ARTICLE

Climate change – psychology's contribution

Alexa Spence, Nick Pidgeon and **David Uzzell** consider psychology's role in debating, combating and adapting to climate change

Climate change is a term on everybody's lips at the moment. But what role can we, as psychologists – both individually and within our subdisciplinary groups – play in reducing, and adapting to the impacts of, society's 'carbon footprint'?

This article argues that the issue of climate change raises an important set of research and public policy questions that psychologists are well placed to help address. In particular, we focus on the issues of sustainable behaviour change and nuclear power.

questions

What does climate change mean for your current research and research practices?

Do you know how your own energy supply is generated? Is it sustainable? And do you care?

resources

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The Intergovernmental Panel on Climate Change (IPCC, 2007), a group of leading international climate and policy scientists, has recently concluded that climate change is happening and human actions are making a significant contribution to this change. We probably have less than 15 years to make major changes in our greenhouse gas emissions worldwide if dangerous impacts later this century are to be forestalled. The influential Stern Report (2006), commissioned by the UK Treasury, concluded that the future costs of inaction with regards to climate change will actually be far greater than the costs of taking immediate action.

So climate change is no longer a contested issue: what is contested is what we do about it. Governments now recognise that climate change and its consequences need to be addressed by changing people's behaviour and everyday practices; technological fixes alone will not be enough. When one appreciates the extent of the causes and consequences of climate change, it is clear that psychology should be playing a key role.

Mitigation and adaptation

Climate change is a global phenomenon, a complex product of our energy use, unsustainable consumption, population growth and ecological changes such as deforestation. No one will remain unaffected. The IPCC predicts temperature rises of at least 2°C (probably more), which would result in drastic weather changes resulting in droughts, floods, and accompanying human health problems as well as the risk of extinction or a significant change in the distribution of many species. There is even the possibility of a 'tipping point' for a significant and catastrophic environmental impact, such as thawing of the permafrost, which in turn might trigger further rapid changes and repercussions that are, as yet, unknown (Lenton et al., 2008).

However, if we act fast, we may be able to avoid the most extreme predicted temperature rises and lessen related impacts. So, what can we do? Well, as individual citizens, we can look for ways to limit our use of private transport, turn off unnecessary gadgets, and generally use less energy. But such actions are not necessarily as straightforward as government energy-saving messages would suggest. Much of our well-being is tied up with what we consume, and this may have personal as well as environmental effects. Positive psychology is currently making an important contribution to the climate change debate as part of a wider set of critiques of consumerism in today's society. If we consume less, we may end up being happier people. Some writers (e.g. James, 2007) claim that the constant struggle for wealth and goods makes us unhappy (although evidence here is mixed; see also Deaton, 2008). Cries are being heard for us to slow down, to stop both spending and working so hard, and to do less – for the good of the planet and for ourselves. This could be easier said than done, since consumption operates at a subtle psychological level in terms of serving to define who we are. Bauman (2007) argues that while people used to develop their identity in the workplace, now people gain their identity mainly through consumption – much of which requires energy.

One important way in which psychologists are contributing to climate change research is through the design of mitigation strategies – understanding what people currently believe and know about climate change (Lorenzoni & Pidgeon, 2006) against the backdrop of changing

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the behaviour of people and society away from environmentally harmful activities, and towards a reduction in our collective and personal carbon emissions. Aspects of this include identifying the barriers that prevent people from changing their behaviour, communicating the why and the how of actions that need to be taken, and aiding the facilitation of debate over what can be done.

Psychology also has a role in adaptation measures that will be required for the levels of climate change which are already projected as inevitable. These will pose challenges within such areas as transnational migration, health, psychological well-being, and in resolving so-called 'environmental conflicts' where groups and states compete (possibly even go to war) over increasingly scarce resources, or where political conflicts are aggravated by environmental conditions.

In both mitigation and adaptation, psychology can advise on two levels: sustainable behaviour change in individuals; and the discourses, engagement and resolution strategies required for society to debate the profound economic and structural changes required.

