

## *Environment and Behavior*

# **GENERAL BELIEFS AND ENVIRONMENTAL CONCERN**

## Transatlantic Comparisons

**ANNA OLOFSSON** and **SUSANNA ÖHMAN** *are senior lecturers in sociology at the Department of Social Sciences, Mid Sweden University, Sweden.*

**ABSTRACT:** The aim of the study was to empirically test whether grouping people according to their general beliefs, combined with positional factors, can explain environmental concern, and whether there are country differences in this respect. The study is based on the USA, Canadian, Norwegian and Swedish parts of The International Social Survey Program (ISSP) survey 2000 on environmental concern. The four countries were paired resulting in a comparison between North America and Scandinavia. The results showed that general beliefs, together with education and political affiliation, were the most stable predictors of environmental concern, and that adding general beliefs to the analysis improve the explanatory power in a significant way.

**Keywords:** *general beliefs; environmental concern; national comparisons*

**Authors' note:** We would like to thank Prof. Stefan Svallfors, Dept. of Sociology, Umeå University, for financial support and providing the data material from the International Social Survey Program 2000 – Environment II. We would also like to thank Dr. Jonas Edlund and the seminar group at the Dept. of Sociology, Umeå University, for useful comments to improve the article. Last we like to thank the anonymous reviewers for their helpful suggestions.

**How to cite:** Olofsson, A. & Öhman, S. (2006). General beliefs and environmental concern. Trans Atlantic Comparisons. *Environment and Behavior*, 38 (6) 768-790.

**This article examines the relationship between** general beliefs and environmental concern.<sup>1</sup>

There is a wide spectrum of studies in the field of attitudes to the environment, varying from different environmental topics and issues to approaches aiming at conceptualise ‘concern’ (Dunlap, 2003). This study belongs to the latter approach and focuses more specifically on individuals’ perception of environmental problems. It follows the moderate number of earlier studies emphasising the combination of social structural and social psychological factors in exploring public environmental concern (c p. Dietz, Stern & Guagnano, 1998, Johnson, Bowker & Cordell, 2004).

Unlike earlier studies, we do not include specific attitudes as a predictor of specific behaviour; as a matter of fact, we omit the relation between attitudes and behaviour, and focus instead on the significance of general beliefs on environmental concern and self-reported behaviour. General beliefs are defined as a combination of value indicators, according to which people are classified. A second difference from earlier studies is that country comparisons are made, although not the common large-scale comparisons of some twenty countries that are often seen in earlier studies; instead, two pairs of countries, in Europe and North America, are compared. The last difference compared with earlier studies is that we use latent classification analysis to cluster people according to their general beliefs and thereby increase the reliability of the measurement (cp. McCutcheon, 1987).

The aim of the study is to empirically test whether grouping people according to their general beliefs (individual factors), combined with positional, or social structural, factors can explain environmental concern, and whether there are differences between North America and Scandinavia in this respect (for further definitions of the concepts and variables, see ‘method and

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<sup>1</sup> Environmental concern can be defined as ‘*the degree to which people are aware of environmental problems and support efforts to solve them and/or indicate a willingness to contribute personally to their solution.*’ (Dunlap, 2003, p. 365, Dunlap, & Jones, 2002, p. 485).

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measurements'). The analyses are based on The International Social Survey Program (ISSP) survey 2000 on environmental concern among the Norwegian, Swedish, Canadian and US public.

## **EARLIER STUDIES**

Dunlap and Jones (2002), argue that studies on environmental concern can be divided into two approaches, the 'theoretical approach' and the 'policy approach', where the latter, needless to say, focuses on policy-relevant aspects of environmental concern. The theoretical approach refers to a stream of research focusing on environmental concern in terms of an 'attitude object' (cp. Ajzen & Fishbein, 1980), often measured by means of large-scale surveys. This study follows the latter approach, and the next sections will present some relevant earlier studies within this field, structured according to the two factors used in the analyses: positional and individual factors.

### **POSITIONAL FACTORS**

In a study from 1980, van Liere and Dunlap summarise the theoretical grounds behind assumptions about how positional factors, such as gender, age, education, social class etc., influence environmental concern.<sup>2</sup> Even though twenty years have passed, the summary still seems to be relevant when reviewing contemporary empirical research, although some divergence has also been detected (Dekker, Ester & Nas, 1997, Dietz, T., Stern, P. C. & Guanganano, 1998, Dunlap & Jones, 2002). Positional factors influencing environmental concern are shown to be fairly similar across countries: environmental concern is negatively associated with age, positively associated with education, urban residents and left-wing and liberal political orientations (see also Engel & Plötschke, 1998, Jones & Dunlap, 1991, Skrentny 1993). The results concerning gender are more ambiguous; sometimes the relationship is insignificant and when it is significant the pattern is

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<sup>2</sup> Van Liere and Dunlap (1980) formulate five hypotheses: (1) Younger people tend to be more concerned about the environment than older people, (2) Environmental concern is positively associated with social class as indicated by education, income and occupational prestige, (3) Urban residents are more likely to be environmentally concerned than

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inconsistent. However, studies in Sweden show repeated and significant differences between men and women, where, contrary to van Liere and Dunlap's hypothesis, women show more environmentally friendly attitudes and behaviour than men (Bennulf, 1994, Olsson, 1994).<sup>3</sup>

Few studies show strong relationships between environmental concern and variables such as social class, income and occupational sector (Dietz, Stern and Guagnano, 1998, van Liere & Dunlap, 1980). Research on religion (Judeo-Christian religions) and environmentalism, also show unstable relationships. The theoretical assumption is that Judeo-Christian theology has an anthropocentric conception of nature. Therefore people holding such beliefs will, to a higher degree than others, have an exploitative and indifferent attitude towards nature (Guth, Green, Kellstadt & Smidt, 1995). Dekker, Ester and Nas (1997) contradict this by showing a positive relationship between religiosity and environmental concern in the ISSP module on environment in 1993 (cp. Dietz, Stern & Guagnano, 1998). It is unclear, however, whether this is a correlation between religiosity and environmental concern or rather a view of nature as sacred. Hence, there are no clear relationships between environmental concern and factors such as class, income and religiosity.

