Trauma-Informed Approach to Climate Change

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Abstract

Climate change has been a thorny issue for policymakers both at national and global levels. The differences among scientists, policymakers, and global leaders regarding the exactitude of the very science of climate change persisted since the concern came into surface in its recent iteration in the late 1980s. This chapter takes a different approach and looks at the issue of climate change from a behavioral health perspective, similar to a situation when a traumatized client seeks out a therapist for counseling; the therapists listens to the background leading to the current state of the problem and reframes it for the client to take on a new perspective. A cognitive behavioral approach is often taken to inform the client to view the problem in a new way and bring about behavior change through a treatment plan. Similarly, if climate change science, especially the way it exists in the discursive space, needs a reframing, a trauma-informed lens could be used for such reframing. The chapter outlines the history of climate change and provides multiple examples of how in actuality the climate fallout is also triggering a behavioral health crisis for many, including higher level of depression,

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anxiety, and traumatic stress. It provides a therapeutic discursive argument that could be used to bring opposing viewpoints to share information instead of fears.

Keywords

Climate change · Behavioral health · Trauma-informed lens · Mental health · Urban heat islands

Climate change signifies a long-term alteration in Earth's climate and weather patterns to the detriment of sustaining life on the planet. It is an existential crisis that is global in scale and requires a scientific and proactive approach. This chapter engages with the topic of climate change from the perspectives of social workers, therapists, and mental and behavioral health practitioners. What if the problem of climate change were brought to the attention of social workers? How would social workers handle the discourses around climate change similar to many other problems they address involving human suffering? Social workers and other behavioral health practitioners often find themselves working with clients who are in the middle of family conflict and chaotic circumstances that heighten their stresses and result in anxiety, depression, substance use disorder, and other ailments that Freud had collectively termed as "discontents" toward the pitfalls of "civilization" itself (Freud 1961). This chapter takes a public health approach and delves into the history of climate change debate, outlines major developments on climate impact and policy at the global level, identifies the polarization of opinions when it comes to climate science, outlines the mental health impact of climate change, and reframes the discourse from a social worker mental health therapist vantage point. The chapter takes a trauma-informed lens and explores if the resistance to changes called for by the climate science lies in overdependence and a tendency to avoid accepting the negative outcome of our fossil fuel-led lifestyle. The chapter further identifies important stakeholders who can form multidisciplinary teams, often employed in integrated mental healthcare, to manage climate change communication. Management of communication with clients is key to a healing relationship that a social worker forges with a client. Keys to that relationship are intentional trauma-informed communication and engagement. The chapter explores if the same strategies could employ to lift the discourses around climate from the morass of misinformation and "fake news."

It took nearly a century of research and data to convince the vast majority of the scientific community that human activity known as dangerous anthropogenic intervention (DAI) could alter our entire planet (Kolbert 2009). Unfortunately, the climate science stands polarized and politicized, preventing consensus building among corporations, the fossil fuel industry, the developed and the developing nations, grassroots organizations, and the ordinary citizenry – leaving said stakeholders in a perpetual dispute with each other (Khafaie et al. 2019; Fritz and Koch 2019). As this chapter is being written and finalized, an unprecedented global pandemic is sweeping the planet, shutting down economies, and forcing

governments to learn how unpredictable mass-scale disasters can affect macroeconomic entities and quotidian daily existence the unassuming individuals with the same debilitation. The COVID-19 pandemic, and its paralyzing impact on daily life, provided an opportunity to bring about a concerted dialogue at a global level for possible remedy. The world has become globalized in its economy, yet has continued defining and combating problems regionally, even if a problem, such as a climate change, is global in scope; this could have perpetuated the denial of the changing climate to localized pockets. As a result, vested interests found it convenient to stall dialogue and obfuscate scientific discoveries in their constituencies, prohibiting a concerted response. This chapter explores whether social workers and other human service practitioners can combat climate-misinformation and raise awareness about the problem (Boetto and McKinnon 2013). Social workers, clinically trained in trauma-informed approaches, could facilitate a new type of climate change dialogue globally. This chapter outlines the history of disagreements on climate science and underscores the resulting psychological impact. Furthermore, it discusses how a trauma-informed approach could alter the extant stalemate in the discourse.

