Exploring climate-related psychology research: What can music researchers learn?

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Researchers are exploring the climate crisis from many different fields. Environmental psychologists study a key aspect of the climate crisis: the relationships between human behaviour and the environment.[1] Environmental psychologists study the influence of environment on human experience, behaviour and wellbeing, but also the influence of individuals on the environment, including factors influencing environmental behaviour and ways to encourage pro-environmental behaviour.[2]

Many musicians and musical organisations, from rock bands (e.g. *Coldplay* and *Massive Attack*) to opera companies (e.g. *Opera North*), are aligning their practice to take climate change into account, in relation to practical steps they are taking to reduce their environmental impact, and in relation to their creative outputs, in the hope that they will influence their audiences or fans.[3] Evidence from the UK suggests that arts audiences and music fans are generally more supportive than the general population of steps to make the creative industries more sustainable.[4] Musicologists, too, are studying the environmental impacts of music-making and sustainable practices.[5] The field of ecomusicology has, for several decades, used music to highlight features of the natural environment,[6] and research relating to environment-related music continues.[7] Music psychologists and sociologists are exploring the social benefits of music,[8] and are beginning to investigate the question of whether music can influence environment-related behaviours. The effectiveness of particular creative outputs in influencing audience members' environment-related values, beliefs, attitudes and behaviours is rarely measured empirically, however. Indeed, doing so is challenging, in terms of honing pertinent research questions and knowing how to answer those questions with effective study design and appropriate methodological tools. This chapter is intended to address some of those challenges by exploring three ways in which music researchers who are interested in exploring this area can learn from environmental psychology research, in relation to theories, methods and empirical evidence.

Learning from theoretical studies in environmental psychology

Decision-making and related theories of behaviour change are complex phenomena and have prompted considerable study over several decades.[9] Environmental psychologists have used empirical evidence to develop and refine theories focussed on environment-related decision-making. Steg and Norland[10] describe one overarching theory, Goal Framing Theory, that encompasses other theories about environmental behaviour. Goal Framing Theory suggests that our behaviour is motivated by three overarching goals: the hedonic goal; the gain goal; and the normative goal. Our behaviour, the theory suggests, is motivated by the most salient goal. If this is the hedonic goal, we pursue something for pleasure, or for an emotional reward. If the gain goal is salient, we pursue something that will bring us personal gain. If the normative goal is salient, our behaviour will tend to conform to the behaviour of others.

Within each of these goals are other theories that help us to understand the relevant goal-related behaviour. In relation to the hedonic goal, the understanding of affect, emotion, and the differences between hedonic and eudaimonic emotions is important.[11] Hedonic emotions are straightforward pleasure emotions; eudaimonic emotions are related to meaningful behaviour that may have a moral component.[12] Theories relating to the gain goal are the Theory of Planned Behaviour (TPB)[13] and Protection Motivation Theory (PMT).[14] Those relating to the normative goal are the Norm Activation Model (NAM)[15] and the Value-Belief Norm Theory (VBN).[16] By understanding the variables that affect individuals' decision-making, we can begin to find ways to influence selected variables to encourage environmentally-friendly behaviour.[17]

The author has explored aspects of these theories in relation to research in music psychology to identify mechanisms through which music might be able to influence environment-related behaviours.[18] This work posits twelve research questions, based on these theories and empirical evidence from music psychology (see Table 1).

Table 1: Research questions posited by Prior and the focus of each research question. ERM is used as an abbreviation for environment-related music, or music created with an environment-related aim.

RQ	Psychological mechanism/model		Research Question from Prior[19]	Focus of research question
1	Hedonic Goal	Hedonic emotions	Can we use music's emotional effects to enhance the positivity of people's anticipated emotions when they are considering whether or not to engage in pro-environmental behaviour?	Using music that evokes positive emotions (often listeners' favourite/preferred music)
2		Hedonic emotions	Can we use music's emotional effects to enhance the experience of environmentally-friendly behaviours using music?	Using music that evokes positive emotions (often listeners' favourite/preferred music)
3		Eudaimonic emotions	What can we learn from those who commit to pro-environmental behaviours and those who commit to music performance activities, since both of these activities seem to prompt hedonic and eudaimonic emotional experiences?	Behaviours surrounding music
4	Gain Goal	Theory of Planned Behaviour Subjective Norm	Can we use musical genre stereotypes to strengthen individuals' subjective norms?	Behaviours surrounding music
5		Theory of Planned Behaviour Subjective Norm	Can we use musical role models to encourage fans to behave in environmentally-friendly ways?	Behaviours surrounding music

