The Psycho-Spatial Dimension of Global Environmental Problems

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Abstract

There has been little research on the differential aspects of local/global dichotomy, yet there is every suggestion that such a distinction could be crucially important in terms of understanding the public’s perception and attitudes towards environmental problems as well as understanding their subsequent behaviour. This research sought to address three questions. First, are people only able to relate to environmental issues if they are concrete, immediate and local? Second, do people consider environmental problems to be more serious at a global or a local level? Third, what is the effect of the public’s perceptions of the seriousness of environmental problems on their sense of responsibility for taking action?

Three studies were undertaken in Australia, England, Ireland and Slovakia. The results of each study consistently demonstrate that respondents are not only able to conceptualise problems at a global level, but an inverse distance effect is found such that environmental problems are perceived to be more serious the farther away they are from the perceiver. An inverse relationship was also found between a sense of responsibility for environmental problems and spatial scale resulting in feelings of powerlessness at the global level. The paper concludes with a discussion of various psychological theories and perspectives which informs our analysis and understanding of what might seen as environmental hyperopia.

Introduction

One had to look no farther than across our sitting rooms to the televised millennium celebrations from the capital cities of the world and remote islands in the Pacific Ocean on 31\textsuperscript{st} December 1999 to realise that this was party time in the global village. Entering the 21\textsuperscript{st} century, feelings of one-worldness and a new global neighbourliness by the West are fuelled by an increasing concern about Third World debt and unfair trade

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agreements, the global implications of genetic engineering and international responsibility for ethnic atrocities. Notwithstanding this, our relationships with places ‘elsewhere’ remain ambiguous and often contradictory especially when it comes to an understanding of the local and global consequences of environmental mismanagement.

Through processes of what is now called globalisation (Lechner and Boli, 1999) local agendas are increasingly informed by global perspectives and processes. The interaction between the local and the global is crucial (Bauman, 1998) and only when it is critically understood will it be possible to formulate appropriate political responses, not only at the global scale but also at the level of the family and the community (Rapoport, 1997; Beck, 1999). Not surprisingly, it is on the environment that many global processes are acted out.

By selecting, interpreting and emphasising particular events, and by publishing people’s reactions to those events, the mass media play a critical role in structuring and defining reality and the crucial issues of the day. The visually spectacular and dramatic nature of the effects of phenomena such as El Niño or the emotional impact of the cutting down of the rain forests or the hunting of whales has served to place global environmental problems on the public agenda. Terms such as global warming and the destruction of the ozone layer have entered into public discourse in much the same way as psychoanalytic terminology was appropriated by the public (Moscovici, 1976).

Growing ecological awareness and concern amongst the general population has been reflected in the expanding membership of international organisations such as Friends of the Earth and Greenpeace. Although many of these highly conspicuous environmental groups have local membership structures, their public presence and the way in which the mass media interact and report them is often at a national or international level.

Parallel to the popularisation of environmental issues have been high profile scientific and political conferences such as the 1992 Earth Summit in Rio. It is probably not unfair to suggest, however, that the Rio conference has lodged in the public’s consciousness more than its operationalisation through Local Agenda 21 initiatives.

It might be concluded, therefore, that these three developments - the mass media coverage of environmental issues, the growth in environmental organisations and the placing of environmental issues on international political agendas - have at least one important feature in common. Intentionally or unintentionally, each have emphasised the seriousness of global as opposed to local or even national environmental problems.

It comes as a surprise then to find that social scientists such as De Haven Smith (1988) argue that most individuals are not concerned about environmental problems at a global scale, and indeed, they are incapable of understanding them at such an abstract conceptual level. People worry, he suggests, about issues according to personal interests, experiences and group membership. Catton and Dunlap (1978) maintain that individuals only see the environment in terms of what is immediate and local, a view shared by Slovic, Fischhoff and Lichtenstein (1978) who argue that the principal factors which enhance people’s sense of risk is if the threat is personal, direct and immediate. The difficulty faced by governments and environmental groups who wish to raise public awareness of the seriousness of global environmental problems, and more
importantly, to do something about them is that most global environmental problems such as the destruction of the ozone layer and global warming are regarded as impersonal, indirect and long-term. Vining and Ebro (1990) assert that it is only worthwhile investigating local environmental knowledge as people display difficulties in understanding and assimilating complex, distant problems. Zube (1991) argues for the importance of studying how people perceive and interact with the environment at a local level because it is at this level people function and exist in most meaningful ways.

