

Workshop: Climate change - and other big issues – in the psychology classroom

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Here are some suggestions for classroom activities with students, based on the psychology of climate change and environmental issues, as demonstrated in our conference workshop. They involve psychological theories, concepts and research that are commonly taught on courses in high schools and colleges. The activities can be adapted to suit particular curriculum requirements, and some can be used as a basis for students' own research projects.

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Activity 1: Scenarios and concepts

Draw a line to link each scenario to any relevant concepts/processes

1. Jenny is very worried about global warming and signs many petitions to reduce the use of fossil fuels, encourage public transport etc. She also loves to travel and in the last few years she's flown to Sydney, Buenos Aires, Vancouver and Beijing, although she is aware of the effects air travel has on climate change.

2. John loves animals and watched a TV programme about the natural world, which pointed out the effects of a warming climate on the ice floes in the Arctic region and hence the danger for polar bears living there. "That's just scaremongering," he thought to himself, "look how cold this winter was. There are plenty of articles in the paper by scientists who say the whole global warming thing is fake news."

3. Catherine read an article about climate change that, among others, contains the following statements: "It is very unlikely that the global increase in temperature can be held below 1.5°C." "Any temperature rise above 1.5°C will lead to a greater likelihood of drought, flooding, depletion of resources, conflict and forced migration." "Higher CO2 levels and a warmer climate provide benefits to the biosphere (i.e. a greener planet and enhanced crop yields)." "Modern temperatures, sea levels, and extreme weather events are not unusual. Many regions of the Earth are cooler now than they have been for most of the last 10,000 years." Next day in the pub she told her friends "Climate change is no problem, there will be better crops, the Earth will be greener, and anyway lots of places are cooler now than they have been for ages - thousands of years!"

4. Hans and Sara are having their first baby. Up till now they've known about climate change but not really thought much about it. Now they find themselves trying hard to use less energy, use the car less and cycle more. They argue with friends against fracking and about nuclear power and renewable energy sources.

Psychological concepts/processes
attitudes / attitude change / persuasion
attitudes-behaviour relationship
cognitive dissonance
theory of planned behaviour
minority influence
motivation
defence mechanisms
denial
anxiety
moral reasoning
empathy
pro-social behaviour / altruism
personality
self-efficacy
locus of control
learned helplessness
social justice / climate justice
connectedness to nature
affirmatory bias

	Psychological concepts/processes
<p>5. Nadia has a large group of friends she often meets in the pub. She opposes burning fossil fuels and therefore opposes fracking. Her friends say many people think global warming is a hoax, and anyway they'd welcome a warmer climate as it's always cold where they live. Nadia wants to get some of her friends to go along to a big protest against fracking. She and another activist friend meet 3 of her friends in the pub and tell them about the march and all the work they are doing to prepare for it. They explain why they oppose fracking and that several celebrities are supporting marches around the country. One of the friends decides to join the march, and when they meet the rest of the group and tell them another 2 say they'll come. At the march Nadia is pleased to see 5 of her pub group taking part!</p>	<p>attitudes / attitude change / persuasion</p> <p>attitudes-behaviour relationship</p> <p>cognitive dissonance</p> <p>theory of planned behaviour</p> <p>minority influence</p> <p>motivation</p>
<p>6. In her childhood Kirsten spent lots of time outdoors and she loves nature and animals. Yvonne grew up in the city and cares a lot about people, especially hating injustice. Their friends are surprised to discover that Yvonne is much more worried than Kirsten about climate change because of the potential effects of desertification and rising sea levels on vulnerable people in poor countries around the world.</p>	<p>defence mechanisms</p> <p>denial</p> <p>anxiety</p> <p>moral reasoning</p>
<p>7. Jim's dad was very strict with him, punishing him for small mistakes and laughing at his ideas and suggestions. Jim has remained very anxious and now he's worried because his house is vulnerable to flooding and the floods seem to be getting more frequent as "once in a century" weather events with storms and heavy rainfall become more frequent. He's heard it could be because of climate change, but he's sure no-one can do anything about it, which makes him even more anxious.</p>	<p>empathy</p> <p>pro-social behaviour / altruism</p> <p>personality</p> <p>self-efficacy</p>
<p>8. Mark and Hanne live in a shared flat with several friends. All of them are interested in the environment and preventing climate change. Each believes that something needs to be done to prevent climate change, including reducing energy use. They talk about buying a vacuum cleaner and washing machine for the flat and while Mark is in favour of buying appliances that are very energy efficient but more expensive, Hanne says she can't afford to spend more than the minimum, so they end up with the less efficient ones. She suggests they simply clean less often and that clean carpets and clothes are not really that important, and anyway "what we do will make only the tiniest difference."</p>	<p>locus of control</p> <p>learned helplessness</p> <p>social justice / climate justice</p> <p>connectedness to nature</p> <p>affirmatory bias</p>

Activity 2: A set of ideas for practical research tasks based on climate change / environmental issues

Example 1:

Research question:

Is pro-environmental motivation affected by “present-oriented” and “future-oriented” mind-sets?