Generally known, environmentally friendly attitudes are not necessarily followed by environmentally friendly behaviour. Research shows for example that older people to a higher degree than young people are willing to behave in an environmentally friendly manner, although their attitudes are not as positive as the former (Engel & Plötschke, 1998, Olsson, 1994). Consequently, it is vital to distinguish between attitudes and behaviour, and as many earlier studies have shown, attitudes per se explain only a limited part of a behaviour (e.g. Wright & Kljyn, 1998). To solve this problem, specific attitudes towards the issue in question have been used to predict a

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rural residents, (4) Liberals are more concerned about environmental quality than are conservatives, (5) Men are more likely to be more environmentally friendly than women.

<sup>3</sup> Hayes (2001), using ISSP data about environmental concern from 1993, shows that gender does not explain environmental concern and she confirms the conclusion from earlier studies that there are no clear-cut relationships between gender and environmental attitudes. However, even though there are few significant results regarding the impact of gender in the cross-national analysis, the results for two of the studied countries, the USA and Norway (Sweden was not part of this fielding), indicate that in some countries gender might influence attitudes (women are

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particular behaviour (Engel & Pötschke, 1998). Dietz, Stern and Guagnano (1998) refer to a number of studies showing relationships between environmental concern and:

- support for the broad goals of the environmental movements;
- adherence to a cluster of self-transcendent values (developed by Schwartz, 1987);
- acceptance of the “New Ecological Paradigm” (NEP<sup>4</sup>).

However, in this study we are not interested in the relationship between attitudes and behaviour, but rather the relationship between different explanatory factors and both attitudes and self-reported behaviour associated with environmental concern.

## **INDIVIDUAL FACTORS**

The individual level includes general beliefs, but also broad values and for example life-styles which people today can ‘choose’ to adopt, regardless of their nationality, social class, age, gender etc. In accordance with this, new approaches have been developed to understand and explain individual environmental concern (e.g. Inglehart, 1977, Rokeach, 1973, Kuehn, 1998). Examples are lifestyles and different kinds of value-based groupings (e.g. Inglehart’s, 1977, materialists and postmaterialists and blue-green resistance by Hwiid Nielsen, Jelsøe & Öhman, 2002), and some studies have tried to combine and create new ways of clustering public opinions (Bennulf, 1994, Bennulf & Selin, 1994, Olsson, 1994). This article follows the latter approach.

Some of the research that links environmental concern to individual factors claims that broad values and attitudes are predictive of specific ones, and suggests that the predictors depend on the type of behaviour that is under study (Dietz, Stern & Guagnano, 1998). However, it has been hard to show strong relationships between general beliefs and behaviour (Ajzen, 1989). On the other hand, general beliefs have been used in studies to explain *specific* behaviour in a successful way

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more concerned with the environment than men are). In combination with several earlier Swedish studies this indicates that gender might be relevant in the countries under investigation in this study.

<sup>4</sup> One of the most reviewed scales of measuring environmental concern is the NEP scale (the New Environmental Paradigm), from the 1970s (Dunlap & van Liere, 1978), revised at the beginning of the 1990s (Dunlap, van Liere, Mertig & Jones, 2000), and renamed the New Ecological Paradigm.

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(e.g. Swartz, 1987). The problem is, however, that general beliefs in these cases are more or less closely related to the target attitude or behaviour, environmental concern, and hence it is not surprising to find stable relationships. One way of avoiding measuring the same thing twice is to take the value concept one step further, i.e. to make it even broader. Engel & Plötschke (1998) show in their study of the ISSP survey on environmental concern in 1993 that general beliefs, not necessarily related to environmental issues, may have a substantial explanatory power for environmental behaviour. Their results indicate that people's actions tend to be value consistent, that is, they act according to their general beliefs in specific issues (see also Rasinski, Smith & Zuckerbraun, 1994).

One of the best-known value-scales is Inglehart's (1977) materialist-postmaterialist index. He claims that the emergence of the modern welfare state produces a shift in people's basic values from predominantly materialist value orientations, towards individualised and postmaterialist values,<sup>5</sup> and environmental concern is considered to be an essential part of these postmaterialist values (Inglehart, 1990: 371-392, 1997, see also. Bennulf, 1994, Dietz, Stern & Guagnano, 1998, Mertig & Dunlap, 2001, Öhman, 2002). Inglehart's theory has not remained unopposed (e.g. Flanagan, 1982, Knutsen, 1989, 1990, Krebs, 1992): It has been hard to find stable empirical results confirming the cohort effect and that materialism-postmaterialism can be considered as a one-dimensional. Dekker, Ester and Nas (1997) found that in many countries<sup>6</sup> postmaterialists are not likely to be more concerned about the environment than materialists, though their willingness to pay for the environment appears to be somewhat higher. We find the concept of materialists vs. postmaterialists interesting, since there is empirical evidence supporting this kind of division of general beliefs

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<sup>5</sup> Postmaterialists tend to have little confidence that science will help society, or that more emphasis on technology is needed. Postmodern values also reflect the assumption that survival can be taken for granted, which leads to a growing emphasis on self-expression (Inglehart, 1997).

<sup>6</sup> The study is based on ISSP data from the 1993 module on environment for 19 countries, including Canada, the USA and Norway.

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among the public, while the notion of a cohort effect is more controversial and less empirically supported, and will not be further investigated in this paper.