It would seem then that we are faced with a contradiction. On the one hand the communication and presentation of environmental issues primarily raises awareness at a global level. On the other hand, many authors argue that the communication of information about environmental problems should be at the local level as it is only at this level that it is meaningful to the public. Does this mean that there may be support for global action, but not for changes in personal behaviour at a local level? Responsibility for environmental destruction and degradation is seen to lie outside the control of the individual or even the community. This perceived lack of control may lead to denial and reduced feelings of self-efficacy (Levy-Leboyer and Duron, 1991). One study reported here sought to assess whether, if there is a spatial bias, this has an effect on respondents’ attributions of responsibility for the seriousness of environmental problems.

There has been comparatively little research on either the perceived impact of hazards on the environment compared with the self (Schmidt and Gifford, 1989; Hine and Gifford, 1991; Fridgen, 1994) or the differential perceptions of local/global environmental problems (Dunlap et al., 1993; Jianguang, 1994; Gooch, 1995). Yet there is every suggestion that such a distinction could be crucially important in terms of understanding the public’s perception and attitudes towards environmental problems as well as understanding their subsequent behaviour. Dunlap et al., (1993) found that when respondents in twelve industrialised countries were asked ‘…..to rate the quality of the environment a) in your local community, b) in our nation, and c) of the world as a whole’, 20.5% of respondents rated the quality of their local environment as ‘bad’ or ‘very bad’, compared with 30.9% who rated the quality of the national environment as ‘bad’ or ‘very bad’, and 79.3% who rated the quality of the global environment as ‘bad’ or ‘very bad’. In the same study, the authors found that respondents from ‘developing’ countries were far more concerned about local environmental problems than respondents from the industrialised nations. As Bonaiuto et al (1996) point out, although environmental issues are increasingly seen as international in terms of extent, impact and necessary response, social psychological studies have traditionally treated them as locally centred and limited to a single country. Thus they have been decontextualised in that not only has the local/global environmental dimension been minimised, but perhaps more significantly the local/global social psychological effects have also been minimised. As there is an important interaction between the local and global at an environmental level, so there is an interaction between the local and global at a social process level too. This is well illustrated by Bonaiuto et al (ibid.) who examined the role of social identity processes as they manifest themselves in place (local) and national identity in the perception and evaluation of beach pollution. It was found that subjects who were more attracted to their town or their nation tended to perceive their local and national beaches as being less polluted.
Four Countries, Three Studies

Reviewing the literature on environmental concern over the last few years, several noteworthy features warrant comment. First, there has been an attempt to move away from surveys which seek simply to measure the public’s breadth and depth of concern about the environment and to set the research within a more theoretically-driven framework (Bonaiuto et al, 1996). Second, there has been more of an emphasis placed on understanding the determinants and predictors of environmental concern (Klineberg, McKeever, & Rothenbach, 1998), especially in the light of inconsistent relationships reported in previous research between measures of environmental concern and standard demographic predictors. Third, there has been an increasing emphasis on trying to model environmental concerns and attitudes more effectively, reflecting both the multidimensional nature of environmental concerns (Carman, 1998; Uzzell, Pol, & Baddenes, 2000) and how they may be embedded in broader belief systems (Dietz, Stern, & Guagnano, 1998; Stern & Dietz, 1994) and general issues such as quality of life (Vlek, Skolnik, & Gatersleben, 1998).

The research reported in this paper falls into the first category and sought to test whether De Haven Smith and others are correct in their assertion that most of the public can only relate to environmental issues if they are concrete, immediate and local. Alternatively, is it that mass media coverage, the growth of environmental organisations and government interest in the environment has sensitised the public more effectively to global environmental issues than to local ones?

This paper seeks to answer three principal questions. First, are people only able to relate to environmental issues if they are concrete, immediate and local? Second, do people consider environmental problems to be more serious at a global or local level? It is hypothesised that people consider environmental problems at the global level to be more serious than those at lower spatial levels. Third, what is the effect of the public’s perceptions of the seriousness of environmental problems on their sense of responsibility for taking action? It is hypothesised that there will be an inverse relationship between perceptions of the seriousness of environmental problems at increasing areal levels and the attributions of responsibility for tackling those problems.

