Indian Journal of Social Sciences and Literature Studies
Vol. 10, Issue 1, June 2024
ISSN 2349-5634 (Print) ISSN 2455-0973 (online)

Psychological Awareness Towards Global Warming

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Global climate change is one of the major threats facing humanity. Human interactions with climate occur at all levels of social organization, but so far research has focused largely on institutional actors (for example, governments, industries) and on the technological, demographic and economic trends that drive climate change. Factors that influence decisions and behaviour at the individual level have received significantly less attention. However, individual behaviour is important and ultimately drives societal change via adoption of technologies and support for policies. Unless we examine how people perceive climate change, what factors influence mitigation and adaptation behaviours and how climate change will affect human well-being, we will be unable to respond effectively as a society. Psychological research employs rigorous empirical methods to investigate individual perceptions and cognitions, individual and collective behaviours, and psychological well-being related to climate change. This research incorporates physiological, cognitive, affective and interpersonal processes, as well as factors in the social, cultural, biophysical and engineered environments of individuals.

Understanding public perceptions of climate change

There is great variability in public understanding of climate change and willingness to support action. Counterintuitively, public acknowledgement of the problem is not purely a function of education or knowledge and has not grown along with the scientific consensus. It is important to understand why people do or do not endorse the need to address climate change, especially in countries with relatively low levels of agreement. Psychological research shows that much diversity in understanding can be attributed not to what we learn about climate change but to how, and from whom, we learn: the sources of our information and how we evaluate those sources. In general, direct experiences of events related to climate change are more powerful than second-hand information in informing attitudes and behaviour, which in

part explains why local, observable conditions (including environmental risks, such as air pollution) typically influence concerns more than distant ones, such as climate change. Yet global warming beliefs also influence assessment of changes in local climatic conditions: for example, national survey data from the USA revealed that, compared with people who accepted the reality of global warming, people who believed that global warming was not happening were less likely to remember (accurately) that they had experienced a warmer-than-usual summer during the previous year. This shows that the effect of experience on perceptions of climate change is moderated by other factors . Thus, one must also look to other sources of influence on beliefs, attitudes and behaviours related to climate change.

Climate change communication:

Psychological research highlights that, for messages to be attended and responded to, sources must be trusted and attractive; the message relevant, clear and coherent; and the audience motivated and able to act. This is also evident from the growing literature on persuasive communication about climate change. In many countries, the primary source of information on climate change is the mass media. Where media outlets are associated with differing ideologies or communities of interest and present different views, people tend to preferentially accept the views of trusted and attitudinally reinforcing information sources, while other information sources are ignored and discounted. Partly for this reason, social and political identities are critical determinants of climate change perceptions in many countries. National surveys show an increasing divergence between voters on the left and those on the right in the USA and, to some extent, in the UK; individuals with right-of-centre politics, or with belief systems that emphasize individual autonomy rather than collective ties, are most rejecting of mainstream climate science, less likely to engage in behavioural change and less likely to support policies for action to limit climate change. Indeed, at least in the USA and UK, acceptance versus rejection of climate science seems to be linked far more to political ideology and worldview than to any other factor, and that polarization has increased over time. Regression analyses of survey data show that political party identification is a major predictor of climate change beliefs, even when controlling for ideology, demonstrating that this is a function of group identity and not just of a shared belief system. However, although political polarization and significant scepticism are apparent in countries where there are interest-based efforts to shape public opinion (that is, by conservative think tanks and media outlets), other regions, such as Latin America and sub-Saharan Africa, show higher and growing levels of concern with little apparent scepticism or ideological polarization. These findings critically underscore the importance of attending to the social processes that direct people towards particular sources of

information, and of considering how to provide information through multiple channels to reach different audiences.