The present chapter intends to identify the role of multi-stakeholders in the arena of climate change and contribute to the understanding of how various stakeholders could come to a consensus on identifying the most vulnerable among us – those disproportionately affected by the environmental disaster – and play a vital role in the fight for environmental justice. It aspires to address the consequences of climate change through education, advocacy, community organizing, and research and widen and intensify policymakers' understanding of the advantage in incorporating the social interventions into climate policies.

The Myriad Historical Theorizing on Climate Change

The history of climate science is complex and contradictory. It provides an inconsistent base for a robust social work intervention. Understanding the chronological trajectory of climate science can explain the origin of the contradiction that mars the current scientific discourse. It took almost a century of research and compelling data for the scientific community to acknowledge that human activities and human-produced carbon dioxide (CO2), as well as other greenhouse gasses, pored holes on Earth's insulation system meant to protects us from the sun's ultraviolet rays (Chan et al. 2019). Historically, there have been many theories about how human activities have contributed to climate deterioration (Murphy 2020; Dominelli 2013). The Ancient Greeks believed that climate change was due to human activity, yet its impact was localized. Later, a now-discredited dust bowl theory of the 1930s claimed widespread agriculture had contributed to global warming and climate change (McKibben 2020). The coexistence of opposing viewpoints around climate science is not a recent phenomenon. In 1895, a Swedish chemist named Arrhenius had proposed that carbon dioxide in the atmosphere might cool the Earth by absorbing energy, leading to global cooling by about 9 °F; the same scientist, later on, had reversed his thesis and claimed the global temperature would increase by 9°

for the same reasons (Tretter and Löffler-Stastka 2019). In the 1930s, scientists had postulated that temperature in the United States and the North Atlantic region had significantly warmed due to the industrial revolution. In the 1950s, the Scripps Institute of Oceanography's Charles Keeling found a tooth-shaped curve showing a steady rise of carbon dioxide levels along with short, jagged up and down levels of gas produced by repeated wintering and greening of the Northern Hemisphere (Lysack 2015). The more advanced computer modeling in the 1960s confirmed the Keeling Curve hypothesis by simulating that a doubling of carbon dioxide could produce a 3.6 °F warming within the next century.

The science of climate change may be politicized and controversial in the current day and age, but experiments on the cost of human activities producing carbon dioxide and other greenhouse gases in the atmosphere originated back in the early seventeenth century (Wallace-Wells 2020; Woroniecki et al. 2019). Earth's climate and weather patterns have been cyclical over time, with repeated cooling down and warming up phases. However, the very idea that human activities can alter the climate at a global scale has always seemed far-fetched to lay thinkers. Over the last half-century, the concentration of carbon dioxide and other greenhouse gases has steadily increased in the atmosphere, causing glaciers to melt and sea levels to rise at an alarming rate. Social scientists and social workers working for environmental justice need to differentiate between the scientific facts and opinions not adequately grounded in factual data. Social workers forging the right alliances with scientific communities could access legitimate information on climate change (Pyles 2016). The importance of creating community awareness and subsequent community action is undisputed, as it would stem the slide in the climactic deteriorations in the future. The environmental justice movement does need social scientists, social workers, community activists, and policy advocates to join forces with climate science to exert meaningful actions from the nation-states. As we all know, it is easier said than done, since scientists themselves are quite divided on this issue. Under these circumstances, social workers can employ critical thinking skills to ascertain their position. Social workers must go back to climate science and ask pertinent questions: How do scientists know what they claim to know? Who are the key players and influencers of climate change at the global, national, regional, and local levels? How to reduce fossil fuels? Are environmental regulations effective? What can one do from their locus of control to positively influence the climate?