Three studies were undertaken in four countries - Australia, Ireland, Slovakia and England over a three year period. The principal data collection methodology was a questionnaire which incorporated an ‘environmental grid’, based on Kelly’s Repertory Grid technique (Fransella and Bannister, 1977). A multiple sorting task was used in a pilot study to elicit respondents’ ideas as to salient environmental problems at varying spatial scales (Canter, Brown and Groat, 1985). A sample of respondents (n=14) was presented with twenty cards each marked with one environmental problem. Respondents were then asked to sort the cards into groups in such a way that the environmental problems in each group were similar to one another and different from those in other categories. The groups of environmental problems and their perceived effects were then content analysed (Krippendorf, 1980). The environmental problems fell into eight major groups. Further inter-subjective reliability tests resulted in the eight categories being reduced to seven with an inter-rater reliability level of 92%.
These seven environmental problems, making the rows of the grid, were: water pollution, atmospheric pollution, the effects of acid rain, global warming, noise pollution, deforestation and holes in the ozone layer. The columns of the grid represented the different spatial scales over which the perceived seriousness of the environmental problems were to be evaluated ranging from the impact on the individual, through the impact on their local area, the country, their continent and the world. Respondents were asked to rate the seriousness of the environmental problems (comprising the rows) on a five-point rating scale varying from 1 (extremely serious) to 5 (not serious at all) for each of the areal levels.

**Study 1: Ireland**

Research on environmental concerns suggests that environmental knowledge is an important pre-cursor to attitude and behaviour change (Hine, Hungerford and Tomera, 1987; Stern, 1992). For this research, it was decided that although a sample of the general public would be surveyed, particular attention would be paid to environmentally informed groups as these should be the most well informed in their perceptions of environmental problems. Research has shown that the public, environmentalists and even scientists display marked biases in their estimates of risk (Slovic, 1987). It was hypothesised therefore that environmentalists’ perceptions of environmental problems will not necessarily be more accurate. It is difficult to define accuracy in this context, but they may demonstrate more understanding of the local/global interaction and argue that the local and global are inseparable.

It has been suggested that with national educational curricula, mass communication, increased mobility, the increased use of technology and the increasing physical and psychological urbanisation of major parts of the developed world, the validity and importance of distinguishing between urban and rural populations for social analysis has to be questioned. However, Tremblay and Dunlap (1978) and Lowe and Peek (1980) have suggested that geographical location accounts for a modest proportion of attitude variance, with the former finding that there was more concern about environmental problems among urban than rural residents. Urban residents are typically exposed to more serious and a wider range of environmental problems and examples of environmental degradation than rural residents (Zeidner and Schechter, 1988). Consequently, one might hypothesise that the urban/rural dimension could be a significant factor in the perception of the seriousness of environmental problems, at least at the local level.

The first study (Woods, 1991) was undertaken in the Republic of Ireland in July and August 1990 and involved three sub-samples: sixty-two urban residents from Dublin; sixty-six rural inhabitants drawn from towns and villages populated by less than 10,000 people in Co. Cork, Co. Clare and Co. Mayo; and twenty-one environmental ‘experts’ and professionals working in environmental groups and organisations throughout Ireland. The response rate from the urban (87%) and rural (85%) samples was particularly high. This figure dropped considerably for returns from members of environmental groups (30%) to that that found typically in postal questionnaires. The modal age range of the sample was 18-30 years (age 18-30, 41%; 31-45, 23%; 46-55, 21%; +56, 15%). The urban and rural samples were matched in terms of age, religion, environmental group membership. The response rate for females was higher (63%)
than males (37%) in urban areas, but equivalent in rural areas. The majority (84%) of urban and rural respondents were not members of any environmental organisations.

The respondents perceived the environmental problems to effect the five areal levels differently - a difference which a one way analysis of variance demonstrated was statistically significant (F = 238.69, df=4,114 p<.0001). Subsequent Scheffé tests of contrasts indicated that the environmental problems were perceived as being more serious at the higher areal levels than the lower areal levels. Perceived severity scores for Europe and the World did not differ significantly from each other. It was clear however that a significant threshold occurs at the national level. The effects of environmental problems on the world were seen as significantly more serious than their effects on Ireland (F=30.19, df=6,114, p<.01), the local area (F=83.1, df=6,114, p<.01) and the individual (F=78.25, df=6,114, p<.01). Likewise, problems affecting Europe were perceived as more serious than those affecting Ireland (F=17.53, df=6,114, p<.01), the local area (F=60.82, df=6,114, p<.01) and the individual (F=57.03, df=6,114, p<.01). Finally, problems affecting Ireland were perceived as more serious than those affecting the local area (Qr=5.72, p<.01) and the individual (Qr=4.77, p<.01).

Mean severity scores were calculated for urban, rural and expert groups. The same trend in perceptions emerged (Figure 1) when the sample was broken down into the three sub samples (F = 2.8, df=4,114 p<.0001). It was hypothesised that the urban group would consider the environmental problems to be more serious than the rural group. Mean severity scores for each areal level and each problem were calculated for the urban, rural and expert groups. There were differences between the three groups in their perception of the severity of specific environmental problems (F = 2.8, df=4,114 p<.001). Air pollution (F = 5.33, df=4,113 p<.005) was seen as more serious by urban than rural inhabitants, as was radiation (F = 4.93, df=4,115 p<.01).