Sustainable behaviour change

The biggest contributors to greenhouse gas emissions in Britain are from the electricity, heating and transport sectors (DEFRA, 2007); therefore changing to low-carbon sources (e.g. renewables), increasing the energy efficiency of products, decreasing heat wastage in the home, and making more sustainable transport choices should be a priority. In relation to mitigation efforts, DEFRA (2008) has outlined 12 specific headline behaviours, in the areas of personal transport (e.g. use more efficient vehicles, and avoid unnecessary flights); energy, waste and water in our homes (e.g. insulation, recycling and more responsible water usage); and eco-products (e.g. eat more locally produced, seasonal food). Whilst this provides some guidance as to behaviours that are most relevant to the changing climate, it does little to help in modifying behaviour, and the over general nature of the advice means that it is open to widely differing interpretations. Importantly, psychology has significant scope and potential to both understand and facilitate change in these behaviours. Simply providing information about potential energy saving measures is not sufficient – householders need to know which actions are likely to be most beneficial so they can make priority judgements in terms of effectiveness. Interestingly, Stern and Gardner (2008) note that whilst most campaigns and messages have promoted energy conservation, in reality it is efficiency-improving actions that generally save more energy. Perhaps a more considered, individually tailored, analysis of sustainable actions is required.

The application of psychological theory and empirical research is well advanced in respect of environmental behaviour change and sustainable lifestyles (see Jackson, 2005, for a review). Theoretical frameworks such as the theory of planned behaviour (Ajzen, 1991) have been used frequently in this field to examine behaviours such as the use of public transport. For example, Heath and Gifford (2002) identified descriptive norms (i.e. beliefs about typical behaviour) alongside beliefs about control as an important factor in relation to the use of buses. They found that a behavioural intervention in the form of free bus passes increased bus use, and whilst the intervention did not change which factors were considered important, the perceived likelihood of positive outcomes associated with these factors (e.g. convenience) increased.

There are also extensive psychological literatures on particular sustainable behaviours, such as recycling. Research at Surrey indicates that identity is an important factor in recycling. People who recycle, for example, are viewed as likeable and energetic and as individuals who have strong environmental beliefs (Nigbur et al., 2005). However, those who recycle are also often seen as 'do-gooders' and as left-wing, green-voting, hippy types. It is important to be aware of the self-presentational implications of environmental behaviours so that stereotyping may be built on, combated or incorporated into behavioural communications and interventions. There is also evidence that as these behaviours become the norm, so negative identities may be reduced.

Further research has employed a diverse range of psychology theories, including those relating to implicit associations, intergroup behaviour, social capital, social cohesion, and social and place identity theories. While various studies within different fields make significant contributions to our understanding of sustainable behaviour, it is now a particularly important aim to assimilate and integrate this research across theoretical and empirical domains in order that gaps can be systematically identified.

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Psychology has significant scope and potential to both understand and facilitate change in behaviour

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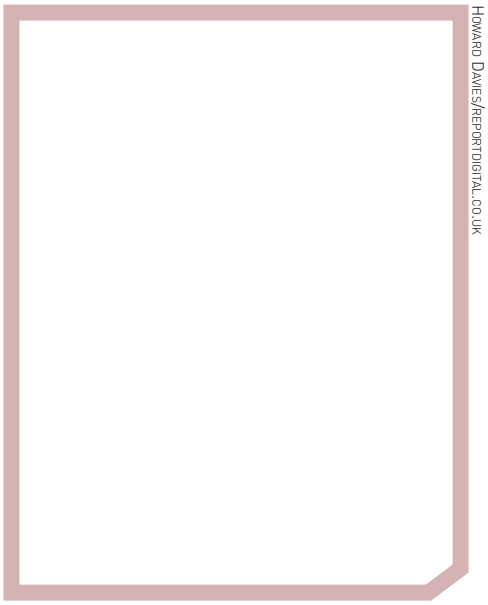
Crucially, it is clear from work in both health and environmental psychology that communication strategies aimed at changing attitudes alone – sometimes referred to as downstream interventions – may not be sufficient to generate sustained behaviour change. In addition to psychological theory on internal constraints on the individual, we need to integrate economic theory about external constraints (Stern & Oskamp, 1987). This allows us to engage in upstream interventions (i.e. structural changes) in order to generate, support and reinforce effective behaviour change across groups. These structural changes may refer to social organisation (e.g. community groups), the political and economic environment (e.g. legislation and taxes), and the available physical infrastructure (e.g. new bus routes or protected cycle routes). Bamberg (2006) provides an innovative example of a combined approach to promoting behaviour change by providing information about buses and a free bus pass to individuals who had recently relocated, an approach that was particularly effective in increasing public transport use. Incentives such as these can be very effective, but as Gardner and Stern (2002) have noted, they must be large enough to be effective (although beyond a certain optimum level, these become less useful), credible, politically acceptable, evasion proof, and noticed (so people are aware of them). They must also be appropriate to the particular barriers for action and to the target audience.

