

EMPIRICALLY GROUNDED CLINICAL GUIDANCE PAPER

# Acceptance and commitment therapy as an approach for working with climate distress

Marc O. Williams and Victoria M. Samuel

School of Psychology, Cardiff University, UK

**Corresponding author:** Marc Williams; Email: [WilliamsM93@cardiff.ac.uk](mailto:WilliamsM93@cardiff.ac.uk)

(Received 6 April 2023; revised 15 September 2023; accepted 25 September 2023)

## Abstract

Climate distress describes a complex array of emotional responses to climate change, which may include anxiety, despair, anger and grief. This paper presents a conceptual analysis of how acceptance and commitment therapy (ACT) is relevant to supporting those with climate distress. ACT aims to increase psychological flexibility, consisting of an open and aware orientation to one's experiences, and an engaged approach to living, guided by personal values. We discuss the pertinence of each of these processes for adapting to the challenging reality of climate change. By embracing climate distress as a natural human experience and promoting value-guided action, ACT offers a promising approach that brings co-benefits to individuals and wider society.

## Key learning aims

- (1) To understand the concept of climate distress and its various emotional responses.
- (2) To explore the relevance of acceptance and commitment therapy (ACT) in addressing climate distress and promoting psychological well-being.
- (3) To examine the importance of psychological flexibility in coping with climate change.
- (4) To analyse the role of ACT in embracing climate distress as a natural human experience.
- (5) To investigate how ACT can encourage pro-environmental behaviours and climate change mitigation efforts.

**Keywords:** Acceptance and commitment therapy; Climate change; Climate distress; Nature connectedness; Pro-environmental behaviour; Psychological flexibility; Well-being

## Introduction

Climate distress encapsulates an array of emotional responses to human-caused environmental change and its effects. Emotional experiences can include anxiety (Clayton, 2020), anger (Stanley *et al.*, 2021) and grief (Cunsolo and Ellis, 2018). In the UK, Whitmarsh *et al.* (2022) found 4% of a large sample of adults ( $n = 1332$ ) reported moderate/severe levels of climate anxiety (consisting of cognitive-emotional and functional impairment; Clayton and Karazsia, 2020). Rates of 'climate worry' were far higher, with 46.2% of participants reporting being 'very' or 'extremely' worried about climate change (Whitmarsh *et al.*, 2022). A survey of adults in Tuvalu reported that a majority experienced 'extreme' distress in relation to climate change in at least one way: sadness, worry/anxiety, anger, or poor health, both in relation to local observations of climate change and abstract knowledge of climate change (Gibson *et al.*, 2020). A majority of those reporting climate

© The Author(s), 2024. Published by Cambridge University Press on behalf of British Association for Behavioural and Cognitive Psychotherapies. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

distress also experienced impaired functioning as a result (Gibson *et al.*, 2020). Research has also found high rates of climate worry and functional impairment in young people internationally (Hickman *et al.*, 2021).

Working therapeutically with climate distress presents a dilemma. On the one hand, climate distress is associated with lower well-being and impaired functioning in some respects (Ogunbode *et al.*, 2022), and clinicians have an ethical responsibility to support those experiencing distress. On the other hand, climate distress is associated with higher rates of pro-environmental behaviours (Whitmarsh *et al.*, 2022; Ogunbode *et al.*, 2022). Hence, while mitigating the emotional distress related to climate concerns could improve individual well-being, it could also dampen the motivation to engage in behaviours that contribute to societal efforts to combat climate change.

This paper presents the acceptance and commitment therapy model (ACT; Hayes *et al.*, 2012), which we argue presents a solution to this dilemma. ACT does not focus on the elimination of psychological distress, but rather on the development of a new relationship with one's experiences in a way that enhances value-guided action. We posit that ACT shows promise as a framework for conceptualising climate distress as an understandable human experience. Central to ACT's philosophy is that suffering arises in part from threats to one's core values: 'you hurt where you care, and you care where you hurt' (Hayes, 2020; p. 24).