Pakulski and Tranter (1998) used both general values (postmaterialists vs. materialists) and specific values (intention to join an environmental group) in clustering environmental concern in Australia, which resulted in three clusters: 'Green concern', a group of left-wing postmaterialists and active environmental supporters voting primarily for Green parties; 'Brown concern', a less clearly defined group of people with 'mixed' value preferences, politically right-of-centre, voting informally or for other not classified parties; and lastly a cluster which the authors call 'Others'. This last group is a kind of residual group, which did not cluster with either 'green' or 'brown', with a strong under-representation among postmaterialists, green group members and Green Party voters. A similar approach is found in a study by Dietz, Stern and Guagnano (1998), but they combine positional and individual factors to explain environmental concern.<sup>7</sup> Unlike us, they try to find causal relationships between general beliefs, attitudes and behaviour. Their results show that the relationship between environmentally friendly behaviour and general beliefs is stronger than the relationship with positional factors, although it is not (statistically) strong.

Following earlier research, we clustered the respondents according to their general beliefs by using a combination of indicators of values (cp. Bennulf, 1994, Hviid Nielsen, Jelsøe & Öhman, 2002). Rather than using only one indicator, e.g. Inglehart's materialist–postmaterialist scale, we used four in a single cluster analysis, one of which was Inglehart's scale.

## **SUMMARY**

The aim of this article is to study environmental concern as an attitude object, based in a combination of positional and individual factors. So-called positional factors, such as age, education and political affiliation, have often been used in earlier studies to explain environmental attitudes

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and these factors will be used in a similar way in this study. Less commonly used are so-called individual factors, such as people's general beliefs, which will be added to the positional factors in our analyses of environmental concern. Figure 1 shows the design graphically.

### FIGURE 1

In the next section, environmental concern as well as positional and individual factors are further elaborated and defined.

## METHOD AND MEASUREMENTS

The analyses were made on data from the International Social Survey Program (ISSP), and more precisely, the 2000 module on environment.<sup>8</sup> The dataset used in the analyses is composed of representative samples from four countries: Canada (1115 respondents), the USA (1276), Sweden (1067), and Norway (1452). The survey was actually launched in the spring of 2001, as a stratified<sup>9</sup> random sample of 3000 persons in Canada, as a multi-stage probability sample of 4883 persons in the USA, and as a self-completion mail survey to a representative random sample of 2000 persons in Sweden and 2500 persons in Norway.

Rather than comparing a large number of countries, resulting in an ambivalent interpretation of the results, we choose to compare these four countries that may be considered as pairs: North America and Scandinavia.<sup>10</sup> Comparing two pairs of countries with different socioeconomic

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<sup>7</sup> The study is based on the General Social Survey (GSS) in the USA.

<sup>8</sup> The ISSP is a collaboration between researchers and institutions from about thirty countries that conduct attitude surveys on various topics (Svallfors, 1999). The main purpose of the ISSP network is to create a structure that allows for comparisons and time series analysis. In this way, the hazard of different understandings of questions in different countries is minimised. Different modules, on for example environment, in the ISSP surveys are repeated within a period of between five and eight years, beginning in 1990 (Svallfors, 1999), but Sweden did not participate at the first launch of the environmental module in 1993. Data are therefore only available for one year.

<sup>9</sup> By province and gender.

<sup>10</sup> There are of course differences between all the countries, both in general and particularly in environmental policy, but earlier research indicates that it is productive to treat the four countries as pairs. For example, observers of the development and evolution of Canadian environmental policy have found evidence of what appears to be a pattern of lagged emulation of USA environmental initiatives by Canadian authorities (Howlett, 1994). Similarly, the Nordic countries also have comparable environmental policies, characterised by a high level of environmental concern in



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distribution and environmental policy, might show how general beliefs influence environmental concern in North America and Scandinavia, respectively. There are of course both advantages and disadvantages in using comparative international data (for an orientation, see Svallfors, 1999; for the validity and reliability of cross-national environmental surveys, including ISSP, see Neumayer, 2002.). However, by using two pairs of countries the risk of overemphasising differences between only two randomly selected countries is minimised, and at the same time we avoid many of the problems associated with comparisons of many countries.

Needless to say, quite a few studies of attitudes to environmental concern make large-scale country comparisons, as for example in surveys such as the ISSP and GSS (e.g. Dietz, Stern & Guagnano, 1998, Dekker, Ester & Nas, 1997, Franzen, 2003, Merting & Dunlap, 2001). Results show that environmental concern differs between countries, but positional factors such as age, gender and social class, show similar patterns (e.g. Skrentny, 1993).

## **ENVIRONMENTAL CONCERN, A DEFINITION**

To measure environmental concern the concept is usually operationalised, or defined, by one or more indexes or scales. The ISSP module on environment is not explicitly based on earlier used and established measurement scales of environmental concern, which makes it hard to compare with other studies. On the other hand, the survey is longitudinal and earlier studies within the ISSP are available. One example of such a study is the one carried out by Franzen (2003) who uses both the 1993 and 2000 survey on environment in his international comparison. The scale used in this aggregated analysis did not, however, suit our data for Canada, the USA, Norway and Sweden, since the different questions used to construct the scales were not consistent (Cronbach's  $\alpha < 0.40$ ). Instead, three separate sub-scales were developed, measuring three aspects of

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popular culture, a 'rule-deferential' political culture and a political culture emphasising cooperation and consensus (Munk Christiansen & Lundqvist, 1996, p. 360). There are also similarities in more general societal structural factors in

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environmental concern: perception of one's own ability to do something about environmental problems (resigned attitudes), willingness to make financial sacrifices (financial sacrifices) and environmental commitment (political behaviour). These three scales and the questions from the survey of which they are composed are presented below:

- Resigned attitudes to the environment - index of four indicators of resigned environmental attitudes: no point unless others do the same; many issues about the environment are exaggerated; there are other things that are more important than to protect the environment; it is too difficult to protect the environment (Cronbach's Alpha 0.67).
- Financial sacrifices for the environment - index of three indicators: To protect the environment I would be prepared to; pay much higher prices, pay much higher taxes and cut my standard of living (Cronbach's Alpha 0.80).
- Political behaviour - index of four indicators: membership in environmental group; have signed a petition for the environment in the last five years; have given money to an environmental group in the last five years; have participated in a protest demonstration about an environmental issue (Cronbach's Alpha not applicable).<sup>11</sup>

These indicators of environmental concern are similar to indicators used in earlier studies, although the specific questions of which the indicators are composed might differ (e.g. Öhman, 2001).