RQ	Psychological mechanism/model		Research Question from Prior[20]	Focus of research question
6		Theory of Planned Behaviour Subjective Norm	Can we use research about Social Identity Theory and music to modify in-group and out-group distinctions and thereby promote positive environmental behaviours?	Behaviours surrounding music
7		Theory of Planned Behaviour Habits	Is it possible to develop music-based interventions that help break habits with a negative environmental impact and help to form and strengthen habits with a more positive environmental impact?	Using music that evokes positive emotions (often listeners' favourite/preferred music)
8	Normative Goal	Norm Activation Model Outcome efficacy	Can heroic music be used to bolster individuals' feelings concerning outcome efficacy, making them feel that their outcomes will make a difference to climate change outcomes and thereby encouraging them to take environmentally friendly actions?	ERM: 'Heroic' music
9		Value-Belief Norm Theory Values	Can music make empathy and altruism more salient, thereby influencing people's values and potentially, their environmental behaviours?	ERM: Music that helps the listener to see themselves as someone who cares for other people (evokes empathy)

RQ	Psychological mecha-nism/model		Research Question from Prior[21]	Focus of research question
10		Value-Be-lief Norm Theory Values	Can music that references sounds of the natural world increase the salience of listeners' biospheric (pro-environmental) values? If so, is this influence reflected in their environmental be-haviours?	ERM: Music that helps the lis-tener to see themselves as someone who cares for the environment (by featuring the natural world)
11		Value-Be-lief Norm Theory Beliefs	What is the influence of musicians' musical outputs (the musical content and the messaging conveyed or communicated through them) on fans' and listeners' ecological worldview, their awareness of the environ-mental consequences of specific actions, their ascrip-tion of responsibility, their pro-environmental personal norms, and their day-to-day environmental behaviours?	ERM: Music with a particular message (in the lyrics or ac-companying information) that provides cognitive sup-port to enable people to provide reasons for their values (encourages value-congruent behaviour)
12		Value-Be-lief Norm Theory Beliefs	What is the influence of musicians' non-musical ac-tions on fans' and listeners' ecological worldview, their awareness of the environ-mental consequences of specific actions, their ascrip-tion of responsibility, their pro-environmental personal norms, and their day-to-day environmental behaviours?	Behaviours surrounding music

Some of these research questions seem likely to be most effective with music that evokes positive emotions, which is often our preferred or favourite music, either to make us feel more positive when we are making environment-related decisions (1), or when we are enacting pro-environmental behaviour, such as walking some-where rather than driving (2); or when trying to break habits that are negative for the environment and establish new pro-environmental habits (7). Other questions involve behaviours that surround music, such as the sense of eudaimonic satisfac-

tion that both music practice and pro-environmental behaviour bring (3); the social norms that music can strengthen (4); musical and environmental role models (5); in-group and out-group behaviours (6); or the influence of musicians' non-musical actions on various aspects of listeners' environmental values, beliefs and actions (12). The remaining questions involve music created with some kind of environment-related aim or features, which, for the purposes of this chapter, we might call environment-related music, or ERM. These questions address the idea that ERM may be effective in influencing environmental values, attitudes and behaviours, for example heroic music (8), music that encourages empathy or altruism (9), music that references the natural world (10), or music with a particular message in the lyrics or accompanying information (11). Work is needed to explore all these questions empirically, but this chapter will focus on possible approaches to studying questions relating to ERM. The potentially effective features of ERM identified above are not genre-specific. Equally, any study exploring the effectiveness of such music would need to consider variables relating not only to the music, but also the listener and the situation, as advocated in research on music and emotion.[22] Although music psychology research has an array of established methods for exploring listeners' responses to music, including self-report measures of various kinds,[23] environmental psychology has much to offer in terms of the response mechanisms that might be appropriate for measuring environmental values, beliefs and behaviours.

Learning from methodology in environmental psychology

Most of the research questions above that relate to ERM are related to the Value-Belief Norm Theory, or VBN.[24] The VBN suggests a set of influences on environment-related behaviour, involving our long-term values, which are relatively stable but can vary in salience; our beliefs, which are also fairly stable but can change; our pro-environmental personal norms; and our resulting behaviour.[25] Environmental psychologists have developed reliable, valid ways of measuring values, beliefs and behaviour. Each of these will be briefly explored here in relation to possibilities for use in relation to music and, in particular, ERM.