Throughout the 1980s and 1990s, the political system did not respond to warnings from the scientific community, though evidence of climate change as a potential hazard persisted. In 1985, British scientists discovered a "hole" in the ozone layer caused by the chlorofluorocarbons in the atmosphere. An international treaty, ratified in 1987, phased out chlorofluorocarbons and helped avert a crisis. Since then, the warming hypothesis of climate change has taken precedence over the cooling one creating a politicized distrust on the vacillating scientific hypotheses. In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) reviewed the available scientific literature and devised a concerted plan to mitigate climate change by reducing greenhouse gasses (Khafaie et al. 2019; Wallace-Wells 2020). The consequent agreement, known as the Kyoto Protocol of 1997, identified

actionable steps to eliminate greenhouse gasses through state-enacted regulations. The Kyoto Protocol of 1997 took effect under the leadership of Democratic President Bill Clinton. President George Bush, a conservative republican, after assuming office in 2001, immediately dismissed the premise of the Kyoto Protocol and had refused to implement it (Drolet and Sampson 2017). In 2009, President Barak Obama, another Democrat, reentered negotiations on the Kyoto Protocol and led to a noteworthy advancement in actionable steps getting 192 countries to agree on it. The 2015 Paris Agreement, a landmark in combating climate change on a global scale resulting from President Obama-led negotiations with other world leaders (Bexell et al. 2019).

Meanwhile, the United Nations 2015 Sustainable Development Goals (SDG) also called for water and energy security and climate change mitigation (Alston 2015). In 2017, President Donald Trump, a conservative, protectionist Republican, came to power and decided to withdraw from the Paris Agreement. The secretary of the Environmental Protection Agency (EPA), Mr. Scott Pruitt, reversed the extant air and water pollution regulations and backtracked years of advancement in fighting climate change (Puko 2020; Fritz and Koch 2019). Meanwhile, the United States Congresswoman Alexandria Ocasio-Cortez and US Senator Ed Markey released a plan in 2019 that called for a Green New Deal (Bhuyan et al. 2019). The Green New Deal apportions unprecedented investment in public works projects, regulatory infrastructure, and financial and welfare reform to reverse climate change. The 2020 US Presidential election has put the Green New Deal on the ballot box with the Republicans calling it socialistic and the Democrats calling it the need of the hour. During this chapter's writing, a vast swathe of forest fires in California and Oregon had put the climate question right at the forefront of the US federal election (Kolbert 2019). The Biden administration recently reversed back many of the climate policies from the Trump era (Bokart-Lindell 2021).

In social sciences, especially in applied behavioral health disciplines such as social work and psychology, there is an epistemological tendency to view the relationship with nature from a dichotomous subject/object paradigm. Eco feminists, however, use critical theory to view this relationship as continuity with nature and the environment always seen within the purview of human existence and never as an objectified entity. The theory of ethical ecology originated within the ecofeminists' epistemological tradition is gaining ground in psychology and social work shifting from an anthropocentric tradition of viewing the world (Plesa 2019; Singh and Singh 2015). Malin and Ryder (2018) propose a "deeply intersectional" framework described as "intersecting forms of structural environmental injustice and dominant ideologies that operate as classist, racist, sexist, nativist, ableist, homophobic, and anthropocentric matrices of dominion:" (p. 1). This chapter adds a public health lens to the "deeply intersectional framework" to view climate change and calls for a trauma-informed approach to negotiate the collective differences.

Establishing Climate Change as a Public Health Concern

A public health approach redefines the relationship one's environment and health. It sidesteps the political discourse and redirects the focus on climate as a healthcare issue (Bay 2013). The public health approach acknowledges a complicated relationship between environment and health and identifies the specific domains where climate change impacts health. A trauma-informed approach, thereupon, lays out the toll of climate change on mental and behavioral health (Case 2017; Gordon 2017). A 2009 Lancet article proclaimed that "climate change is the biggest global health threat of the 21st century."