## **POSITIONAL FACTORS, DEFINITIONS**

The selection of positional variables is based on earlier studies on environmental concern and new technology (e.g. Bennulf, 1994, Ester, P, Halman & de Moor, 1994, Heijs & Midden, 1997, Öhman, 2002). The following positional factors were used in the analyses (expected outcome also indicated, see also Figure 2):<sup>12</sup>

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the two pairs of countries, but differences between the pairs, that make it interesting to compare the quartet of countries.

<sup>11</sup> The measurement of political behaviour showed some serious problems of consistency, i.e. outliers and a tendency for heteroscedasticity. An alternative measurement was therefore created, to adjust for these problems, where the four indicators were dichotomised according to whether the respondent had demonstrated one or more of the four environmentally friendly behaviours or not. Logistic regressions were then made for all four countries, but since MCA was used for the two other dependent variables, analyses with MCA, using the poorer indicator of political behaviour described in the text, were also made. The results from the two analyses were almost identical and to be able to compare the three indicators, we choose to present results from the MCA analyses for all three dependent variables.

<sup>12</sup> Religiosity was excluded, since there is a risk that it is correlated with one of the questions used in the general beliefs clusters (see the section 'Explanatory individual factors').

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- gender: women are more environmentally friendly than men (e.g. Hayes, 2001, Olsson, 1994);
- age (in four groups): negative relationship, i.e., the younger, the more environmentally friendly (e.g. van Liere & Dunlap, 1980, Engel & Plötschke, 1998);
- years of education (in three groups): positive relationship, i.e., the higher education, the more environmentally friendly (e.g. van Liere & Dunlap, 1980, Engel & Plötschke, 1998);
- political affiliation (left, liberal, right and other): those with left and liberal views are more environmentally friendly than others (e.g. van Liere & Dunlap, 1980, Bennulf, 1994);
- urban vs. rural (three categories): those living in urban areas are more environmentally friendly than others (e.g. van Liere & Dunlap, 1980, Bennulf, 1994).

## **INDIVIDUAL FACTORS, DEFINITIONS**

The choice of individual variables is also based on earlier research, as well as on the objective to combine different indicators of people's general beliefs (e.g. Bennulf, 1994, Dietz, Stern and Guagnano, 1998, Hviid Nielsen, Jelsøe & Öhman, 2002, Inglehart, 1997, Pakulski & Tranter, 1998). Four indicators of general beliefs were used to cluster the subjects into different groups: beliefs about science, views of nature, materialism vs. postmaterialism and individual vs. collective view of society.<sup>13</sup> 'Clustering' people means grouping them according to certain criteria, in this case questions measuring their general beliefs as mentioned above. In other words, each individual will belong to one of the clusters, similar to other variables measuring individual characteristics such as education or political affiliation. To do this an explanatory latent class cluster analysis<sup>14</sup> was made, beginning with a 1-class model that was then complemented with five additional classes to find a satisfactory fit with the data. A summary of the LC analyses is shown in Table 1.<sup>15</sup>

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<sup>13</sup> Materialist vs. postmaterialist and individual vs. collective view of society are indexes (nominally 3 levels) of two and three items, respectively, while view of scientists and nature are single items that vary on a 3-level ordinal scale.

<sup>14</sup> Latent class analysis (LCA) is developed to handle discrete variables, and variables of different scale types, and hence suitable in analyses of survey data (McCutcheon, 1987). The association between observed variables is explained by an unobserved, or latent, variable, which for example might explain clusters among the respondents. In cluster analysis, respondents who share similar characteristics are grouped together. For this purpose, the statistical program Latent Gold was used, which also categorises the respondents according to the different clusters and in this way creates new variables according to the results of the cluster analysis (see Vermunt & Magidson, 2000).

<sup>15</sup> All models have been re-estimated several times, using different starting values, to avoid a local maximum likelihood solution. In the estimations, country has been controlled for by using country as covariate.

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### TABLE 1

By evaluating the statistical results the best solution was then chosen, based on both statistical and theoretical criteria. The former measured by a goodness of fit measurement (BIC), and the latter by analysing the characteristics of each cluster and comparing it to earlier research. Even though the reduction of  $L^2$  (98%) in model 4, is slightly less than in model 5 we choose the former because of the comparably better fit (BIC) and correspondence with earlier research.<sup>16</sup> The four-cluster model is presented in Table 2. The distribution of respondents among the clusters is fairly similar, between 22 and 28 per cent in each cluster.

### TABLE 2

The cluster solution suggests that the first cluster can be characterised as '*conservative individualist*' because of the focus on God as the creator of nature, scepticism of science and individual values. The second cluster can be characterised as "*liberal collectivist*", since the focus is on collective regulation, pro-science and a view of nature based on a non-religious or spiritual value. Neither of these clusters shows any clear pattern concerning the materialist/postmaterialist dimension. However, the third cluster is more clearly materialistic; it also holds individualistic values and is sceptical of science and not religious. We label this cluster '*materialistic individualist*'. The last cluster is labelled '*postmaterialistic collectivist*', characterised by postmaterialistic values, collective view of society, and a spiritual view of nature.

