Resources

Climate Change, Mental Health, and Well-Being for Pacific Peoples:
A Literature Review

JEMAIMA TIATIA-SEATH, TRISH TUPOU, AND IAN FOOKES

Climate Change, Mental Health, and Well-Being for Pacific Peoples: A Literature Review

Jemaima Tiatia-Seath,
Trish Tupou, and Ian Fookes

> Islanders need to belong to places, the physical plots, taro fields, coconut groves, sandy beaches, portions of reefs, fishing corals, and the island in general . . . to keep our sea of islands within us no matter how physically removed we are from our islands. . . . If there is a frightening notion that most islanders share, it is the concept of being lost, being out of place, or the inability to make connection with a place.
> —Joakim Jojo Peter,
> "Uleletiw: Imaging of My Paradise"

At the heart of Pacific peoples' identity is a sense of place and belonging. Fear and anxiety stemming from threats to this connection to place and to the places themselves are profound and tangible effects of climate change. For researchers, addressing this concern remains a challenge, as they must consider not only the vastness and diversity of the region but also how successive Western and scientific representations have impacted Pacific peoples' conceptions of themselves and of the region. This issue is particularly important with regard to conceptions of climate change, mental health, and well-being.

The Pacific is currently home to over thirty-eight million people—including many Indigenous communities—living in a mixture of rural and coastal villages, areas of high-density development, metropoles, and "green zones" occupied by diplomats and expats (UNESCAP 2013). The region features a range of political and social institutions, operating within overlapping sociolinguistic and cultural contexts. The first challenge fac-

ing researchers, then, is to come to grips with this vastness and complexity. The second challenge is to develop ways of decolonizing scientific frameworks and centering Pacific ways of knowing within research methodologies. In the opening epigraph, the late Chuukese community leader Joakim Jojo Peter payed homage to Epeli Hauʻofa's foundational essay "Our Sea of Islands" (1993). Peter's comments echo the Tongan intellectual's criticism, voiced in the 1990s, of the way the Pacific had been conceived of by governments, international organizations, and their advisors. By exposing the reductive lens that the West had cast over the Pacific, Hauʻofa allowed us to reimagine an Oceania that is as diverse as it is vast and that is a space intimately connected through genealogy, culture, and long histories of movement and mobility. He problematized the objectivity of Western scientific frameworks, arguing that they instead objectify Pacific peoples, reductively categorize their diversity, and marginalize their understandings of themselves. He thus relativized their claims and successfully created space for Indigenous, Oceanic ways of knowing. Sadly, more than twenty-five years later, the very same reductive tendency that Hauʻofa challenged remains persistent in the study of climate change in the Pacific.

One of the latest "filters" to be cast over the Pacific is that of "sustainable development." Since 2000, the United Nations (UN) Millennium Development Goals have guided research and policy in the region. In 2016, these goals were assessed, modified, and extended through the adoption of the Sustainable Development Goals (SDGs) (for the full list, see United Nations 2019). Progress toward the achievement of these goals is an ongoing priority for researchers, who use it to evaluate the preparedness of Pacific nations for the effects of climate change. Researchers have concentrated almost exclusively on the impacts of development in the Pacific in terms of sustainability and ecology, as well as, most recently, the identification of underreporting and insufficient data provided by Pacific nations (UNESCAP 2017). As a result, relatively little attention has been paid to the effects that development has had on the mental health and well-being of Pacific peoples. Though mental health and climate change both feature in the Sustainable Development Goals, they are not explicitly in conversation with one another. This oversight obscures both the crucial connection between overall social well-being and the environment and the distinctly Pacific-based ways of understanding well-being in relation to place.

Indigenous peoples do not just belong to a place; rather, they often see themselves as embodying place itself. The terms whenua (Aotearoa), enua (Vanuatu), fonua (Tonga), and vanua (Fiji), for example, refer both to the

land and to an ancestral connection to the land. Words for land and dirt are often synonymous with words for placenta (whenua, enua, fonua, vanua) and as such suggest that life and land are intrinsically connected. For myriad Pacific cultures, the common practice of returning the placenta to the earth further embeds this notion of being *of the land*. Such a connection means that any radical transformation of the land or separation from it—be it through voluntary or involuntary displacement—is likely to be a catalyst for profound identity loss (Campbell 2010, 61). This connection between place and people is solidified through the various creation stories from across the region. The story of Touia ʻo Futuna from the islands of Tonga tells us how the deities and different worlds of the Pacific were created through a volcanic eruption from under the ocean (Kaʻili 2017; Tupou 2019). According to this story, islands come from the gods, and people eventually come from and protect the land, suggesting that all people from the Pacific are creations connected back to their islands and to the deities that procreated to make the land. Likewise, stories from all over the Pacific tell us how people, islands, animals, worlds, deities, and mortals intertwined to create space and Pacific futures. Contemporarily, Linda Te Aho's account of the Waikato River in Aotearoa/New Zealand as a living ancestor with its own mauri (life force) underscores a responsibility on the part of tribal members, who are guardians bound by kaitiakitanga (an ethic of guardianship and protection) (Te Aho 2015, 171–172).

Underscoring this notion, in 2008, aided by a changing legal and political landscape, the Waikato-Tainui tribe was able to negotiate a settlement with the New Zealand government that recognized the Waikato River as a tupuna (ancestor) and asserted the need to protect the "river's mana and restore its well-being" (Te Aho 2015, 154; see also New Zealand Government 2020). The acknowledgment of mana and well-being as common human attributes showcases how it was possible for a Māori worldview to be integrated into a Western legal framework, offering an alternative to a more scientific approach to conservation efforts. Though Western frameworks have had an invasive influence throughout the Pacific, Indigenous ways of knowing have persevered. Moreover, these ways of knowing are often situated at the forefront of "environmental" protection efforts simply because they inherently recognize the connection between people and place.

*   *   *

In this literature review, we begin by defining "climate change" and "mental health and well-being" before providing an overview of some of the connections between climate change and mental health. We then present research on the more specific relationships between natural disasters and mental health, allowing for analysis and discussion of the potential implications of climate change for the mental health and well-being of those living in the Pacific, particularly Indigenous peoples.

DEFINITIONS

Climate Change

Introduced into scientific literature in 1975 by geochemist Wallace Broecker, the term "climate change" received widespread media attention following its use in testimony by NASA scientist James E Hansen to the US Congress in 1988. Hansen strongly suggested a causal relationship between a "greenhouse effect" and "global warming." In this context, "global warming" referred narrowly to "the increase in Earth's average surface temperature due to rising levels of greenhouse gases," while the scientific term "climate change" referred to "a long-term change in the Earth's climate, or of a region on Earth" (NASA Precipitation Measurement Missions 2018). These terms continue to denote two distinct phenomena in scientific discourse.

In popular discourse, however, the terms "climate change" and "global warming" have tended to be interchangeable and politicized in their usage. A 2015 study by Maurice Lineman and coauthors of internet search terms and tweets suggests that the two terms are used synonymously in the public sphere and that their use in popular and scientific discourses has risen and fallen depending on exposure to "powerful press events," such as the 2007 release of the fourth Intergovernmental Panel on Climate Change (IPCC) report on climate change and the 2006 documentary *An Inconvenient Truth* (Guggenheim 2006).

The study also notes that the awarding of the 2007 Nobel Prize to the authors of the IPCC report and the producer of the documentary, Al Gore, led to global recognition of the term "climate change" (Lineman and others 2015). Moreover, during this process of global uptake, the term took on new meanings. Since 2007, "climate change" has been used to refer to both the effects of changing global temperatures and the effects of rising precipitation rates, the latter including more frequent and severe

flooding and droughts, rising sea levels, and more extreme disruptive weather patterns.