It was hypothesised that environmental ‘experts’ would consider environmental problems at all areal levels to be more serious than the urban and rural public. The analysis of the perceived severity scores revealed that there were no significant differences between the environmental experts and professionals in their perception of the seriousness of the seven different environmental problems or in the aggregate score for all the environmental problems at each areal level.

Study 2: England, Slovakia and Australia

Having identified the existence of this biasing phenomenon amongst three different populations in Ireland (urban, rural and environmental interest groups), it was decided to investigate whether the pattern of responses was unique to Ireland and its particular cultural-environmental situation, or whether this phenomenon was repeated elsewhere and is part of a more general psychological phenomenon. The sample drawn for the second study was different from the first in several respects. First, the sample comprised students reading for degrees in geography, environmental studies, environmental sciences or environmental education. It was decided to focus on a sample of people who would be aware of local, national and global environmental
problems. In this way one could begin to control for environmental interest, motivation and, to a certain extent, knowledge so that the existence of a psychological biasing mechanism would be less ambiguous. Secondly, the students were studying in three very different countries in different parts of the world: England, Slovakia and Australia (Rice, 1994). Confirmatory data was sought on whether the phenomenon found in Ireland would be replicated in an adjacent country (England) and whether it is a eurocentric view (Australia). Finally, Slovakia was chosen because environmental degradation in Eastern Europe is particularly serious, and many of the environmental problems selected as stimuli are especially salient in Slovakia such as water and air pollution (DeBardeleben, 1992).

A questionnaire was administered to students in the Department of Geography, St Mary’s College, Twickenham, London (n = 125), the Faculty of Natural Sciences, Comenius University, Bratislava (n = 190) and the School of Social, Business and Environmental Education, Queensland University of Technology, Brisbane (n = 48). The modal age and age range for each group was Brisbane - 19; 18-45; Bratislava - 20; 18-29; London - 20; 18-29. It was assumed that they would be more informed than the general public about environmental problems so it could be determined whether the findings of Study 1 were a function of knowledge or whether a more fundamental distortion is occurring.

The same environmental grid was employed as in Study 1. A mixed measures analysis of variance (MANOVA) revealed a significant difference in the way that all three groups perceived environmental problems at the five areal levels (F = 238.00, df=4,1376, p < .0001). An interaction effect was also found between country and areal level (F = 2.31, df=8,1376, p < .02).

Multiple comparison tests indicated that environmental problems were considered to be more serious as the geographical distance from the perceiver increased. There were, however, no significant differences between perceptions of severity at the ‘you’ and ‘town’ areal levels. There were significant differences between the remaining areal levels. The effects of environmental problems on the world were perceived as more serious than their effects at the continental, country, town or individual level. Similarly, problems at the continental level were viewed as more serious than at the country, town or individual level, and problems at the country level were viewed as more serious than at the town or individual level. This trend held true for all three subgroups with a minor exception in the case of the Australian sample who, for understandable reasons, made no distinction between the severity of environmental problems at ‘country’ and ‘continent’ areal levels, a consequence of the size of the country ‘Australia’ in relation to the continent ‘Australasia’. This phenomenon was anticipated prior to the distribution of the questionnaire, but it was decided to use ‘country’ and ‘continent’ labels for all the sub-groups in order to allow direct comparisons between the three groups.

A further MANOVA found that different environmental problems were not regarded as being equally serious; (F = 86.26, df=6,2064 p < .0001). There was also a
significant interaction effect between country and type of environmental problem; \( F = 9.94, df=8,2064 \ p < .0001 \).

The second study also sought to identify the relationship between attributed responsibility for dealing with environmental problems and areal scale. It was hypothesised that individuals would attribute more responsibility to themselves and the local community for local environmental problems and less responsibility for environmental problems at higher areal levels. It was found that perceived individual responsibility for the environment is greatest at the neighbourhood level and decreases as the areal level becomes more remote. Respondents saw themselves and then environmental groups and the local community to be responsible for addressing environmental problems at the local level. They then considered that industry was the next most responsible body followed by national government and international agencies. There was more consensus about the contribution and role of industry, national government and international agencies, than there was about local organisations and community action.

