

The responsibility of communicating difficult truths about climate influenced societal disruption and collapse: An introduction to psychological research

A literature review¹

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Abstract

This paper presents a review of psychology research that can help people begin to assess the different ways they can responsibly support each other to talk about their thoughts and feelings on their perceptions of societal disruption and collapse, at home and abroad, due to environmental and climate change. It includes a summary of a review of published studies in psychology on matters of anticipating difficult futures, including vulnerability, disruption, disaster, suffering and mortality. The claims by both specialists and non-specialists that collapse anticipation is necessarily harmful to mental health and social engagement is shown to be theoretically and empirically weak. Instead, the research suggests we engage each other on this upsetting topic to promote coping. It highlights the potential for that engagement to support people with processing difficult emotions and thus finding more pro-social and pro-environmental ways of responding to societal disturbances.

Whakarāpopotonga

E horaina ana e tēnei pepa he arotakahanga o te rangahau hinengaro taea te āwhina tangata ki te aromatwai i ngā tūmomo huarahi taea e rātau te āta tautoko tahi i a rātau anō ki te kōrero mō ō rātau whakaaro me ā rātau tirohanga ki ngā mahi tutū, whakatanuku rō hāpori, i te kāinga me tāwāhi puta ake i ngā panonihanga o te taiao me te huarere. Huia mai hoki he

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whakarāpopotonga o ngā arotakenga rangahau hinengaro kua tāia e aro ana ki ngā take whakaneinei anamata uaua, tae atu ki te pānekeneketanga, te tutūnga, te aituā, te pākatokatonga me te mate. E kitea ana, ko te whakapae ā ngā mātanga me ngā mātanga-noa e pēhi whakaneinei ana, he mate kino ki te hauora hinengaro me ngā take hāpori e whākina ana he whakaarohanga he aromatawaihanga haumate. Mahue kē, te rangahau e tautoko ana me aro tātau ki a tātau anō i tēnei kaupapa mōrikarika hai whakatairanga oranga. Ka whakahiraina te torohūngā mō tērā aronga tautoko tangata ki te hātepe kare-ā-roto uaua ā, otia kitea ai ētahi atu huarahi whakaratanga hāpori, whakataunga taiao whakautu i ngā whawhenga hāpori.

Key words: climate psychology; eco anxiety; emotion; post-traumatic growth; climate change; natural disaster; mental health; community care.

Acknowledgements

As I sit down to write these acknowledgements, a fire is raging through forests and bush on the outskirts of my city, only a short 30 minute drive from my home. The sky is an eerie orange colour as the sun shines through layers of smoke, and ash is raining in my garden. The streets are quiet, as our city is in the middle of another hard lock down due to a community case of a mutated strain of COVID-19. This summer has once again been hot and dry, and the windy weather means this fire is expected to burn for the next few days, despite the best efforts of brave firefighters and volunteers. As a mother, I worry about how this fire will affect my asthmatic children's breathing over the coming days and nights, and I check the Ventolin levels of their inhalers. As a friend, my mind is turned towards those I know who are on standby for potential evacuation, as well as those I know who have homes within the fire zone and I have yet to hear back from. Although over 70 homes have been destroyed so far, there have been no recorded deaths or civilian hospitalisations, and this brings a little comfort. As I sit with my anxiety and grief over the devastating effects of climate change, I am aware that I am but one person in this whole world of people who also have been, are, and will be navigating emotional experiences for similar reasons. These acknowledgements I extend to you.

Firstly, I am aware that we are not the first people to grieve the loss of land and ecosystems, the loss of a way of life, and the loss of how our culture functions. We are not the first people who fear the ravaging destruction of disease. We are not the first people to have our liberties and autonomy limited. We are not the first people to be separated from family and loved ones indefinitely. I extend my first acknowledgements to Traditional Land Owners, who are intimately acquainted with the grief and trauma of loss of country, culture, community, family, and identity. I write from Boorloo, the land of the Wadjuk people of the Noongar Nation.

Secondly, I want to acknowledge those who live in parts of the world where the effects of climate change are already being experienced. I acknowledge your grief as your way of life changes dramatically, and I want you to know that your pain is seen, and your cries are heard. Our efforts are for you.

Thirdly, I want to acknowledge those who work in their respective fields and spheres to

bring about knowledge, awareness, support, advocacy, solutions, healing, and change in respect to climate change. There are people who have dedicated their lives to work tirelessly in this area, and for you I am very grateful.

Finally, and definitely not least, I want to acknowledge the children of this earth. Yours is a difficult and uncertain future. I encourage you to continue to challenge us and hold us accountable for our decisions and efforts. I encourage you to remind us of your capacity for bravery, resilience, creativity, and innovation. I encourage you to speak out when you see injustice, and speak up when you imagine solutions. I encourage you to continuously cultivate empathy within yourselves, and seek to work together with compassion and solidarity.

Introduction

Over the past few decades, climate scientists have expressed increasing concern about the effects of climate change on our biosphere, and in turn, societal functioning (World Meteorological Organisation, 1986). The increasing awareness of our severe predicament throughout academic, activist, and mainstream contexts, activates emotional responses to this issue (Berry & Peel, 2015; Clayton & Karazsia, 2020; Comtesse et al, 2021; Consulo & Ellis, 2018). These responses are termed ‘climate anxiety’, ‘solastalgia’, ‘eco grief’, and ‘eco anger’. Consensus is lacking as to how this information is received by the public, and what kinds of action it stimulates. Some believe that the overwhelming enormity of the climate emergency will lead to inaction, and therefore communication should be moderated to account for this (Strunz et al, 2018). Meanwhile, other voices provide evidence that people should embrace emotional responses, make meaning of these, and use them as the impetus for making the necessary shifts in society to navigate the uncertain future (Girons Lopez et al, 2017; Greer et al, 2018; Lindell et al, 2016; Rollason et al, 2018; Zhao et al, 2019). Climate anxiety is becoming a field of study in its own right, drawing from the diversity of knowledge within schools of psychology, neuroscience, anthropology, politics, sociology, philosophy, environmentalism, and economics. Given the variety of frameworks used to approach this area of research, there is the opportunity for a well-informed approach to communication on this topic collectively, and in solidarity. This review seeks to provide a systematic overview of the current research available on climate anxiety throughout the psychology literature.

In 1985, the United Nations released a statement entitled “Greenhouse Gases and Climate” (World Meteorological Organisation, 1986) which documented the increase of carbon dioxide levels in the atmosphere and the associated effects, including changes in climate. In that report, it was stated that social and economic decisions at the time were being made on the assumption that the climate would remain stable for the foreseeable future. However, the panel of scientists concluded that such stability was no longer assumed and was therefore no longer a reliable guide to decision making. Based on the available information they declared it a matter of urgency to readjust social and economic directions. In the list of government and policy recommendations that followed, the second recommendation was the need for public communication regarding the extent of the climate emergency, including wide distribution of the report which documented inevitable and potentially irreversible climate change.

Since this time, public communication from scientists regarding climate change has increased. However, the discussion of climate change has become politicalised with some confusion regarding what constitutes speaking from science versus speaking from political ideology (Chandler, 2006). Despite the scientific platform, there is still active resistance and suppression from those who struggle to acknowledge the severity of the climate emergency (Nuccitelli, 2014). Alongside this, due to current and expected ecological losses within the biosphere, strong emotions of distress have been activated globally (Consulo & Ellis, 2018). This rise in emotionality provokes concerns that it will lead to inaction, paralysis and reductions in pro-environmental behaviour (Wolfe & Tubi, 2019). Subsequently, there has been fear expressed regarding the impact on mental health from the public communication and discussion of climate change projections (Swim et al, 2011).

Given the highly charged nature of climate change information and the urgency with which it needs to be delivered it is vital that any generalisations drawn from research are factually based. Some of the articles on climate change related emotional responses suggest they lead to inaction. Such papers suggest considerations that climate change will lead to societal disruption or collapse are characterised by apathy. For example, Strunz et al (2018) argue that “collapse-warnings are psychologically ineffective because they might induce fear and guilt, which leads to apathy not action” (p. 1718), and that there is a risk that the “negative emotions triggered by collapse warnings even turn out to be counterproductive” (p. 1724). In supporting these claims Strunz et al cite experimental papers that investigate the impacts of risk related information being included in educational material (Chen, 2016; Keller, 1999); papers that mention the cohort of climate responders who doubt that humans will make enough change in time to avoid disruption or collapse (Ereaut & Segnit, 2006; Gifford, 2011); experimental papers investigating the response to risk salient environmental information (Buttler et al, 2017); and experimental papers investigating the use of positive messaging on subsequent behaviour (Jacobson et al., 2018; Van de Velde et al., 2010). Despite the clarity of the authors’ claims, the citations used to support those claims do not provide convincing evidence that this is the strongest conclusion.

