

Worrying about climate change: is it responsible to promote public debate?

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Some fear that provoking widespread worry about climate change may harm mental health. The Regional Wellbeing Survey, a large study of health, well-being and life in rural and regional Australia, examined climate change worry and attitudes. Most respondents were worried about climate change and agreed that fossil fuel use causes global warming, but there was no evidence to suggest that worry about climate change is linked to mental health in the general population. Respectful, calm, considered public debate about how to respond to climate change is unlikely to be harmful to population mental health. Individually focused clinical approaches are unlikely to be effective as a primary approach in managing the mental health impacts of climate change. Instead, collective, systems-based approaches will be needed.

There is near-total scientific consensus that the world is warming and that current climate change is unprecedented and potentially disastrous (Intergovernmental Panel on Climate Change, 2014). Climate change is now considered the world's greatest health threat (Costello *et al.*, 2009) but health research on climate change has, to date, emphasised physical health. With mental disorders being the leading cause of global years lost to disability (Whiteford *et al.*, 2013), constituting 13% of the global burden of disease (Collins *et al.*, 2011), mental health needs greater priority.

Properly framed, accurate and timely public information could help stimulate constructive public debate and the motivation necessary to galvanise action; but some fear that provoking widespread worry about the possible impacts of climate change may harm mental health (Swim *et al.*, 2011). The study of climate change and mental health is in its infancy and there is little concrete evidence to inform decision-making about the possible mental health impacts of promoting public debate about climate change. The aim of this study was to contribute evidence on whether climate change attitudes and, particularly, worry about climate change are linked to mental health and well-being, taking account place-based and sociodemographic factors.

Methods

Data were taken from wave 1 (2013) of the Regional Wellbeing Survey, a survey of health, well-being and life in rural and regional Australia (see <http://www.canberra.edu.au/murray-darling-crn/regional-wellbeing>). Our sub-sample comprised

6674 respondents (mean age 52.48 years, s.d. 14.45) who completed a module on climate change. Participants included 3705 (55.51%) women and 2799 (41.94%) men; 170 (2.55%) did not specify a gender. Most people (58%) were living in regional towns or cities, significantly more women (65%) than men (48%); the rest were living mainly on rural properties (30% women and 49% men). Consistent with the rural focus of the dataset, only 3% (197 respondents) were living in capital cities.

A wide range of place-based and socio-demographic measures were included in the study. Mental health problems were screened using the Kessler 10-item Psychological Distress Scale (K10; Kessler *et al.*, 2003), which records non-specific symptoms of anxiety and depression. Emotional well-being was screened by measuring life satisfaction, happiness and optimism. Climate change attitudes were measured on three items: 'Human use of fossil fuels is changing the climate' (indicating belief in human-induced climate change), 'I am worried about global warming' and 'The science behind global warming is doubtful' (indicating distrust of the science).

We calculated descriptive statistics, analyses of variance, bivariate correlations and multiple hierarchical linear regression models to explore relationships among correlates and predictors of both 'worry' about climate change and trust in climate science. Statistical analyses were performed in StataSE 13 (64-bit). Full methodological details are available from the corresponding author.

Results

Most people were worried about climate change (56%) and agreed that fossil fuel use causes global warming (63%) and that climate science is trustworthy (55%). Climate change attitudes were strongly positively correlated, such that those agreeing with one item were likely to agree with the other items. Most of the measures used in the study were statistically significantly correlated with climate change attitudes but, for the most part, only trivially. Residents of capital cities, women, younger people, more educated people and those with high household incomes tended to worry slightly more than others, as did more distressed, pessimistic and less satisfied people. Farmers, people living on rural properties and in places where agriculture is important, older people, those working long hours, home owners and more optimistic, satisfied and happier people tended very slightly to disagree with the climate change items.

All the factors together, excluding climate change attitudes, explained only 7% of the

variance in 'worry about climate change'. When attitudes to climate change (especially about fossil fuel use) were included in the analyses, this figure increased to 58%. Further analyses indicated that climate change attitudes accounted for the small contribution of place-based, sociodemographic and illness/well-being factors to explaining worry about climate change. An identical analysis was undertaken to analyse what predicted belief that fossil fuel use is causing global warming, because this was by far the strongest predictor of worrying about climate change. The results differed little from the first analysis. No aspect of mental health and well-being helped predict beliefs about fossil fuel use. Instead, trust in the science was by far the strongest predictor of this attitude. Tables of results are available from the corresponding author.

Discussion

We found no evidence to suggest that general community worry about climate change is substantially directly or indirectly linked to population-level psychiatric morbidity. Regional and rural Australians, like most Australians (Stefanova *et al*, 2014) and others around the world (Capstick *et al*, 2015), do worry about climate change. They are likely to do so primarily if they believe that human activity is causing climate change and if they trust the science behind it. Their worry is linked to many of the factors investigated here, including aspects of mental health and well-being, but these account for an almost negligible proportion of their worry.

While cross-sectional studies cannot address causality, it is unlikely that worrying about climate change would substantially cause people to become poorly educated, married or resident on farms. Conversely, it makes sense to propose that believing human activity is causing (potentially disastrous) global warming would engender worry; and that certain predisposing factors might influence, in complex ways (Doherty & Clayton, 2011), the likelihood of believing this. This view is consistent with emerging evidence that climate change attitudes reflect social (rather than individual) context, such as politics, economics (Capstick *et al*, 2015), norms, social identity and general public uncertainty about the science itself; and that these constrain adaptation options. We must therefore look to relevant theories to explain these beliefs. There is thus value, as a starting point, in thinking systemically about society's major relevant social and technological processes (Doherty & Clayton, 2011) and about barriers to climate change adaptation (Swim *et al*, 2011) to guide realistic mental health strategies relating to climate change.

Systemic approaches would suggest a primary (though not exclusive) focus on carefully tailored policy (such as disaster preparedness planning that incorporates consideration of mental health) rather than on clinical responses, with an emphasis on collective approaches. Appropriately constructed, these could have the additional benefit of building social capital and emotional resilience (Berry, 2009; Berry *et al*, 2010), both

of which are protective of mental health. Proper framing of responses would require sophisticated understanding of: types of people, their varied interests, beliefs, aspirations, challenges and fears; what they know about climate change; what they would be able and willing to do; and the kinds of messages they would 'hear', the conversations in which they would engage and the media via which messages could be promoted.

The expansion of services to help the minority of people who have psychiatric disorders and vulnerabilities 'overcome stress, worry, and despair' in relation to climate change (Swim *et al*, 2011) may be a consideration, but this is not a priority for population mental health policy. Frightening people, especially those who are affected by disorders, would be irresponsible and unhelpful. The mental health workforce and those who train it have moral and practical responsibilities in advocacy for ill and vulnerable individuals and their foreseeable service needs (Maughan *et al*, 2014). But it is essential to differentiate between rational, manageable concern about climate change and pathological anxiety (Swim *et al*, 2011). The present findings provide preliminary empirical corroboration that the two are not the same. Violent storms destroying houses may traumatise people and prolonged drought may cause widespread distress, but respectful, calm, considered public debate about how to respond to climate change will not.

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