More important, however, is the fact that the UN Framework Convention on Climate Change attributes such effects to human activity, defining "climate change" as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere" (United Nations 1992, 7). This definition has far-reaching scientific and political implications, as it identifies humans as responsible for changes in the Earth's atmosphere. "Climate change" has therefore become a politicized term that raises ethical and practical issues regarding the use of resources and protection of the environment.

"Climate change" as a term has also become notable for its plasticity when employed in different social and political contexts (Hulme 2009). Given this pluralistic nature, the term can be a source of misunderstanding or contention when used in discussions as shorthand for a range of different phenomena. Researchers such as Patrick Nunn have also noted that "climate change" is a new term developed in Western scientific discourse and as such often lacks an equivalent in Pacific languages (2009). The result is that climate change is seen as alien to some Pacific peoples and as a "preoccupation of developed nations" to many others (Nunn 2004). In this respect, the term "climate change" is a prime example of Western scientific discourse being exported into the region and, consequently, viewed with some skepticism. However, despite reservations and debates surrounding the concept of climate change, many still refer to noticeable rises in sea level, more frequent cyclones, and more severe floods, as well as to changes in seasonal weather patterns (SPC 2019). At issue here, then, is not the recognition of the effects of climate change, but rather the nature of the conceptual frameworks within which they are addressed. If a term is foreign or does not reflect the lived reality of those on the frontlines of climate change, how does this affect mental well-being and the mitigation and adaptation strategies employed under its guise?

Mental Health and Well-Being

The World Health Organization defines "mental health" as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO 2004). Although conceived as more than simply the absence of mental disorders, this definition is based on primarily socioeconomic terms: To be

mentally well is to be productive. For this reason, it has been challenged by Silvana Galderisi and coauthors, whose rival definition stipulates that mental health is a "dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society" (2015, 231–232). This internal equilibrium is reliant on a "harmonious relationship between body and mind" and consists of "basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles" (Galderisi and others 2015, 232).

In presenting this definition, Galderisi and coauthors recognized the need to articulate what they meant by "universal values of society," defining them as "respect and care for oneself and other living beings; recognition of connectedness between people; respect for the environment; and respect for one's own and others' freedom" (2015, 232). The authors seemed to realize that their definition would inevitably provoke criticism from those who remain wary of universal definitions of such culturally bound notions as mental health and well-being, noting that "the definition of mental health is clearly influenced by the culture that defines it" (Galderisi and others 2015, 231).

Accordingly, when they suggested a universal definition of mental health, they simultaneously applied what they described as a "common-sense" approach (Galderisi and others 2015, 231). However, although attempting to acknowledge culturally diverse conceptions of mental health and well-being, the authors could not escape the constraints of creating a universal definition. Instead, they offered an example of their appeal to common sense and employed an analogy of nutrition to justify their position, arguing that "in spite of cultural differences in eating habits, the acknowledgement of the importance of vitamins and the four basic food groups is universal" (Galderisi and others 2015, 231). For Galderisi and coauthors, and for Western scientific discourse more generally, although culturally based ways of understanding the world are acknowledged as important, they are nevertheless seen to impede practical engagement in the field. This engagement is, in their view, based on a more fundamental—and necessarily universal—understanding of the world.

In response, however, some scholars have asserted that in the Pacific the concept of mental health relies heavily on the varying cultural understandings of "health and well-being" embedded within Pacific peoples' experiences and beliefs. These are derived from "corresponding Pacific

indigenous knowledge traditions," which, scholars argue, need to be better understood by those working within Western health frameworks (Mila-Schaaf and Hudson 2009, 115). According to this view, to effectively understand how one may define mental health and well-being in the Pacific, an intimate understanding of the cosmological beliefs and ontological claims made within Indigenous knowledge traditions is necessary. Further, as has been outlined in a recent Aotearoa/New Zealand government inquiry into mental health and addiction, "For Pacific peoples, mental health and wellbeing encompasses a holistic approach of reciprocity, respect, belonging, genealogy, and relationships with all entities—Atua, the land and environment, ancestors, cultures, languages, family and others, collectivism—elements that protect and strengthen family and individual wellbeing" (Paterson and others 2018, 22). Despite best efforts, such a conception of mental health has yet to take full effect within the field of Western scientific discourse. In 2005, the authors of a formative study on Indigeneity concluded that "Indigenous peoples–state relations are imbued with an air of ambivalence as colonialist paradigms grind up against an emergent post-colonialism" (Maaka and Fleras 2005, 299). This situation, they argued, was due to colonial and postcolonial (or settler colonial) forces coexisting within a contested space. Some Indigenous scholars have responded to climate change by articulating its impacts in terms of rights and legal recognition of Indigenous peoples' access to resources. However, this approach has yet to be deployed in terms of Pacific conceptions of health and well-being, and such an analysis is not currently part of its political project (see Doolittle 2010). At the same time, there is an emerging body of literature that identifies different cultural understandings of mental health—in particular Samoan understandings (see Ataera-Minster and Trowland 2018; Malo 2000; Pulotu-Endemann and others 2007; Tamasese and others 2005)—albeit with warnings that their specificity cannot be generalized throughout the Pacific.

Increasing recognition of Pacific ways of knowing and tensions over definitions of mental health and well-being have led to the present situation, in which the definition of the phrase "mental health and well-being" remains contested across multiple discourses. At the heart of this contestation lies the impasse between universal definitions proposed by the World Health Organization and Galderisi and coauthors and the culturally relative definitions linked to particular Pacific peoples' ways of knowing. This creates practical difficulties when conducting research on the effects of climate change on mental health within predominantly Western scientific

frameworks, challenging researchers to reconcile their methodologies with the diverse forms of knowledge they encounter within the Pacific region.

LITERATURE REVIEW

Climate Change and Health

Climate change is a global, political, and ethical issue, the terms of which remain disputed. Accordingly, research into health and climate change is closely linked with political initiatives that form an ongoing response to global warming and an evolving understanding of climate change and its effects. Much of the literature appeared prior to the conclusion of the Millennium Development Goals in 2015 and the adoption of the Sustainable Development Goals the following year. As a result, the narrative is dominated by calls for a push toward establishing the Sustainable Development Goals. Broadly speaking, early research centers on the view that climate change should be seen as a catalyst to "expedite development in the poorest counties," as "the effects of climate change on health and development are inextricably linked to global development policy" (Costello and others 2009, 1694). Such advocacy for the importance of development to health outcomes is typical of the literature from that time and serves to highlight the role that global development policy plays in orienting research into health risks and climate change.

One exception to this trend is research conducted from an ecological standpoint, which challenges the development narrative. To account for the complex effects of climate change and their impacts on population health, some researchers have argued for an ecological approach that would provide insights into the "systems upon which we depend" and enable researchers to "move beyond a simplistic, mechanistic, model of environmental health risks to human health" (McMichael 2003, 3). Although not incompatible with studies that focus on development, ecological approaches adopt a systems-based view of the environment in which human activity is but one element. Both developmental and ecological approaches conclude that the poorest populations will be the most affected by climate change and will also be the most vulnerable to its health implications.

Shortly before the 2009 UN Climate Change Conference in Copenhagen, there were enthusiastic calls in the literature for policy makers and health researchers to join the debate concerning the serious health

risks associated with climate change. Part of this call was a collection of studies on climate change and displacement, which highlighted the direct and indirect effects of global warming (McAdam 2010). One such study, which developed out of the ecological perspective (McMichael and others 2010), analyzed the relationship between the impacts of climate change and increased health risks. According to Anthony McMichael and coauthors (2010), physical systems, including river flows, ocean temperatures, soil, moisture, and air quality, are connected to biological cycles, ecological linkages, and ecosystem function. These systems underpin the economic systems influencing infrastructure, production, trade, and the gross domestic product of a population. Direct damage to these physical and economic systems resulting from climate change, including temperature rise and extreme weather events, will therefore create further flow-on effects that are indirectly mediated through both the aforementioned physical, economic, and ecological systems, as well as through social support networks. These then go on to affect and compound health risks associated with economic and social support networks (McMichael and others 2010). By highlighting this process, the study clearly demonstrates that climate change negatively impacts human health not only directly and indirectly but also in the short and long term and through natural and social support systems. The study also notes that these increased health risks are often worsened by the subsequent inability of a population to prevent or recover from further damage, thereby creating long-term vulnerability.