The analysis also shows that the clusters of general beliefs are not equally distributed across countries (see Table 2, 'country'). On the contrary, materialistic individualists are more common in North America, while conservative individualists are more common in Scandinavia. Because of this, one cluster in each pair of countries has been excluded in the analyses, i.e. cluster number three

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in North America (only 1 per cent of the respondents from North America belong to this group) and cluster number one in Scandinavia (only 1 per cent of the respondents from Scandinavia belong to this group).

According to theory and earlier research, people with collective and postmaterialistic values are expected to have pro-environmental attitudes (cp. Beck, 2000, Dekker, Ester & Nas, 1997, Inglehart, 1997). It has also been shown that people with conservative and traditional values might hold pro-environmental attitudes although they are based on their view of nature as the creation of God and a utilitarian view (Olsson, 1994, cp. Dekker, Ester and Nas, 1997). People with individualistic and materialistic values, on the other hand, are expected to be less environmentally friendly, based on the assumption that they are more concerned with individual gains and consumption (Inglehart, 1997, Ester, Halman & de Moor, 1994). In this case we have one individualistic cluster, one materialistic and two postmaterialistic and/or collectivist clusters, and we expect the latter clusters to be more environmentally friendly than the first.

## **SUMMARY**

We can now call to mind that the aim of this study is to empirically test whether grouping people according to their general beliefs (individual factors), combined with positional, or social structural, factors can explain environmental concern, and whether there are country differences in this respect (see Figure 2).

## **FIGURE 2**

In the analyses we use three dependent variables (indexes): perception of one's own ability to do something about environmental problems (resigned attitudes); willingness to make financial sacrifices (financial sacrifices); and lastly environmental commitment (political behaviour). The

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<sup>16</sup> Alternative methods using factor solutions (e.g. 1 factor with three levels, and 2 factors with two levels, respectively) were also applied, but without satisfactory results.

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independent variables, or explanatory variables, are the earlier described individual factors (general beliefs) and the positional factors. These are then analysed in multiple classification analyses (MCA) for each country, to see whether general beliefs in fact make a contribution to the understanding of environmental concern.

## RESULTS

The level of environmental concern varies across the four countries. The Swedish population has the highest levels of concern on all three indicators of environmental concern. At the other end of the scale, the USA has the lowest levels of concern in two out of three indicators (financial sacrifices for the environment and resigned attitudes to the environment), while Norway scores lowest on political environmental behaviour. The order between Norway and Canada differs to some degree, but overall Canada has slightly higher levels of environmental concern than Norway. The differences between the countries are not great but the pattern or order is fairly stable and confirms earlier studies (e.g. van Liere & Dunlap, 1980, Skrentny, 1993).<sup>17</sup> These results indicate possible drawbacks of treating the four countries as two pairs, since there are individual differences between the countries. The multivariate analyses (MCA) were therefore applied to the four countries separately.

As shown in the three tables below (Table 3-5), the differences based on positional factors, e.g. education, age and political affiliation, are quite similar across the three dependent variables and all countries. As expected, women, highly educated people, liberals, and people from higher classes are more environmentally friendly compared with men, people with a low level of education, right-wing voters and working-class people. In the case of general beliefs, we also find the expected pattern in so far as people with collective and postmaterialistic values are more environmentally friendly compared with individualists and materialists, who show the lowest level

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<sup>17</sup> The differences between the four countries are statistically significant for all three dependent variables (MCA including country as a variable).

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of environmental concern. The fact that Table 4 shows a positive relationship between age and willingness to make financial sacrifices is slightly surprising, as it contradicts the assumption that younger people have more environmentally friendly attitudes. This can however be a result of the fact that older people sometimes have a better financial situation compared with that of the younger generation. Attitudes and participation in environmental groups etc are not a financial matter in the same way as accepting higher taxes or paying higher prices, as measured here.

In the analysis of all three variables measuring environmental concern, estimations have been made both with and without general beliefs to see how this factor contributes to explain people's perceptions of environmental issues. The results show that general beliefs increase the explained variance ( $R^2$ ) by between 0.5 and 8.5 per cent, with a mean of 4.4 per cent (see Table 3-5).<sup>18</sup> In the following three subsections the detailed results for each aspect of environmental concern, resigned attitudes, financial sacrifice and political environmental behaviour, are presented.

## **RESIGNED ATTITUDES**

Turning to the so-called resigned attitudes to the environment, we find that there is one non-significant indicator, namely place of residence (see Table 3).

### **TABLE 3**

Age contributes significantly in three countries, while gender is significant in two. Education and political affiliation as well as general beliefs are significant in all four countries: highly educated people are less resigned, as are left-wing and liberal voters, and collectivists are less resigned than individualists are. However, in North America the most pro-environmental group is the liberal collectivists, while it is the postmaterialistic collectivists in Scandinavia.

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## **FINANCIAL SACRIFICE**

Looking at willingness to make financial sacrifices, we find a slightly different pattern (see Table 4).

### **TABLE 4**

In this case gender is only significant in Canada, where also place of residence plays a role. Once again, general beliefs and education are significant in all countries, while political affiliation is significant in three out of four countries. In other respects, the pattern is the same as in the previous analysis. Interestingly, here we find the only significant gender difference where men show greater environmental concern than woman.

## **POLITICAL ENVIRONMENTAL BEHAVIOUR**

Turning to political environmental behaviour, once again the pattern is similar, although fewer factors are significant and the relationship between the different factors and political behaviour is weaker (see Table 5).