### Acceptance and commitment therapy

ACT (Hayes *et al.*, 2012) is considered a third-wave cognitive-behavioural therapy, which helps people to enhance well-being through pursuing value-based activities in the presence of aversive experiences. Meta-analyses support its efficacy for enhancing subjective well-being (Stenhoff *et al.*, 2020), positive outcomes for a range of physical and mental health presentations (e.g. see Gloster *et al.* (2020) for a review of 20 meta-analyses), and positive outcomes for anxiety and depression via self-help (French *et al.*, 2017). ACT does not attempt to reduce pain or suffering directly, but rather helps individuals to live a life in accordance with their values. There is evidence that ACT reduces 'valued living discrepancy', i.e. the disparity between how important a behaviour is to a person and their frequency of performing that behaviour (Wersebe *et al.*, 2017; p. 63).

At the heart of ACT is psychological flexibility, which is 'the process of contacting the present moment fully as a conscious human being and persisting or changing behavior in the service of chosen values' (Hayes *et al.*, 2006; p. 9). It is hypothesised that the beneficial effects of ACT are mediated by psychological flexibility, and this has received empirical support; for example, Lin *et al.* (2018) found changes in psychological flexibility mediated the positive effects of an online ACT intervention for chronic pain. Twohig *et al.* (2015) also demonstrated a mediatory role for psychological flexibility in obsessive compulsive disorder (OCD) severity in response to an ACT intervention for OCD.

ACT proposes that there are features of the human mind that impede psychological flexibility, drawing on relational frame theory (RFT; Barnes-Holmes and Roche, 2001). RFT is a behavioural account of human language and its relation to thoughts and behaviours, and posits that humans develop relational frames, i.e. stimulus associations that become increasingly generalised through a process of deriving relationships between stimuli that have not been learned through direct experience. Relational frames have three features: mutual entailment, combinatorial entailment, and transformation of stimulus functions (Gross and Fox, 2009). For example, learning that an oak tree in the park is equivalent to the word 'tree' leads to the derivation of the reciprocal relationship that the word 'tree' also entails the oak that one sees (mutual entailment). Learning that a pine tree in the park is also equivalent to the word 'tree' combines with the first derived relationship to entail a coordinative relationship between a pine and an oak (combinatorial entailment). Finally, if one learns that squirrels are to be found in pine trees, knowing the relation

between oak and pine trees may lead one to look for squirrels in oak trees also (transformation of stimulus functions).

Through the process of developing relational frames, humans develop extended networks of stimulus relationships, which allows for complex and sophisticated thought and behaviour. RFT proposes that this fundamental feature of human cognition also paves the way to suffering, as this form of learning leads to internal processes, such as thoughts being seen as tantamount to factual representations of external realities ('cognitive fusion'; Hayes *et al.*, 1999). In this way 'Words and thoughts acquire power' (Törneke, 2010; p. 218) and can start to impede contextually flexible and adaptive behavioural choices. This can lead to attachment to the conceptualised self ('self-as-content', e.g. what kind of person one believes oneself to be) (Harris, 2019) and experiential avoidance, which is the unwillingness to make room for aversive inner experiences and the attempt to avoid or rid oneself of them (Chawla and Ostafin, 2007).

ACT focuses on the development of six core processes that enhance psychological flexibility and can be seen as ways of addressing the self-limiting aspects of human language and behaviour. These core processes have been sub-categorised into three underlying clusters, representing different orientations toward one's experience of the world: 'open', 'aware' and 'engaged' (Hayes *et al.*, 2011; Levin *et al.*, 2020). In this paper, we argue that these core processes of psychological flexibility represent optimal stances that will be important for emotional adaptation to the realities of the climate and ecological crisis, whilst supporting people to engage with valued actions in support of climate change mitigation.

ACT is a flexible model that allows the integration of insights from a variety of disciplines within psychology and other fields. Due to its focus on values, ACT can draw on insights from social and environmental psychology, such as the cross-cultural importance of values (Schwartz, 2012) and their role in shaping sustainable behaviour (Stern *et al.*, 1999). Furthermore, sociological insights into the collective denial of climate and ecological decline (Norgaard, 2011) are relevant to the contention in ACT that experiential avoidance is pivotal to understanding maladaptive human behaviour (Hayes *et al.*, 2012).