Experimental studies cited by Strunz et al (2018) extrapolate from unrelated contexts, such as sorority member condom use following safe-sex information dissemination (Keller, 1999), and smaller scale fear appeal communication studies in which the authors themselves caution against being generalised (Chen, 2016). Studies used to support the suggestion that concern regarding societal disruption or collapse is inherently apathetic reference qualitative work describing the available narratives on climate change, rather than experimental studies exploring correlations between attitudes and behaviour (Ereaut & Segnit, 2006). Other studies, although climate change related, are cited as evidence of apathy despite not directly suggesting so. For example, rather than implying apathy, Gifford (2011) describes a type of climate responder who believes that *individual* responsibility and action is not enough to make enough of a difference to the emergency; Jacobson et al (2018) reports that positive rather than negative video messaging led to participants giving more to a conservation charity; and Van de Velde et al. (2010) recommends that messages regarding climate change provide guidance regarding pro-environmental responses in order to be effective. Although there are experimental studies that are directly related to the effects of environmental disaster messaging on behaviour, some, such as Buttler et al (2017), do not

sufficiently analyse their data and make claims that are not statistically evidenced.

Other papers report important distinctions between types of climate change doubt (not to be confused with climate change denial): constructive doubt includes those who do not believe that humanity will do enough to prevent the effects of climate change; fatalistic doubt includes those who believe that environmental impacts are in the hands of a greater force such as God or Mother Nature (Marlon et al, 2019). In this study, although fatalistic doubt was linked to inaction, constructive doubt was linked to increases in pro-environmental behaviour thereby contradicting the view that considering societal disruption or collapse leads to apathy. Other perspectives on the discussion of potential societal disruption or collapse suggest that it is reasonable to believe it is too late to prevent climate change induced human suffering and yet still work towards environmental and societal preservation (Moser, 2020). Furthermore, Moser (2020) suggests that climate change induced human suffering and societal disruption is already occurring in some areas of the globe, and thus to consider this perspective to be a worst-case scenario or 'doomsday response' is unreasonable.

Despite strong emotional reactions to climate change information being common, and expected, the field of research into this area is still in its infancy. Research regarding the impacts of climate change on humans focuses on physical health, with limited consideration of mental health impacts. As such, there is very little evidence documenting the epidemiological mental health outcomes of climate change (Berry & Bowen, 2010). The available research indicates that mental health can be affected directly or indirectly by climate change (Page & Howard, 2010). Direct effects include lived experience and exposure to natural disasters and extreme weather events such as fire, storms, and floods. Indirect and chronic impacts on mental health are due to secondary stressors of climate change such as loss of food supply, displacement, and loss of homes (Comtesse et al, 2021).

The emotional responses due to the direct and indirect effects of climate change have been termed eco grief, climate anxiety, solastalgia, and eco anger. Although there is overlap in their development, they are considered to be distinct phenomenological experiences (Comtesse et al, 2021). Eco grief refers to the sense of sadness due to losses within the biosphere. This can be experienced due to past and present losses of species, ecosystems, and landscapes; loss of environmental knowledge, connection with land, and related cultures and identities; as well as anticipated environmental and lifestyle losses (Berry & Peel, 2015; Clayton & Karazsia, 2020; Comtesse et al, 2021). Grief is a natural response to loss and although there is much understanding of the emotional and physiological components of grief, this is yet to include the grief of losses within the environmental world (Consulo & Ellis, 2018). This type of grief is not well understood or tolerated within secular contexts. Solastalgia, similar to eco grief, refers to a sense of sadness that is specific to an individual's sense of home, familiarity, and belongingness to place (Comtesse et al, 2021). Solastalgia arises from the awareness that the places forming part of one's identity will no longer exist in their current state. It has been described as a sense of homesickness whilst being at home. Climate anxiety is future oriented and refers to the anticipation of the hardships that come with climate change (Comtesse et al, 2021). This can be due to lived experience of natural disaster, relating to post traumatic stress, or pre-empting the trauma to come due to knowing the impacts of climate change on the environment. Recently, 'eco anger' is being researched. It is defined as anger related to the human induced impacts on the environment and a sense

of wanting to protect and preserve it (Stanley et al, 2021). The initial research suggests that 'eco anger' propels individuals to act in a protective manner towards the environment. The way anger is related to other emotions, whether subsequent to love and fear, and how it leads to other emotions over time (Greenberg, 2008), depending on expression and feedback, is yet to be further investigated in this context.

This systematic descriptive review of the psychology literature finds little evidence to support the concerns that increasing emotional responses to climate change will reduce pro-environmental behaviour or that it is necessary to moderate climate communication. Evidence for inaction comes from research into social, political and economic attitudes to climate change, as well as uncertainty or mistrust regarding the evidence supporting climate change (Berry & Peel, 2015). However more research suggests that climate anxiety and eco grief are inherently 'adaptive' emotional experiences and increase the likelihood of pro-environmental behaviour (Comtesse et al, 2021). The word 'adaptive' in this context means psychologically positive. As climate anxiety is future oriented, it can provide impetus for adaptive and pre-emptive preparations or precautions (Clayton & Karazsia, 2020).

A scale to assess the strength of individuals' identification with environmental issues found that higher levels of environmental identification was linked to higher risk of climate anxiety as well as greater pro-environmental behaviour (Clayton & Karazsia, 2020). Furthermore, the creation and validation of a climate anxiety measure found that negative emotions identified (sad, scared, angry, etc.) were distinguishable from clinical levels of anxiety; in other words, they are not psychopathological. Additionally, these negative emotional responses to climate change were indicative of higher levels of pro-environmental behaviour. This study also found that clinical anxiety was not correlated with environmental behaviour. It is important to note that if anxiety was associated with apathy or paralysis, a negative correlation with behaviour would have been present (Clayton & Karazsia, 2020).

These findings indicate that climate anxiety and discussion about climate change and adaptation should not be assumed to be synonymous with paralysis and overwhelm (Berry & Peel, 2015). Moreover, currently there is no research to suggest any causal link between climate anxiety and clinical pathology (Berry & Peel, 2015). As such, the mental health impacts of climate change need to be approached with an awareness that over-pathologising of their reactions misses opportunities to harness their adaptive potential (Berry & Bowen, 2010). In the mental health promotion field, good mental health has been described as the ability to engage with and live with our own emotional experiences and those of others (Herman, 2001). Since climate related emotional experiences are not inherently pathological and may increase pro-environmental behaviour, this definition suggests that climate related emotions could in fact be indicative of good mental health. Rather than avoiding or aiming to suppress such emotions, supporting people's ability to process their feelings may help to enhance their adaptive effect on pro-environmental behaviour.

Throughout the eco grief and climate anxiety literature, authors encourage further research into this phenomenon to both increase understanding of these emotions, and to support those experiencing them (Berry & Bowen, 2010; Berry & Peel, 2015; Clayton & Karazsia, 2020; Comtesse et al, 2021). Literature addressing how to support people who have these experiences highlights the growing evidence that eco grief may have a large impact on children (Clayton et al, 2017). Surveys suggest that a sizable proportion of children and

adolescents are concerned about climate change and its impacts. As such, policy and intervention should consider implementing early intervention services to enable this demographic to be well supported in their resilience, which is enhanced by the capacity for emotional processing and reflective functioning (Clayton et al, 2017). As this area of research is emerging, there is currently no integrative framework for understanding and responding to mental health concerns due to climate change (Berry & Bowen, 2010). The available research encourages communication regarding climate change to attend to the framing of public messages by taking into account the context of the audience, and insight into cognition and emotion.

Another recommendation is the need for provision of services to support those with underlying psychiatric conditions in order to manage any distress due to potential comorbidity with eco-grief and climate anxiety (Berry & Peel, 2015). Furthermore, recommendations encourage the building of healthy community relationships and collective emotional resilience, both of which are protective factors in mental health (Berry & Peel, 2015). Eco grief and climate anxiety are not yet well understood despite becoming more prevalent within communities as climate change impacts increase. More research is needed to identify ways to support and process this grief as environmental and societal losses increase (Consulo & Ellis, 2018).

In a response to the need for more public discussion regarding climate change, this systematic descriptive review seeks to investigate and describe the research available within and beyond the specific field of eco grief and climate anxiety. Through six separate topics, this review seeks to explore communication of climate emergency to a public audience, as well as the potential public responses to this information. The six topics were generated by discussions between members of the Deep Adaptation Forum and psychologists, as they sought to clarify the understandings from which they were working. Climate change and its impact on humanity is a multifaceted and systemic issue, and as such, synthesising the diversity of knowledge from various fields in addressing this issue is necessary. This review seeks to explore perspectives within psychology and neuroscience in providing insight into these questions. This review is exploratory in nature and seeks to describe the various perspectives that can inform the formulation of this communication. The aim of this paper is not to provide an exhaustive review of the literature for each question. This paper is an attempt to deliver a 'snapshot' of the salient research available for each question with the intention of providing evidence that there is potential for a cohesive, systemic, and synthesised approach in understanding these.

Method

Materials

The range of databases used pertained to social sciences, humanities, and environment. These included: Annual Reviews, Australia and New Zealand Database, BioMed Central, Cochrane Library, Directory of Open Access Journals, Gale Academic OneFile, Informit Families and Society Collection, Informit Health Collection, JSTOR Arts and Sciences I-IV Collections, MA Healthcare, Oxford Journals, Oxford Medical Online, ProQuest Central,

SAGE Journals, Science Direct, SpringerLink, Taylor & Francis Journals, Walter de Gruyter eJournals, and WorldCat.org.