### **TABLE 5**

Age is insignificant, if we disregard the 10%-level significance in the USA. Gender is significant in Canada and the USA, as is place of residence, while political affiliation is a contributing factor in Norway and Sweden. Once again, education and general beliefs are the indicators significant in most countries, although general beliefs are not significant in the USA. Political affiliation seems to be an important indicator in Scandinavia, characterised by right-wing voters being the least environmentally concerned.

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<sup>18</sup> The contribution differs between the three dependent variables: Regarding resigned attitudes, general beliefs increase the explained variance by a mean value of 5.7%; willingness to make financial sacrifices by 5.4%, and political environmental behaviour by 3.4%.



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## **SUMMARY**

Summing up the results and returning to the comparison of the two pairs of countries, we find that education is the single most stable variable that explains environmental concern, while the other positional variables are not as consistent (see Figure 3).

### **FIGURE 3**

Political affiliation is a stable contributor in Scandinavia, but not in North America. Gender is significant in North America as regards political behaviour, but in Scandinavia it is correlated with resigned attitudes, and age does not show any stable pattern whatsoever. General beliefs show a more stable pattern across dependent variables and countries, and even though they are insignificant in the USA in the last case, the pattern is consistent. First, people with collective values are more environmentally friendly than people with individualistic values. This pattern is consistent across countries. Second, in North America liberal collectivists, who believe in science but not God, are more pro-environment, while in Scandinavia it is postmaterialistic collectivists, who also believe in science but perceive nature as sacred or created by God, who are more concerned with the environment. Finally, yet importantly, the inclusion of general beliefs increases the explanatory power in the analyses in a noteworthy way.

## **CONCLUSIONS**

The results show that combining positional and individual factors gives a deeper understanding of environmental concern. These results are also encouraging for further research into the significance of general beliefs in the understanding of environmental concern, as well as other issues of late modernity (cp. Engel & Plötschke, 1998).

Looking at the different aspects of environmental concern, with regard to individual factors, we find that in eleven out of twelve analyses, general beliefs play a significant role. It is only when it comes to political behaviour in the USA that we do not find a significant relationship. This

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indicates that general beliefs are a major contributing factor in understanding environmental concern. The expected outcome of the analyses, that postmaterialists show relatively more environmental concern than the other value groups, was confirmed by this fact (cp. Dekker, Ester & Nas, 1997, Olsson, 1994).

Positional factors contributing to the understanding of environmental concern show similar relationships regardless of country (and dependent variable), which confirm earlier findings (e.g. Skrentny, 1993). We find that level of education and political affiliation are the two most influential positional factors. Level of education contributes to the understanding of environmental concern in all twelve analyses, and for political affiliation, eight out of twelve analyses are significant. Research since the beginning of the 1980s shows the significance of education (cp. Engel & Plötschke, 1998, van Liere & Dunlap, 1980, Skrentny, 1993), and our results also confirm earlier studies with regard to political affiliation, since left-wing and liberal voters are more environmentally friendly than people voting to the right (cp. Van Liere & Dunlap, 1980, Bennulf & Selin, 1994). No further positional factors show stable relationships across all countries and dependent variables. However, some of these results are still interesting. Gender is, for example, significant in five of the analyses, and as seen earlier, women show a higher level of environmental concern than men in these cases (cp. Hayes, 2001), with the exception of financial sacrifices, which on the other hand might support Van Liere and Dunlap's hypothesis from 1980.

When it comes to similarities within the two pairs, we find that the Scandinavian countries show similar patterns for all three dependent variables. The only deviant variable is age, which is significant concerning resigned attitudes and willingness to make financial sacrifices in Norway, but not in Sweden. In all other cases, Norway and Sweden show the same pattern. The similarities between Canada and the USA are more ambiguous. Similar patterns are found concerning resigned attitudes and political environmental behaviour, but there is hardly any correspondence when it comes to willingness to make financial sacrifices. More interesting, the resemblance between these

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two countries is probably due to some overall pattern including Scandinavia, since when scrutinising the results we find that in the case of resigned attitudes the similarity with Scandinavia is also high, i.e. here we might have a case where both positional and individual factors show the same pattern, regardless of country. In the two other cases North America and Scandinavia differ, indicating that it might be possible at least to talk of a Scandinavian example of environmental concern. Munk Christiansen and Lundqvist (1996) also conclude, when examining the Scandinavian countries' environmental policies, that the similarities outnumber the differences. Our results support the assumption of similarities between the two countries regarding factors explaining environmental concern within the public, especially with regard to general beliefs.

This study confirms results from earlier investigations, both in the stability of the influence of education and political affiliation, and in direction of the relationship between age and gender, of which these last two, together with urban vs. rural, show less stable relationships than education, political affiliation and general beliefs. The contribution of the study is the stable relationship between individual factors (general beliefs) and environmental concern. This supports the idea that new issues, stemming from the modernisation process, should be studied not only according to sociodemographic factors but also according to people's general beliefs.

It would be desirable to design a study for the sole purpose of measuring and clustering general beliefs among people, and to test these clusters against various environmental issues characterising late modern society.

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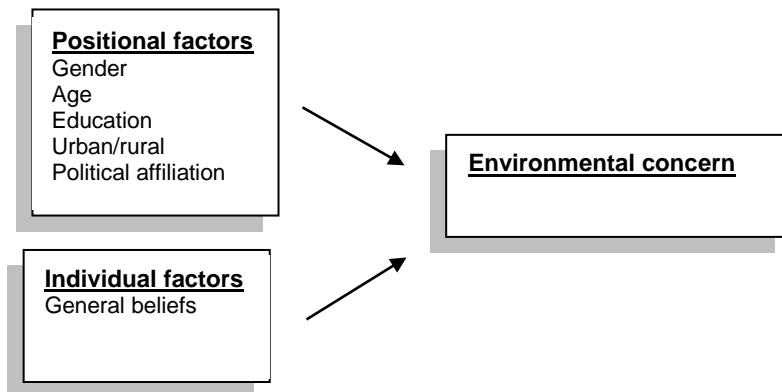
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**How to cite:** Olofsson, A. & Öhman, S. (2006). General beliefs and environmental concern. Trans Atlantic Comparisons. *Environment and Behavior*, 38 (6) 768-790.