The emphasis ACT places on embracing all experiences and distancing from a conceptualised 'self' arguably facilitates willingness to be open to grief in the face of environmental decline (Weller, 2015). A less conceptualised self may also facilitate a more flexible and expansive understanding of one's identity (cf. transpersonal psychology), for example as a broader part of nature ('connectedness to nature') (Mayer and Frantz, 2004). Moreover, ACT endorses accepting even painful experiences, which resonates with insights from health geography, namely that emotional ties to place can bring about solace and sorrow (Cunsolo *et al.*, 2020), and environmental philosophy's revelations that perturbations in these connections with nature can bring forth an array of 'Earth emotions' (Albrecht, 2019). These authors will be referred to throughout the paper.

The following sections summarise the facets of psychological flexibility proposed by ACT and their relevance to understanding climate distress. While this paper focuses on ACT, this is not the only therapy that can be applied in a climate and ecological context, nor is it the only one that can help to build these psychological skills and behavioural engagement with valued actions. The invitation is for readers to consider this paper as an exemplar of how climate- and ecologically-aware therapists can adapt therapeutic models to support those experiencing climate distress.

### Open

Acceptance (one of the core processes constituting an 'open' stance in ACT) refers to willingness to accept one's inner experience without trying to change it. It can be understood in contrast to experiential avoidance, characterised by unwillingness to accept aversive experiences and attempting to suppress them. Experiential avoidance has been found to be ineffective as a coping strategy, often resulting in paradoxical increases in the intrusion of difficult thoughts

(Abramowitz *et al.*, 2001) and resulting in increasingly restrictive behaviours. Experiential avoidance has been proposed as a ‘core pathological process’ associated with depression, anxiety and other difficulties (Akbari *et al.*, 2022; p. 74). Ellis and Albrecht (2017) outlined a case study of Western Australian farmers with a poignant quote that illustrates avoidance: ‘There’s nothing [that] makes me more depressed than to see . . . dust lifting off the place . . . I get in bed and pull the rugs over my head so I can’t see it’ (p. 276).

Guthrie (2023) has referred to ACT as ‘a modality bridging the divide between the existential and behavioral’ (p. 215), as it is founded on the premise that experiences such as anxiety are an inevitable part of living. The invitation in ACT is to drop futile attempts at controlling and suppressing inner experiences, and welcome aversive experiences, when doing so allows for a richer and more meaningful life. The ‘control agenda’, by contrast, entails avoidance of aversive experiences, in which people spend ‘ever more time and energy cordoning off anxiety-arousing areas of existence until the space they have left to live is claustrophobic and cramped’ (Guthrie, 2023; p. 214). Attempts to control distressing climate-related emotions may play a role in perpetuating climate distress (Guthrie, 2023). Indeed, Clayton and Karaszia’s (2020) measure of climate anxiety includes items that reflect non-acceptance of one’s climate emotions, e.g. ‘I think, “why do I react to climate change this way?”’ (p. 4).

Experiential avoidance may lead to poor well-being, an ambivalent relationship with natural spaces, and possible disengagement from pro-environmental behaviour. Weller (2015) eloquently described the profound emotional challenge of being confronted with ecological losses: ‘How can we possibly stay open to the endless assaults on the biosphere when the urge to avert our eyes and pretend we don’t feel this pain takes over? It takes a heart of courage and conviction, one willing to look into the center of suffering and remain present’ (p. 48). Feather and Williams (2022) provided evidence that psychological inflexibility, characterised by non-acceptance and experiential avoidance, may exacerbate distress associated with climate change. Avoidance can also happen at a societal level. For example, Norgaard (2011) described findings from interviews with residents of a rural Norwegian community who were experiencing unusually warm temperatures; participants avoided discussing climate change, contributing to collective denial of the issue and a social environment in which the issue remains unaddressed.

