the pursuit of ideological and economic interests in favour of coherent, honest, and respectful conversation about data is indicated. Media reporting that prioritises accurate dissemination of knowledge and responsible reporting would help to bolster any positive change. This change would facilitate an unblocking for the self-other and other-self flows of compassion. As both parties were able to attend to the suffering of the other, and cultivate compassion for each other's position, there may be a concurrent generation of compassion more generally, including self-self in the case of climate scientists. By acknowledging the interconnectedness of all aforementioned flows of compassion, there is an invitation to attend to the suffering of those in different positions. Applying compassion, whilst accounting for these differences allows all to act in pursuit of the goals of a common global community.

Conclusion

This paper sought to take note of climate scientists as a group with particular experiences and relationships to climate change. This unique position presupposes unique emotional experiences (Calabria & Marks, 2023a). By attending to this population and their mental health journeys in the

face of ecological distress, this paper sought to introduce a psychological model, namely CFT, as a way of making sense and conceptualising these experiences.

As citizens of the world, we all have a responsibility and an interest in considering changes in our communication and discourse with each other in relation to the climate and ecological crises. If we pursue a society that compassionately attends to, and seeks to reduce, the suffering of others in pursuit of common goals for humanity, our planet, and our eco-systems, we better protect our world and each other. In this way, societal discourse might mirror spaces like Climate Cafés. Shifting the narrative around climate-related distress and developing compassion for the myriad of responses to the climate and ecological crises may contribute to the genesis of safe discourse around an emotive topic. From this position of safety, we would also do better at protecting climate scientists, who might just hold the key to reducing the catastrophic impact of the climate and ecological crises.

Key practice points

- Consider climate scientists as a distinct group with a particular expression of eco-distress.
- Be aware of the blocks to flows of compassion perpetuated by both interpersonal and intrapersonal processes within this group.
- Consider CFT conceptualisations of the eco-distress of climate scientists, and how to cultivate 'soothe' in climate scientists' experiences. Climate cafes might be a particular way to support this.

Further Reading

- Clayton, S. (2018). Mental Health Risk and Resilience Among Climate Scientists. *Nature Climate Change*. 8. p.260-261.
- Gilbert, P. (2014). The Origins and Nature of Compassion Focused Therapy. *British Journal of Clinical Psychology*. 53(1). p. 6-41.
- Head, L., & Harada, T. (2017). Keeping the Heart a Long Way from the Brain: The Emotional Labour of Climate Scientists. *Emotion, Space, and Society*. 24. p. 34-41.
- Renouf, J.S. (2021). Making Sense of Climate Change- The Lived Experience of Experts. *Climate Change*. 164(14).

References

- Brienes, J.G. & Chen, S.** (2012). Self-Compassion Increase Self-Improvement Motivation. *Personality and Social Psychology Bulletin*. 38(9). p. 1133-1143.
- Calabria, L. & Marks, E.** (2023a). A Scoping Review of the Mental Health Experiences of Climate Scientists. [Unpublished manuscript]. Department of Psychology. University of Bath.
- Calabria, L. & Marks, E.** (2023b). What Happens in a Climate Cafés?: Exploring Responses to the Psychological Burdens of Climate Change in Seven Women. [Unpublished manuscript]. Department of Psychology. University of Bath.
- Campbell-Lendrum, D. & Bertollini, R.** (2010). Science, Media, and Public Perception: Implications for Climate and Health Policies. *Bulletin of the World Health Organisation*. 88(242). p. 242-243.
- Clayton, S.** (2018). Mental Health Risk and Resilience Among Climate Scientists. *Nature Climate Change*. 8. p.260-261.
- Climate Psychology Alliance** (2020). Climate Cafes. Available at <<https://www.climatepsychologyalliance.org/index.php/component/content/article/climate-cafes?catid=13&Itemid=101>> Last Accessed [16.2.2023].
- Cologna, V. & Siegrist, M.** (2020). The Role of Trust for Climate Change Mitigation and Adaptation Behaviour: A Meta-Analysis. *Journal of Environmental Psychology*. 69. <https://doi.org/10.1016/j.jenvp.2020.101428>
- Cozolino, L.** (2014). *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain*. WW Norton & Company.
- Crocker, J., & Canevello, A.** (2012). Consequences of Self-Image and Compassionate Goals. In P. G. Devine, & A. Plant (Vol. Eds.), *Advances in Experimental Social Psychology*. Vol. 45. *Advances in Experimental Social Psychology* (pp. 229–277). New York, NY: Elsevier.
- Depue, R. A., & Morrone-Strupinsky, J. V.** (2005). A Neurobehavioral Model of Affiliative Bonding: Implications for Conceptualizing a Human Trait of Affiliation. *Behavioral and Brain Sciences*. 28(3). 313-349.
- Duggan, J., Haddaway, N.R., & Badullovich, N.** (2021). Climate Emotions: It Is OK To Feel the Way You Do. *The Lancet Planetary Health*. 5(12). p. e854-855.
- Gilbert, P.** (2009). Introducing Compassion-Focused Therapy. *Advances in Psychiatric Treatment*. 15(3). p. 199-208. doi:10.1192/apt.bp.107.005264
- Gilbert, P.** (2014). The Origins and Nature of Compassion Focused Therapy. *British Journal of Clinical Psychology*. 53(1). p. 6-41.
- Hayhoe, K.** (2021). Talk, Act, Hope. *The World Today*. 77. p. 46-47.
- Head, L., & Harada, T.** (2017). Keeping the Heart a Long Way from the Brain: The Emotional Labour of Climate Scientists. *Emotion, Space, and Society*. 24. p. 34-41.
- Herman, A.T., Piki, M., Bauer, A.** (2017). Alerters, Critics, and Objectivists: Researchers in Austrian Newspaper Coverage of Climate Change. *Österreichische Zeitschrift für Politikwissenschaft*. 46(4). p.13-25.
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R.E., & Mayall, E.E.** (2021). Climate Anxiety in Children and Young People and Their Beliefs About Government