A public health approach pertains to physical health; a trauma-informed approach incorporates mental and behavioral health. The Affordable Care Act (ACA 2010) had integrated mental and behavioral health into public health discourses creating a ground for exploring the impact of climate change in a holistic way (Hanna-Andrea et al. 2020). Mental health conditions and psychosocial resilience determine how one responds to significant adversity, stress, and traumas and subsequent health outcomes; hence, mental and physical health are both integrated and interdependent aspects of overall health. Currently, the Climate Change and Health Vulnerability and Adaptation Assessment (CCHVAA) assesses climate change's health consequences; this assessment tool overlooks the mental health components of climate change that may include clinical concepts like mental well-being, resilience, diagnosed mental illnesses, or mental disorders (Hayes et al. 2019; Evans et al. 2012).

There is a dearth of literature regarding the impact of climate change on mental health. However, the literature mentions climate-related hazards potentially debilitating mental health, such as extreme heat, extreme weather events, and morbidity associated with the vector-borne disease. Extreme weather events like flooding, hurricanes, and wildfires lead to depression, anxiety, post-traumatic stress disorder (PTSD), suicidal ideation, substance use disorder, vicarious trauma, relationship strains, and helplessness (Espinel et al. 2019). Vector-borne diseases such as West Nile virus and Lyme disease contribute to cognitive, neurological, and mental health problems (Chersich et al. 2018). However, the relationship between climate change and mental health is complex and multidimensional. Some scholars have identified positive mental health outcomes following climate-related events. Since climate change has a geospatial implication, some scholars believe that it would enhance a sense of community by suspending social isolation and nurturing deep communications and a sense of belonging through a shared rupture in everyday life. Climate affects both the onset and severity of depression. When it is hotter out, psychiatric hospitals see a spike in patients. Heat waves also increase the severity of mood swings (Longman et al. 2019; Matthews et al. 2019; Schwartz et al. 2017).

Climate change is anthropogenic. Though research is still ongoing, deforestation and habitat loss force many exotic animals to migrate, potentially encountering other animals/livestock or people, which may cause spillover infections such as COVID-19. Furthermore, a recent study found that people who reside in areas with low air quality are more likely to die from COVID-19, while also accounting for factors such as preexisting conditions, socioeconomic status, and access to healthcare. A

recent study found that increases in particulate matter air pollution contributed to the 2015 spread of bird flu. Air pollution can help provide conduits to several viruses such as adenovirus and influenza virus (Kwan and Walsh 2017). There has also been fear among scientists that glaciers and polar caps' melting could unveil fossilized pathogens or viruses from antiquity that modern humans have never encountered and have zero immunity. Urban heat islands (UHIs) emerge in cities where the land surface gets modified for new development, usurping soil and vegetation and replacing them with concrete structures. Science suggests that such human modification activities increase the heat of those cities that see a change in the land surface (Hamilton and Erickson 2012).

The temperature increase manifests through a sharp rise in nighttime temperature. This phenomenon is known as UHI and can negatively influence the health and well-being of city dwellers (Hamilton and Erickson 2012). The temperature increase due to UHI could grow between 5° and 20°. The density of the city structures contributes to the higher and steadily increasing elevation of the UHI. According to Bartlett (2008), UHI can cause respiratory illnesses among children and older adults. Children absorb more heat from the atmosphere than adults, and an increase in surface temperature can cause them to asphyxiate due to heatstroke. Older adults can also experience stress due to an increase in surface temperature. Secondarily, the UHI can increase air conditioning units in urban areas, which may lead to higher emission of lethal greenhouse gases. Of course, low income and minority populations happen to reside at the most vulnerable fringes in the city; they are also not likely to have the means to have protection from elevated temperatures. For example, at the end of the last millennium, a heat wave in Chicago disproportionately killed the elderly and low-income population, and a majority of those killed by the heat wave were African Americans (Gray and Coates 2015).

One of the significant drawbacks to the literature connecting mental health/overall health with climate change is the lack of research on the direct causality of specific events to climate change. However, there are many advantages to understanding the relationship between climate change and mental health (Hayes and Poland 2018). Firstly, it helps us provide a more holistic conceptualization of health that clarifies the actual illness burden associated with climate change. Secondly, attributing climate change to mental health may help to reduce mental health stigma. Since environmental factors are universal, people are more likely to appreciate their mental health impact, promoting help-seeking behavior. Thirdly, establishing a stronger relationship between mental health and anthropogenic climate change may encourage better mitigation behavior and advocacy for climate action at both community and policy levels. Finally, a better understanding of mental health outcomes from climate change could help build strategies and interventions to develop better psychosocial resilience (Xue et al. 2019).