The other core process related to the ‘open’ stance is cognitive defusion. Defusion describes a stance towards thoughts in which they are regarded as transient internal events, as opposed to factual accounts of the world that require a particular behavioural response. It is common for people to report feeling hopeless, helpless and powerless about climate and ecological decline (Hickman *et al.*, 2021; Minor *et al.*, 2019). Fusion with cognitions about the futility of action (such as, ‘there’s nothing I can do’, ‘it’s pointless making changes’, ‘it’s too late’, etc.) may trigger or perpetuate these feelings. Developing a more detached stance towards these thoughts through cognitive defusion might open up a more flexible repertoire of actions in relation to pro-environmental action, reducing feelings of inertia and despair.

### Aware

The ‘aware’ stance entails mindful awareness of experience, i.e. paying attention ‘in a particular way: on purpose, in the present moment, and non-judgmentally’ (Kabat-Zinn, 1994 p. 4). Mindfulness is a way of keeping a detached awareness of our emotions, which we would argue is a crucial psychological stance when our surroundings increasingly bear the marks of loss and transformation. Cunsolo *et al.* (2020) noted ecological grief resulting from biodiversity loss among a Canadian Inuit population. Albrecht *et al.* (2007) discussed the key importance of a sense of ‘place’ and the threats to identity when there are evident environmental changes. These authors proposed the term *solastalgia* to describe the distress arising from the inability to seek solace from one’s home environment due to its desolation. Climate distress can also move us out of the present moment when it takes the form of pre-occupation with future risks (Doherty and Clayton, 2011);

mindfulness, with its present-moment focus, might be a particularly helpful means of reorientating one's attention to the here-and-now, and the manifold opportunities to act in line with one's values. It is of note that Whitmarsh *et al.* (2022) found higher levels of mindfulness to predict lower climate anxiety in the UK.

There is evidence that contact with the sensory array in the present moment can also be an effective way to bring people into contact with nature. Choe *et al.* (2020) compared participants who underwent a mindfulness-based stress reduction programme in a natural environment and in two non-natural environments (outdoor/indoor) and found that nature connectedness only improved among those who attended the natural environment programme. Cross-sectional research has also shown that connectedness to nature is associated with higher trait mindfulness (Wolsko and Lindberg, 2013).

The 'aware' stance in ACT is fostered by a reconceptualisation of the self (*self-as-context* or *the observer self*) (Harris, 2019). Humans often over-identify with their thoughts, feelings and narratives of themselves, as though they were defined by these experiences. ACT, however, illustrates another way of understanding oneself: not as thoughts and feelings, but as the awareness in which these events arise and pass by. Research has shown that how one conceptualises the self is highly predictive of engagement with nature. Connectedness to nature entails seeing oneself as part of nature (Mayer and Frantz, 2004) and is associated with both self-reported pro-environmental behaviours (such as buying organically/fair-trade; Nisbet *et al.*, 2009) and observed behaviours (electricity consumption; Trostle, 2008). Lengieza and Swim (2021) reported experimental evidence that an increase in nature connectedness in a natural environment was mediated through decreased pre-occupation with oneself.

### Engaged

Schwartz (2012) refers to values as the things that are 'important to us' (p. 3). Within ACT, values are defined as 'chosen qualities of purposive action that can never be obtained as an object but can be instantiated moment by moment; (Hayes *et al.*, 2006; p. 8). Clarifying one's values is a core process in ACT that enhances psychological flexibility, as it can help us to be sensitive to opportunities in any given moment that allow us to act in line with what is personally meaningful. Pursuit of a rich and meaningful life is the central aim of ACT, and the psychological processes underlying the 'open' and 'aware' stances are considered ways of countering internal obstacles to living a value-based life. Doherty *et al.* (2022) suggested adapting the choice point tool (Harris, 2019) to a climate change context to help those grappling with climate emotions to use tools to psychologically 'unhook' from them. This tool can be used whenever difficult climate emotions arise and is a means of reminding individuals to stay in contact with the present moment and the observer self, remain open to experience, and clarify their values in order to engage in value-consistent action.