This increased vulnerability associated with negative health outcomes is marked by increased rates of infectious diseases, malnutrition, conflict, thermal stress, and injuries and death caused by extreme weather events, pollutants, heat waves, and flooding. Significantly, within the study's schematic description of climate change and health, mental health and well-being demand greater consideration because individuals already experiencing poor mental health are more at risk than the general population (McMichael and others 2010).

"Vulnerability" therefore becomes an important term for research relating to climate change, as it functions as a correlative of "development." Determined by a range of factors—from a community's population density, economic status, income levels and distribution, and local environmental conditions to its members' preexisting health conditions and access to food and quality public health care (McMichael 2003)—vulnerability is used primarily in conjunction with other measures of adaptive capacity to

direct research into climate change and its effects. There are also obvious issues with this dialogue, as it privileges a deficit model of well-being and health—that is, a model in which onus is commonly placed on individuals as opposed to capturing structural inequalities.

Regardless, Pacific Islands *are* particularly vulnerable to the effects of climate change, though this is outside of their control. Oxfam's 2009 report highlighted the enormous impact climate change will have on the Pacific, noting that in a region "where half the population lives within 1.5 kilometres of the sea" (7), very few will be unaffected by sea-level rise and increased severity and frequency of cyclones, hurricanes, and flooding. The report outlined the potential health implications of climate change in the wake of natural disasters that may damage health infrastructure. As an example, it mentions the case of Niue's only hospital being badly damaged after Cyclone Heta in 2004, as well as the extreme floods in Papua New Guinea in 2008, which destroyed much of the island's vital hospital equipment. The study brings to the fore the stark reality of the Pacific's infrastructural vulnerability.

Since 2010, research has increasingly focused on the idea of resilience building, which targets vulnerable or at-risk communities, attempting to develop their resistance to potential disasters. This focus lends itself to an ecological or systems-based approach that relies on an understanding of mechanisms and structures that contribute to a community's adaptive capacities. The latest UN Women and UN Environment joint initiative illustrates this emphasis through its research on the nexus of vulnerability, development, and resilience in the Asia-Pacific region. It aims "to build long-lasting resilience to climate change" in response to "the root causes of two of its most pressing challenges," described as "human vulnerability and gender inequality" (UN Environment Programme 2018).

An example of such research is an article by Andreas Neef and coauthors (2018), which seeks to identify the role that cultural values played in the successful relocation of a Fijian village in the wake of flooding. Adopting a values-based approach, the researchers analyzed the villagers' motivations for relocation to a new site. Although offering relatively little regarding mental health outcomes, the study does provide an analysis of the psychological motivations and impacts of the move through an expressly Indigenous framework.

This type of work aims to capture the cultural diversity of the Pacific, with particular reference to outcomes that are concerned not only with physical and material well-being but also with spiritual and cultural val-

ues. In this sense, it would appear that research is moving toward a specific focus on the mental health outcomes associated with climate change, but that such a focus has yet to be widely adopted. As Maryanne Loughry noted (2010), psychological approaches have tended to be marginalized in research on the effects of climate change, and those that have been adopted are primarily adaptations of Maslow's hierarchy of needs, which lends itself to a development-focused approach that links mental well-being to the satisfaction of material needs.

Connecting Mental Health and Climate Change

Both the direct and indirect effects of climate change clearly affect the health and well-being of Pacific peoples. However, research has shown that those already at risk, especially people with preexisting mental disorders, will be disproportionately affected. In addition to natural disasters having a direct impact on community resources, the long-term effects of climate change may also necessitate relocation. The threat of such a move, let alone its realization, has the potential to greatly affect mental health. As a result, instability caused by other forms of voluntary and involuntary migration remains a prominent source of anxiety among many Pacific peoples, who have already been shown to be particularly vulnerable for geographic and economic reasons (Albrecht and others 2007).

As such, the growing body of literature investigating the potential mental health impacts of climate change–induced activity reflects this concern. Helen Berry suggested that mental health will be affected in both direct and indirect ways (2009). She contended that the increase in natural disasters caused by climate change will have a direct impact on mental health through increased levels of trauma and that indirect effects will occur through the impact on physical health, "which is causally and reciprocally related to mental health" (Berry 2009, 454). She also identified the indirect impact of possible physical devastation to the environment, which in turn would affect the social, communal, and economic aspects of place, leading to stress and mental health consequences.

A connection between droughts, dryland salinity, and mental health outcomes has also been identified. In a case study conducted between 1996 and 2001 in Western Australia (Speldewinde and others 2009), researchers found that lower socioeconomic status, Aboriginal identity, and dryland salinity boosted an individual's risk of depression. They noted an increase in hospitalizations for depression associated with living in areas "proportionately more affected by dryland salinity" (Speldewinde and

others 2009, 884–885). This was potentially attributable to a number of factors affecting mental health outcomes, including economic strain due to dryland salinity rendering land unusable, declining populations and subsequent loss of social ties, and a lowering of socioeconomic status. The study concluded that, although socioeconomic status and identifying as Indigenous were predictors of depression, dryland salinity constituted an "independent" risk, highlighting the fact that those who rely on farming—particularly subsistence farming, as is common throughout the Pacific—could be at higher risk of depression when climatic changes affect the viability of their land.

Naturally, communities reliant on their natural environment have been identified as particularly vulnerable. François Bourque and Ashlee Willox pointed out that such communities will likely suffer from mental health issues due to sudden changes in the climate and the resulting impacts on their economic and subsistence livelihoods (2014). Following Berry (2009), Bourque and Willox recognized that potential direct mental health impacts may include feelings of "sadness, helplessness and anxiety; loss of place (solace) and grief reactions" to long-term environmental changes (2014, 415). Moreover, in an observation that echoes other studies, they noted that those with preexisting mental health issues will be more vulnerable during "subacute weather events" (Bourque and Willox 2014, 415). They reiterated the indirect impacts Berry suggested (2009), and they added "disruption of community and healthcare resources; forced relocations . . . unemployment from agricultural activities; increased socioeconomic disparities . . . urban drift . . . loss of livelihoods . . . involuntary migration . . . [and] potential for increased conflicts due to migration and resource scarcity" (Bourque and Willox 2014, 418).

Janet Swim and coauthors suggested that "even in the absence of direct impacts, anticipation and concern about the threat of climate change may erode quality of life and threaten mental health" (2011, 243). In particular, those living in coastal and circumpolar regions will be at high risk (Bourque and Willox 2014, 418). A further consideration for the Pacific, as Jon Barnett pointed out (2005), is that most major cities and urban areas are coastal and are therefore highly vulnerable to impending climate change events.

Connecting Mental Health, Climate Change, and the Pacific

Measuring "vulnerability" immediately uncovers the Pacific region as a potential area of high risk from the effects of climate change, including

poor mental health outcomes. As Alistair Woodward, Simon Hales, and Philip Weinstein suggested, poverty, underdevelopment, political rigidity, dependency, and geographic isolation create a particularly vulnerable state (1998). These five indicators can all be found within the Pacific region and will undoubtedly contribute to the mental health implications of climate change.

Despite this risk, there is relatively little published research about such mental health implications. Lachlan McIver and coauthors conducted a case study of i-Kiribati communities and found that climate change will pose a threat to people's "livelihoods . . . [and] the country's sovereignty and national identity" (2014, 5234). Further, they acknowledged that little is known about mental health in Kiribati, creating a barrier to properly understanding the magnitude and nature of the issue within a more local context. This lack of understanding is a recurring trait throughout the Pacific. Without such research, there is a deficiency of data to draw on, an issue recently highlighted by the *Asia and Pacific SDG Progress Report 2017* (UNESCAP 2017). It is urgently clear that a localized and intimate understanding of mental health and climate change perceptions in the Pacific is needed to understand the potential vastness of this problem.