Measuring values

As mentioned above, although values are stable, they can vary in salience for individuals, influencing their beliefs and behaviours.[26] Data suggest that audiences of arts events in the UK have greater environmental concern than the general public and are more likely to have adjusted their lifestyles to make them more sustainable,[27] suggesting that these audiences may have stronger biospheric or altruistic values than the general public. It would be useful to assess not only the values of

arts audiences, but also whether or not particular values can become more salient in response to arts events featuring ERM. Audience members could be asked to complete a questionnaire measuring their values both when they book a ticket for an event featuring ERM, and immediately after they have attended the event. Comparing responses from audience members of different events (those featuring ERM or not featuring ERM; or those featuring ERM of different styles or genres) could provide both a "control group" and insight into the values of audiences of different kinds of events. Comparing "before" and "after" measures could provide insight into the potential for a particular event to influence the salience of different values, and therefore, potentially, individuals' attitudes and behaviours.

There are many different validated questionnaires available to measure values.[28] Validation is especially important because individuals find it difficult to prioritise values when asked directly.[29] The E-PVQ,[30] for example, is a carefully-worded 17-item questionnaire that is being used in a pilot study to measure the values of people attending arts events.[31]

Measuring beliefs

The notion of environmental beliefs encompasses a range of psychological determinants of environmental behaviour, including an individual's environmental concern, ecological worldview and myths of nature.[32] Environmental concern is often considered to be a facet of environmental attitudes, defined as "a psychological tendency to evaluate the natural and built environments, and factors affecting their quality, with some degree of favor or disfavor".[33] There are multiple self-report measures of environmental attitudes, as McIntyre & Milfont discuss, and scales have been developed for specific populations, such as children.[34] A pilot study is currently being undertaken using the Environmental Attitudes Inventory (EAI)[35] to examine the effects of song lyrics on environmental attitudes.[36] As more studies of this kind are undertaken, it may be possible to determine the effectiveness of different kinds of song lyrics and musical styles in influencing environmental attitudes or beliefs for different populations and situations.

Measuring behaviour

There are also many instruments for measuring pro-environmental behaviour. Despite its limitations, self-reported behaviour data can be a useful indication of pro-environmental behaviour, and environmental psychologists have developed a range of validated questionnaires to measure different aspects of pro-environmental behaviour.[37] One such measure is the PEBS, or the Pro-Environmental Behaviour Scale,[38] which has the advantage of focusing on behaviours that have the largest environmental impact, whether positive (such as joining an environmental

organisation) or negative (such as driving or eating red meat). The PEBS has been used to measure music students' self-reported environmental behaviours before and after a teaching intervention, showing a small positive effect on students,[39] but could be used in relation to music more generally. If researchers are hoping to influence pro-environmental behaviour using music, this might provide a useful tool to ascertain the effectiveness of particular ERM interventions. For example, one could measure audience members' behaviour immediately before attending an ERM event, immediately afterwards, and three months later. Trends in the general public could be controlled for with a parallel sample attending a non-ERM event. If the ERM intervention is effective in changing behaviour, one would expect to see improved scores on the PEBS for the group who attended the ERM event, but not for the group who attended a non-ERM event.

Learning from empirical research in environmental psychology

Although the validated measures explored above have not been used extensively in relation to ERM, they have been used in relation to TV and film to explore the effects of environment-related film and TV on viewers, in addition to analyses of the films themselves.[40] Such empirical evidence is valuable to music researchers in terms of both methodology and results. Ailise Bulfin notes that popular culture both reflects cultural understandings of climate change and embodies a source of information that drives understanding of climate change.[41] The effects of film and TV (and indeed music) on a viewer or listener can be complex and unexpected: even inaccurate films can drive increased understanding and change if they are perceived as educative, truthful and trustworthy.[42] Climate change-related films such as *The Day After Tomorrow* can prompt information-seeking behaviour[43] and trigger helpful scientific commentary exploring the tensions between "dramatic truths" and "veritable truths".[44] Thus the relationship between film as a stimulus and viewers' attitudes, beliefs and behaviours is not always straightforward; and the same seems likely to apply to ERM. As in studies of music and emotion,[45] it seems likely that variables relating to the stimulus (film or music), viewer/listener and situation will influence responses.

The Day After Tomorrow and two other climate-related films, *An Inconvenient Truth* and *The Age of Stupid*, have been studied repeatedly in relation to their effectiveness in influencing environmental concern and behaviour.[46] Maria Sakellari's meta-analysis suggests that these films do generally have some short-term effects on environmental concern and on behaviour. The short-term nature of these effects may be due to a combination of complex factors: the insufficiency of the so-called "deficit model" (the idea that increased knowledge will lead to increased action); the heterogeneity of audiences' life experiences and their perception of reliability of information;

and the unhelpfulness of the fearful framing of climate change[47] (though the use of "moral arguments grounded [...] in personal stories of loss"[48] can be helpful). Sakellari concludes that "exposure to narrative, emotional climate change storylines, inducing a democratic-based and moral framing of climate change, can be a positive tool toward empowering people to address climate change impacts".[49]

Interestingly, only a few researchers seem to consider the impact of the music within the above films,[50] or many other climate-related films, despite the considerable effects of music within film[51] and a considerable field of study that exists in film music.[52] This seems like a fruitful area for future research.