There is a body of literature relating values to how humans interact with the natural world. For example, biospheric values (such as being respectful towards and protective of nature) are associated with pro-environmental behaviours (Katz-Gerro *et al.*, 2017). The value-belief-norm theory (Stern *et al.*, 1999) proposes that values are fundamental to pro-environmental behaviour, as knowledge that the objects of one's values are under threat will lead to a personal moral obligation to act. The theory has received support for a wide range of pro-environmental behaviours in international samples (Chen, 2015; Van Riper and Kyle, 2014; Xu *et al.*, 2019).

Blake (1999) described a 'value-action gap', in which environmental concern often does not translate into pro-environmental behaviour. This gap has been acknowledged as a continuing phenomenon in environmental research (Joshi and Rahman, 2015). ACT enhances meaningful living by supporting individuals to bring their actions into alignment with their values (Ciarrochi *et al.*, 2013). Those with higher levels of climate distress have been found to endorse environmental values more strongly (Whitmarsh *et al.*, 2022); by supporting these individuals to

live in accordance with their values, ACT may therefore bring co-benefits to individuals and wider society.

Pro-environmental behaviours can be financially and socially costly, and involve varying degrees of effort; they are markedly influenced by the availability of supportive infrastructure, such as recycling facilities and good public transport (Steg and Vlek, 2009). In addition, there are misinformation campaigns that generate confusion and controversy around the issue (Dunlap and McCright, 2015), which may thwart environmental action. ACT could help individuals to allow difficult feelings such as frustration, and to focus on the value-consistent actions available to them within a given social and structural context. These behaviours might include private-sphere actions focused on one's own environmental impacts as well as public-sphere behaviours geared towards having a wider social and political impact (Stern, 2000).

The value-action gap may, however, not be entirely due to structural factors: Kennedy *et al.* (2009) found that 72% of Canadians reported a discrepancy between their intended and actual pro-environmental behaviour despite most participants reporting few situational barriers to behaviour. One reason for this might be that individuals hold values that are contradictory or transient. ACT can help individuals to clarify their values in a way that allows them to recognise the rich opportunities for living in line with them, such as bringing *compassion* to animals and other species through ecologically sensitive behaviours, satisfying *curiosity* by learning about nature, bringing *persistence* to a challenging hike up a mountain, demonstrating *patience* in waiting for a seed to germinate, and bringing *gratitude* to an appreciation of the beauty of nature. Indeed, there is evidence that exploring individuals' values can have a positive impact on behavioural outcomes, beyond mere goal-setting (e.g. improving academic performance; Chase *et al.*, 2013).

Being 'engaged' also entails committed action: acting in line with our personal values even when difficult thoughts and feelings arise. Although values themselves are qualities or attributes of actions which are never achieved, 'concrete goals that are values consistent can be achieved' (Hayes *et al.*, 2013; p. 8). Committed action often involves aiming to achieve short-, medium- and long-term value-consistent goals. A common piece of advice for clinicians working with those experiencing climate distress is to encourage pro-environmental behaviour: individual action can bring actions into alignment with environmental values, and collective action can provide a source of emotional support from others (Baudon and Jachens, 2021). However, Charlson *et al.* (2022) noted that environmental action can be beneficial or detrimental to mental health; it has the potential to engender hope and solidarity, as well as hopelessness and burn-out. The ACT approach encourages value-guided living in tandem with the development of psychological processes that support acceptance of and detachment from distressing psychological experiences that might otherwise derail pro-environmental actions.

## Conclusion

This paper presents a conceptual analysis of ACT and psychological flexibility's relevance to supporting those with climate distress. We have argued that ACT could help those with climate distress to adapt to the reality of climate and ecological decline by developing an allowing stance towards difficult feelings, developing distance from cognitions that might impede pro-environmental action, gaining clarity about their values, and building awareness of the various present-moment opportunities for value-guided action (which, for some, might entail pro-environmental behaviour). On a wider societal level, developing psychological flexibility might buttress against denial of climate and ecological decline. There are broader policy implications in terms of ACT-based initiatives to address climate change denial on the one extreme, and high levels of climate distress that might impede effective engagement with the climate and ecological crisis on the other.