Though mental health seems to be a less pressing concern than physical health, research shows that the impact of climate change-induced disaster is greater on mental health than physical health. Helen Berry and colleagues have developed a multi-clausal conceptual pathway linking climate change to mental health (Hayes et al. 2019). They identified three types of causal pathways that affect mental health:

direct (extreme weather, high heat, forest fires), indirect (economic downturn, loss of business, displacement due to rising water, homelessness due to forest fires), and overarching (worry/anxiety due to the knowledge of climate change). There is no psychological impact assessment that empirically measures climate change's impact on mental health and well-being. There are a few studies that assess psychological resilience to changing climate. For example, the environmental distress scale (EDS) assesses well-being in changing environmental conditions (Espinel et al. 2019); the Kessler 6 Psychological Distress Scale; Post-traumatic stress disorder-civilian checklist (PCL-C) to assess climate trauma; and a general health questionnaire (GHQ) to assess psychological resilience post-flood.

The impact of climate change is universal, but the impact is more amplified in populations that are most marginalized such as the indigenous people in Australia, the Black, and Latino communities in the United States and numerous populations across the world on the "other" side of social inequity. Children, pregnant women, and older adults are also vulnerable to the consequences of climate change-driven extreme weather and rising heat (Chersich et al. 2018; Fernandez et al. 2015). Older adults are more likely to show attachment to land or a specific geographic habitat than the younger population. This attachment to land increases with age and makes older people more emotionally attached and less amenable to climate-driven relocation (Parks et al. 2020). Research suggests that older participants experience more difficulty understanding the abstract scientific concepts of climate change and its often-contradictory manifestation. Indigenous people sharing an intimate and down-to-earth relationship to their immediate natural environment may experience a profound loss of life's meaning or purpose due to climate change leading to an increased prevalence of depression, chronic illness, and loneliness (Hecht et al. 2018; Joseph 2017).

Though the gender gap has shrunk in every facet of life, extreme weather disproportionately precipitates premature childbirth rates and increased maternal and infant death rates in the developing world by precipitating insect-borne illnesses. One of them is the Zika virus, a mosquito-borne disease that endangers a developing fetus. An increase in the concentration of carbon dioxide in the atmosphere leads to more grass pollen production, increasing allergies by 20%. The carbon dioxide further increases the allergy-causing potential of pollen by altering the seasonal pattern of allergies. Children now suffer allergy-driven sinus pains, ear infections, and congestion year-round (Muchacha and Mushunje 2019).

Research increasingly points out a causal relationship between climate change and the risk of future violent conflict in societies. A study analyzed the data of annual average water discharge of the Euphrates River in the Turkey/Syria border from 1937 to 2010. It connected the declining water supply in the river with the precipitation of the violence among the ethnic communities located in that geographic region. Water scarcity led to six different areas in Syria becoming drought-prone (Mason et al. 2020; Lysack 2015). Agricultural failures, economic dislocations, and population displacement between 1990 and 2011 prepared the platform for initiating the Syrian conflict.