Procedure

Key words for each topic of enquiry were chosen and then entered in a step-wise sequence in order to refine the number of results produced. In order to cover the most relevant research the target quantity for search output was set at less than 100 articles per topic, with approximately five articles to be included in the final selection for each search. The scope of each search was limited to only include peer-reviewed, full-text, journal articles from the last ten years. Larger result quantities were further restricted to the last five years. The results were then screened by title to assess for those that were related to the topic being researched. These articles were then further screened by abstract to only include those that were related to the research question. The remaining articles were read in their entirety, and those that were relevant to providing depth and insight into the research question were included in this document.

Results

Topic 1:

The psychological impact of hearing grim predictions, from apathy to motivation, depends on how we help each other to process the implications of that foresight, including attention to the intellectual, emotional and physiological aspects of ourselves. There is a skill to be learned about how to break bad news and help each other integrate that bad news.

Key words: Disaster, emotion, social support, community.

Timeframe: Articles published within the last five years.

Initial journal output: 361 articles were generated.

Screening scope: Inclusion criteria encompassed articles that investigated 'bad news' in a variety of contexts and the impact this has on the receiver. Articles investigating this retrospectively to make recommendations were included. Articles that investigated different types of human experiences in the midst of crises were included.

Articles included in the review: Garcia & Rime, 2019; Geiger et al, 2017; Gianisa & Le De, 2018; Gillilan et al, 2017; Johal & Mounsey, 2016; Lin et al, 2020.

Topic 2:

It is not predetermined how people respond to their perception of the increased vulnerability of them and their loved ones. It can lead to a range of different emotional (and neurobiological) and intellectual responses (in the immediate moment and over the longer term i.e. things change as people process emotions and discuss). Different pathways of response to increased vulnerability are influenced by context. In other words, although increasing fear often leads to support for simplistic, authoritarian and xenophobic ideas, it can lead to other responses, and depends on how we help each other process the emotions of vulnerability.

Key words: Crisis, fear, political support, society, emotional processing.

Timeframe: Articles published within the last five years.

Initial journal output: 48 articles were generated.

Screening scope: Inclusion criteria encompassed articles that investigated the way individuals and societies respond during crises. Intercultural interactions during crises were included. Communication regarding crises and the impact on public and individual perceptions and behaviours were included.

Articles included in the review: Courtney et al, 2020; Jost, 2017; Lamprianou & Ellinas, 2019; Mukhtar, 2020; Pyszczynski et al, 2020; Rothmund et al, 2017; Wolfe & Tubi, 2019; Yang et al, 2018.

Topic 3:

It is not proven that to foresee a calamity as probable or certain undermines action, with much evidence to the contrary.

Key words: Risk perception, behavioural response, natural disaster.

Timeframe: Articles published within the last five years.

Initial journal output: 157 articles were generated.

Screening scope: Inclusion criteria encompassed papers that investigated crises and how they are communicated to the public as well as social responses to these emotionally and behaviourally.

Articles included in the review: Girons Lopez et al, 2017; Greer et al, 2018; Lindell et al, 2016; Rollason et al, 2018; Zhao et al, 2019.

Topic 4:

Mental health can be supported through more honesty about our thoughts and emotions (including vulnerability about those) and more connection and dialogue with others. Conversely the avoidance of issues and the suppression of emotions about those issues is unhelpful for mental health and wellbeing.

Key words: Emotional processing, change mechanism, adaptive, affect avoidant.

Timeframe: Articles published within the last ten years.

Initial journal output: 563 articles were generated.

Screening scope: Exclusion criteria included articles addressing therapy style efficacy as this was not useful to question. Inclusion criteria attended to articles that investigate process of change within experimental conditions and attention was paid to whether the sample population was clinical or non-clinical for extrapolation purposes.

Articles included in the review: Messina et al, 2016; Pascual-Leone, 2018; Riedel et al, 2018; Rohde et al, 2015; Scherer et al, 2017; van der Linden, 2014.

Topic 5:

Transference of responsibilities, or deference, to perceived authorities on matters of mental health and wellbeing are unhelpful for positive mental health outcomes. Instead, commitment to collective co-responsibility is helpful for mental health and wellbeing.

Key words: Community care, mental health, peer provider, co-design, minority, meta analysis.

Timeframe: Articles published within the last five years.

Initial journal output: 127 articles were generated.

Screening scope: Inclusion criteria encompassed articles pertaining to the provision of mental health intervention as well as articles pertaining to the development and governance of these interventions. Screening also extended to included findings pertaining to how demographics access mental health programs or awareness of demographic mental health disparities.

Articles included in the review: Ayano, 2018; Mantovani et al, 2017; Marshall et al, 2020; Ridley et al, 2018; Sweeney et al, 2019; Zapolski et al, 2017.

Topic 6:

Those people who can allow foresight of calamity into their current experience might be able to help other people later on, if they have time to process the implications for themselves now.

Key words: Post traumatic growth, compassion, empathy.

Timeframe: Due to limited results when screened by timeframe, this topic did not include a timeframe scope.

Initial journal output: 65 articles were generated.

Screening scope: Inclusion criteria encompassed articles that investigated how people grow from trauma and what leads them to help others.

Articles included in the review: Armstrong et al, 2014; Hallam & Morris, 2013; Kashdan & Kane, 2011; Pollard & Kennedy, 2007; Scignaro et al, 2018; Sifaki-Pistolla et al, 2017; Slavin-Spenny et al, 2010; Staub & Vollhardt, 2008.

Discussion

Topic 1:

The psychological impact of hearing grim predictions, from apathy to motivation, depends on how we help each other to process the implications of that foresight, including attention to the intellectual, emotional and physiological aspects of ourselves. There is a skill to be learned about how to break bad news and help each other integrate that bad news.

The research generated for this topic was not specific to hearing predictions; however, it does document how people respond within crises in various ways. The various contexts included in this topic cover initial responses to disasters in a collective manner, as well as receiving diagnosis and prognosis news of loved ones. In addition, the neural processes underlying observation of the harm being done to others are included. The lack of research regarding pre-emptive responses to receiving alarming news highlights a need for more research to be done in this area.

Johal & Mounsey (2016) investigated the needs of communities who had been impacted by natural disaster in order to understand how to prepare communities to respond well to these. They found that communities affected by floods will best be served by responding organisations that are cognisant of the potential psychosocial and mental health impacts. This indicates that although physical safety and shelter are the initial priorities when providing aid to devastated communities, the psychosocial determinants of health should not be underestimated. For communities to be well supported post-disaster, response

agencies should support emotional well-being, recognise and respond to community distress, and take action to prevent onset of additional mental health problems. These responses need to be flexible to individual needs and take into account people's existing psychosocial factors such as socioeconomic circumstances.

The most frequently reported coping strategies following natural disaster are rational, detached and avoidant, with the least frequent being emotional coping. This indicates that although physical needs may be taken care of, the survivors' emotional and social needs will suffer, both short term and long term. In order to process this experience and support others in this process, emotional and social engagement is needed. Greater amounts of time spent volunteering in flood efforts were associated with increased feelings of belongingness and decreased feelings of burdensomeness. Both of these indicate that these volunteers are engaging emotionally and socially. In addition, these are both protective factors against suicide. Research suggests that higher 'stoicism', in which an individual employs distraction or emotional avoidance as coping strategies, is associated with higher post-disaster depression and poorer self-reported mental health. Similarly, the use of maladaptive coping, such as venting and distraction, were also associated with greater deterioration in mental health after floods. This indicates that coping strategies that avoid or suppress emotional engagement have negative long-term effects. Conversely, emotion-focused coping such as acceptance, positive reframing, and humour, were protective against such deterioration.

Research into the biopsychosocial determinants of health often exclude spirituality from its investigation. Gianisa & Le De (2018) considered the impact that spirituality and religious engagement has on post-disaster recovery. There were initial concerns that portraying disasters as divine retribution might create a fatalistic attitude. This could leave the community more vulnerable and hinder efforts to tackle the root causes of disaster. In contrast, findings suggest that the religious beliefs of the community created positive re-evaluations of the event and strengthened the social links within and between local communities. Religious beliefs and practices, as part of the culture, appeared to be one of the key resources participants mobilised to overcome the disaster. These beliefs gave the Confucian and Muslim participants a way to cope with the 2009 earthquake by providing them with, what the researchers define as, answers and hope. The researchers found that praying positively improved their ability to cope by reaffirming their view that every event is caused by God. This belief, which relates to the concept in many religions including Islam of surrendering-to-what-occurs, then provided them with the strength to face the event. This is in line with different studies showing that religious beliefs provide people with a sense of power, intrinsic self-worth, optimism, a low level of depression and a feeling of control and safety. Although these beliefs may not be scientifically evidenced, in these communities they were protective by providing hope and connection within the community. This does not provide information on the effect that this has on motivation to overcome climate change; however, it does indicate that spirituality is an important factor in post-disaster recovery. Similarly, when faced with existential grief in palliative care, there is a need for an individual to be assessed as a whole, which is inclusive of their spirituality (Gillilan et al, 2017).