### Key practice points

- (1) Recognise and validate the complex emotional responses that arise from climate distress, such as anxiety, despair, anger and grief, in order to support individuals coping with the challenges of climate change.
- (2) Utilise acceptance and commitment therapy (ACT) as an intervention for climate distress by helping individuals develop psychological flexibility.
- (3) Incorporate ACT principles in practice, such as mindfulness, acceptance and value-based action, to foster an open and aware orientation to one's experiences and an engaged approach to living.
- (4) Encourage clients to embrace climate distress as a natural, human experience by validating their emotions and helping them connect with their personal values.
- (5) Support the development of pro-environmental behaviours and climate change mitigation efforts where these behaviours align with individuals' personal values.

### Further reading

- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy*. New York: Guilford Press.
- Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist*, 40, 976–1002.
- Weller, F. (2015). *The Wild Edge of Sorrow: Rituals of Renewal and the Sacred Work of Grief*. North Atlantic Books.

**Data availability statement.** Data sharing not applicable – no new data generated.

**Acknowledgements.** None.

**Author contributions.** M.W. conceived of the initial idea for the paper and V.S. developed the idea with further conceptual linkages between psychological flexibility and climate distress. M.W. and V.S. both contributed drafts of the paper. Both authors have reviewed and approved of the manuscript prior to submission. **Marc Williams:** Conceptualization (equal), Writing – original draft (equal), Writing – review & editing (equal); **Victoria Samuel:** Conceptualization (equal), Writing – original draft (equal), Writing – review & editing (equal).

**Financial support.** The authors received no financial support for the research, authorship, and publication of this article.

**Competing interests.** The authors declare none.

**Ethical standards.** Authors abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the BABCP and BPS.

### References

- Abramowitz, J. S., Tolin, D. F., & Street, G. P. (2001). Paradoxical effects of thought suppression: a meta-analysis of controlled studies. *Clinical Psychology Review*, 21, 683–703.
- Akbari, M., Seydavi, M., Hosseini, Z. S., Krafft, J., & Levin, M. E. (2022). Experiential avoidance in depression, anxiety, obsessive-compulsive related, and posttraumatic stress disorders: a comprehensive systematic review and meta-analysis. *Journal of Contextual Behavioral Science*.
- Albrecht, G. A. (2019). *Earth Emotions: New Words for a New World*. Cornell University Press.
- Albrecht, G., Sartore, G. M., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., . . . & Pollard, G. (2007). Solastalgia: the distress caused by environmental change. *Australasian Psychiatry*, 15, S95–S98.
- Barnes-Holmes, S. C. H. D., & Roche, B. (2001). *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition*. Springer Science & Business Media.
- Baudon, P., & Jachens, L. (2021). A scoping review of interventions for the treatment of eco-anxiety. *International Journal of Environmental Research and Public Health*, 18, 9636.
- Blake, J. (1999). Overcoming the 'value-action gap' in environmental policy: tensions between national policy and local experience. *Local Environment*, 4, 257–278.
- Charlson, F., Ali, S., Augustinavicius, J., Benmarhnia, T., Birch, S., Clayton, S., . . . & Massazza, A. (2022). Global priorities for climate change and mental health research. *Environment International*, 158, 106984.