At the ‘global’ level there was a similar hierarchical structure to respondents’ conceptualisations of feelings of responsibility for tackling environmental problems, although in this case the relationship was reversed. Respondents’ considered themselves to be least responsible for solving global environmental problems, followed by increasing responsibility ascribed to the local community and environmental groups and more responsibility still to national governments and international agencies. There was considerable consensus amongst all three groups concerning the relationship between level of responsibility and spatial scale.

**Study 3: the Effectiveness of Experiential Environmental Education**

The third study again drew a sample from a different population. Whereas the previous study found that perceptual distortion occurs even with environmentally informed students, the third study sought to test the existence of this biasing phenomenon on a sample of children who had experienced a one week environmental education course which addressed both local and global environmental issues through didactic teaching methods and hands-on experience (Whistance, 1993). This was undertaken at three time periods: before (Stage 1), after (Stage 2) and six weeks following (Stage 3) the environmental education intervention. It was hypothesised that the perceived severity of environmental problems at the local level will be higher in the Stage 2 group compared with the Stage 1 group, but lower in the Stage 3 group compared with the Stage 2 group as the effect of the environmental intervention wears off. In addition, the children were expected to view environmental problems as more serious at the global level than at the local level.

The children who participated in the study were 63 female, year 10 students (mean age 14 years 4 months) from Burntwood Secondary School in Earlsfield in inner city London. The Stage 1 group \( n = 32 \), mean age 14 years 3 months) comprised children who were tested before starting the field course. The Stage 2 group \( n = 31 \), mean age 14 years 3 months) consisted of children tested after completing the field course. The Stage 3 group \( n = 25 \), mean age 14 years 5 months) comprised girls tested 6 weeks
after the course, and included 15 respondents randomly selected from the Stage 1 group and 10 respondents randomly selected from the Stage 2 group. They were completing levels 4 to 8 of Attainment Target 2, *Life and Living Processes* of the National Curriculum at the time of the study (National Curriculum, 1991). The children attended Sayers Croft Field Centre at Ewhurst in Surrey, England. Sayers Croft is an established Field Studies Centre which uses both classroom and field-based environmental education methods to teach scientific topics covered in the National Curriculum.

A questionnaire was administered to the children using the same environmental grid format of the two previous studies, but with one modification. Four areal levels were used: the European level was excluded. The same questionnaire was administered to all three groups of children.

A Friedman two-way analysis of variance tested for differences between the total areal level scores within each of the three conditions. The results of these analyses show that there were significant differences between the areal levels in all three conditions. There was a heightened level of concern for the different environmental problems with each increase in areal level (Stage 1: $X^2 = 63.27$, df. = 3, $p<.05$; Stage 2: $X^2 = 56.49$, df. = 3, $p<.05$; Stage 3: $X^2 = 45.82$, $p<.05$). Wilcoxon tests revealed that there were no statistically significant differences between the ‘you’ and ‘town’ levels in all three conditions (Stage 1: 1 tailed $W = -6.69$, $N = 29$, NS; Stage 2: 1 tailed $W = -3.30$, $N = 31$, NS; Stage 3: 1 tailed $W = -1.54$, $N = 25$, NS). There were, however, significant differences between the ‘town’ and ‘Britain’ levels in all three test groups (Stage 1: 1 tailed $W = -4.42$, $N = 30$, $p<.05$; Stage 2: 1 tailed $W = -3.91$, $N = 31$, $p<.05$; Stage 3: 1 tailed $W = -3.68$, $N = 25$, $p<.05$). There were also significant differences between the ‘Britain’ and ‘world’ levels in all three test groups (Stage 1: 1 tailed $W = -4.78$, $N = 30$, $p<.05$; Stage 2: 1 tailed $W = -4.29$, $N = 31$, $p<.05$; Stage 3: 1 tailed $W = -4.09$, $N = 25$, $p<.05$).

- Figure 3 here -

The most noteworthy feature of Figure 3 is that the median score for perceived severity is in each case less in the Stage 3 condition than the Stage 1 and Stage 2 conditions, especially at the ‘myself’ and ‘town’ levels. The children were marginally more concerned about environmental problems after the environmental education intervention than they were prior to the intervention. However, six weeks after the intervention, their perception of the severity of these problems has not only declined to below the post intervention level, but to below the pre-intervention level. There were no statistically significant differences in the ‘myself’ level between the Stage 1 and Stage 2 conditions (Mann-Whitney 2 tailed $U = 365$, $N = 60$, NS) or between the Stage 1 and Stage 3 conditions (2 tailed $U = 280.5$, $N = 54$, NS). There was, however, a statistically significant difference in the ‘myself’ level between the Stage 2 and Stage 3 conditions (2 tailed $U = 247.5$, $N = 56$, $p<.05$). Generally, the post-intervention group did show a higher degree of perceived severity in the ‘myself’, ‘town’ and ‘Britain’ areal levels than the pre-intervention group.