Lin et al (2020) investigated the experience of parents being told by medical practitioners that their child was very sick, vulnerable, and potentially dying. They reviewed over 100 articles to identify themes within this body of literature. Theme one revealed that parents

and children experienced feeling invisible and powerless in this process. There was a sense of feeling displaced when told the news and the following events often led to a sense of being undermined by authorities. Through this process patients and parents sometimes felt betrayed by staff and became distrustful. Within this theme was a strong experience of feeling helpless and intimidated. This process was also disempowering when there was a lack of information provided. This theme indicates that in breaking bad news, there is a need for more awareness of the powerlessness and vulnerability of the audience. When these people have information withheld from them or their needs being undermined by authorities, this is a disempowering process and can lead to feeling betrayed and distrustful.

The second theme was of fear and worry for the future. When individuals were given this bad news, their initial response was often paralysis. This would then be followed by uncertainty and dread as they were unable to foresee how this would develop over time and how they could process this with their loved ones. This anticipation often led to a need to discuss intimate and private topics. This indicates the delicacy of delivering this news, and to be cognisant of the multifaceted impact it has on individuals. Although delivering the news may be within the scope of intervention for the clinician, this news permeates the most intimate aspects of the client's lives.

The third theme was burdened with responsibility. With this news came a sense of pressure and the children diagnosed felt a need to balance the external expectations of others whilst also navigating an internal sense of being unprepared and wishing to preserve their parents' hope that they would survive, in order to reduce their parents' pain. These associated tasks that come with this news also have a high pressure on parents. As such, deliverers of news should be aware of these pressures and provide support for these other aspects that then may enable patients to process this news.

The fourth theme was the sense of emotional support and encouragement. There were experiences in which parents felt supported emotionally and encouraged by those around them through this process. This theme came with a sense of being validated in their 'personhood' as all aspects of themselves were encouraged and supported. Within this theme was a sense of companionship. This theme highlights the importance of understanding the person as a whole in the delivery of 'bad news'. The presence of connection and validation are important aspects when processing news that may change the paradigm of someone's life.

The fifth theme revealed in this process was of safety and trust. When individuals felt that their clinicians were being truthful and transparent, they trusted them. When they felt aware of the intricacies of the situation and were able to understand them, they felt prepared for the future. When experts were able to connect with the emotion of fear in clients, this was a reassuring process. And when the adults were experiencing a sense of trust and agency within this uncertain situation, the children felt as though they could depend on the adults for protection and direction. This theme was permeated by a sense of security in expressing opinions and needs, and the ability of clinicians to receive these and process these with their clients. This theme speaks of the need for benevolent leadership within the impartation of bad news, as well as the openness to receive the fears and curiosities of those receiving the news.

The last theme was empowerment and assertive agency. In this theme, individuals expressed their rights for individual knowledge and choice, they asserted control over their lives, they engaged in a healthy partnership and mutual respect throughout the process, and

this gave them the enhanced capacity for self-management. This last theme indicates that this process, when navigated well, can be an empowering one that leads to agency and assertiveness. This agency occurs within the context of mutual respect and openness.

Literature investigating the collective trauma of survivors and communities after incidents of domestic terrorism looked for ways that communities find resilience in the aftermath of attack (Garcia & Rimé, 2019). Emotional engagement was an important factor within this and with long-term expressions of solidarity being related to the previous participation in collective emotions. This indicates that those who are familiar with emotionally engaging with their own concerns, as well as alongside others, find this process post-disaster to be more intuitive. This then leads to a sense of solidarity, connection, and support within communities. These collective emotions are foundational to further psychological phenomena, such as group-based emotions and collective action. When a society experiences trauma on a widespread scale, the emotional response is not simply a collection of simultaneous negative emotional responses from many individuals. It is in fact a collective emotional experience, felt as a whole, that can lead to long-term solidarity, the activation of social processes, the use of language related to prosocial behaviour, and the expression of positive affect. These findings suggest that it is not despite the distress of the community that they are more united after a terrorist attack, but it is precisely because of their shared distress that their emotional bonds become stronger. This collective processing of grief and assertiveness provides societies with the strength and resilience to adapt to face the new threats.

Geiger et al (2017) investigated the neural processes that are engaged when viewing information about environmental destruction and animal cruelty. These findings illustrate the phenomenon of mirror neurons when watching another in pain. It is known that when observing another human, these neuronal networks become activated leaving the observer 'feeling' what the other is feeling. This process is the foundation of empathy and activates an observer to help when the other is in pain. Geiger et al (2017) looks at these neural pathways and the link to empathy when observing destruction of the environment. There are neural overlaps between observing suffering in animals and observing suffering in humans. As such, when receiving messages involving environmental destruction and its impact on animals, individuals are likely to have empathic responses and feel compelled to help. This is acknowledged as an impetus for engaging with animal activism.

This knowledge can be used to understand why people then become engaged with protecting the environment. When observing environmental destruction, there are overlaps between the neural pathways that lead to empathic concern for humans and animals; however, these neural responses are somewhat muted compared to those elicited by human and animal subjects. This is important as it demonstrates that humans are neurologically predisposed to be drawn to act upon visually noticing distress in others, when the individual identifies with that distress; the greater the individual identifies with the distress, the greater their urge to act.

The literature generated in this search highlights that when taking into account recovery post-disaster, it is important to consider all aspects of a person. Whilst physical needs are focused on by aid volunteers, often the psychosocial aspects are overlooked. Research shows that when these aspects are overlooked, many individuals do not have the skills to navigate

their emotional experiences within this trauma and therefore employ avoidant or suppressive coping mechanisms, which leads to post disaster depression. When social and emotional engagement is enabled, risk of long-term depression including suicide is lowered.

The process of delivering bad news and how this can impact the receiver has been explored in this systematic review. Openness, honesty, respect, and rapport building from the person delivering the news provided trust, safety, agency and assertiveness in the receiver. On a societal level, when a community is faced with a collective trauma, their ability to express their emotions collectively and support each other determines how resilient they can become to face further threats. Consequently, there is research to support Topic 1.

Topic 2:

It is not predetermined how people respond to their perception of the increased vulnerability of them and their loved ones. It can lead to a range of different emotional (and neurobiological) and intellectual responses (in the immediate moment and over the longer term i.e., things change as people process emotions and discuss). Different pathways of response to increased vulnerability are influenced by context. In other words, although increasing fear often leads to support for simplistic, authoritarian and xenophobic ideas, it can lead to other responses, and depends on how we help each other process the emotions of vulnerability.

During times of crisis, there are often multifaceted aspects to how this is navigated that can impact the mental health of society. Many of the risk factors that are present during these times are precipitated by a sense of fear, which leads to perceptions and behaviour as a response to that fear. The results generated in exploring this topic discuss the emergence of conspiracy theories, misinformation, and disinformation, which can lead to racism and discrimination. There are also political implications of circumstances that incite anxiety. Political ideologies have tendencies towards either rigidity or flexibility, and the ability to tolerate ambiguity, collaborate with outgroups, and apply reflective cognitive functioning in order to adapt to circumstances are all vital to resilience and resourcefulness during crisis. The research regarding this topic has been more focused on risk averse and trauma informed approaches to navigating emotional responses and does not clearly document the adaptive and positive communal responses that have emerged during these events.

Several studies have included insights from Terror Management Theory (TMT) into their conceptualisation of the response to climate change and its associated effects. Wolfe & Tubi (2018) argue that climate change communication can include material that increases mortality salience, which is an individual's awareness of their death, a key component in TMT. For some people, such information can trigger a deep existential terror which can be overwhelming for an individual to experience. Due to this, defence mechanisms and cognitive biases are employed in order for the individual to maintain cognitive and emotional equilibrium. Wolfe & Tubi (2018) reviews a body of literature in which mortality salience triggered by discussion of climate related disasters leads to non-pro-environmental behaviours. This research reveals that under these circumstances, there is an increase in exploitation of natural resources and material consumption, and a decrease in perceived connection to, and desire to protect, nonhuman species. However, the authors found that when mortality salience was presented within the context of pro-environmental behaviour becoming a social norm, as well as the mortality salience becoming highly personal for receivers of the climate

communication, then this information leads to pro-environmental behaviour.

Pyszczynski et al (2020) and Courtney et al (2020) consider the role of mortality salience (the underpinnings of TMT) within responses to the COVID-19 pandemic. Their research indicates that the constant reminder of death through pandemic news has led to divergent, or avoidant, behaviours seen in an increase in food consumption, television viewing, alcohol consumption, and engaging in conversation aiming at a trivialisation of the situation. Adaptive responses to the mortality salience since the onset of the COVID-19 pandemic have been to engage in social distancing, obey health directives, follow WHO advice on pro-social hygienic behaviour as well as engaging in social justice causes, such as Black Lives Matter protests.