A Crisis Intervention and Trauma-Informed Approach to Climate Change

After many years of trials and tribulations, the world has realized that a solution to environmental degradation and climate change could not emerge without an ethical engagement between communities and nature. We are using the terms "nature" and "environment" interchangeably. Policymakers often propose a top-down technological solution to environmental problems, leaving communities disengaged, uninformed, and without an active stake in the solution. As with many other scientific propositions, the public messaging around environmental science is riddled with ideological differences, information gaps, and trust deficits, especially when the mandates and regulations come from government entities. Environmental communication with communities has been deteriorating since the 1970s. Faith and trust in science among the general population have seen a steady decline when technological and scientific innovations begin to define our way of life (Mapp 2020). Thus, effective communication around environmental conservation and climate change needs a strategic reimagining. We believe, social workers and other mental health and human service professionals could provide a framework that might bolster the efficiency of extant strategies for environmental communication (Mason et al. 2020). This framework would be a trauma-informed one with a primary goal of redefining the challenges to environmental preservation from the stakeholders who have the most to lose. Every member of our nationwide and even global community is a stakeholder to environmental preservation. There is no binary choice between humanity and the nature that surrounds and sustains us. However, our anthropomorphic thinking since the post-industrial revolution has been delineating human economic activities from those of the environment. Our production modes are now mostly hidden from the metropolitan areas' public eyes, where our policymakers and industrial titans operate and reside (Willett and Sears 2018; Papadopoulos and Hegarty 2017). Lack of proximity between the environment and our economic activities has created a misperception of the environment as nothing more than a mere objectified entity that supplies us raw materials for our economic growth and prosperity. This mercantile relationship's tenor leads us to treat nature not as a mother, god, sustainer, or a higher force to reckon with, but as a means to the capitalistic profit appropriation end. This type of thinking is a cognitive trope that has been marketed and packaged by a smorgasbord of a determined and all-encompassing global media establishment – including the 24-hour news channels, audio-visual advertising, social media, television, and popular cinema. Without creating a bottom-up non-rancorous communication shift to engage with community stakeholders fruitfully, we have a very timid chance to preempt an imminent disaster.

The consequences of climate change on mental health occur immediately following exposure to a climate-related hazard and then continue as psychological sequelae for the long term. Hence, mental health intervention can be twofold: (1) as crisis intervention and (2) as long-term mental health rehabilitation. A crisis is when an individual experiences an overwhelming event/events that upset one's psychological equilibrium or baseline level of functioning. When mental health is crisis-induced,

then one loses their existing problem solving and coping mechanisms (Powers et al. 2018). Typically, a crisis lasts between 2 days and 6 weeks. Climate-induced mental health is a situational crisis precipitated by a sudden traumatic event that is unexpected. A situational mental health crisis can have several protective factors that modulate mental health fallout. These protective factors include social support, psychological resilience, perception of the event, nature of the event, the extent of exposure, and positive coping mechanisms (Dominelli 2011; Fuentes et al. 2020).

The trauma-informed perspective posits that a singular or series of events can lead to a traumatic experience on the individual/collective psyche. A traumatic experience entails an initial response of fight, flight, and freeze, followed by a prolonged period of dysfunctional mnemonic associations that trigger the involuntary re-experiencing of a said traumatic event. As for the diagnostic and statistical manual 5 (DSM-5), traumatic stresses, such as those resulting in PTSD, remain persistent in someone's psyche when unaddressed. Traumatic stress consists of multiple deleterious symptoms: dissociative thoughts, intrusive thoughts, hypervigilance, and psychosomatic experiences. Survivors and patients suffering from traumatic stress find themselves unable to make their memories past. Traumatic stresses further induce existent or novel mental health symptoms such as anxiety, depression, sensitivity, anger, overreaction, affective dysregulation, and difficulty regaining significant modulation. Hence, understanding the relationship between climate change and mental health cannot be accomplished without considering the mediating role of traumatic stressors. Since mental health can be pathological, genetic, and developmental in its provenance, climate change-induced events may be primarily traumatic; an accurate assessment of climate change on mental health relies on a trauma-informed lens (Rother et al. 2020).

The political discourses, marred by partisan nonscientific contentions, sowed doubt on the plausibility of a consensus on the issue. The politicization of climate change has stifled meaningful engagement from social workers and other professionals. Simultaneously, governments worldwide have also drastically reduced the budget for social welfare and societal abilities to advocate for change from within the system.

Social workers' foray into environmental justice, involving both the human and non-human conditions, has been limited. Social work curriculum and training have been more anthropocentric and less ethnocentric (Kemp 2011) An ecologically informed social work practice would include climate change from both public health and trauma-informed perspectives. However, historically, both these perspectives were psychosocial and primarily anthropocentric (Nesmith and Smyth 2015). However, there is a need to reconceptualize and deconstruct these clinical perspectives and use them to assess the broader environmental and nonhuman spheres of existence. There are challenges to creating an ecologically informed social work practice (Noble 2016).