Such targeted and tailored intervention campaigns are more effective than a shotgun approach. In the case of recycling, there are some communities where recycling levels are high already, some where they are very low to non-existent and then some in between. So where and how should targeting and tailoring be applied to ensure it is most effective? A study investigating the barriers that people mentioned in changing from disposable to modern reusable cloth nappies, found that different groups of parents emerged as having different constraints and needs (Uzzell & Leach, 2003):

- *Would but can't* – those who may have financial constraints on choosing cloth nappies as the initial outlay can be high.
- *Would but don't* – those who recognise the importance of the environment, but do nothing. Perhaps they don't know what to do, are confused, do not have the confidence, or feel intimidated by others.
- *Could but won't* – those who have the financial means but prefer to spend their income in a different way, or they don't think recycling communicates the right image.
- *Could but don't* – those who have the ability, knowledge and means, but just can't be bothered.

While some local authorities recognise that finance may be an issue and put in place incentive schemes, many just rely on information and behaviour change messages that may not be suitable and effective for all groups. For example, the 'Could' parents may not be impeded by a practical or external barrier but have attitudinal and lifestyle considerations to be overcome; for them, it is more a question of choice. The various group categories and their social, material and psychological profiles will help to inform and identify the most appropriate and useful strategies and resource requirements. It is also interesting and important to ask what the 'Effort to Effect' ratio is for each of these groups: is the same amount and kind of effort required to change the behaviour of each?

Of course, behavioural maintenance is crucial, and any long-term environmental behaviour strategy should be situated in the relationships between people, both individually and collectively, and their environment (Uzzell et al., 2002). At the level of community interventions, social capital – defined as the characteristics of social organisation, such as norms of reciprocity that facilitate cooperation for mutual benefit – is seen as particularly important. Within health research, social capital is noted to have important supportive impacts on positive health behaviours and on social control over negative health behaviours (Poortinga, 2006). It is also likely to be a key aspect in promoting sustainable behaviours. For example, some people are much more willing to act if they believe that other people are also taking action. Therefore, if you see your neighbours recycling, or composting, or cycling instead of driving, for example, you are more likely to undertake these behaviours yourself (Nigbur et al., 2005).



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Structural changes may refer to social organisation, the political and economic environment and the available physical infrastructure

Controversy and public policy

Extensive economic and structural changes will be essential in order to mitigate climate change, and these are likely to fuel political and public controversies. Psychology therefore has an important role in understanding the dynamics of these controversies, and research at Cardiff has particularly focused on this.

Probably the most controversial issue at present is the further development of nuclear energy. The UK government has given the go-ahead for new nuclear power stations in Britain and has taken various steps towards modifying planning legislation and identifying likely sites to encourage the development of new stations by private companies. Proponents

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argue that nuclear power, as a low-carbon electricity source, is needed to meet rising demand and that there is no viable alternative (if greenhouse gas emissions targets are to be met) for replacing Britain's ageing nuclear and coal-fired stations when they reach the end of their operational lives. Opponents, on the other hand, argue that current nuclear stations only represent a small fraction of our total energy use (3–4 per cent) and that the costs of new nuclear power stations and related decommissioning may be vastly underestimated. They argue that further investment in nuclear power will detract from much-needed exploitation of alternative and renewable technologies, and that by suggesting that a simple technological solution exists it may even deflect attention from the behaviour changes that are needed for society to tackle climate change on a broader front. Past links with nuclear weapons manufacture have also been the focus of high-profile civil opposition campaigns from influential activist groups.