Motivational processes and cognitive biases:

The discomfort caused by the profound political, ethical and social implications of climatic change can lead climate change messages to be rejected. Political and other identities do more than suggest which information sources are trustworthy; research shows that they also provide people with the mental models that shape their understandings and motivate particular interpretations of the information that is received, which is filtered through lenses of values and identities. Rejection of the scientific consensus can be linked to the perceived threat to one's current way of life that is associated with policies aimed to combat climate change. For example, Americans who read an article that attributed climate change to China's excess energy use were more likely to attribute climate change to human behaviour than were those who read an article attributing it to American excess energy use. These motivational biases can work in concert with biases in information processing to create resistance to climate change information. The 'availability heuristic' in human cognition suggests that risk perceptions will be influenced by recent or common events that are more cognitively 'available'. Survey and experimental evidence shows that concern about climate change increases with current media coverage, sometimes coupled with direct experience such as fluctuations in local weather conditions. Tendencies to be overly optimistic about the future, and to focus on the present rather than the future, are other biases that threaten people's ability and motivation to respond in effective ways to long-term, gradually developing environmental changes and related threats. Ample research suggests that perceptions of risk are heavily conditioned by mental shortcuts, emotions, environmental cues, social experiences and contextual factors. Misperceptions tend to persist because individuals interpret messages in light of previous experience, beliefs, values and expectations, and to seek out information that confirms rather than tests their beliefs. In one study, people who accepted or rejected the idea of climate change were asked to read two articles, one presenting mainstream climate science, and the other a climate sceptic view. The rejecters perceived the sceptical article as more reliable than the non-sceptical article, whereas the reverse was found for the accepters; importantly, both groups reported becoming more convinced of their views. Even misperceptions about climate change that are not value-laden — such as conflation with ozone depletion — endure if they are not directly counteracted because new information is fitted into existing conceptual frameworks.

Behavioural drivers and mitigation responses

Analyses of household emissions as drivers of climate change, and of ways to reduce them, have traditionally focused on consumer technologies that use fossil fuels (for example, building, automotive and appliance technologies), technologies that would reduce this usage and the economic forces affecting their adoption and use. Psychological concepts complement such analyses by examining non-economic predictors of adoption and use of these technologies, including cognitive and motivational factors such as values and beliefs, and social factors such as norms and public commitments, as well as features of programmes intended to influence behaviour such as the type of information and forms of financial incentive provided. Research shows that these factors differ in relative importance for different types of behaviour, such as household adoption, use and maintenance of consumer technologies, and behaviour in different domains. With some types of behaviour, research has shown that intrinsic factors (for example, values) are often more important than extrinsic ones (for example, incentives). It is important to recognize that many behavioural decisions are influenced by factors outside conscious awareness. To the extent that behavioural choices are made in conscious response to the threat of climate change, the factors discussed in the previous section on perceptions will be relevant; however, a great deal of environmentally relevant behaviour is driven by forces such as norms, habits and default options.

Inducing investment in low-emissions technologies:

Research shows that households seriously underinvest in low- or zerocarbon technologies compared with the level of investment that would lower optimally their overall costs — what has been called the energy-efficiency gap. Much of this gap is due to non-financial factors that can be altered to increase consumer responsiveness to incentives. For example, response to incentive programmes for home insulation implemented by different organizations has varied by a factor of ten or more, depending on trust in the organizations, approaches to marketing and programme implementation, including levels of effort required of the household to take advantage of the incentives. Programme design must attend carefully to processes of thinking and decision making within the target households. Although financial incentives can be influential, attention to these cognitive processes can suggest complements to existing or new financial incentives, and are especially important when the latter are not an option.

Psychological research has been particularly useful in revealing the limitations of financial inducements, whose effects often last only as long as the incentives are in place. When the goal is a one-time technology purchase, this may be sufficient. However, focusing

individuals' attention on possible financial gain may reduce their engagement in subsequent sustainable actions, as their emphasis shifts from doing good to gaining a profit. In one field experiment, people responded less strongly to an economic appeal (to get their tyre pressure checked) than to a nature-focused or even a neutral appeal. Research shows that non-financial factors, such as the symbolic value of a behaviour as an expression of identity or status and beneficial effects to the environment, may have greater effects on adoption and on use than prices and costs for some kinds of low-emissions technology. This is particularly true when possible financial benefits are small relative to the effort needed to gain them.