**FIGURE 1**

**Graphical representation of the relationships between the factors and environmental concern.**



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**TABLE 1**  
**Latent cluster analysis (LCA) of general beliefs among respondents in four countries: the USA, Canada, Sweden and Norway. N=4275, model fit for 5 Latent Class Models**

Model		L <sup>2</sup>	BIC	df	p-value	Reduction of L <sup>2</sup> in relation to Model 1
Model 1	1-Cluster	633	415.39	26	0.00	0%
Model 2	2-Cluster	151	-16.20	20	0.00	76%
Model 3	3-Cluster	61	-56,35	14	0.00	90%
Model 4	4-Cluster	11	-56.24	8	0.22	98%
Model 5	5-Cluster	3	-13.38	2	0.19	99%

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**TABLE 2**  
**Cluster membership probabilities and conditional cluster probabilities associated with each category of categorical indicator variables of model 4 in Table 1**

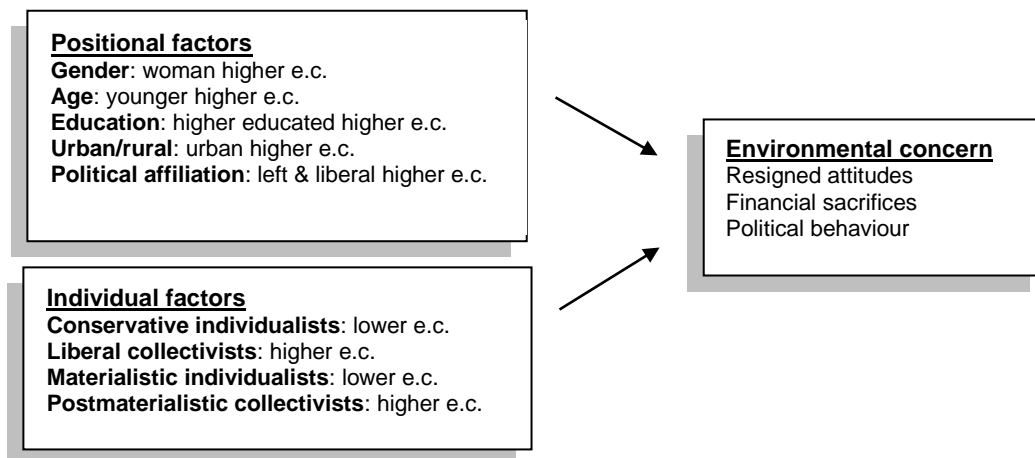
Indicators	Conservative individualists	Liberal collectivists	Materialistic individualists	Postmaterialistic collectivists
<b>Respondents divided into clusters</b>	28%	28%	22%	22%
<b>Inglehart scale</b>				
<i>materialist</i>	26%	26%	28%	20%
<i>postmaterialist</i>	30%	31%	13%	26%
<b>Individual/collective</b>				
<i>individual</i>	52%	16%	29%	2%
<i>collective</i>	13%	35%	18%	34%
<b>View of science</b>				
<i>bad</i>	40%	7%	34%	19%
<i>good</i>	20%	40%	16%	24%
<b>View of nature</b>				
<i>important, not spiritual/sacred</i>	19%	45%	27%	9%
<b>Country</b>				
<i>North America</i>	57%	12%	1%	30%
<i>Scandinavia</i>	1%	42%	42%	15%



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**FIGURE 2**

**Graphical representation of the expected direction of the relationships between the variables.  
Environmental concern has been abbreviated to 'e.c.'**



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**TABLE 3**

**Resigned attitudes towards the environment in different groups in Canada, the USA, Norway and Sweden. Multiple classification analysis, adjusted means and betas (the higher the mean, the less resigned)**

		<b>Canada</b>	<b>USA</b>	<b>Norway</b>	<b>Sweden</b>
<b>Grand mean</b>		<b>3.62</b>	<b>3.40</b>	<b>3.46</b>	<b>3.67</b>
<b>Gender</b>		<i>0.04</i>	<i>0.06</i>	<b>0.15**</b>	<b>0.11**</b>
	men	3.31	3.54	3.35	3.59
	women	3.37	3.63	3.56	3.74
<b>Age</b>		<b>0.10**</b>	<b>0.12*</b>	<b>0.09*</b>	<i>0.08</i>
	young	3.37	3.65	3.49	3.64
	lower middle	3.40	3.62	3.46	3.74
	middle	3.32	3.61	3.44	3.64
	old	3.16	3.38	3.26	3.58
<b>Education</b>		<b>0.18**</b>	<b>0.11*</b>	<b>0.11**</b>	<b>0.11*</b>
	low	3.04	3.45	3.36	3.58
	middle	3.35	3.63	3.40	3.70
	high	3.46	3.64	3.55	3.76
<b>Urban-rural</b>		<i>0.05</i>	<i>0.03</i>	<i>0.02</i>	<i>0.02</i>
	urban	3.37	3.55	3.42	3.67
	town/suburban	3.28	3.60	3.44	3.66
	rural	3.32	3.59	3.45	3.63
<b>Political affiliation</b>		<b>0.08^</b>	<b>0.12*</b>	<b>0.12**</b>	<b>0.13*</b>
	left	3.35	3.65	3.51	3.66
	liberal	3.40	3.62	3.52	3.76
	right	3.26	3.46	3.34	3.56
	other	3.27	3.71	3.50	3.21
<b>General beliefs</b>		<b>0.27**</b>	<b>0.25**</b>	<b>0.27**</b>	<b>0.23**</b>
	Conservative individualist	3.17	3.38		
	Liberal collectivist	3.66	3.59	3.49	3.64
	Materialistic individualist			3.23	3.52
	Postmaterialistic collectivist	3.57	3.80	3.71	3.96
<b>R<sup>2</sup> %</b> (R <sup>2</sup> % 'general beliefs' not included)		<b>15 (8.9)</b>	<b>12.6 (7.4)</b>	<b>16.7 (9.9)</b>	<b>11.7 (6.9)</b>

Significance: \*\*p<0.01; \*p<0.05; ^p<0.1.