The COVID-19 pandemic has had a large impact on collective mental health (Mukhtar, 2020). Throughout this context, there have been patterns of behaviour and beliefs that have emerged out of fear. The restrictions in response to COVID-19, in conjunction with the global impact of the disease, has led to intense psychosocial issues and compromised mental health. Mukhtar (2020) has identified an array of risk factors that have impacted mental health during this time. Lifestyle factors have been indicated as a result of globally implemented preventive and restrictive measures. These new measures have limited the usual coping and resilience factors, such as social support, which have made supporting mental health a challenge. Many beliefs emerging from fear have been circulating inclusive of conspiracy theories, misinformation, and disinformation. These have in turn increased fear levels and removed focus from collective mental health to protection of the immediate self or suspicion of the status quo. In addition, there has been a global socioeconomic crisis as many individuals have lost their livelihoods and loved ones, and have been limited in their access to travel, entertainment, and social or religious gatherings. These all impact the ability for recreational activity, connection with loved ones and expression of identity. Other panic-related behaviour includes panic buying and hoarding, and xenophobia and discrimination. These indicate the inherent role that fear plays in the shrinking of in-group inclusion criteria as a way to protect the individual from perceived harm. On a macro scale there has been the psychological pressure of productivity, overwhelm of medical centres and health organisations, and general impact on education, politics, socioeconomic, culture, environment and climate. Although this research does not provide solutions to these risk factors, the identification of such is important for being aware of the multifaceted nature of the risk factors to mental health and the responses, in order to be prepared for future similar effects.

Opposing responses to vulnerable out-groups from in-groups in society during the Euro-crisis were observed (Rothmund et al, 2017). During the Euro-crisis there were polarised opinions regarding for and against 'bailing out' other countries within the European Union. The difference between these two groups was investigated to discover any underlying group characteristics. Observer-sensitive individuals were those who responded to the vulnerable with empathic concern and anger on their behalf. The empathic concern also extended to the intergroup level and was directly related to policy attitudes in this context. These individuals also showed reduced anger regarding the behaviour of disadvantaged out-groups and this partially accounts for why observer-sensitive individuals are able to support intergroup solidarity. This indicates that during crises, some individuals will respond to this crisis with empathy towards those outside the in-group and be tolerant

of the behaviours that result from fear and discrimination. During these times, these people will remain supportive of intergroup dynamics and respond towards others with a sense of solidarity. In contrast, people high on victim-sensitivity are those who see the vulnerable population and are sensitive to feeling suspicious and rejecting of these people. This group is less likely to favour the idea of solidarity compared to people low on victim-sensitivity. The impact of victim-sensitivity was fully mediated by higher angry resentment, lower empathic concerns and higher nationalistic concerns. This indicates that victim-sensitive individuals are more inclined to be mistrustful of others' intentions and concerned about the risk of exploitation. Furthermore, victim sensitivity is linked to anger and fear of being exploited in intergroup relations, especially with regard to disadvantaged outgroups.

Jost (2017) argues that individuals are attracted to certain political ideologies in order to meet three psychological needs: epistemic, existential, and relational needs (or motives). Behaviour that stems from these needs aims to provide a sense of safety, security, and reassurance; and a sense of identity, belongingness, and shared reality. These needs and subsequent behaviours are seen to manifest differently. Jost (2017) conducted a meta-analysis of the political nuances found in political philosophies to produce insight into the different ideologies held. The findings supported a stronger need to maintain the status quo and perceptual and cognitive rigidity in some ideologies, leading to a higher need for predictability and closure. When ideologies showed the ability to tolerate ambiguity, uncertainty, and lack of cognitive closure there was also a higher need for deliberation and consideration of their perspectives, as well as a willingness to employ cognitive resources to do so. When these results are considered in the context of crises, those who have more flexible and inclusive psychological processes are better equipped to withstand the uncertainty within crises as well as support those around them during this.

Crisis such as epidemics can impact psychosocial aspects of mental health. Although crises induced by infectious disease may continue for weeks, months, or years, there is clear evidence that events at the later end of the crises are shaped by predisposing factors present in earlier stages of the crises (Yang et al, 2018). Emotional processing, both collectively and individually, impact the capacity to endure crises. On the premise that prevention is easier than repair, the author highlights the importance for research to investigate the mechanisms of the social and emotional processes that are present at early stages of crises. This knowledge is key to developing methods for emotion management through individual support and collective approaches at later stages of crises. Consequently, there is research to support Topic 2.

Topic 3:

It is not proven that to foresee a calamity as probable or certain undermines action, with much evidence to the contrary.

As climate related disasters become more common, patterns of behavioural responses to these disasters are able to be documented. The research explored within this topic demonstrates the types of behavioural responses to natural disaster. Furthermore, nuances in sequences of behavioural responses have been investigated, and regression analysis has shown a predictability to these. Research has also shown the importance of the type of communication provided at different stages of disaster, and the impact of this on behaviour and after-effects.

Zhao et al (2019) investigated how individuals respond to environmental risk and how these behaviours and perceptions differ between different stages of disaster. They found that as the weather conditions deteriorated, affect, risk perception, and behavioural intent all increased. This indicates that as disaster progresses, individuals become more emotionally engaged with the problem, are more cognitively active during the problem, and from a combination of these, they respond behaviourally. In addition, it was possible to predict behaviour at certain stages of storm progression based on the behaviour exhibited by individuals at prior stages of the storm's progression. This indicates that there is a predictable pattern of behaviour that is seen during disaster. This pattern appears to be inherently sequential with emotional, cognitive, and behavioural responses emerging in a particular order. Furthermore, these responses follow a trajectory as level of responses at one stage of a storm can indicate the level of responses at more acute stages of the storm. Furthermore, it was possible to link negative affect with risk perception, as those with greater activation were more aware of the risks present within the storm. When looking at the impact that media communication had on the individuals affected, it was found that risk perception and behavioural intention were heightened after media exposure. Media coverage of a disaster was able to impact the response to the disaster. As disasters progress, the likelihood that communication technology will fail increases. For this reason, communication by the authorities as well as between community members becomes essential for preparedness. This indicates the need to communicate the risks and evacuation plans early in the progression of a natural disaster in order to ensure this information has been received during times when technology is no longer operating.

Girons Lopez et al (2017) investigated the usefulness of preparing communities for disaster when threat of such is not imminent. In these cases, the community becomes prepared for the potential of a natural disaster and aware of how they will support each other and evacuate during this event. In the context of flooding, the findings highlight the importance of social preparedness for flood loss mitigation. It was found that efforts to promote and preserve social preparedness before the threat of disaster helped to reduce disaster-induced losses by almost one half. When faced with a threat, the typical responses fall into either a fight, flight, or freeze category. Fight and flight lead a person to either confront and address the threat or escape the threat. Freeze occurs when the person is overwhelmed and unable to respond instantly. Freeze is a frequent response during traumatic events, and prior communicated plans and social supports protect the community from the freeze response.

Whilst investigating the impact that different aspects of disaster communication have on the communities involved, Rollason et al (2018) found that threat appraisal was vital in order for residents to respond appropriately. Communication of disaster often provides information about the threat in order to make residents aware of the current and future risks to them. When this is done without providing "threat appraisal information", which assists in making meaning of the threat, residents were less likely to adopt protective behaviours. In these cases, residents employed wishful thinking, over-reliance on management organisations, denial, and learned helplessness. When threat information is provided, appraisal information should be included so that residents are informed how to respond emotionally and behaviourally. This includes providing specific risks to residents

based on their areas, projected impact of the disaster, specific plans on how to mitigate risks, and when to respond using these plans. In order to navigate their emotional responses to disaster, residents desire a greater range of information about the disaster, including locally specific information on the dynamics, which would allow them to understand their personal risk situation and how the disaster will affect them as individuals. Delivering the entire range of information available is vital to enable those at risk to judge what protective actions they can take, and when they should take action. Without these forecasts of how the disaster will progress, residents are unable to judge the potential severity of future disaster. In addition, this study found that the residents impacted by disaster desired the array of information to be provided to them. Without being informed, individuals become uncomfortable and reluctant to act blindly.

When investigating the mechanisms of change within individuals who drastically increase their risk perception and respective protective behaviours, personal impact was one of the key factors (Greer et al, 2018). When individuals do not feel as though they are personally affected by disaster, they show lower risk perception and commitment to protective behaviours. Even when risk perceptions are higher, this still did not reach the threshold for engaging in protective behaviours. Longevity of living in an area decreases the likelihood to show risk perception or desire for action in response to disaster. This is reflective of the innate bias towards maintaining the status quo, and denial of evidence that threatens it. However, when exposed to an acute natural disaster personally affecting them, residents' risk perception and protective behaviours rise significantly. In addition, longevity of living in the area then becomes positively correlated with desire for action. This highlights the importance of communicating the personal impact that disaster will have on the individual, and that their emotional response to this information is the impetus for protective behaviours.