Public acceptance of technologies and policies:

Psychological research informs understanding of 'not in my back yard' (NIMBY) responses to nearby energy projects, which lead individuals and communities to oppose local development of wind farms or oil and gas extraction64. People form strong emotional bonds with a place (place attachments) and may develop a sense of self that is tied to the place (place identities). Research shows that responses to a range of energy technologies, including offshore wind farms66 and power lines, are rooted in people–place bonds in complex ways, so that technologies perceived to maintain or enhance the distinctive qualities of a place are supported by individuals with strong place attachments and identities, whereas technologies perceived to threaten those qualities are opposed. Thus renewable energy sources are evaluated not just in terms of objective costs and benefits but also in terms of their perceived fit with the local (natural and socially defined) environment. Responses are also explained by values, levels of trust in project developers, and the perceived fairness of both decision-making procedures and how costs and benefits are distributed. One of the most important ways in which individuals can have an impact is through collective action, such as support for public policies and social movements to reduce greenhouse gases on larger scales through participating in demonstrations, making financial contributions to social movements, signing petitions and voting. Studies suggest that policies that reward people for energy-saving behaviour and adoption of energy-efficient technologies are more acceptable than policies punishing high energy use or promoting curtailment behaviour. Policy acceptance is affected by beliefs about the seriousness of relevant environmental problems, beliefs about the personal and environmental consequences of policies, the extent to which people think they can help reduce these problems, and their feelings of moral obligation to help reduce these problems. People evaluate policies positively or negatively depending on how much they trust the responsible institutions and how they believe the policies will affect important values. Perceived justice and fairness, affected both by policy attributes and individual perceptions, can strongly affect

responses to policies; in some populations, policies are evaluated as more acceptable and fair when people believe that future generations, nature and the environment are protected (reflecting environmental justice), and when everybody would be equally affected.

Impacts on human well-being and adaptation responses:

Human behavioural changes are necessary not only to mitigate the effects of climate change but also to adapt to them. Climate change will affect psychological health and well-being in ways that are often overlooked. Abrupt environmental events, experienced as natural disasters, will have direct impacts on mental health and quality of life; in addition, indirect impacts will result from gradually evolving and often cumulative environmental stresses on livelihoods, economic opportunity and sociocultural conditions. Awareness of these impacts can encourage public engagement and inform attempts to encourage effective adaptations that minimize negative effects and capitalize on possibilities for more positive changes.

Direct and indirect impacts: Climate change is likely to increase the frequency, extent, or intensity of extreme weather events such as heat waves, drought and flooding, producing many social stresses. Owing to traumatic experiences, loss of loved ones, economic disruption and so on, abrupt disaster events can lead to anxiety, depression, post-traumatic stress disorder and other negative psychological outcomes. Such events also disrupt the social and institutional systems that promote health and well-being, including informal social networks and organized mental health services, although disasters sometimes increase social solidarity as communities come together to address the consequences. Negative impacts are more likely for those in the developing world and those who are economically or socially marginalized, exacerbating inequality and resentment, and increasing the likelihood of individual and societal conflict. Slowly evolving changes in environmental conditions will also have significant impacts. Gradual increases in temperature and shifts in rainfall patterns will affect livelihood opportunities and local economies, placing many at risk of economic loss, food insecurity and the psychological impacts that result. Both gradual and abrupt environmental changes can result in migrations and forced displacement, which can lead to a range of social and psychological impacts, including feelings of anxiety, grief and loss, and disruption to networks of support and belonging.

Conclusion: The psychological perspective is uniquely placed to understand individual- and household-level factors in socio-ecological systems, and can provide important input towards a multi-level approach integrating natural sciences, social sciences and the humanities. Researchers concerned with understanding and responding to climate change typically acknowledge that multiple disciplinary approaches are necessary, but do not always act on this

recognition. It is time to develop effective ways to integrate psychological research into these efforts. To successfully communicate about risk, change behaviours that contribute to climate change, understand the impacts of climate change and facilitate adaptation, it is necessary to consider individual capabilities, cognitive processes, biases, values, beliefs, norms, identities and social relationships, and to integrate understanding at this level into broader understanding of human interactions with a changing climate.

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