Method & design: experiment, independent measures

Independent variable: present-oriented or future-oriented mind-set (induced by a short text)

Dependent variable: level of pro-environmental motivation (measured by questionnaire)

Procedure:

One group of participants are asked to read a present-oriented text:

“Please take a few minutes to envision what your everyday life circumstances are. Visualize what happens on a typical day (such as today) from the time you wake up until you go to sleep. Try to include as much detail as possible (sights, sounds, smells, etc.). Take three deep breaths before you begin. Feel free to close your eyes during this task. You will be verbally instructed when to stop. Please do not turn the page until instructed to do so.”

A second group of participants are asked to read a future-oriented text:

“Please take a few minutes to envision what your everyday life circumstances might be like FOUR years in the future. Visualize what happens on a typical day from the time you wake up until you go to sleep, FOUR years in the future. Try to include as much detail as possible (sights, sounds, smells, etc.). Take three deep breaths before you begin. Feel free to close your eyes during this task. You will be verbally instructed when to stop. Please do not turn the page until instructed to do so.”

Both groups then complete a measure of **Pro-environmental motivation**, e.g:

Please indicate to what extent you agree with each of the following statements.

	strongly agree	agree	not sure	disagree	strongly disagree
scoring*	5	4	3	2	1
1. I feel a personal obligation to do what I can to help reduce climate change					
2. I am prepared to reduce my energy use to help tackle climate change					
3. I am prepared to avoid travelling by car and use public transport instead					
4. I am prepared to donate money to an environmental organisation					
5. I try to persuade others that it's important to tackle climate change					
6. I try to always re-cycle all items that are re-cyclable					

*Responses are totalled to give each participant a single score (max = 30); high score means high level of pro-environmental motivation.

Sources: Arnocky et al (2014), Hornsey et al (2015), and Milfont and Duckitt (2004)

Data analysis

Scores can be compared between groups by means of descriptive statistics (means, standard deviations, barcharts etc), plus inferential statistical test if appropriate (e.g. t-test, Mann-Whitney).

Example 2

Research question: Do females and males differ in their level of pro-environmental motivation?

Method & design: quasi experiment, independent measures

Independent variable: gender

Dependent variable: level of pro-environmental motivation (measured by questionnaire)

Example 3

Research question: Do females and males differ in their level of beliefs about causes of climate change – natural / anthropogenic ?

Method & design: quasi experiment, independent measures

Independent variable: gender

Dependent variable: nature of beliefs about causes of climate change, natural / anthropogenic, measured by questionnaire, e.g.:

Thinking about the causes of climate change, which of the following best describes your opinion?:

	Tick one	Scoring key* [not shown to participants]
Climate change is entirely caused by natural processes		1
Climate change is mainly caused by natural processes		2
Climate change is partly caused by natural processes and partly caused by human activity		3
Climate change is mainly caused by human activity		4
Climate change is entirely caused by human activity		5
There is no such thing as climate change		0

* a high score means a strong belief in anthropogenic causes of climate change

Questionnaire adapted from Poortinga et al. (2011)

Data analysis

Scores can be compared between groups by means of descriptive statistics (means, standard deviations, bar charts etc), plus inferential statistical test if appropriate (e.g. t-test, Mann-Whitney).

Example 4

Research question: is there a relationship between level of pro-environmental motivation and nature of beliefs in causes of climate change (natural / anthropogenic)?

Method: non-experimental questionnaires / correlational design

Variables: - pro-environmental motivation
- nature of beliefs in causes of climate change

Materials: the two questionnaires in previous examples.

Data analysis:

Scores can be plotted on a scattergram; for inferential stats testing, Spearman's rho is likely to be most suitable.

Example 5: see next page

Other ideas

- Comparison of attitudes to climate change across cultures
- Personality differences in attitudes to climate change
- Effect of different subjective norms on environmental attitudes
- Gender differences in connectedness to nature
- Correlation between emotional empathy and environmental concern
- Correlation between self-efficacy and belief in anthropogenic climate change
- Correlation between pro-environmental motivation and feelings of distress

Activity 2 (continued, pp. 6-10):

Example 5

Research question: Do females and males differ in the kinds of arguments they regard as most important / persuasive, about climate change? Are females more likely to find 'ethical justice' arguments more persuasive, and are males more likely to find 'science and business' arguments more persuasive?