The research generated within the review for Topic 3 gives insight into how communities respond to trauma in the immediate and long term. It has been found that when the urgency of the message to respond to expected disaster increases, and when environmental conditions pertinent to the disaster increase, risk perception of community members also increase. As risk perception increases, subsequent protective behaviours also escalate. In more acute natural disasters, such as unexpected large earthquakes, the instant response of the population is to freeze. This is an instinctive response that occurs before action. In these instances, the clear and well-established plans for evacuation, which had been communicated consistently over time prior to the disaster, were able to overcome this instinct. When individuals froze, there was less need for them to plan an appropriate response as instructions had already been scaffolded and communicated to them. In addition, it was found that without the salience of the imminent threat of the disaster, individuals were less likely to adopt protective behaviours. When individuals perceive themselves to be in danger, they then respond to this threat. Threat appraisal was required to be communicated in conjunction with clear evacuation plans in order to increase attention and a sense of urgency and decrease a sense of overwhelm or chaos. When evacuation plans are delivered, the threat appraisal becomes the impetus for the plans to be followed.

Topic 4:

Mental health can be supported through more honesty about our thoughts and emotions (including vulnerability about those) and more connection and dialogue with others. Conversely the avoidance of issues and the suppression of emotions about those issues is unhelpful for mental health and wellbeing.

The ever-increasing awareness of the climate crisis our globe is currently facing is coupled with collective emotional responses which are likely to increase in proportion with exposure to climate change effects. In order to respond appropriately to the mental health needs that are embedded within this issue, it is important to have knowledge of the most beneficial way of navigating emotions. This search looked for literature that could provide insight into how people process their emotions and cognitions, and how this could be done in such a way as to foster growth and agency.

Pascual-Leone (2018) investigated emotional expression leading to transformation and developed a model that indicates that emotions are accessed sequentially. Using this model, he suggests that it is possible to facilitate growth in an individual so that they shift towards transformative expression of emotion. This facilitation occurs by first engaging with expressions of global distress, fear or shame to make meaning of these. This research supports the suggestion that the capacity to be honest with ourselves and others regarding the nature of our emotional experiences is important for growth. When a distressing emotion is experienced or expressed in a difficult manner, the response to this should not be of alarm or an attempt to reduce this experience, but to 'lean in' and 'make space' for this experience. Doing so provides the opportunity to transform responses to a more adaptive expression such as acceptance and agency. Due to the sequence of emotions proposed by this model, the implications of discouraging expression of distress, shame or fear are that this could prevent the opportunity to process and make meaning from these. In this case, alarm about people experiencing distressing emotions could prevent transformative growth.

In addition to highlighting the importance of engaging with emotional experiences to making meaning of these, literature suggests that for this to provide a growth opportunity, it should be done in the context of intentional meaning making. This indicates that emotional expression alone is not enough for growth. Meaning making is a cognitive process and is an integral aspect of growth. Rohde et al (2015) investigated the use of emotional engagement with and without meaning making. They found that although both conditions reported a sense of relief following emotional expression, only those in the meaning making condition were found to have increased levels of resolution of their grievances, and mastery over this type of grievance. This indicates that whilst emotional engagement is vital to therapeutic outcomes, coupling this with intentional meaning making is required. The usefulness of both the cognitive and emotional aspects of exploring distress in tandem was the focus of van der Linden's (2014) research, in the context of personal responses to climate change. They found that incorporating both aspects of cognitively and emotionally exploring the eco grief in a way that was personal to the individual was also necessary. Being present with one's own emotion whilst making sense of the larger issues propelled individuals to employ information seeking behaviour.

Engaging with both emotion and cognition within a therapy context was found to be a strong predictor of therapeutic outcomes (Scherer et al., 2017). This research found that

therapeutic outcomes were positively related to cognitive reappraisal, and negatively related to reducing emotional engagement. This indicates that when individuals were facilitated to actively form reappraisals, they were more likely to have good therapeutic outcomes. However, when individuals were discouraged from engaging with their emotional experiences, they were more likely to have poor therapeutic outcomes. Although the relationships were both significant in both instances, reducing emotional engagement leading to poorer therapeutic outcomes had the larger effect size. This research shows the importance of engaging with emotional experiences during meaning making and supports the prior suggestions that cognitive and emotional processes are both important in facilitating growth. As such, when individuals are not intentionally encouraged to emotionally engage with the experiences they are reappraising, this is counterproductive to their growth and reduction of psychopathology symptomology.

The importance of engaging with emotion during cognitive reappraisal has been indicated within several neuroscientific studies. Messina et al (2016) found that reducing emotional reactivity as a catalyst for reappraisal led to a rebound effect, and further entrenched maladaptive emotional responses. This indicates that employing emotional avoidance techniques appears to be useful in the short term as an individual is visibly less distressed. However, long term avoidance has poor implications for an individual's ability to move forward; growth occurs in the engagement with emotions. This was supported by Reidel et al. (2018) research which concluded that emotional engagement was necessary for growth and understanding, as meaning making in the context of emotional arousal leads to reappraisal and reduces emotional reactivity. These studies highlight the importance of engaging with emotion whilst employing cognitive techniques to reappraise, and that exploring emotional experiences should be supported.

The research generated in this search provided strong evidence supporting the process of engaging with emotional experiences to make meaning of them as a way to support good psychological health. The research identified the importance of utilising both cognitive and emotional experiences when trying to process a distressing situation. Furthermore, it is important that both of these aspects of an experience are engaged with during this process in order to support the meaning making that is required for growth. Conversely, no research was found that supported the use of avoidance techniques or suppression of emotion. Research indicated that these responses were counterproductive to growth and meaning making, with some studies suggesting that these techniques provided a rebound effect, eventually leading to further distress.

Topic 5:

Transference of responsibilities, or deference, to perceived authorities on matters of mental health and wellbeing are unhelpful for positive mental health outcomes. Instead, commitment to collective co-responsibility is helpful for mental health and wellbeing.

In order to best support mental health and well-being, it is important to understand the complexities of how this issue is both perpetuated and protected by our societies. This area of enquiry aimed to investigate the most functional approaches to supporting mental health, taking into account the systemic nature of psychological well-being.

When investigating the experiences of accessing and initially engaging with mental

health services, Sweeney et al (2019) found that from as early as the assessment phase, the approach taken by the clinician can have a strong impact on the individual. There is an inherent power dynamic between clinicians and clients, with the clients being the vulnerable party in these interactions. When this is not managed by the clinician in a way that provides a sense of safety or autonomy in the client, this can incite distress, powerlessness, and hopelessness. This study found that when the clinician focused on establishing a good rapport with the client, and engaged in a collaborative manner, these outcomes could be avoided. It is clear that the responsibility for establishing trust, engagement, and collaboration within this power dynamic should be placed on the position of power and authority. When this is not taken into account, or managed well by the authority, this can have damaging effects on the individual, leading to disengagement.

Zapolski et al (2017) provided insight into the strengths that different cultural demographics may bring to emotional resilience. It was found that identifying with certain minority cultures had protective effects against drug use, whilst identifying with a white Western culture had the opposite effect. This research is nuanced in its approach and should be interpreted within the scope of literature of its kind; it is possible to draw further hypotheses from these results. Some minority groups have strong family and community ties. Identification with this strong collective approach may provide a sense of belonging and identity, as well as a sense of safety and protection from within the group. These aspects may protect individuals against feelings of isolation, overwhelm, and vulnerability. Although this research leads to more questions than answers in the context of the original topic, it does indicate the potential that when collective responsibility for others forms part of an individual's identity, there is less need for unhealthy coping mechanisms as support is accessible within the group. This may explain why identifying with a white Western culture did not have protective benefits, as this culture tends to focus on the importance of individuality over the collective identity. When an individual struggles in these circumstances, there is less readily available social support, more stigma regarding asking for help from others, and a greater sense of isolation. The antidote to these struggles would be shifting a cultural perspective towards mental health being a collective responsibility. In this case, those who were struggling would not have to then overcome societal expectations and stigma themselves, but the gap would be bridged by other society members who are able to provide support.

Incorporating the local community into navigating the impact of mental health has been strongly supported by research (Marshall et al, 2020; Ridley et al, 2018). The outcomes of these studies indicate the importance of supporting the psychosocial determinants of health on a community level. One approach to this is collectively designing mental health services in collaboration with the community they intend to serve. This leads to more accessible and relevant services which is paramount in supporting mental health. In the context of preventing homelessness, facilitating a multifaceted community network that provides opportunity to access social supports and social integration should be provided in addition to mental health services. This systemic approach is integral to supporting the mental health of those within the community. This suggestion recognises the impact and responsibility that social, youth, religious, aged, and disability workers have on mental health as well as the importance of individual, community, and population interventions to promote this. Although sharing the

responsibility amongst the various industries in order to support those within the community in a holistic way has shown to be beneficial, this has yet to be effectively promoted. There is a need to actively encourage and facilitate more collective responsibility for mental health within the community. Mental health services have begun including this perspective within their design, by facilitating community members and those with lived experiences in collaborating with a skilled cohort in designing services. In these cases, although the individual interventions continue to be delivered by mental health professionals, the way in which a person accesses and operates within this service is designed collaboratively with the community and reviewed for its impact on the individual and community level. This type of service design has found to be effective in engaging marginalised communities, as well as overcoming the inherent racism and classism that is often found within these systems. The importance of collective responsibility by utilising the strengths of those invited into collaborate (e.g., profession, cultural understanding, lived experience) enables hard-to-reach communities to be engaged and well supported.