- Chase, J. A., Houmanfar, R., Hayes, S. C., Ward, T. A., Vilardaga, J. P., & Follette, V. (2013). Values are not just goals: online ACT-based values training adds to goal setting in improving undergraduate college student performance. *Journal of Contextual Behavioral Science*, 2, 79–84.
- Chawla, N., & Ostafin, B. (2007). Experiential avoidance as a functional dimensional approach to psychopathology: an empirical review. *Journal of Clinical Psychology*, 63, 871–890.
- Chen, M. F. (2015). An examination of the value-belief-norm theory model in predicting pro-environmental behaviour in Taiwan. *Asian Journal of Social Psychology*, 18, 145–151.
- Ciarrochi, J., Kashdan, T. B., & Harris, R. (2013). The foundations of flourishing. *Mindfulness, Acceptance, and Positive Psychology: The Seven Foundations of Well-being*, 1–29.
- Choe, E. Y., Jorgensen, A., & Sheffield, D. (2020). Does a natural environment enhance the effectiveness of Mindfulness-Based Stress Reduction (MBSR)? Examining the mental health and wellbeing, and nature connectedness benefits. *Landscape and Urban Planning*, 202, 103886.
- Clayton, S. (2020). Climate anxiety: psychological responses to climate change. *Journal of Anxiety Disorders*, 74, 102263.
- Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*, 69, 101434.
- Cunsolo, A., Borish, D., Harper, S. L., Snook, J., Shiwak, I., Wood, M., & The Herd Caribou Project Steering Committee (2020). 'You can never replace the caribou': Inuit experiences of ecological grief from Caribou declines. *American Imago*, 77, 31–59.
- Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, 8, 275–281.
- Doherty, T. J., & Clayton, S. (2011). The psychological impacts of global climate change. *American Psychologist*, 66, 265.
- Doherty, T. J., Lykins, A. D., Piotrowski, N. A., Rogers, Z., Sebree Jr, D. D., & White, K. E. (2022). Clinical psychology responses to the climate crisis. In Asmundson, G. J. G., *Comprehensive Clinical Psychology* (pp. 167–183). Amsterdam: Elsevier Ltd.
- Dunlap, R. E., & McCright, A. M. (2015). Challenging climate change: the denial countermovement. In Dunlap, R., & Brulle, R. (eds), *Sociological Perspectives on Climate Change* (pp. 300–332). New York: Oxford University Press.
- Ellis, N. R., & Albrecht, G. A. (2017). Climate change threats to family farmers' sense of place and mental wellbeing: a case study from the Western Australian Wheatbelt. *Social Science & Medicine*, 175, 161–168.
- Feather, G., & Williams, M. (2022). The moderating effects of psychological flexibility and psychological inflexibility on the relationship between climate concern and climate-related distress. *Journal of Contextual Behavioral Science*.
- French, K., Golijani-Moghaddam, N., & Schröder, T. (2017). What is the evidence for the efficacy of self-help acceptance and commitment therapy? A systematic review and meta-analysis. *Journal of Contextual Behavioral Science*, 6, 360–374.
- Gibson, K. E., Barnett, J., Haslam, N., & Kaplan, I. (2020). The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders*, 73, 102237.
- Gloster, A. T., Walder, N., Levin, M., Twohig, M., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: a review of meta-analyses. *Journal of Contextual Behavioral Science*.
- Gross, A. C., & Fox, E. J. (2009). Relational frame theory: an overview of the controversy. *Analysis of Verbal Behavior*, 25, 87–98.
- Guthrie, D. (2023). How I learned to stop worrying and love the eco-apocalypse: an existential approach to accepting eco-anxiety. *Perspectives on Psychological Science*, 18, 210–223.
- Harris, R. (2019). *ACT Made Simple: An Easy-To-Read Primer on Acceptance and Commitment Therapy*. New Harbinger Publications.
- Hayes, S. C. (2020). *A Liberated Mind: How to Pivot Toward What Matters*. Penguin.
- Hayes, S. C., Levin, M. E., Plumb-Vilardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy*, 44, 180–198.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: model, processes and outcomes. *Behaviour Research and Therapy*, 44, 1–25.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy*. New York: Guilford Press.
- Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist*, 40, 976–1002.
- Hayes, S. C., Villatte, M., Levin, M., & Hildebrandt, M. (2011). Open, aware, and active: Contextual approaches as an emerging trend in the behavioral and cognitive therapies. *Annual Review of Clinical Psychology*, 7.
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., ... & van Susteren, L. (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, e863–e873.
- Joshi, Y., & Rahman, Z. (2015). Factors affecting green purchase behaviour and future research directions. *International Strategic Management Review*, 3, 128–143.
- Kabat-Zinn, J. (1994). *Wherever you go. There You Are: Mindfulness Meditation in Everyday Life*. New York: Hyperion.

