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LAY REPRESENTATIONS ON CLIMATE CHANGE

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ABSTRACT

Lay representations on climate change were mapped via the free-word association method in two pilot studies. Participants were asked to generate words associated to "the big problems faced by humankind nowadays" (1st study) and to "climate change" (2nd study).

Climate change was not spontaneously evoked by the participants in the first study: pollution was among the top 10 problems, but references to other environmental issues were very low. In the second study, climate change was considered as a threat, and it was associated with diseases, death and destruction. Possible mitigation actions were mentioned by only 4% of the participants, which portrayed themselves as potential victims rather than potential actors of mitigation actions. Results suggest that feelings of risk associated with climate change are not closely related with pro-environment behaviours.

Keywords: social representations, climate change, free-word association

I. INTRODUCTION

In this paper we explore lay representations on climate change by using associative imagery (a free-word association technique). The two pilot studies reported here are part of a broader research project on discourses on climate change and citizens' engagement with pro-environmental behaviour (project funded by the Portuguese Fundação para a Ciência e Tecnologia: POCTI/COM/56973/2004). The goals of this project are the following: to map the meanings associated with climate change that are produced by different social actors, the media and the lay public, to pinpoint the links between those meanings, and to devise ways for engaging citizens in decision-making by identifying the conditions that could increase both public mobilization and the acceptability of given policy options.

The scientific community is presently consensual regarding the fact that climate change poses a great risk for human societies in the coming decades and centuries and that significant

reductions of human-generated greenhouse gases are required if the worst effects are to be averted (Houghton et al., 2001).

For the lay public, research has shown that having an accurate knowledge of climate change is a requirement for displaying attitudes and behaviours aiming at the resolution of the problem and for being able to engage in informed discussions on scientific and policy dimensions (e.g., Dunlap, 1998).

Overall, studies have reported a low level of knowledge of the causes of climate change amongst lay people (e.g., Brechin, 2003; Dunlap, 1988); knowledge of the effects of climate change tends to be centered on ecological problems and weather changes rather than on impacts on human health and welfare (Dunlap, 1998). Some authors have suggested that people use an air pollution framework to approach the climate change issue (Bord, Fisher & O' Connor, 1998; Brechin, 2003; Dunlap, 1998) – people often mention air pollution as a cause of climate change or global warming and often confuse ozone depletion with climate change. However, there is evidence that knowledge, risk perceptions and general environmental beliefs are more important for predicting behavioural intentions to address the problem whereas the air pollution framework only explains behavioural intentions when the other factors are not included in the analysis (Bord, O´Connor, & Fisher, 2000).

Perceptions of responsibility for mitigation and adaptation to climate change have been found to be consistent across various studies and indicate that people are willing to make some personal sacrifices but do not support policies that interfere significantly with their daily life convenience (e.g., Bord et al., 1998, 2000)

Most studies have used questionnaires to collect information onpeople's views on climate change (e.g., Bord et al., 1998, 2000; Brechin, 2003; Dunlap, 1998). A qualitative approach has been used in few studies: interviews (e.g., Niemeyer, Petts & Hobson, 2005), focus groups (e.g., Shackley, McLachlan & Gough, 2004) or associative imagery (e.g., Leiserowitz, 2005).

Leiserowitz (2005) studied the affective images that the US public associates with climate change with the method of discrete or continued word associations, in which each participant was asked to provide the first thought or image coming to his/her mind when thinking about global warming and then to rate its emotional valence. He found 24 distinct categories of affective images associated with global warming. The top eight categories were melting glaciers and polar ice (the largest category of responses), followed by heat and rising temperatures, impacts on nonhuman nature, ozone depletion, alarmist images of disaster, sea level rise and the flooding of rivers and coastal areas, references to climate change, and associations indicating scepticism or cynicism towards climate change. Climate change was negatively rated by almost all participants, but disasters held the strongest negative connotations.

In a cross-national comparison between the US and the UK publics, Lorenzoni, Leiserowitz, Doria, Poortinga & Pidgeon (2006) found that British people were much less likely to express scepticism about climate change. They tend to associate the issue with 'ozone', 'pollution' and 'weather' more frequently than Americans and make fewer associations than the latter with disasters. Similar proportions in the two countries mentioned images relating to 'flood/sea level'. Like the Americans, the British people also associate climate change with negative and distant images.

We have followed this line of research by conducting two studies using a qualitative technique (free-word association) and investigating the prominence of environmental problems in people's minds (study 1) and the meanings associated with climate change (study 2).

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II. METHOD AND RESULTS

The qualitative method used to map social representations was the free word association. This technique is considered to minimise the researcher bias typically created by closed questionnaires, as the answers produced are "unfiltered, relatively context-free, and spontaneous, thus providing a unique means to access and assess subjective meanings" (Lorenzoni et al., 2006, p.269); and is also considered to be a very useful technique to use at the beginning of empirical research on social representations. Both studies followed the same method, procedure and data analysis – therefore information concerning the studies will be presented jointly in each section.

Participants. Fifty undergraduate students from a social sciences course participated in each study – about 60% female; aged from 18 to 24 years.