While these issues may on the surface appear to be simply about the characteristics of competing technologies, underlying the public debates are controversies which range from attitudes towards consumption and more sustainable lifestyles, equity and developing world issues, through to concerns over nuclear weapons proliferation. Mapping such underlying dynamics is an important part of understanding why controversy exists in the first place.

Past psychometric research on people's perceptions of nuclear power demonstrates a consistent set of highly negative associations for most people (e.g. Slovic, 2000). Following its long history of negative publicity, people associate it with accidents such as Chernobyl and Three Mile Island, but also hazardous waste and the 'dread' of invisible radiation. Commenting retrospectively on the impacts of this work, Baruch Fischhoff (1990) has argued that policy makers of the past tended to take notice only as a means of last resort, or when the behaviour of the public seemed to threaten existing policy: as when nuclear power was last the focus of intense opposition in the 1970s and 80s. Indeed, a default is often for policy makers – who rarely have direct access to expert psychological advice – to rely upon their own personal assumptions and stereotypes about human behaviour and what various sectors of the public think and want, without taking the trouble to gather direct evidence.

Psychological research on perceptions can provide at least some minimal evidence about what people currently know and believe about energy technologies, with the goal of facilitating better communication between all parties and groups in society about the respective risks and benefits of both climate change and the available energy options. For example, in a community sample obtained in 2007 from locations across Britain, participants' own attitudes towards nuclear power were overall neutral, whilst their judgements of the attitudes of others were far more negative (Spence et al., 2008). Systematic psychological research can also illustrate some of the methodological complexities of studying 'attitudes' and preferences in the real world – for example, the many contextual factors and ways of framing current technology choices that can influence a study's outcome – hence cautioning against basing policy or risk communications upon the conclusions to be drawn from any single study or one-off opinion poll.

> "some people are willing to act if they believe that other people are taking action"

Current evidence from a number of studies does indicate a clear ranking in people's general preferences for different sources of energy: renewables such as solar power or wind farms are the most favoured, fossil fuels less favoured, while nuclear power is perceived most negatively (Poortinga et al., 2006). What is particularly interesting is that the climate change and energy debates may be leading to a significant change in public perceptions of nuclear energy. Attitudes are currently far more ambivalent than in the past, with nuclear power now linked with benefits such as cleaner air, a reliable supply of electricity independent of other countries and, for some people, a reduction in CO_2 emissions (McGowan & Sauter, 2005). Importantly, perceptions of nuclear power may be significantly different depending on the context in which they are placed, for example in relation to rising oil prices, or if a new nuclear plant is to be sited in your town, or within the context of climate change. Recent qualitative and quantitative research at Cardiff indicates that a majority of the British public might be prepared to 'reluctantly accept' nuclear power if they believed it could contribute to climate change mitigation (Pidgeon et al., 2008). However, what the research also clearly demonstrates is that people are uncomfortable with any simplistic climate change/nuclear power trade-off. Acceptance of nuclear power is highly conditional, with few people actively preferring it over renewable energy sources given the choice. Latent concerns over risks remain for most people, and support could easily disappear in the face of any major nuclear accident. Policy makers must therefore take heed of public perceptions and concerns about nuclear power in order to understand why controversy and public opposition might still occur.

Future

Climate change is a serious and important topic that is not going away. Elsewhere in the world, including notably in the USA and Australia, the professional psychological bodies have highlighted climate change in recent conferences as a key research issue, and it is imperative that we in Britain do the same. Psychology can make a unique and significant contribution to climate change mitigation strategies and programmes, and we should rise to this challenge.

Climate change should not be seen as the sole preserve of environmental psychologists. Interestingly, counselling psychologists are already making a contribution to this area (cf. Rust, 2008), but there are opportunities for all psychologists in all areas of the discipline – cognitive, organisational, health psychology, to name but three – to demonstrate that their areas of specialism have an important role to play. Yes, change your light bulbs to energy efficient versions, but consider your research, teaching and professional work as well.

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