Mental Health and Natural Disasters

We suggest that one way to work around the current lack of data specific to mental health and climate change is to turn to the growing field of research exploring the mental health outcomes of natural disaster survivors. As previously mentioned, climate change is expected to increase the occurrence and severity of natural disasters, so examining approaches to mental health within this field is highly useful (Page and Howard 2010; Barnett 2005). In a report by the UN Economic and Social Commission for Asia and the Pacific (UNESCAP) detailing natural disasters in the Asia-Pacific region between 1970 and 2014, it was found that 42.9 percent of the world's natural disasters took place within the region (UNESCAP 2015, 7). In the Pacific itself, the threat of natural disasters is forever looming. In recent years, we have seen devastating floods in Fiji in 2018, 2019, and 2020, as well as Cyclone Winston in 2016 (see Holmes 2016), Cyclone Gita in 2018, Typhoon Yutu in 2018, and Cyclone Herold in 2020, with more expected to come. Given this vulnerability to natural disasters, the ensuing mental health impacts must be considered in future research connecting climate change to mental health outcomes. Philippa Howard-Chapman and coauthors suggested that coastal flooding will be a global

consequence of climate change (2010), following on the work of Tom Wilbanks and coauthors, who estimated that between 600 million and 1.2 billion people will be affected by sea-level rise and coastal storm surges contributing to flooding (2007). In their study, Wilbanks and coauthors found that suicide and severe mental health impacts correlate with flooding, drought, and fire in rural communities, showing that rural or isolated areas are of particular concern because health services remain inaccessible.

Carla Stanke and coauthors' literature review on mental health and flooding found that the distress experienced in the aftermath of natural disasters is difficult to distinguish from that experienced as part of common mental health conditions (2012). This alerts us to another consideration for research of this kind: Flooding may not be causally related to mental disorders—rather, it may uncover preexisting mental disorders. However, Stanke and coauthors also found that flooding is a deeply stressful experience, that the prevalence of common mental disorders increases after flooding, and that this increase can be sustained for a long period after the disaster occurs (2012). Therefore, they stressed the importance of effective public mental health and clinical responses to flooding. In his literature review of flood disasters in developing countries, Andrew Crabtree suggested that evidence-based plans will be needed if the governments, health sectors, nongovernmental organizations, and other stakeholders of developing nations expect to meet impending mental health needs in a post-disaster context (2012, 21).

Relocation, "Solastalgia," and Urbanization

Migration has been posed as an adaptation option for people in the Pacific. However, some argue that discussing potential migration strategies weakens the emphasis on ensuring that on-the-ground adaptive countermeasures to climate change are implemented (Adger and Barnett 2005). Migration as adaptation also indicates a deficiency within the literature on alternative adaptation strategies (Mortreux and Barnett 2009). If relocation is to become the main adaptive response to climate change in the Pacific, then the effects on the overall well-being and health of those being displaced must be fully considered.

While we have acknowledged that relocation and disconnection from one's home or island can trigger mental disorders, remaining in place while the environment changes can have a similar impact. "Solastalgia," a term coined by environmental philosopher Glenn Albrecht, conveys the feeling of distress caused by an environmental change affecting a home

environment (Albrecht and others 2007). It fits within a category of illness called "pyschoterratic" illness, which Albrecht and coauthors defined as an "earth-related mental illness where people's mental wellbeing (psyche) is threatened by the severing of 'healthy' links between themselves and their home/territory" (2007, s95). Solastalgia also draws on the concept of nostalgia—though instead of a longing for home when away, it is a longing for a particular state or idea of home while still living there. This is caused by changes in the natural environment of one's home, such as flooding, droughts, land erosion, or mining. Albrecht and coauthors suggested that "solastalgia exists when there is the lived experience of the physical desolation of home," and they argued that climate change will significantly contribute to a global increase in psychoterratic illness (2007, s96). This is a useful concept for thinking about the relationship between climate change and mental health. As migration is often seen as a last resort, it is likely that many in the Pacific will suffer from solastalgia, or some other iteration of this illness, as they witness the growing effects of climate change. Albrecht and coauthors also noted that while solastalgia refers to an individual's feelings, it may also burden communities— "environmental change can create distressed environments inhabited by distressed people" (2007, s96). Thus, this may be a relevant concept for understanding climate change's potential impacts on the many close, kin-tied communities in the Pacific. However, we should also be aware that such terms, like "climate change" itself, risk being mere foreign concepts that outsiders attempt to weave into Pacific narratives in which such feelings of attachment to and loss of land are already embedded. Still, even if such terms do not resonate or are not entirely applicable, they are useful in considering how future research might account for gaps in the literature. If nothing else, they may be of use until they can be replaced by more appropriate terminology.

Domestic relocation, from rural to urban locations, may also affect mental health outcomes. As Chris Cocklin and Meg Keen suggested, vulnerability is exacerbated by "rural-to-urban migration, which has exceeded the capacity of urban planners to provide adequate services, creating pockets of highly vulnerable squatter communities" (2000, 208). However, there are also some pragmatic positives to urbanization within the Pacific Islands. Cities tend to have better health infrastructure (Barnett 2005; Page and Howard 2010), which could prove beneficial to those relocating to such urban areas. Still, Woodward and coauthors argued that urbanization in the Pacific is a potential risk, as overpopulation in

places without the infrastructure to maintain the population can cause "heat islands" (a significant rise in temperature compared to surrounding rural areas), flooding, and the spread of vector-borne diseases (Woodward and others 2000). As previously discussed, these all can have negative effects on mental health outcomes. However, Woodward and coauthors also recognized that urbanization can contribute to economic development and result in improvements to infrastructure and resource access.

Migration and Mental Health Implications

According to Oxfam, an estimated 75 million people from the Asia-Pacific region (which includes but is not limited to the Pacific Islands) will be forced to migrate by 2050 as a result of climate change (2009, 9). Howard-Chapman and coauthors have suggested that Aotearoa/New Zealand will become a relocation destination for many Pacific peoples, adding that, due to the cultural loss and stress of forced migration, those who are forced to relocate will be at higher risk of mental disorders (2010).

As some Pacific scholars have established, (see Mila-Schaaf and Hudson 2009; Tamasese and others 2005; Tiatia 2003, 2008, 2012), Pacific peoples living in Aotearoa/New Zealand suffer from high rates of mental disorders yet are often unlikely to seek help through mental health services. Reasons behind this vary, as age, gender identity, cultural identity, socioeconomic status, religion, language capabilities, spirituality, sexual orientation, generation, and other concerns can all shape a person's ability or decision to seek care. Importantly, one's access to mental health services is also dependent on the accessibility of mental health professionals. To this point, Bourque and Willox identified the need to mobilize mental health professionals (2014). Those who work in vulnerable communities must advocate for better services and educate their communities about mental health in order to remove the stigma surrounding psychological disorders (2014, 420).

However, a common motif of this research is the recognition that Pacific peoples need better-equipped, culturally sensitive, and specific services. For example, Kiwi Tamasese and coauthors shared that many of their participants thought services needed to embody a Samoan view of the "relational self" and to understand the importance of family inclusion in the healing process (2005, 305). This body of research suggests that an understanding of Pacific Islanders' experiences with and suggestions for mental health services in Aotearoa/New Zealand will prove crucial for those who choose to move there from uninhabitable Pacific islands.

Services must not only cater to Pacific migrants in a culturally inclusive way but also take into account the reasons behind their migration. Unlike those who migrate for work, education, or family, those migrating due to climate change will likely be moving involuntarily. Services must reflect this difference in migrant experience.