**Discussion: Experiencing the Environmental Crisis**
The first question which this research sought to investigate was, are people only able to relate to environmental issues if they are concrete, immediate and local? De Haven Smith (1988) argues that only a small proportion of the public have sophisticated ideologies and only the educated élite concern themselves with abstract issues such as the planet’s or even the nation’s environmental state. Contrary to the assertion of De Haven Smith (ibid), the results of these studies demonstrate that people do have an awareness of global environmental problems. They are able to differentiate between them and make judgements about their relative degree of seriousness. Furthermore, they appear to be more concerned about such problems at a global and international level than they are at the local and regional level. This suggests that their perceptions and evaluations are not just based upon immediate and mundane personal experiences as De Haven Smith contends, or that individuals only see the environment in terms of what is immediate and local (Catton and Dunlap, 1978). Furthermore, contrary to De Haven Smith’s assertion, these studies have demonstrated that environmentalists of varying levels of knowledge, commitment and interest far from being an élite group not only share similar perceptions between themselves but also hold similar views to non-environmentalists. One positive aspect of this finding is that it appears that the mass media and environmental organisations are having an impact on public perceptions of global environmental processes and events affecting the planet. Furthermore, this phenomenon is evident in a number of countries which have experienced different kinds and degrees of environmental degradation.

The second question posed was, do people consider environmental problems to be more serious at a global or local level? It was hypothesised that people consider environmental problems at the global level to be more serious than those at lower spatial levels. This was found to be the case, without exception. While one positive aspect of these finding is that it would seem that the mass media and environmental organisations (and educational courses) are effective in raising individuals’ awareness of environmental issues the negative side of the equation is, however, that this may be at the expense of the public’s level of concern about environmental problems in their immediate area, and how global problems may manifest themselves at the local level. Although it is clear that environmental problems conceptualised at a global level are seen as more serious, one should not minimise the concern expressed over local problems. Problems which are salient locally are perceived to be more serious than other, less salient, problems. For example, the Slovakian group considered all the environmental problems (e.g., water and air pollution), with the exception of global warming, to be significantly more serious than the British group. Such a perception is a realistic assessment given that Bratislava had one of the highest per capita emissions of SO₂ and NOₓ in Europe between 1985 and 1995 (European Environment Agency, 1998, p.258).

The results of the Surrey studies indicate that respondents’ rated severity of environmental problems followed a consistent perceptual pattern at each areal level and in each study area. There is a structure to the environmental perceptions and in many ways it is coherent and systematic. It remains to be seen whether the perception of environmental problems are structured and stable over time, or loose and continually changing as argued by de Haven Smith: the evidence from these studies suggests the former.
It was hypothesised that there would be an inverse relationship between perceptions of the seriousness of environmental problems at higher areal levels and the attributions of responsibility for tackling those problems. The second study sought to identify the perceptual areal threshold of attributed personal and institutional responsibility for the environment. Perceived individual responsibility for the environment is greatest at the neighbourhood level and decreases as the areal level becomes more remote. Ironically, although people feel that they are responsible for the environment at the local level this is the level at which they perceive minimal problems. The areal level which they perceive has the most serious environmental problems is precisely the areal level about which they feel least personally responsible and powerless to influence or act. These are an important set of findings because they suggest that despite numerous attempts by statutory and voluntary organisations to change people’s attitudes and behaviour, the majority of individuals do not believe that they are responsible for or can engage in any actions which will be environmentally efficacious.

Research by Fazio and Zanna (1981) has shown that direct experience with an attitude object leads to stronger attitudes compared to indirect experience. However, a child’s hands-on experience of the environment often does not have the effect intended because invariably the child does not acquire a hands-on experience of the environmental problem itself. With an emphasis on scientific, especially chemo-biological, investigations children are provided with experiential encounters with nature, but not social, cultural, economic and political encounters. A hands-on experience is invariably contextualised within a natural rather than social scientific framework. It often fails to set environmental problems within their wider social and economic context and focuses on the symptoms, not on the system that supports one form of social or economic behaviour over another. Environmental problems lie in society not in the environment (Uzzell, 1999).

While these results do not necessarily challenge the importance of experience in environmental knowledge and attitude formation (Gooch, 1995), they do suggest that experience is not necessarily generalised to the non-experiential realm. This may be one reason why the relationship between attitudes and behaviour becomes less predictable as the attitude object becomes less specific. If direct environmental experiences do not compensate for psychological biases then what kind of theoretical frameworks can be superimposed on these findings to account for this phenomena?