Materials and procedure. Data collection took place collectively as a classroom exercise in October 2005. The material was simply a blank page for each student. Each participant was asked to provide the first five thoughts or images coming to his/her mind when thinking about 'the big problems faced by humankind nowadays'' (study 1) and about "climate change" (study 2).

Results and discussion. Respondents' associations generated by this technique took the form of either single word responses (e.g., ''nature'') or short narrative statements (e.g., ''man cannot control nature''). The words freely provided by participants were reduced to synonyms and we obtained a dataset of 102 associations to the "problems of humankind" and 124 associations to "climate change".

Table 1 displays the percentage of respondents that mentioned a given issue.

Table 1. Top 10 free associations for studies 1 and 2

	Study 1		Study 2	
Rank	Problems of humankind	%	Climate change	%
1	War	50	Pollution	36
2	Racism	38	Destruction	28
3	Poverty	30	Diseases	24
4	Terrorism	20	Death	22
5	Pollution	16	Ozone hole	22
5	Xenophobia	16	Melting of the glaciers	16
7	Selfishness	14	Hurricanes	16
7	AIDS	14	Drought	16
9	Drugs	12	Global warming	14
10	Greed	10	Storms	12

Results from the first study (Table 1) show that climate change was not spontaneously evoked by the students when they thought about the problems faced by humankind. War (50%), racism (38%), poverty (30%) and terrorism (20%) were amongst the most important issues reported to be faced by humankind nowadays. Pollution (16%) was among the most mentioned problems, but there was no explicit reference either to 'climate change' or to 'global warming'. Some participants mentioned 'environmental problems' in general (6%) or specific environmental issues such as drought or scarcity of water (8%) and 'overexploitation of nature' (4%). On the whole, issues related to the environment were less than 10% of the participants' answers. These

results suggest that climate change is considered a distant threat with limited impact on people's lives.

When participants were asked to freely associate words with 'climate change' in study 2 (Table 1), results showed that climate change was considered as a threat. It was associated with destruction (28%), diseases (24%) and death (22%). These feelings of threat seem to sustained by lay knowledge that associates climate change with pollution (36%) and the ozone hole (22%), as shown by previous research. Participants' answers had much more references to climate change *effects* (e.g. melting of the glaciers: 16%) then to climate change *causes* (e.g. deforestation: 4%). Amongst the most frequent associations were local problems, namely drought (16%) and fires (8%), which have been the most dramatic visible environmental problems in Portugal during the last few years. There were also references to more distant problems, namely hurricanes (16%). Both local and distant problems may have been very salient on participants' minds due to the recency of some dramatic events that were spontaneously mentioned by participants: Asian tsunami (8%), Katrina (4%), amongst others.

Possible mitigation actions (use of renewable energies, for example) were only mentioned by 4% of the participants. Participants seemed to project their condition of potential *victims* of climate change on their answers but they did not see themselves as potential *actors* of mitigation actions. Theses results show a gap between the threatening feelings of risk associated with climate change and the possible mobilization of pro-environment behaviours.

In conclusion, climate change is not a salient issue on youths' minds, as it did not appear spontaneously in the answers in the first study. However, when climate change becomes salient due to the instructions given by the researcher, youths think of it as a very threatening issue. Concerning views of nature (e.g., Dake, 1992), in both studies the participants' answers seemed to project mainly a 'fragile nature' view (e.g. 'human beings do not respect nature'; 'human beings intrude in the nature system') followed by a 'capricious nature' view (e.g. 'we cannot control nature'; 'nature is up-side-down'). Human actions 'against' the equilibrium of nature are salient in youths' minds but daily individual actions to improve the quality of the environment are not.

III. CONCLUDING REMARKS

Lay representations on climate change were mapped via the free-word association method in two pilot studies. Results from the first study showed that environmental issues were notmentioned by the majority of students when they thought about the problems faced by humankind.

Climate change was not spontaneously evoked by the participants, and references to other environmental issues were very low, with the exception of 'pollution', that was among the top ten problems mentioned. These results suggest that climate change is not cognitively salient for the participants.

When participants were asked to freely associate words with 'climate change' a different pattern of results emerged: climate change was considered as a threat, since it was associated with diseases, death and destruction. This means that the participants only think about this threat when they are asked explicitly about it.

Participants associated climate change with pollution and the ozone hole. These results are in line with previous studies showing that people use an air pollution framework to approach the climate change issue (Bord et al., 1998; Brechin, 2003; Dunlap, 1998). Previous studies have reported that lay knowledge of climate change tends to favour effects associated with ecological problems and weather rather than effects on human health and welfare (Dunlap, 1998). In our

study, not only ecological and weather effects were very salient but also effects on human health emerged strongly, as climate change was associated with diseases and death.

Participants were more focused on the *effects* than on the *causes* of climate change. Possible mitigation actions were mentioned by very few participants. Overall, participants portrayed themselves as potential *victims* rather than potential *actors* of mitigation actions. These results suggest that feelings of risk associated with climate change are not closely related with pro-environment behaviours. Human actions 'against' the equilibrium of nature are salient in youths' minds but daily individual actions to improve the quality of the environment are not. Engaging the public in general and the youths in particular with this issue is thus a very demanding and challenging task.

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