The post-migration experience of recent immigrants is significant in the resettlement process. Regina Pernice and Judith Brook noted that "the social conditions in the host country seem to have a powerful influence on mental health" (1996, 512). Summarizing findings by Ruben Rumbaut (1991), they explained that "after one year of residence in the host country, immigrants' major sources of distress stemmed from the post-immigration variables of economic and cultural adaptation" (Pernice and Brook 1996, 513). Through their case study, Pernice and Brook found that Pacific Islander participants reported experiencing discrimination by their mental health providers, as well as misdiagnosis due to an inability among health professionals to identify and recognize key cultural differences (1996). Though the study is now over twenty years old, more contemporary studies, such as those described earlier, reveal similar experiences.

Thinking even more broadly, then, the need for culturally specific services must be applied to any and all adaptation and mitigation strategies. For example, Kristie Ebi and Jan Semanza argued that the community must be central to any mitigation and adaptation strategies (2008). Though they recognized the importance of top-down approaches to support this through policy implementation and government regulation, they suggested that governmental solutions will need to be managed *with* the community to ensure the success of any adaptation or mitigation policy (Ebi and Semanza 2008, 506). Importantly, one underlying concern exists among all of the discussed work: a lack of data on mental health within the Pacific region will be a significant barrier to research in this area. As suggested by Simon Rice and Lachlan McIver (2016), and as illustrated by the UNESCAP reports, improvements in infrastructure and data collection will be essential for any further study.

Pacific Concepts and Loss of Identity

In order to understand the effect of climate change on the mental health of Pacific peoples, we must also understand what the environment—and the idea of "place" or "home"—means to Pacific peoples. Hauʻofa articulated the sacred connection between people and place in his epilogue to

Remembrance of Pacific Pasts: "To remove a people from their ancestral, natural surroundings or vice versa, or to destroy their lands with mining, deforestation, bombing, large-scale industrial and urban developments, and the like, is to sever them not only from their traditional sources of livelihood, but also and much more importantly, from their ancestry, their history, their identity, and from their ultimate claim for the legitimacy of their existence. It is the destruction of age-old rhythms of cyclical dramas that lock together familiar time, motion, and space" (2000, 468–469). Relocation, solastalgia, and urbanization may all affect the identities of Pacific peoples. As Hau'ofa suggested, the sense of losing one's identity is often strongly linked to relocation or degradation of the environment. Ruth Rogan, Moira O'Connor, and Pierre Horowitz explained that "studies of psychological impacts of environmental change have articulated feelings of grief, loss and mourning to the loss of one's home and other places of personal significance" (2005, 148; see also Fried 2000). Because of this, culture and identity must be considered in any future plans for climate change adaptation in the Pacific. As W Neil Adger and coauthors argued, "If the cultural dimensions of climate change are ignored, it is likely that both adaptation and mitigation responses will fail to be effective because they simply do not connect with what matters to individuals and communities" (2013, 116).

In her essay on resilience and empowerment in the face of climate change in the Pacific, Candice Steiner relayed important Pacific perspectives on the environment (2015), highlighting Cochran and coauthors' argument that because "native cultures and sense of identity are directly tied to the places where people have lived for generations," their "observations, riddles, stories, dances, art, language, music, and traditions" form a highly contextual body of knowledge vulnerable to loss through ecological damage, altered climates, and the inevitable passing of "elder knowledge-keepers" (2013, 154–155).

Given that there has been a strong emphasis on the need for mental health services to be culturally competent and relevant, it is important to establish—and understand—Pacific Islanders' conceptions of themselves in relation to climate change, especially given common media depictions of those impacted by climate change. For example, Carol Farbotko argued that the "tragic victim" status Australian media has assigned to Tuvaluans "marginalizes alternative discourses of adaptation for Tuvaluans and other inhabitants of low-lying islands," effectively silencing "alternative constructions of Tuvaluan identity that could emphasize resilience

and resourcefulness" (Farbotko 2005, 280). Steiner, responding to and expanding on Farbotko's insights, spotlighted Pacific Islanders' efforts to counter this "deficiency" and "victim" dialogue through performance and activism (see also Fair, this issue; Robinson, this issue). There is a growing movement of Pacific peoples taking action against climate change in the name of resilience and empowerment (see 350 Pacific 2014; Steiner 2015; Fair, this issue; Robinson, this issue), which offers a positive framework for future research.

As such literature shows and as Jon R Campbell summarized, "considerable evidence suggests that Pacific Islands people are highly resilient and not somehow inherently vulnerable" (2014, 7; see also Bayliss-Smith and others 1988; Barnett and Campbell 2010). This alternative discourse must be considered in any future research on climate change in the Pacific, especially when identifying gaps in current literature. Importantly, one must also recognize that such a gap in research on mental health and climate change in the Pacific exists not only in scientific literature by non-Pacific Islanders but also in research undertaken by Pacific Islanders themselves. Pacific scholars can offer a new, culturally specific framing of both mental health and climate change within the region and, in turn, better inform mental health services related to mitigation and adaptation, but they must be given the chance to do so. With this in mind, it is imperative to address potential barriers to Islanders' participation in this work and to prioritize their narratives when reflecting on mental health and well-being.

Climate change is a high-stakes issue for people of the Pacific, and this is reflected through their ongoing forms of resilience and through their rejection of the West's paternalistic narrative. Activists and poets, such as Kathy Jetñil Kijiner (2018), continuously remind the rest of the world that people in and of the Pacific are coming together and fighting against climate change in their own ways. Further, Katerina Teaiwa has illuminated how broader conversations in the Pacific continue to be entangled through the issue of climate change, which is bringing together Pacific peoples and diverse Pacific voices in unprecedented ways (2018, 30). Given this context, one way to address the need for culturally competent health services that address climate change's mental health impacts might be to establish preventative services that complement Pacific communities' existing efforts and inclinations to act and advocate for the protection of their homes.

ANALYSIS AND DISCUSSION

Although there is a growing body of research exploring the relationship between mental health and natural disasters, and an even broader body of research on climate change and health, this literature review highlights the scarcity of information specific to climate change and mental health, especially in a Pacific context. Mike Hulme argued that "climate change should be conceived as a situated phenomenon, implicating relationships between people and places, rather than being conceived as a 'purified,' decontextualized system of abstract knowledge" (2009, 61; see also Devine-Wright 2012). This argument is central to the findings of this literature review—greater cultural awareness, local knowledge, and an understanding of the diverse ways of knowing in the region must be incorporated into future studies of climate change and mental health and well-being in the Pacific.

As has been shown by the various studies presented here, the Pacific Islands will be disproportionately affected by climate change, with the region's many developing nations rendered particularly vulnerable. Despite this vulnerability due to the geographic and economic positioning of the region, Pacific Islanders have the capacity to adapt and take control over future interventions in the face of climate change. Researchers should focus on this capacity and build their work around it.

This literature review also reiterates Hulme's sentiment, discussed earlier, and the urgent need for Pacific governments, community organizations, nongovernmental organizations, health sectors, communities, and individuals to recognize climate change as a *social* and environmental issue as opposed to purely scientific and environmental. This reframing in people's social imaginaries will help to reorient the discussion around adaptation and mitigation to ensure that the focus is on communities (as argued by Ebi and Semanza 2008). This focus should bode well for general and mental health outcomes in the Pacific—as noted, people's well-being relies heavily on relationships and society.

What complicates this literature review are the varying opinions about adaptation—which can be read as an indicator of this research's current limitations and opportunities for strengthening and expansion. The increasing inclusion of holistic approaches is promising for the Pacific, as it aligns with Pacific values, such as the "relational self" mentioned by Tamasese and coauthors.