Both bottom-up and top-down approaches have been considered in how to support good mental health in the community. Mantovani et al (2017) conducted a pilot study to investigate what could be done within marginalised communities in addition to the services provided. They trained laypeople from marginalised demographics as mental health advocates who provided support within their homes and communities. This study found that this was effective in approaching stigma regarding mental health in these communities; however, the advocates found that their training was not sufficient to provide the complexity of mental health support required. The conclusion was that a balance between in-community support and mental health service provision was important for good mental health outcomes. This indicates that even with community support and involvement there is the need for mental health professionals in supporting the complexity of mental health. As stigma is still an obstacle to accessing services, this can be effectively addressed through training community members to be aware of signs of distress, as well as normalising help seeking behaviour. As this research is in its infancy, this is not evidence to dismiss the notion that more responsibility for mental health can take place within the community, as better training and more research may address these questions.

Conversely, Ayano (2018) investigated the impact that decisions made at a policy level have on community mental health. They considered the global burden of disease, taking into account the weighting of impact different countries have on this burden. Gaps between countries were noticed, with some countries having higher global burdens of mental health than others. When considering the differences between these countries it was noticed that there was a link between burden of disease and provision of legislation to govern how this was managed within communities. Countries without mental health legislation had higher levels of homelessness and institutionalised care that enabled violations of human rights. This indicates that although community mental health needs to be collaboratively managed between mental health professionals and community engagement, without the policy and legislation to protect and govern this process, this area of well-being cannot be sufficiently addressed. In these instances, the systems provided to support mental health can become responsible for perpetuating these concerns.

The research generated in exploring this topic has highlighted the complexity and

multifaceted nature of mental health and well-being. There is a need for co-responsibility of mental health and this needs to be covered by a micro and macro approach. In-home trained community advocates as well as community involvement in designing services are both important in reducing stigma and increasing accessibility. Within services, taking active responsibility to account for the inherent power dynamic between the client and clinician is important in increasing engagement through collaboration. Furthermore, appropriate legislation and policy to govern how these initiatives are developed and managed is imperative in supporting the human rights on an individual scale, as well as reducing the global burden of disease on a macro scale.

Topic 6:

Those people who can allow foresight of calamity into their current experience might be able to help other people later on, if they have time to process the implications for themselves now.

The research generated for this question shows the capacity for post-traumatic growth following a crisis and the potential for this growth to be used to help others in similar circumstances. Adaptive aspects of navigating experiences that foster post-traumatic growth are explored and the research highlights the importance of being able to process emotional experiences, particularly within an interpersonal context. The research does not cover this process prior to a calamity, and as such, further investigation into the nuances and potential extrapolations between post-traumatic growth and pre-traumatic growth are necessary.

When facing personal trauma, there are several approaches to navigating the intense emotional experiences that emerge (Staub & Vollhardt, 2008). These can be categorised into two groups; expressors and repressors. 'Expressors' actively engage with their experiences in order to make meaning of them. This leads them to understand themselves and others better as an outcome of this process. 'Repressors' actively avoid exploring their pain which can leave them easily overwhelmed or emotionally reactive in emotionally strained situations. In order to be able to grow and move past these experiences, being able to explore these emotions is vital. This process of exploring emotional experiences leads to growth as well as the capacity to meet one's own basic psychological needs. One of the outcomes of this growth is the recognition of a personal need for support from others, as well as the will and ability to seek this support.

Another indicator of post-traumatic growth is the ability to tolerate one's own negative emotions and a sense of comfort with expressing these as part of a personal need to explore one's own existence (Scrignaro et al, 2018). In light of this research, if there is evidence for a disaster, those who are able to engage with their emotional experiences such as fear and anger, and make meaning of these, will be well placed to support others through this experience. Furthermore, without the opportunity to be able to process the emotions that are part of realising disaster is imminent, these people will not be equipped to support others through this process. Similarly, for those who are 'repressors', this experience is likely to be overwhelming and intolerable, especially when it becomes impossible to utilise coping mechanisms such as emotional avoidance.

The process of exploring emotional experiences has been found to be most beneficial when undertaken in a 'spoken disclosure' format (Slavin-Spenny et al, 2010). This research

investigated different methods of facilitating post-traumatic growth within participants who disclosed a traumatic event that remained emotionally unresolved. They found that various methods of spoken disclosure were linked to significant post-traumatic growth, whilst written disclosure was not. In addition, it was found that one 30 minute session of verbal disclosure led to significant post-traumatic growth. The indications from this research highlights the importance of engaging with emotional experiences post-trauma, and emphasises the need for this to be done through conversation with supportive others. It also indicates that without this opportunity for engaging with emotional experiences by speaking to others, an individual's opportunity for growth is limited.

One of the largest predictors of developing Post-Traumatic Stress Disorder (PTSD) symptoms post-trauma is a perceived lack of social support, and conversely the strongest protective factor against PTSD symptoms is a sense of belongingness and social support (Sifaki-Pistolla et al, 2017). Research investigating the impact that belongingness or social support had on PTSD symptoms found that it was the coping strategies which an individual employed that mediated any social effects found (Armstrong et al, 2014). Belongingness refers to the sense of identification and acceptance within a specific social context, while social support reflects the emotional and relational elements that are provided within this 'belongingness'. Although these aspects are known to be preventative against suicide, these findings indicate that the way a person relies on these supports is the important factor in how helpful these can be. Coping strategies such as emotional expression and cognitive reappraisal are both indicated as important aspects for post-traumatic growth, and it is through the use of these within a social context that belongingness and social support become useful. Coping strategies that are most adaptive involve acceptance and exploration of the experiences, whilst maladaptive coping styles included denial and avoidance (Pollard & Kennedy, 2007). As such, when an individual seeks out the social support of the people available to them in order to explore their own experiences and develop acceptance of them, this leads to growth, and they are well placed to also provide similar support to those within their community.

Although post-traumatic growth is predicted by frequency of trauma, belongingness, and coping strategies, neither the predictors of frequency nor belongingness remained significant when coping strategies were statistically controlled for. This indicates that, whilst frequency and belongingness are both opportunities to maximise post-traumatic growth, it is the coping strategies employed during this process that are the mechanism for change. Similarly, the coping strategy of intentional rumination was strongly predictive of post-traumatic growth. Intentional rumination refers to the cognitive focusing and exploring of ideas and experiences with the intention of making meaning of these. In addition, this is done in an accepting manner with no pressure on thinking 'positively'. This coping style differs from intrusive rumination, whereby an individual has unwelcome thought patterns that occur alongside the desire to avoid or suppress these. Intrusive rumination is considered to be maladaptive. When intentional rumination was accounted for in social support seeking, it was found to mediate the relationship between social support and post traumatic growth (Hallam & Morris, 2013). Similarly, further research has found that when high post-traumatic distress is coupled with low emotional avoidance, high levels of post-traumatic growth and meaning in life occurs. This indicates that high post-traumatic distress provides

opportunity for large amount of growth; however, this needs to occur within a context of emotional exploration instead of avoidance. Conversely, high distress and high avoidance leads to minimal growth and meaning making (Kashdan & Kane, 2011). These findings suggest that that growth and meaning making can take place in the context of high distress, however exploring distressing thoughts and feelings must happen in order for this to occur.

The research reviewed in addressing this topic highlights that employing coping strategies of exploring and engaging with experiences over suppressing and avoiding experiences is imperative to post traumatic growth. In the context of processing collective grief, these findings indicate that social systems are catalysts for growth, and that individuals should be encouraged to utilise these supports to discuss their concerns. Given that exploring emotions and reappraising cognitions within social contexts is the mechanism for change within belongingness and social support, it is important to maximise the number of individuals within these social systems that have the capacity to hold and facilitate this process for others. This would lead to social systems becoming more effective in transforming these individual emotions and fostering post traumatic growth on a larger scale.

Summary of Main Findings

This paper responds to the need for more public discussion on current and future societal disruptions from climate change by investigating a series of topics. The topics covered the nature of the communication of difficult truths, as well as the ways that people may respond to these truths. Although these topics were multifaceted and diverse, the research generated during this review revealed three main themes that emerged consistently throughout each topic. These themes are; the important role of emotion; the important role of a collective response; and the need for communication to be intentionally shaped by insight into how people respond to news. Each of these themes will be discussed further below.

The important role of emotion

Throughout each question, the role that emotion has to play continued to remain salient. It was clear that emotion, rather than being deemed either positive or negative, could be inherently adaptive when given opportunity to process this in a meaningful way (Pascual-Leone, 2018). In order to process emotional experiences, any maladaptive expressions needed to be engaged with in order to move towards more adaptive expressions. Given the hierarchical nature of emotional expression, avoidance had the potential to prevent this growth. Natural disaster research revealed that those who were emotionally engaged during a disaster were more likely to respond in protective ways (Zhao et al, 2019). Furthermore, negative affect was linked to more risk averse and adaptive responses. Following disaster, those who were more likely to engage with their emotions showed greater post-traumatic growth, and this growth increased proportionally with their distress levels (Kashdan & Kane, 2011). In this instance, high emotional distress was adaptive when emotional engagement occurred. This research is consistent with the climate change literature that indicates the adaptiveness of emotional responses to climate change.