Experts in climate communication have also explored the medium of film. Paola Banchero, Travis Rector and Jonathan VanBallenberghe explored "best practices" for climate communication that had been developed from existing empirical evidence.[53] They then applied these principles to create their own "fulldome" film, before gathering empirical evidence about its effectiveness. These principles are outlined in the left-hand column of Table 2. Music is not mentioned explicitly in these guidelines, though some aspects such as cultural connection and the management of the emotional message may imply the use of music, as shown in the middle column of Table 2. A comparison of these best practice guidelines with the research questions relating to music that were outlined earlier is shown in the right-hand column of Table 2.

Table 2: "Best Practices" for climate communication[54] in film in comparison with potentially useful features of ERM identified above.

Best practices for climate communication in film	Might music support this within film?	Potentially useful features of ERM identified above
Focus on local issues relevant to the audience on short timescales		Music with a particular message (in the lyrics or accompanying information) that provides cognitive support to enable people to provide reasons for their values (encourages value-congruent behaviour)
Frame storylines in social and economic terms		
Present problems and solutions together	Support with 'heroic' music?	'Heroic' music to increase feelings of outcome efficacy

Best practices for climate communication in film	Might music support this within film?	Potentially useful features of ERM identified above
Use inoculation theory (including small pieces of accurate information on a topic that act as critical reference points when misinformation is encountered later)		Music with a particular message (in the lyrics or accompanying information) that provides cognitive support to enable people to provide reasons for their values (encourages value-congruent behaviour)
Integrate climate change into narratives about topics of interest		
Employ incremental persuasion		
Connect on culture and values	Ensure that the genre of music used enables connection with the presumed audience/viewer. Can we use musical genre stereotypes to strengthen individuals' subjective norms?	Music that helps the listener to see themselves as someone who cares for the environment (biospheric values) or for other people (altruistic values)
Use evocative wording and comprehensible terminology	Use music to support evocative wording	
Include people and peer groups that the audience will identify as relatable, empowered, and /or trustworthy	Use music/artists that the audience will perceive as relatable, empowered, and/or trustworthy. Can we use musical role models to encourage fans to behave in environmentally-friendly ways?	
Use evocative cinematic imagery for emotional impact	Use evocative music for emotional impact	Music that helps the listener to see themselves as someone who cares for the environment (biospheric values) or for other people (altruistic values)
Use storytelling instead of informational narratives	Use music to support the storytelling	
Managing the emotional message	Use music to help evoke helpful emotions	

Showing people solutions to problems empowers them, as does heroic music that empowers the listener. There are similarities between creating a connection with people on culture and values and the ideas about helping the listener to see themselves as someone who cares for the environment and other people; and hearing music that references the natural world may also increase the salience of biospheric values. Using evocative imagery and storytelling help to evoke empathy, as can music that helps the listener to see themselves as someone who cares for the environmental or for other people. Other categories help to provide cognitive support for people in relation to their values. There may be much to learn from empirical research on climate-based film in terms of the features musicians employ in ERM; conversely, an exploration of music in environment-related films could be useful for music researchers, film-makers and environmental psychologists.

Conclusions

In trying to answer the question "What can music researchers learn from environmental psychology?", I have argued that theory from environmental psychology, in conjunction with evidence from music psychology, can inform our ideas about how music can be used in relation to climate change. In addition, we can learn from the methods previously developed by environmental psychologists to measure the values, attitudes and behaviours of individuals involved in music-climate interventions. Finally, we can use empirical evidence from environmental psychology derived from responses to other art forms (e.g., film) to inform our practice and research in music-climate interventions. Musicians and music researchers have a vital role to play in creating, performing, and evaluating listeners' responses to music in relation to pro-environmental values, attitudes, and behaviour, but also in analysing music that is used as part of other media created with the same goals. There is considerable scope for interaction between the fields of musicology (in its broadest sense) and environmental psychology, and such interaction has the potential to strengthen research in both fields, increasing the efficacy of music used with an intention to influence climate-related values, attitudes, beliefs and behaviours.

Notes

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