Further, developing our understanding of existing mental health services in the Pacific, as well as those available following disasters, is essential. As shown here, there is little data on this for the Pacific region. If mental health outcomes are to be improved in post-disaster contexts, baseline information on the mental health services desired and on each Pacific nation's specific needs is integral to tracking improvements and interventions. As McIver and coauthors highlighted in their assessment of climate change's impacts on mental health in Kiribati (2014), it is often hard to understand what mental health looks like in different cultures and contexts. Gaining a localized understanding of mental health and finding ways to center local knowledge should be initial steps in any future research. Therefore, centering Pacific individuals and communities in research—as well as involving local Pacific researchers—will be key to future research in this area. This will not only contribute to the level of cultural awareness among studies on mental health in the region but also create a precedence for research *by* and *for* the Pacific (Teaiwa 2001).

Another consideration for future research will be to look critically at the influence and impact of development within the region. The adoption of the Sustainable Development Goals may offer a frame for future adaptation strategies by Pacific governments, but they can also aid research inquiries. Developmental approaches to climate change adaptation are likely to further embed Westernized understandings of both the environment and mental health within the region, as mentioned in the introduction. How this comes to affect Pacific peoples' understandings of mental health, and their subsequent interactions with mental health services, will be an important consideration as mobility and the social fabric of many Pacific communities change. Further, the consistent painting of the Pacific as vulnerable, while perhaps useful for thinking about the practicalities of data collection, should be met with some cynicism as we continue to consider the paternalistic undertones of such a descriptor of developing nations predominantly used by developed nations. Through this literature review, we hope to make clear that development must be looked at with a critical eye as a growing force within the Pacific.

Impending migration will be another sticky area for future research. There will need to be an in-depth understanding of the forced migration experience of climate migrants and the specific mental health outcomes this may bring. Mental health services in developed countries, such as Aotearoa/New Zealand and Australia, will need to cater to those individuals who may face forced, climate-induced migration. As shown in the

migration section, this will bring new challenges to the already visible barriers to mental health services for Pacific peoples in Aotearoa/New Zealand. In its vision for Pacific mental health and well-being in Aotearoa/New Zealand, the He Ara Oranga inquiry introduced the concept of Vai Niu:

> Vai Niu represents a paradigm shift driven by Pacific solutions and aspirations and with a focus on promotion, prevention and early intervention, including in early childhood. It requires a reconfiguration of attitudes, behaviours and beliefs, while acknowledging the distinct values Pacific peoples place on their own definitions of wellbeing.
>
> The shift envisioned needs to address current power imbalances—"cultural humility" to generate thriving and empowering environments of self-determination for Pacific peoples. *Aiga/kopu tangata/kāinga/magafaoa/matavuvale/kāiga* (family) is central to Pacific mental health and wellbeing, including family support and inclusion in decision-making. The paradigm shift will be an integrated approach and strengthen Pacific leadership, accountability, innovation, integrity and sustainability. (Paterson and others 2018, 87)

Such initiatives will need to be supported and developed by respective governments that take in future "climate refugees."

Though the outcomes of this literature review largely focus on the predominantly bleak reality of climate change, it is equally important to be cognizant of the opportunity for empowerment and resilience building. As shown by Steiner, Teaiwa, and Jetñil-Kijiner, Pacific peoples not only have their own concepts of the environment, linked strongly to their identities, but are also coming together to give voice to their uprising against climate change. This narrative fosters connections not only between Pacific communities but also between Pacific communities and other Indigenous communities worldwide. Future research on climate change and mental health should underscore and take direction from these voices and connections.

* * *

THE CONNECTION *between climate change, mental health, and the Pacific has not been thoroughly researched. In looking to the future of what this area of research may hold, it is important to always be mindful of and to center Pacific conceptions of place. There must be an acknowledgment of the holistic worldview that both mental health and climate change call for in the Pacific. Without this acknowledgment, adaptation strategies will fail to connect to the very communities and peoples that they aim to serve. This literature review exposes this gap in knowledge,*

research, and literature and aims to guide those who might work toward filling in these spaces. Such researchers must go forward with a cultural sensibility and an intimate knowledge of the many diverse Pacific contexts. This can be done by amplifying the Indigenous, Pan-Pacific voices who are already speaking up against climate change from the front lines and shorelines of Oceania.

References

350 Pacific
    2014   Pacific Climate Warriors. 350 Pacific website. www.350pacific.org/pacific-climate-warriors/ [accessed 14 Oct 2018]

Adger, W Neil, and Jon Barnett
    2005   Compensation for Climate Change Must Meet Needs. *Nature* 436 (7049): 328.

Adger, W Neil, Jon Barnett, Katrina Brown, Nadine Marshall, and Karen O'Brien
    2013   Cultural Dimension of Climate Change Impacts and Adaptation. *Nature Climate Change* 3:112–117.

Albrecht, Glenn, Gina-Maree Sartore, Linda Connor, Nick Higginbotham, Sonia Freeman, Brian Kelly, Helen Stain, Anne Tonna, and Georgia Pollard
    2007   Solastalgia: The Distress Caused by Environmental Change. *Australasian Psychiatry* 15 (Issue Supplement): s95–s98.

Ataera-Minster, Joanna, and Holly Trowland
    2018   *Te Kaveinga—Mental Health and Wellbeing of Pacific Peoples: Results from the New Zealand Mental Health Monitor & Health and Lifestyle Survey.* Wellington: Health Promotion Agency. https://www.hpa.org.nz/sites/default/files/FinalReport-TeKaveinga-Mental%20health%20and%20wellbeing%20of%20Pacific%20peoples-Jun2018.pdf [accessed 8 July 2020]

Barnett, Jon
    2005   Titanic States? Impacts and Responses to Climate Change in the Pacific Islands. *Journal of International Affairs* 59 (1): 203–219.

Barnett, Jon, and John R Campbell
    2010   Migration as Climate Change Adaption: Implications for the Pacific. In *Climate Change and Migration in the South Pacific Region: Policy Perspectives,* edited by Bruce Burson, 51–60. Wellington: Institute of Policy Studies.

Bayliss-Smith, Tim, Richard Bedford, Harold Brookfield, and Marc Latham
    1988   *Islands, Islanders and the World: The Colonial and Post-colonial Experience of Fiji.* Cambridge, UK: Cambridge University Press.

Berry, Helen
    2009   Pearl in the Oyster: Climate Change as a Mental Health Opportunity. *Australasian Psychiatry* 17 (6): 453–456.

Bourque, François, and Ashlee Cunsolo Willox
    2014   Climate Change: The Next Challenge for Public Mental Health?
              International Review of Psychiatry 26 (4): 415–422.

Campbell, John R
    2010   Climate-Induced Community Relocation in the Pacific: The Mean-
              ing and Importance of Land. In *Climate Change and Displacement:
              Multidisciplinary Perspectives,* edited by Jane McAdam, 57–80.
              London: Bloomsbury Publishing.
    2014   Climate-Change Migration in the Pacific. *The Contemporary Pacific*
              26 (1): 1–28.

Cochran, Patricia, Orville H Huntington, Caleb Pungowiyi, Stanley Tom, F Stuart
Chapin III, Henry P Huntington, Nancy G Maynard, and Sarah F Trainor
    2013   Indigenous Frameworks for Observing and Responding to Climate
              Change in Alaska. *Climatic Change* 120 (3): 557–567.

Cocklin, Chris, and Meg Keen
    2000   Urbanization in the Pacific: Environmental Change, Vulnerability
              and Human Security. *Environmental Conservation* 27 (4): 392–403.

Costello, Anthony, Mustafa Abbas, Adriana Allen, Sarah Ball, Sarah Bell, Rich-
ard Bellamy, and Sharon Friel
    2009   Managing the Health Effects of Climate Change: Lancet and Univer-
              sity College London Institute for Global Health Commission. *The
              Lancet* 373 (9676): 1693–1733.

Crabtree, Andrew
    2012   Climate Change and Mental Health following Flood Disasters in
              Developing Countries, A Review of the Epidemiological Literature:
              What Do We Know, What Is Being Recommended? *Australasian
              Journal of Disaster and Trauma Studies* 2012 (1): 21–31.