- Katz-Gerro, T., Greenspan, I., Handy, F., & Lee, H. Y. (2017). The relationship between value types and environmental behaviour in four countries: universalism, benevolence, conformity and biospheric values revisited. *Environmental Values*, 26, 223–249.
- Kennedy, E. H., Beckley, T. M., McFarlane, B. L., & Nadeau, S. (2009). Why we don't 'walk the talk': understanding the environmental values/behaviour gap in Canada. *Human Ecology Review*, 151–160.
- Langieza, M. L., & Swim, J. K. (2021). Diminished public self-awareness in nature contributes to the positive effects of contact with nature on connectedness to nature. *Ecopsychology*.
- Levin, M. E., Krafft, J., Hicks, E. T., Pierce, B., & Twohig, M. P. (2020). A randomized dismantling trial of the open and engaged components of acceptance and commitment therapy in an online intervention for distressed college students. *Behaviour Research and Therapy*, 126, 103557.
- Lin, J., Klatt, L. I., McCracken, L. M., & Baumeister, H. (2018). Psychological flexibility mediates the effect of an online-based acceptance and commitment therapy for chronic pain: an investigation of change processes. *Pain*, 159, 663–672.
- Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: a measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24, 503–515.
- Minor, K., Agneman, G., Davidsen, N., Kleemann, N., Markussen, U., Lassen, D. D., & Rosing, M. (2019). Greenlandic perspectives on climate change 2018–2019: results from a national survey.
- Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, 41, 715–740.
- Norgaard, K. M. (2011). *Living in Denial: Climate Change, Emotions, and Everyday Life*. MIT Press.
- Ogunbode, C. A., Doran, R., Hanss, D., Ojala, M., Salmela-Aro, K., van den Broek, K. L., . . . & Karasu, M. (2022). Climate anxiety, wellbeing and pro-environmental action: Correlates of negative emotional responses to climate change in 32 countries. *Journal of Environmental Psychology*, 84, 101887.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2, 2307.
- Stanley, S. K., Hogg, T. L., Leviston, Z., & Walker, I. (2021). From anger to action: differential impacts of eco-anxiety, eco-depression, and eco-anger on climate action and wellbeing. *Journal of Climate Change and Health*, 1, 100003.
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: an integrative review and research agenda. *Journal of Environmental Psychology*, 29, 309–317.
- Stenhoff, A., Steadman, L., Nevitt, S., Benson, L., & White, R. G. (2020). Acceptance and commitment therapy and subjective wellbeing: a systematic review and meta-analyses of randomised controlled trials in adults. *Journal of Contextual Behavioral Science*, 18, 256–272.
- Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407–424.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: the case of environmentalism. *Human Ecology Review*, 81–97.
- Törneke, N. (2010). *Learning RFT: An Introduction to Relational Frame Theory and its Clinical Application*. New Harbinger Publications.
- Trostle, J. (2008). Connectedness to nature and electricity consumption: an interdisciplinary study of behavior and emotional response to nature in the Union Street housing complex. Doctoral dissertation, Oberlin College.
- Twohig, M. P., Vilaradaga, J. C. P., Levin, M. E., & Hayes, S. C. (2015). Changes in psychological flexibility during acceptance and commitment therapy for obsessive compulsive disorder. *Journal of Contextual Behavioral Science*, 4, 196–202.
- Van Riper, C. J., & Kyle, G. T. (2014). Understanding the internal processes of behavioral engagement in a national park: a latent variable path analysis of the value-belief-norm theory. *Journal of Environmental Psychology*, 38, 288–297.
- Weller, F. (2015). *The Wild Edge of Sorrow: Rituals of Renewal and the Sacred Work of Grief*. North Atlantic Books.
- Wersebe, H., Lieb, R., Meyer, A. H., Hoyer, J., Wittchen, H. U., & Gloster, A. T. (2017). Changes of valued behaviors and functioning during an acceptance and commitment therapy intervention. *Journal of Contextual Behavioral Science*, 6, 63–70.
- 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, 101866.
- Wolsko, C., & Lindberg, K. (2013). Experiencing connection with nature: the matrix of psychological well-being, mindfulness, and outdoor recreation. *Ecopsychology*, 5, 80–91.
- Xu, Y., Wei, X., & Chen, S. C. (2019). Determinants and mechanisms of tourists' environmentally responsible behavior: applying and extending the value-identity-personal norm model in China. *Sustainability*, 11, 3711.