This paper concludes with a discussion of various psychological theories and perspectives which might inform our analysis and understanding of what could be termed environmental hyperopia. Psychophysiological, behaviourist, cognitive through to more social psychological perspectives such as social dilemmas and social representations serve to move the discussion away from treating local/global environmental assessments as a form of cognitive bias through to one of seeing them as a means by which individuals in a social context construct the environment in order to understand and deal with what is a threatening state of affairs.

*Psychophysiological Perspectives*

Direct experience of environmental changes at the human psychophysical level is unlikely because the physical signals of global environmental change are way below the
thresholds of discernability of human sensory and memory mechanisms (Pawlik, 1991). For example, temperature changes as a result of global warming are predicted to rise by 1.5°C - 4.5°C over 40 years, or by one tenth of a degree per year. In contrast, in Central England the diurnal variation in air temperature in the Spring is about 9°C, and in the summer can be as much as 17°C. Pawlik refers to this as the ‘low signal-to-noise ratio of global change’, where the ‘signal’ of global environmental change is small in value and slow in time, and the ‘noise’ of observable changes due to circadian, seasonal and regional temperature changes is large. The environmental crisis can therefore be considered as an abstract concept, because we typically only have a surrogate experience of it since our perceptions and knowledge are derived largely from the media.

**Behaviourist and Individualistic Perspectives**

Processes of global environmental change operate across considerable spatial and temporal social distances (Pawlik, 1991). It is often the case with environmental problems that they are ‘exported’ from one region to another. An individual who receives the benefits of an environmentally damaging action may not be the one who is likely to suffer the consequences of it, and will probably be unaware of them. As social learning is facilitated by the interpersonal proximity of the individuals involved (Bandura, 1977), learning, through feelings of responsibility and/or empathy with the ‘victim’ will thus be inhibited (Pawlik, 1991).

The time lapse between human actions and their noticeable effect on environmental change is measured in years to decades, and may involve generational time differences. Experimental research has shown, however, that learning and behaviour modifications occur over time intervals of hours at most (ibid). It is unlikely, therefore, that the behavioural outcome will be able to become a positive reinforcement of the behaviour in question. In the absence of reinforcement, the adopted behaviour is likely to cease as it is difficult to develop and sustain a sense of efficacy when the effects of individual and/or group effort are not readily noticeable (Halford and Sheehan, 1991).

**Cognitive Perspectives**

Denial and failure to act occurs when a person perceives that a threat is uncontrollable. Denial and inaction can lead to the reduction of fear and anxiety levels, and lessen the negative feelings consequent upon the lack of perceived control over the situation (Perloff and Fetzer, 1986). Lazarus and Folkman (1984) suggests that there are two types of coping strategies in the face of threat - problem-focused coping in which an attempt is made to tackle the source of the environmental stressor or the environmental consequences, and emotion-focused coping where the individual may engage cognitive, emotional or behavioural strategies to lessen the psychological impact. Such appraisals can be broken down into two parts - the primary appraisal assesses the nature and extent of the stressor, while the secondary appraisal evaluates the degree to which a person’s coping skills and resources are adequate to meet the threat and stress. In the case of many environmental stressors such as noise, action consequent upon primary appraisal is possible because the stressor is potentially within the bounds of a person’s immediate control and personal or socio-political powers. However, as these results have shown, many global environmental problems are not only perceived to be outside
the individual’s immediate control but also appraised to be beyond reasonable socio-political powers. Although some effort may be made to change individual or even social behaviours as a means of reducing local effects, it is perhaps more probable and reasonable to expect efforts to be directed towards actions consequent upon secondary appraisal. Rippetoe and Rogers (1987) suggest that there are four emotion-focused responses - denial, wishful thinking (simplistic and/or unrealistic solutions), religious faith (hope and reliance on an outside power) and fatalism (the inevitability of the unavoidable). Again, in terms of the findings of the studies reported here, denial at a local level may be compensated for by recognising that the problems do exist, but probably a long way away. Emotion-focused strategies often lead to inaction. Lehman and Taylor (1987) cite an unpublished study of the inhabitants who lived near a dam in Santa Ynez Valley in California. People at risk near the dam in the event of an earthquake were more likely to deny the risk than those living farther away but under less risk.