Devine-Wright, Patrick
    2012   Think Global, Act Local? The Relevance of Place Attachments and
              Place Identities in a Climate Changed World. *Global Environmental
              Change* 23 (1): 61–69.

Doolittle, Amity A
    2010   The Politics of Indigeneity: Indigenous Strategies for Inclusion in
              Climate Change Negotiations. *Conservation and Society* 8 (4): 286–
              291.

Ebi, Kristie L, and Jan C Semenza
    2008   Community-Based Adaptation to the Health Impacts of Climate
              Change. *American Journal of Preventive Medicine* 35 (5): 501–507.

Farbotko, Carol
    2005   Tuvalu and Climate Change: Constructions of Environmental Dis-
              placement in the *Sydney Morning Herald. Geografiska Annaler:
              Series B Human Geography* 87:279–293.

Fried, Marc

    2000   Continuities and Discontinuities of Place. *Journal of Psychology* 20 (3): 193–205.

Galderisi, Silvana, Andreas Heinz, Marianne Kastrup, Julian Beezhold, and Norman Sartorius.

    2015   Toward a New Definition of Mental Health. *World Psychiatry* 14 (2): 231–233.

Guggenheim, Davis, director

    2006   *An Inconvenient Truth.* Documentary film, 96 minutes. Paramount Classics.

Hauʻofa, Epeli

    1993   "Our Sea of Islands." In *A New Oceania: Rediscovering Our Sea of Islands,* edited by Vijay Naidu, Eric Waddell, and Epeli Hauʻofa, 2–16. Suva: School of Social and Economic Development, University of the South Pacific.

    2000   Pasts to Remember. In *Remembrance of Pacific Pasts,* edited by R Borofsky, 453–471. Honolulu: University of Hawaiʻi Press.

Holmes, Oliver

    2016   Cyclone Winston: Tens of Thousands Homeless in Fiji a Week after Storm. *The Guardian,* 29 February. https://www.theguardian.com/world/2016/feb/29/cyclone-winston-forces-thousands-fijians-out-of-homes [accessed 29 Feb 2016]

Howard-Chapman, Philippa, Ralph Chapman, Simon Hales, Emma Britton, and Nick Wilson

    2010   Climate Change and Human Health: Impact and Adaptation Issues for New Zealand. In *Climate Change Adaptation in New Zealand: Future Scenarios and Some Sectoral Perspectives,* edited by Richard A C Nottage, David S Wratt, Janet F Bornman, and Keith Jones, 112–121. Wellington: New Zealand Climate Change Centre.

Hulme, Mike

    2009   *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity.* Cambridge, UK: Cambridge University Press.

Jetñil-Kijiner, Kathy

    2018   Rise: From One Island to Another. Vimeo video, 6:31, posted by Mainspring Media, 12 September. https://vimeo.com/289482525 [accessed 4 Dec 2019]

Kaʻili, Tevita

    2017   *Marking Indigeneity: The Tongan Art of Sociospatial Relations.* Tucson: University of Arizona Press.

Lineman, Maurice, Yuno Do, Ji Yoon Kim, and Gea-Jae Joo
    2015   Talking About Climate Change and Global Warming. *PLOS One* 10 (9).

Loughry, Maryanne
    2010   Climate Change, Human Movement and Promotion of Mental Health: What Have We Learnt from Earlier Global Stressors? In *Climate Change and Displacement: Multidisciplinary Perspectives,* edited by Jane McAdam, 221–246. Oxford: Hart.

Maaka, Roger, and Augie Fleras
    2005   *The Politics of Indigeneity: Challenging the State in Canada and Aotearoa New Zealand.* Dunedin: University of Otago Press.

Malo, Vito
    2000   *Pacific People in New Zealand Talk about Their Experiences with Mental Illness.* Mental Health Commission Recovery Series 3. Wellington: Mental Health Commission.

McAdam, Jane, editor
    2010   *Climate Change and Displacement: Multidisciplinary Perspectives.* Oxford: Hart.

McIver, Lachlan, Alistair Woodward, Seren Davies, Tebikau Tibwe, and Steven Iddings
    2014   Assessment of the Health Impacts of Climate Change in Kiribati. *International Journal of Environmental Research and Public Health* 11:5224–5240.

McMichael, A J
    2003   Global Climate Change and Health: An Old Story Writ Large. In *Climate Change and Human Health: Risks and Responses,* edited by A J McMichael, D H Campbell-Lendrum, C F Corvalan, K L Ebi, L Githeko, J D Scheraga, and A Woodward, 1–17. Geneva: World Health Organization.

McMichael, Anthony J, Celia E McMichael, Helen L Berry, and Kathryn Bowen
    2010   Climate-Related Displacement: Health Risks and Responses. In *Climate Change and Displacement: Multidisciplinary Perspectives,* edited by Jane McAdam, 191–219. Oxford: Hart.

Mila-Schaaf, Karlo, and Maui Hudson
    2009   The Interface between Cultural Understandings: Negotiating New Spaces for Pacific Mental Health. *Pacific Health Dialog* 15 (1): 113–119.

Mortreux, Colette, and Jon Barnett
    2009   Climate Change, Migration and Adaptation in Funafuti, Tuvalu. *Global Environmental Change* 19 (1): 105–112.

NASA Precipitation Measurement Missions
2018   What's in a Name? Global Warming vs. Climate Change. Precipitation Education. https://pmm.nasa.gov/education/articles/whats-name-global-warming-vs-climate-change [accessed 27 Aug 2018]

Neef, Andreas, Lucy Benge, Bryan Boruff, Natasha Pauli, Eberhard Weber, and Renata Varea
2018   Climate Adaptation Strategies in Fiji: The Role of Social Norms and Cultural Values. *World Development* 107:125–137.

New Zealand Government 2020
2020   Waikato-Tainui (Waikato River). Treaty settlement documents. https://www.govt.nz/treaty-settlement-documents/co-management-of-waikato-and-waipa-rivers/Waikato-tainui-waikato-river/ [accessed 13 April 2020]

Nunn, Patrick D
2004   Through a Mist on the Ocean: Human Understanding of Island Environments. *Tijdschrift voor economische en sociale geografie* 95 (3): 311–325.
2009   Responding to Challenges of Climate Change in the Pacific Islands: Management and Technological Imperatives. *Climate Research* 40 (2–3): 211–231.

Oxfam
2009   The Future is Here: Climate Change in the Pacific. Oxfam briefing paper 2009. Australia and New Zealand: Oxfam Australia and Oxfam New Zealand. https://reliefweb.int/sites/reliefweb.int/files/resources/9C0EECFF28A31DB5492576010007F389-Full_Report.pdf [accessed 4 Dec 2019]

Page, L A, and L M Howard
2010   The Impact of Climate Change on Mental Health (But Will Mental Health Be Discussed at Copenhagen?). *Psychological Medicine* 40:177–180.

Paterson, Ron, Mason Durie, Barbara Disley, Dean Rangihuna, Jemaima Tiatia-Seath, and Josiah Tualamali'i
2018   *He Ara Oranga: Report of the Government Inquiry into Mental Health and Addiction.* Wellington: Government Inquiry into Mental Health and Addiction. www.mentalhealth.inquiry.govt.nz/assets/Summary-reports/He-Ara-Oranga.pdf [accessed 4 Dec 2019]

Pernice, Regina, and Judith Brook
1996   Refugees' and Immigrants' Mental Health: Association of Demographic and Post-Immigration Factors. *The Journal of Psychology* 136 (4): 511–519.

Peter, Joakim Jojo
2004   Uleletiw: Imaging of My Paradise. In *Pacific Places Pacific Histories:*

Essays in Honor of Robert C. Kiste, edited by Brij V Lal, 259–274. Honolulu: University of Hawai'i Press.