Responses to Climate Change: A Global Survey. *The Lancet Planetary Health*. 5(12). e863-e873.

- Hoggett, P., & Randall, R.** (2018). Engaging with Climate Change: Comparing the Cultures of Science and Activism. *Environmental Values*. 27(3). p. 223-243.
- Jameton, A.** (1984). *Nursing Practice: The Ethical Issues*. Prentice-Hall: New Jersey.
- Jovarauskaite, L. & Böhm, G.** (2020). The Emotional Engagement of Climate Experts is Related to their Climate Change Perceptions and Coping Strategies. *Journal of Risk Research*. DOI: 10.1080/13669877.2020.1779785
- Kaufman, G.** (1996). *The Psychology of Shame: Theory and Treatment of Shame-Based Syndromes (2nd ed)*. Springer Publishing Company: New York.
- Kirby, J.N., Day, J., & Sagar, V.** (2019). The 'Flow' of Compassion: A Meta-Analysis of the Fears of Compassion Scales and Psychological Functioning. *Clinical Psychology Review*. 70. p. 26-39.
- LeDoux, J.** (1998). *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*. Simon and Schuster.
- Macy, J., & Johnstone, C.** (2012). *Active Hope: How to Face the Mess We're in Without Going Crazy*. New World Library: California.
- Morley, G., Ives, J., Bradbury-Jones, C., & Irvine, F.** (2019). What is 'Moral Distress'? A Narrative Synthesis of the Literature. *Nursing Ethics*. 26(3). p. 646-662.
- Ojala, M.** (2012). Hope and Climate Change: The Importance of Hope for Environmental Engagement Among Young People. *Environmental Education Research*. 18(5). p. 625-642.
- Pani, L** (2000) Is There an Evolutionary Mismatch Between the Normal Physiology of the Human Dopaminergic System and Current Environmental Conditions in Industrialized Countries?. *Molecular Psychiatry*. 5(5). p. 467-75.
- Reay, D.** (2018). How I Stave Off Despair as a Climate Scientist. *Nature*. 563. p.303. DOI: <https://doi.org/10.1038/d41586-018-07765-4>
- Renouf, J.S.** (2021). Making Sense of Climate Change- The Lived Experience of Experts. *Climate Change*. 164(14). <https://doi.org/10.1007/s10584-021-02986-5>
- Spies, B.** (2017). The Science and Politics of Climate Change. *Journal & Proceedings of the Royal Society of New South Wales*. 150(1). p. 48-60.
- Tangney, P.** (2018). Between Conflation and Denial: The Politics of Climate Expertise in Australia. *Australian Journal of Political Science*. 54(1). p. 131-149.
- Tollefson, J.** (2021). Top Climate Scientists are Sceptical that Nations Can Rein in Global Warming. *Nature*. 599. p.22-24. DOI: <https://doi.org/10.1038/d41586-021-02990-w>
- Verplanken, B., Marks, E., & Dobromir, A.I.** (2020). On the Nature of Eco-Anxiety: How Constructive or Unconstructive is Habitual Worry About Global Warming?. *Journal of Environmental Psychology*. 72: 101528. <https://doi.org/10.1016/j.jenvp.2020.101528>
- Wakefield, J.R.H, Sani, F., Vishnu, M., Norbury, M., Dugard, P., & Gabbanelli, C.** (2017). The Relationship Between Group Identification and Satisfaction With Life in a Cross-Cultural Community Sample. *Journal of Happiness Studies*. 18(3). p. 785-807.

Wang, S., Leviston, Z., Hurlstone, M., Lawrence, C., Walker, I. (2018). Emotions Predict Policy Support: Why it Matters How People Feel About Climate Change. *Global Environmental Change*. 50. p. 25-40.

Whitmarsh, L., Player, L., Jiongco, A., James, M., Williams, M., Marks, E., & Kennedy-Williams, P. (2022). Climate Anxiety: What Predicts it and How is it Related to Climate Action. *Journal of Environmental Psychology*. 83.
<https://doi.org/10.1016/j.jenvp.2022.101866>