Method & design: quasi experiment, independent measures

Independent variable: gender

Dependent variable: score on ethical-justice / science-business task (high score represents 'ethical justice' preference, low score means 'science and business' preference)

Materials: see below

Quasi-experiment: Gender differences in the extent to which climate change arguments are regarded as important/persuasive.

Based on: **Swim, Janet et al. (2018). Gendered discourse about climate change policies. *Global Environmental Change*. 48. 216-225**

Based on the findings of the original American study, males are more likely to find Science-business (S-B) arguments and females Ethical-justice (E-J) arguments for climate change policies more persuasive. Some proposed policies to reduce greenhouse gas emissions are put forward as themes for a hypothetical debate.

Students can use the policies and arguments below, which are taken from this paper and slightly adapted, using a suitable sample of female and male participants. Five examples of policies and arguments (For and Against) are given.

For each policy the participant should choose the For and the Against argument they think will persuade an audience more. Students will need to consider how to avoid intervening variables (e.g. presenting the policies and arguments in a random order). The arguments - obviously not labelled S-B and E-J, and just stating "I support" or "I oppose," could be on separate cards numbered on the back (see possible layout below), so the participant hands the researcher the 2 cards they have chosen for each policy and the researcher records the numbers, which will later be related back to the type of argument and a score worked out.

The number of ethical-justice arguments selected is the score (between 10 and 0). The (directional) hypothesis is that females will select more ethical-justice arguments (higher score) and males more science-business arguments.

Mean scores for males and females can be compared and very simple graphs drawn or a non-parametric statistical test (Mann-Whitney U test) applied. This is a quasi-experiment using naturally occurring groups, so could be used for a discussion of types of experiment and their advantages and disadvantages.

This can lead on to a discussion of the need to frame arguments in different ways to persuade different target audiences (other individual differences may be more important, e.g. age, education, socio-economic status...), and a discussion of reasons for the gender differences found, if any, or for those found in the original study.

The CO₂ Allowance Policy: People are charged extra tax if their activities (e.g. motor boating) generate more than a certain amount of CO₂

Pro(S-B): I support the CO₂ Allowance Policy. This will inspire innovations, such as more efficient boats, that individuals can purchase and use

Pro(E-J): I support the CO₂ Allowance Policy. It is our responsibility as individuals to be part of a team that works together to reduce climate change-producing emissions. This will show that we are not just concerned about our own well-being but the well-being of those harmed by climate change.

Con(S-B): I oppose the CO₂ Allowance Policy: Individuals who have earned resources should be allowed to use these resources however they choose. Punishing successful individuals only holds our country back.

Con(E-J): I oppose the CO₂ Allowance Policy. The rich can afford to pay fines and continue in their high-emission producing behaviors. Less well-off people cannot afford energy efficient appliances and homes. So this policy will be ineffective and harm the poor and middle class.

The Illegalization of Standby Mode Policy. To reduce the amount of wasted energy the production of new appliances and equipment with a standby mode, which uses power even when the product is not in use, will be made illegal.

Pro(S-B): I support the Illegalization of Standby Mode Policy. We need to reduce the entirely unnecessary use of energy. This change is simple but effective and our businesses can devise ways to do this but maintain ease of use.

Pro(E-J) I support the Illegalization of Standby Mode Policy. As international citizens, we need to collectively address the problem of creating harmful emissions that hurt people and the planet. It only takes a few extra seconds to have an appliance turn on without standby mode. We can surely take a few seconds to help others.

Con(S-B): I oppose the Illegalization of Standby Mode Policy. Businesses cannot be expected to comply with this policy and be industrial leaders when places like India and China ignore these policies. This policy makes us vulnerable to losing economic power as consumers select cheaper products made in other countries.

Con(E-J): I oppose the Illegalization of Standby Mode Policy. Businesses will have to change their products, which will become more expensive – this means that low-income families will be harmed by this policy.

The Restricted Air Travel Policy. This policy aims to both discourage air travel (such as fuel taxes on flights) and encourage alternative modes of transportation like public trains and buses (more investment and cheaper travel).

Pro(S-B): I support the Restricted Air Travel Policy. Often air travel can easily be replaced by alternative forms of transportation and train and bus companies can then invest more and improve services. People need to start facing the fact that these changes are critical.