Pulotu-Endemann, Fuimaono Karl, Suaali'i-Sauni Tamasailau, David Lui, Tina McNicholas, Moe Milne, and Tony Gibbs

2007   *Seitapu: Pacific Mental Health and Addiction: Cultural & Clinical Competencies Framework.* Auckland: The National Centre of Mental Health Research and Workforce Development. https://www.tepou .co.nz/uploads/files/resource-assets/seitapu-pacific-mental-health -and-addiction-cultural-and-clinical-competencies-framework.pdf [accessed 8 July 2020]

Rice, Simon M, and Lachlan J McIver

2016   Climate Change and Mental Health: Rationale for Research and Intervention Planning. *Asian Journal of Psychiatry* 10:1–2.

Rogan, Ruth, Moira O'Connor, and Pierre Horowitz

2005   Nowhere to Hide: Awareness and Perceptions of Environmental Change, and Their Influence on Relationships with Place. *Journal of Environmental Psychology* 25 (2): 147–158.

Rumbaut, Ruben

1991   The Agony of Exile: A Study of the Migration and Adaptation of Indochinese Refugee Adults and Children. In *Refugee Children,* edited by Frederick L Ahearn and Jean L Athey, 53–91. Baltimore: John Hopkins University Press.

spc, Pacific Community

2019   The Pacific Community and Climate Change. Blog post, 2 December. http://www.spc.int/updates/blog/2019/12/the-pacific-community -and-climate-change [accessed 4 Dec 2019]

Speldewinde, Peter C, Angus Cook, Peter Davies, and Philip Weinstein

2009   A Relationship between Environmental Degradation and Mental Health in Rural Western Australia. *Health and Place* 15 (3): 880– 887.

Stanke, Carla, Virginia Murray, Richard Amlôt, Jo Nurse, and Richard Williams

2012   The Effects of Flooding on Mental Health: Outcomes and Recommendations from a Review of the Literature. *PLOS Currents* 4.

Steiner, Candice Elanna

2015   A Sea of Warriors: Performing an Identity of Resilience and Empowerment in the Face of Climate Change in the Pacific. *The Contemporary Pacific* 27 (1): 147–180.

Swim, Janet K, Paul C Stern, Thomas J Doherty, Susan Clayton, Joseph P Reser, Elke U Weber, Robert Gifford, George S Howard

2011   Psychology's Contributions to Understanding and Addressing Global Climate Change. *American Psychologist* 66 (4): 241–250.

Tamasese, Kiwi, Carmel Peteru, Charles Waldegrave, and Allister Bush
2005   Ole Taeao Afua, the New Morning: A Qualitative Investigation into Samoan Perspectives on Mental Health and Culturally Appropriate Services. *Australian and New Zealand Journal of Psychiatry,* 39 (4): 300–309.

Te Aho, Linda
2015   Proposing an Indigenous Power of Veto in Aotearoa New Zealand. In *Dangerous Ideas in Planning: Essays in Honour of Tom Fookes,* edited by P Taylor and J Crawford, 170–184. Auckland: School of Architecture and Planning, National Institute of Creative Arts and Industries, University of Auckland. https://researchcommons.waikato.ac .nz/bitstream/handle/10289/13090/Chapter%20-%20Proposing %20an%20indigenous%20power%20of%20veto%20in%20 Aotearoa%20New%20Zealand.pdf?sequence=28&isAllowed=y [accessed 8 July 2020]

Teaiwa, Katerina
2018   Our Rising Sea of Islands: Pan-Pacific Regionalism in the Age of Climate Change. *Pacific Studies* 41 (1): 26–54.

Teaiwa, Teresia K
2001   L(o)osing the Edge. *The Contemporary Pacific* 13 (2): 343–365.

Tiatia, Jemaima
2003   Reasons to Live: NZ-Born Samoan Young People's Responses to Suicidal Behaviours. PhD thesis, University of Auckland.
2008   Pacific Cultural Competencies: A Literature Review. Wellington: New Zealand Ministry of Health. https://www.health.govt.nz/ system/files/documents/publications/pacific-cultural-competencies -may08-2.pdf [accessed 4 Dec 2019]
2012   Commentary on "Cultural Diversity across the Pacific": Samoan Cultural Constructs of Emotion, New Zealand-Born Samoan Youth Suicidal Behaviours, and Culturally Competent Human Services. *Journal of Pacific Rim Psychology* 6 (2): 75–79.

Tupou, Patricia
2019   Broken Islands / Moving Islands: Settler Colonialism and Oceanic Mobilities. Master's thesis, University of Hawai'i–Manoa.

UNESCAP, United Nations Economic and Social Commission for Asia and the Pacific
2013   Population Trends in Asia and the Pacific. Factsheet, November. Available from https://www.unescap.org/resources/population -trends-asia-and-pacific [accessed 4 Dec 2019]
2015   Overview of Natural Disasters and Their Impacts in Asia and the Pacific, 1970–2014. Technical paper, 10 March. Available from https://www.unescap.org/resources/overview-natural-disasters-and -their-impacts-asia-and-pacific-1970-2014 [accessed 4 Dec 2019]

2017 Asia and the Pacific SDG Progress Report 2017. Bangkok: United Nations. Available from https://www.unescap.org/publications/asia-and-pacific-sdg-progress-report-2017 [accessed 8 Oct 2018]

UN Environment Programme
2018 Building a Climate-Resilient Asia-Pacific. 8 March. https://www.unenvironment.org/news-and-stories/story/building-climate-resilient-asia-pacific [accessed 8 March 2018]

United Nations
1992 United Nations Framework Convention on Climate Change. unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf [accessed 4 Dec 2019]

2019 About the Sustainable Development Goals. https://www.un.org/sustainabledevelopment/sustainable-development-goals/ [accessed 4 Dec 2019]

WHO, World Health Organization
2004 Promoting Mental Health: Concepts, Emerging Evidence, Practice. Summary report. Geneva: World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/42940/9241591595.pdf [accessed 4 Dec 2019]

Wilbanks, Tom, Patricia Romero Lankao, Manzhu Bao, Frans Berkhout, Sandy Cairncross, Jean-Paul Ceron, Manmohan Kapshe, Robert Muir-Wood, and Ricardo Zapata-Marti
2007 Industry, Settlement and Society. In *Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,* edited by M L Perry, O F Canziana, J P Palutikof, J P van der Linden, and C E Hanson, 357–390. Cambridge, UK: Cambridge University Press.

Woodward, Alistair, Simon Hales, Navitalia Litidamu, David Philips, and John Martin
2000 Protecting Human Health in a Changing World: The Role of Social and Economic Development. *Bulletin of the World Health Organization* 78 (9): 1148–1155.

Woodward, Alistair, Simon Hales, and Philip Weinstein
1998 Climate Change and Human Health in the Asia Pacific Region: Who Will Be Most Vulnerable? *Climate Research* 11:31–38.

Abstract

In this literature review, we analyze existing research on climate change and its impact on mental health and well-being, primarily among Pacific Islanders. To compensate for a lack of research in this area, we also address some of the pro-

jected mental health implications resulting from disasters linked to climate change, such as flooding, hurricanes, and cyclones. This broader scope enables the identification of areas where more research into mental health concerns related to climate change in the Pacific is needed. In closing, we provide recommendations for further research into the mental health and well-being of Pacific peoples and suggest ways to develop resilience to the effects of climate change.

Sisterhood Lifeline, by Lisa Hilli, 2018.
Photo commissioned for the exhibition *The Commute*,
Institute of Modern Art, Brisbane, Australia.
Vinyl wall mural; dimensions variable.

A creative response to a personal experience of institutional racism,
Sisterhood Lifeline celebrates and honors the sacred space that
Black women and nonbinary people hold for each other through
vulnerability and strength. This photographic work unapologetically
affirms the bodies that are familiar to me and serves as a call for
all people of color to boldly take up space when working in cultural
institutions to bring about change.