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**TABLE 4**

**Willingness to make financial sacrifices in different groups in Canada, the USA, Norway and Sweden. Multiple classification analysis, adjusted means and betas (the lower the mean, the more willing to make financial sacrifices).**

		Canada	USA	Norway	Sweden
<b>Grand mean</b>		<b>3.12</b>	<b>3.04</b>	<b>3.10</b>	<b>3.15</b>
<b>Gender</b>		<b>0.09**</b>	0.04	0.01	0.02
	men	2.99	3.10	3.11	3.20
	women	3.18	3.18	3.13	3.15
<b>Age</b>		0.05	<b>0.19**</b>	<b>0.13**</b>	0.09
	young	3.06	3.40	3.28	3.15
	lower middle	3.05	3.22	3.09	3.29
	middle	3.16	3.06	3.03	3.15
	old	3.18	2.81	2.90	3.04
<b>Education</b>		<b>0.08**</b>	<b>0.20**</b>	<b>0.18**</b>	<b>0.14**</b>
	low	3.00	3.41	3.30	3.28
	middle	3.18	3.18	3.20	3.22
	high	3.00	2.92	2.89	2.97
<b>Urban-rural</b>		<b>0.09*</b>	0.04	0.02	0.05
	urban	3.07	3.09	3.10	3.12
	town/suburban	3.00	3.17	3.14	3.20
	rural	3.27	3.11	3.11	3.25
<b>Political affiliation</b>		<b>0.11**</b>	0.08	<b>0.30**</b>	<b>0.23**</b>
	left	3.09	2.90	2.89	3.07
	liberal	2.97	3.18	2.79	3.08
	right	3.26	3.14	3.45	3.47
	other	3.05	3.12	3.22	4.25
<b>General beliefs</b>		<b>0.28**</b>	<b>0.20**</b>	<b>0.21**</b>	<b>0.24**</b>
	Conservative individualist	3.33	3.33		
	Liberal collectivist	2.76	3.21	3.18	3.24
	Materialistic individualist			3.28	3.33
	Postmaterialistic collectivist	2.75	2.91	2.77	2.76
<b>R<sup>2</sup> %</b>		<b>11.8 (3.3)</b>	<b>11.0 (7.4)</b>	<b>22.7 (18.9)</b>	<b>15.3 (9.6)</b>
(R <sup>2</sup> % 'general beliefs' not included)					

Significance: \*\*p<0.01; \*p<0.05; ^p<0.1.

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**TABLE 5**

**Political environmental behaviour in different groups in Canada, the USA, Norway and Sweden. Multiple classification analysis, adjusted means and betas (the higher the mean, the more environmentally friendly behaviour)**

		<b>Canada</b>	<b>USA</b>	<b>Norway</b>	<b>Sweden</b>
<b>Grand mean</b>		<b>0.66</b>	<b>0.66</b>	<b>0.52</b>	<b>0.73</b>
<b>Gender</b>		<b>0.07*</b>	<b>0.09**</b>	0.04	0.00
	men	0.55	0.57	0.50	0.69
	women	0.67	0.73	0.56	0.70
<b>Age</b>		0.08	<b>0.10<sup>^</sup></b>	0.04	0.10
	young	0.56	0.48	0.48	0.82
	lower middle	0.66	0.75	0.55	0.72
	middle	0.69	0.62	0.55	0.61
	old	0.48	0.63	0.54	0.60
<b>Education</b>		<b>0.16**</b>	<b>0.23**</b>	<b>0.18**</b>	<b>0.15**</b>
	low	0.44	0.39	0.41	0.57
	middle	0.53	0.57	0.43	0.70
	high	0.82	0.89	0.72	0.90
<b>Urban-rural</b>		<b>0.09*</b>	<b>0.09<sup>^</sup></b>	0.04	0.02
	urban	0.61	0.79	0.58	0.69
	town/suburban	0.73	0.58	0.52	0.69
	rural	0.47	0.68	0.50	0.74
<b>Political affiliation</b>		0.06	0.09	<b>0.14**</b>	<b>0.16**</b>
	left	0.62	0.91	0.65	0.74
	liberal	0.67	0.60	0.58	0.81
	right	0.53	0.65	0.40	0.42
	other	0.56	0.63	0.71	0.55
<b>General beliefs</b>		<b>0.14**</b>	0.06	<b>0.11**</b>	<b>0.17**</b>
	Conservative individualist	0.51	0.64		
	Liberal collectivist	0.89	0.54	0.46	0.58
	Materialistic individualist			0.50	0.65
	Postmaterialistic collectivist	0.72	0.70	0.67	0.98
<b>R<sup>2</sup> %</b>		<b>8.2 (6.1)</b>	<b>9.7 (9.3)</b>	<b>9.2 (7.3)</b>	<b>10.4 (7.0)</b>
(R <sup>2</sup> % 'general beliefs' not included)					

Significance: \*\*p<0.01; \*p<0.05; <sup>^</sup>p<0.1.

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### FIGURE 3

**Graphical representation of the results. Environmental concern has been abbreviated to 'e.c.'. R<sup>2</sup> shows the range of how much the factors together explain environmental concern in the four countries.**