Pro(E-J): I support the Restricted Air Travel Policy. Travel by air is one of the most harmful forms of transportation for the environment, and the most vulnerable don't often use it but are most affected by its consequences.

Con(S-B): I oppose the Restricted Air Travel Policy. Much business occurs because individuals fly quickly around the country. Overseas business travel cannot be replaced by alternative transportation. More expensive air travel will result on loss of business deals and revenue to international companies, decreasing our economic power.

Con(E-J): I oppose the Restricted Air Travel Policy. We have already invested much land to airports and highways for cars. More train tracks and increased number and size of highways needed for more buses will destroy more animal habitats, damage more forests and fields, and increase the number of animals killed by vehicles.

The Methane Capture and Reuse Policy. This policy gives companies government funds to help capture methane gas from waste (e.g., food, plants, sewage) as it decomposes in landfills; discarded methane gas is a renewable energy source.

Pro(S-B): I support the Methane Capture and Reuse Policy. This policy will strengthen our energy production capabilities. Our waste is already producing methane and we have technology available to capture it, which will reduce our dependence on other countries for fossil fuels and drive innovation.

Pro(E-J). I support the Methane Capture and Reuse Policy. We produce too much waste, much of it biodegradable. The methane from landfills contributes to climate change and we keep destroying more land and animal habitats to create more landfills to fill up with more waste. By productively using this waste we reduce methane in the atmosphere and the need for more landfills.

Con(S-B). I oppose the Methane Capture and Reuse Policy. Digging through refuse to produce energy is inefficient. The amount of methane from landfills is small compared to the amount of other climate change causing gases and the energy produced is small compared to the energy we can produce from other methods. It would be more cost-effective to invest in other industries.

Con(E-J). I oppose the Methane Capture and Reuse Policy. This policy distracts us from the issue of the problem of producing too much waste. We need to take better care of our planet by focusing our effort on reducing the resources we use that create all of our waste. The biodegradable waste we do produce can be composted and then used to help us grow food organically.

The restriction of energy use by appliances and light bulbs. The policy is to restrict the maximum power of certain appliances and light bulbs while prescribing a minimum effectiveness (e.g. cleaning power of vacuum cleaners) for the appliances.

Pro(S-B) I support the Energy Use Restriction Policy because it will drive the development of more efficient appliances and light bulbs and opens up business opportunities for innovative companies.

Pro(E-J) I support the Energy Use Restriction Policy because it will increase demand for efficient appliances making them cheaper and therefore poorer people can save money on their energy bills.

Con(S-B): I oppose the Energy Use Restriction Policy because it limits the possibilities of businesses to develop really effective new appliances, while the difference in costs of energy use are very small. If low-energy appliances are really good the market will sort it out.

Con(E-J): I oppose the Energy Use Restriction Policy because it limits people's choices as consumers and will make appliances more expensive to buy (e.g. LED lightbulbs), which is a burden on the poorest in society.

The CO₂ Allowance Policy

People are charged extra tax if their activities (e.g. motor boating) generate more than a certain amount of CO₂

For	Against
I support the CO ₂ Allowance Policy. This will inspire innovations, such as more efficient boats, that individuals can purchase and use and will produce new business opportunities	I oppose the CO ₂ Allowance Policy. The rich can afford to pay fines and continue in their high-emission producing behaviors. Less well-off people cannot afford energy efficient appliances and homes. So this policy will be ineffective and harm the poor and middle class.
I support the CO ₂ Allowance Policy. It is our responsibility as individuals to be part of a team that works together to reduce climate change-producing emissions. This will show that we are not just concerned about our own well-being but the well-being of those harmed by climate change.	I oppose the CO ₂ Allowance Policy: Individuals who have earned resources should be allowed to use these resources however they choose. Punishing successful individuals only holds our country back.