As social work has critiqued capitalistic and neoliberal politics of the "global north" while advocating for the rights and dignities of the "global south," the field of social work has created a unique platform to incorporate the new frontiers for an environmentally informed and non-human inclusive practice. Kwan and Walsh

(2015) have identified practice domains that are environmentally conscious that social workers can take on, and they include: "sustainable practices to include the real cost of consummative products and foods; search for globally just practice linked to political philosophies and environmental movements that advocate for a reduction in growth; unfettered exploitation of the world's natural resource for more sustainable environmental practices."

Conclusion

Even if it is not often part of public discourse, the changing climate negatively impacts the mental health of communities. A change in cognitions (thoughts) about public discourses on climate science is necessary to avoid the climate trauma that could threaten our mental health before it jeopardizes our very existence. An objective rational explanation needs to be situated in science and be critiqued with sound evidence. Any other disparagement of the very scientific process would obfuscate the rational structure that science is supposed to produce. Thus, the buck would not stop in science, which could cause chaotic public discourse that is currently ensuing in climate debate. A trauma-informed lens suggests that whenever there is no rational explanation found to events that contribute to suffering, a tendency to develop inaccurate or irrational cognitions about causation of such events take root. Onsets of irrational beliefs, conspiracy theories, and tendency to believe, generate, and spread non-evidential information to gain some control or predictability due to lack of belief in an objective authority (science) for information could be seen as a defense mechanism of sort. This chapter identifies and that calls for addressing them from a therapeutic manner. Trauma-informed cognitive therapies call for the following remedial therapeutic steps to address such inaccurate cognition and distrust toward an objective authority;

(a) Psychoeducation: Psychoeducation provides general information about the concerned event (climate change), common emotional and behavioral responses to that event, the roots of fears, and the methods through which information is chosen. The psychoeducation stage could also provide information about how to verify information and evidence and control impulsivity in assigning trust in a rushed manner.
(b) Engagement skills: Engagement skills use functional behavioral analysis to understand triggering events. What are the antecedents that trigger emotional responses? How those responses inform human behavior and reactions? And how they lead to dysfunctional consequences such as social media trolling.
(c) Relaxation in understanding: Infusing relaxation skills to mediate between the receipt and comprehension of information about climate science could regulate reactive emotions. Deep breathing, taking a walk, and engaging in practices such as delay posting a comment could reframe an incipient impulse that otherwise could lead to reactive responses.

(d) Affective expression and modulation skills: Identifying feelings and naming them often deactivates the toxicity of that feeling from impacting our behavior. Sometimes a primary feeling of hurt or anxiety generates a secondary reactive feeling of anger that end up getting expressed. Emotional intelligence calls for observing feelings and neutralizing their impacting potential through modulation skills.
(e) Cognitive coping and processing skills: Recognizing and controlling internal dialogues through cognitive coping strategies, such as how one's feelings influence one's thoughts and action could help new ways of processing.

The cognitive-behavioral approach calls for a non-judgmental discourse to interconnect our thoughts, feelings, and actions. The stepped approach promulgated here is widely and successfully used to address traumatic stress, many phobias, behavioral disorders, and cognitive dissonances. The same approach applies to more extensive macro and mezzo systems such as schools, organizations, and communities. The chapter calls for such approach could be adopted in policy discourses around climate science. There are specific protocols that exist today in trauma-informed schools and communities that could very inform climate leaders, media personalities, vested interest industry groups, and the scientific communities to engage in a trauma-informed way while deliberating on climate science and climate change. The existing dysfunction in the essential discourses on climate change and climate science shows a similar intergenerational and political breakdown of communication that are evident in a patient suffering from cognitive inaccuracy due to traumatic stress. The principles of trauma-informed practices could be applied to create advocacy tools and provide a repertoire for climate activists and policymakers.

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