Whilst emotional experiences themselves can be considered to be inherently adaptive,

emotional avoidance continues to be a common coping mechanism (Pollard & Kennedy, 2007). In the context of trauma, exploring emotional experiences has been found to be an adaptive response, with denial and avoidance being maladaptive. When investigating the use of emotional activation within a therapy context, it was found that those who did not emotionally engage during the therapy process had poorer outcomes (Scherer et al., 2017). This indicates that lack of intentional emotional engagement is counterproductive to growth. These claims were corroborated through the neuroscientific literature on emotional suppression (Messina et al 2016; Reidel et al., 2018). Similarly, post-disaster literature stipulates that mental health is often neglected in first responder intervention (Johal & Mounsey, 2016). In these circumstances, emotional coping is the least frequent method of processing experiences, and yet this is a coping mechanism that has been linked to good outcomes. Suppression and avoidance during disasters are linked with greater post-disaster depression. More recently, research into coping mechanisms during the COVID-19 pandemic has found that lack of capacity to engage with emotional experiences has led to maladaptive coping behaviour, in the form of emotional avoidance such as overeating and television binging (Courtney et al, 2020; Pyszczynski et al, 2020).

Engagement with emotional experiences is fundamental to processing and making meaning of them. It has been found that in order to grow and achieve catharsis, reappraisal must occur (Garcia & Rime, 2019; Rohde et al, 2015). Furthermore, in order to be able to support others through emotional experiences, an individual must have first engaged in this process themselves. When faced with uncertain and fear-inducing news about the prognosis of their own health conditions, Lin et al (2020) found that some children hide their emotional experiences from their parents. This was done in order to protect their parents who were struggling with their own emotional experiences. This indicates that the capacity to tolerate one's own emotional experiences and be supportive of others is not limited by age. Research into post-traumatic growth reveals that those who are 'expressors' of their emotional experiences are better able to understand others as well as themselves and were equipped to meet their own psychological needs whilst supporting others (Hallam & Morris, 2013; Scrigarno et al., 2018; Staub & Vollhardt, 2008). Conversely, those who were 'repressors' became easily emotionally overwhelmed and reactive. Acceptance and processing of emotional experiences is a key component of post-traumatic growth.

The importance of co-responsibility for mental health

The various topics of this literature review revealed the importance of engaging with a collective response in regard to climate change, as well as co-responsibility for the mental health of communities. As individuals make meaning of their responses to climate change, incorporating global grief into this was important as it led to individual responses to a global issue (van der Linden et al, 2014). Furthermore, this process of meaning making is most productive when done in spoken form, emphasizing the important and healing nature of being with another person (Slavin-Spenney et al, 2010). This process of collective emotional meaning making is mutually beneficial, as those who embrace this process have increased levels of reflective functioning and understanding of others, leading to being more open to intergroup support (Jost, 2017; Rothmund et al, 2017). Psychological flexibility and increased

reflective functioning in a social context facilitates tolerance of emotional experiences and ambiguity, both of which are important to navigating the climate emergency.

The benefit of co-responsibility extends beyond individuals to communities and the supportive services within these. Much emerging research documents the importance of incorporating communities in designing services, and notes that this systemic approach is protective for mental health (Mantovani et al, 2017; Marshall et al, 2020; Ridley et al, 2018). On a global scale, provision of policy and legislation is required to support mental health providers and services. Without these, countries are likely to have larger footprints of the global burden of disease due to mental health, as well as increased likelihood of human rights violations, institutionalisation, and homelessness (Ayano, 2018).

Throughout the disaster and trauma literature, the need for community engagement and social support was clear. Mid-disaster communication between community members within a crisis was found to be protective of mental health, and helped with logistical preparedness (Zhao et al, 2019). These strong community ties and communication became vital during times in the disaster when technology was no longer available. Furthermore, this social preparedness and working together during crisis was found to reduce disaster related losses by a half (Girons Lopez et al, 2017). When first responders to disaster victims accommodated for mental health needs as well as physical health needs, individuals' capacity to engage with the community post-disaster increased. Furthermore, volunteering within the community during these times led to greater feelings of belongingness, which is protective against suicide and despair (Johal & Mounsey, 2016; Mukhtar 2020). When communities had strong religious ties during disaster, this was found to be protective as it increased social support and facilitated community mobilisation following the disaster (Gianisa & Le De, 2018). Similarly, research into communities who have experienced collective trauma found that communal emotional responses lead to greater solidarity within the community (Garcia & Rime, 2019). During these events, perceived belongingness is protective against the development of PTSD and was the largest predictor of good mental health (Sifaki-Pistolla et al, 2017).

Constructing public messages about climate change

The final theme that was apparent throughout this review was the breadth of literature available which provides the capacity to communicate climate change messages appropriately and effectively. Although there is contention regarding how much risk should be communicated with these messages, it has been found that communicating disaster requires threat appraisal to be present in order for individuals to respond adaptively and protectively (Rollason et al, 2018). The Chen (2016) article that Strunz et al (2018) cite to argue that higher fear provokes apathy actually found that people exposed to a high-fear message who also believed in collective efficacy then increased their pro-environmental actions. From that insight, the matter is not the fearfulness of the message that is key alone, but how people are supported in their sense of efficacy as they process the information. The question then becomes what assumptions people and researchers may have, from society, that limit our understandings of what efficacy means and how it can be achieved. When a threat is being communicated, the message can benefit from providing some scaffolding as

to how to understand and respond to the threat, or how to begin to understand how one can respond. Without this scaffolding, the behaviour may not be protective. However, this does not need to be prescriptive, especially if any prescriptions are influenced by Experiential Avoidance or other cultural assumptions about efficacy within the people who are constructing and delivering the message. (Elsewhere in this issue, Professor Bendell points to the framework of Deep Adaptation, which offers a four-part inquiry into how one might respond positively to an anticipation of societal disruption and collapse.)

Further to 'what' should be communicated, research also informs the 'how' and 'when' information should be communicated. In disaster response, the media has played an important role, as greater media exposure has been linked with greater behavioural responses (Zhao et al, 2019). Furthermore, communicating response plans and risks well before the escalation of disaster was vital for adaptive and protective behavioural responses during the disaster (Girons Lopez et al, 2017).

Limitations and Recommendations

Given the breadth of topics to cover within one systematic review, it was not practical to explore each topic in depth. As such, a limitation of this review is that whilst it provides a good overview of some of the research available for the topics, more detailed analysis of the nuances of these topics has yet to be completed. Further systematic reviews and experimental research is needed to develop a deeper understanding of these important aspects of the psychosocial impacts of climate change.

The literature produced within this review was predominantly from a Western context. It is vital that information on this topic is representative of the wide varieties of demographics available. The form of eco grief for the loss of environmental knowledge and cultural identification with land is an important aspect of climate-related emotional responses and yet it has less weight within the literature available. As such, responses that are shaped by literature have the potential to further marginalise communities that have been less present in the scope of research. Future research to replicate findings presented in this review in other countries, cultures, religions, and contexts is necessary in order for policy and communication to be equitable and effective.

This systematic review focuses on the quantitative nature of the topics explored. Although this is an important aspect of forming perspectives that are empirically sound, it does not attend to the qualitative nature of what it means to be a human in a time when the world is changing dramatically. There are important schools of research and thought that attend to the more qualitative aspects of living and being, which are important for knowledge to be drawn from. In order for this human experience to be attended to in a holistic way, holistic lines of enquiry are required. Future qualitative research is needed within these fields, such as politics, sociology, anthropology, and economics, in order to provide these important perspectives. Furthermore, more attention to the wider range of literature available regarding the human experiences is needed including support of research in these areas.

Aspects of this review revealed the relevance of climate-related emotional experiences to child and adolescent demographics (Clayton et al, 2017). Given the insight that children

are able to acknowledge their own emotional experiences and navigate these in order to protect their parents' reactions (Lin et al, 2020), as well as the importance of a communal approach to processing and supporting these experiences, more research is required into this area of attachment. Furthermore, in order for emotional experiences regarding climate change to be explored and supported systemically rather than in isolation, early intervention programs to increase the capacity for emotional processing and reflective functioning of both parents and children are needed.

Conclusions

This review indicates the usefulness and importance of drawing knowledge from a variety of schools pertaining to human thought, emotion, and behaviour, and how this collaborative approach can inform communication to a public audience regarding climate change. Research investigating climate change specific emotional responses has found that these differ to pathological experiences, are inherently adaptive, and can indicate pro-environmental behaviour. The importance of encouraging emotional engagement and exploration as a means to process and make meaning of experiences has been found as a main theme of this review. This was present throughout the literature and within all topics. Furthermore, the importance of the collective capacity of humans in making meaning of their experiences, supporting each other through trauma, and overcoming natural disasters has been evidenced. It is clear that as part of navigating the climate emergency, space for collective processing of emotions, and public discussion regarding these is important, and adaptive.

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