The Illegalization of Standby Mode Policy

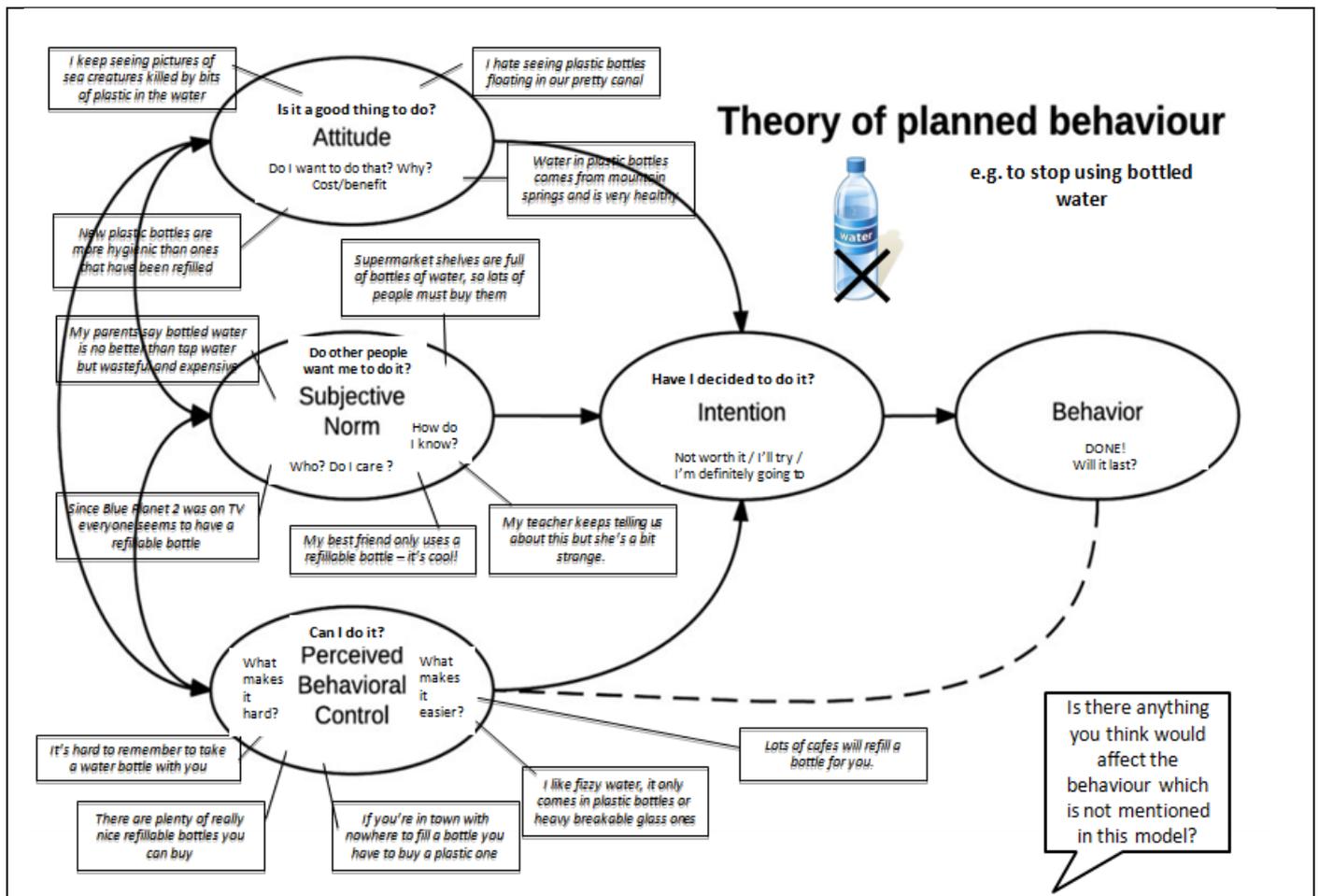
To reduce the amount of wasted energy, the production of new appliances and equipment with a standby mode, which uses power even when the product is not in use, will be made illegal.

For	Against
I support the Illegalization of Standby Mode Policy. As international citizens, we need to collectively address the problem of creating harmful emissions that hurt people and the planet. It only takes a few extra seconds to have an appliance turn on without standby mode. We can surely take a few seconds to help others.	I oppose the Illegalization of Standby Mode Policy. Businesses cannot be expected to comply with this policy and be industrial leaders when places like India and China ignore these policies. This policy makes us vulnerable to losing economic power as consumers select cheaper products made in other countries.
I support the Illegalization of Standby Mode Policy. We need to reduce the entirely unnecessary use of energy. This change is simple but effective and our businesses can devise ways to do this but maintain ease of use.	I oppose the Illegalization of Standby Mode Policy. Businesses will have to change their products, which will become more expensive – this means that low-income families will be harmed by this policy.

Activity 3: Applying a psychological theory to pro-environmental behaviours.

Example: Theory of Planned Behaviour (Ajzen, 1991), from the domain of social cognition, can be applied to (avoiding) buying bottled water.

Teachers or students can either find a diagram of the theory (online or from a book), or draw it themselves, and complete the elements of the theory with the specific aspects relevant to buying / not buying bottled water. For example:



A number of other theories could be used in a similar way, in relation to various aspects of environmental attitudes, beliefs and behaviours.