Optimism bias suggests that undesirable events are less likely to occur to the self and more likely to occur to others (Weinstein, 1980). The results in this paper are consistent with the findings elsewhere that when an event is perceived as uncontrollable as global environmental problems are seen to be, it correlates with optimism bias (Weinstein, 1987). Furthermore, optimism bias and the underestimation of risk at the local level is likely to reduce precautionary behaviour (Lees and Job, 1995; Weinstein, 1995). Weinstein (1988) argues that before individuals engage in precaution-taking, they must move from accepting that a risk exists generally (or at a distance in the case of these studies) to one of accepting personal susceptibility to the risk.

**Risk Theories**

We know from research that there are a multitude of factors which affect risk perception such that the frequency and seriousness of some environmental and technological threats are underestimated while others are overestimated. Liechtenstein *et al* (1978) found the frequency of many common causes of death tended to be underestimated while the frequency of rare causes of death were overestimated. This they termed the primary bias. However, Liechtenstein *et al* also found a secondary bias effect which relates to the impact or fatality estimates. Dramatic and sensational causes of death tend to lead to overestimates of risk, while the everyday and ordinary causes of death lead to underestimates. Secondary bias is of more interest to research on global environmental problems because although the impact of environmental changes maybe be substantial and catastrophic, they are not necessarily perceived to be sensational in the same way as earthquakes, volcanic explosions or nuclear accidents. However, the image of imperceptible change may now be challenged as there is growing scientific support and a public perception that extreme climatic events like El Niño may be a symptom of global environmental change.

Slovic *et al* (*op cit.*) argued that people ignore low probability events even though they may have potentially highly catastrophic effects should the event occur. Global environmental problems might fall into this category, especially in terms of public perceptions. This research suggests that while global environmental problems may be seen as low probability events at the local level, they are adjudged to be higher
probability events at the global level. Slovic et al (op cit.) proposed that one might be able to increase people’s estimate of the probability of automobile injuries and deaths, by ‘elongating people’s time frame’. They found that when they told students that the probability of death from driving in their lifetime (fifty years) was 1 in 100 and the probability of serious injury, almost 40% of non-belt users said that they would use their belts regularly from then on. If by elongating the time frame one can counter the underestimation of risk, these findings might imply that reducing the spatial frame may have the same effect.

Social Perspectives

Study 3 found that despite the emphasis at school on practical ‘hands-on’ experience and knowledge children were less concerned about problems at a local level than they were about problems at a global level. Second, environmental education did not lead to a lasting change in children's environmental attitudes or values as they were less concerned about the environment after six weeks than they were before the environmental education intervention. How does one explain his last result?

Moscovici (1984) argues that science attempts to make the everyday things in life more unusual, that is, to explain the commonplace in terms of abstract scientific concepts. On the other hand social representations are the result of our efforts to make usual that which is unusual, i.e. to fit abstract notions of science and ideology into a more concrete and familiar framework. Therefore, according to Moscovici, social representations work in opposition to science. Moscovici argues that the world of science and the everyday world are different worlds of meaning which he calls the reified and consensual universes. The environment is the everyday world where these two universes of meaning interact. In this sense the representations of the world that we develop through environmental education only serve to make unusual that which is usual.

The children in this study were transplanted for a week from the very familiar and inner-city urban environment in which they live to a very unfamiliar rural environment in which they experienced science. Returning to the school after this encounter only served to further separate and compartmentalise these different experiences and different universes - the world of the school and the scientific and abstract understanding of the environment, and the familiar, consensual and concrete world of their domestic and community surroundings. The world children thought they knew as being real and familiar had become abstract and unfamiliar. Consequently, it can be argued that the children’s concern decreased following an environmental education course because they could not relate the scientific content of their lessons to the social world they normally inhabit.

These findings serve to emphasise the importance of and need for environmental education at the local level (Zube, 1991). It ought to be easier for people to understand local environmental problems, to get involved, to see the results of their actions and then to realise the beneficial effects of their behaviour for the global environment. There is much talk about the need for global citizenship (Spink, 1997) another dimension of the process of globalization highlighted at the outset. Global citizenship will only come about when people start to participate at the local level. The maxim
‘Think Globally, Act Locally’ was coined by René Dubos to impress upon people that global consciousness should begin at home. As John Stuart Mill argued in the 19th century, ‘if individuals in a large state are to be able to participate effectively in the government of the ‘great society’ then the necessary qualities underlying this participation have to be fostered and developed at the local level’ (Pateman, 1970, pp.30-31). Such a message is no less relevant in the 21st century.

References


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Figure 1: Perceptions from Ireland
Figure 2: Perceptions from Australia, Slovakia and the UK
Figure 3: School Children’s Perceptions: Pre and Post Intervention and After 6 Weeks