# Environmental concern and the prediction of environmentally responsible behaviours in Norway: Results from a pilot study and a national survey

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# Abstract

The results reported in the present paper compares selected data from two Norwegian environment and behaviour surveys, a pilot study (n=243) and a national survey (n=1413). The results indicate that environmental concern can be regarded as important predictors of environmentally responsible behaviours, but mainly for the relatively context-independent behavioural domains. Thus, environmental concern explained an important proportion of variance in environmentally responsible consumer behaviours and environmental involvement. In both cases, specific environmental attitudes were the most powerful direct predictor, but ecocentric attitudes and an ecological view of human - nature relations appear to be underlying the more specific pro-environmental attitudes. Rejection of materialism tended to be weakly associated with green consumer behaviour. For waste reduction and transportation behaviour, however, the variance explained by environmental concern dropped dramatically, indicating that other factors such as social and physical constraints, are the most important factors.

Agreement with materialism was widespread among participants, and did not appear to influence environmentally responsible behaviour patterns. On the other hand, Norwegians tend to agree that nature should be valued and protected for it's own sake, and they exhibit clearly pro-environmental attitudes towards specific issues. Taken together, these findings indicate a readiness to act in an environment-friendly manner. However, the self-reported environmental behaviours included received mixed support: Moderate levels of environmentally responsible consumer behaviours, suggests that given competitive prices, environmentally sound products would be rather welcomed by the market. In contrast, low environmental involvement suggests the need for putting environmental issues back on the agenda. Moreover, the population sample reported high levels of waste reduction behaviour. Low levels of environment-friendly transportation indicates that measures should be taken to make such transportation options more attractive and accessible.

Key words: Environmental concern, environmentally responsible behaviours, ecocentrism, anthropocentrism, new ecological paradigm, specific environmental attitudes

**Environmental concern and the prediction of environmentally responsible behaviours: Results from a pilot study and a national survey**

Although relations between environmental concern and environmentally responsible behaviours often are weak, there are at least two reasons for obtaining knowledge about them: First, in a democratic society, popular environmental concern provides politicians with the needed foundation for political action. Second, studies of the relations between environmental concern and behaviour may identify both barriers that prevent behaviour from being expressed, as well as the conditions under which desired behaviours are likely to occur. In this article, selected results from two Norwegian research projects, a pilot study and a national survey, focusing on such questions will be presented. Specifically, the paper examines relations between five distinct aspects of environmental concern and four domains of environmentally responsible behaviours. Considering a broad range of environmental behaviours in this type of research is important, because change must occur in several areas in order to make a difference, such as the fields of transportation, use of fossil fuels, use of tropical forests, and the management of waste (*cf.* Gardner & Stern, 1996).

Dunlap *et al.* (1992), assert that the advent of environmentalism meant the rejection of what they call the *"Human Exemptionalism Paradigm" (HEP)*, according to which human beings are exempt from the laws of nature and rulers over the physical world. Today, the HEP is assumed to be replaced by a new world view more compatible with environmental limits, often labelled the *New Environmental (or Ecological) Paradigm* (Dunlap & Van Liere, 1978; Dunlap *et al.*, 1992), hereafter NEP. Based on or compatible with such conceptualisations, over the last two decades a number of studies have been conducted, employing different instruments.

However, according to Stern (1992), environmental concern could also be conceived of as based upon differing values or *value-orientations*. Stern & Dietz (1994) assumed a tripartite model of value-orientations to be appropriate. In *an egoistic value orientation,* the perceived personal threat due to environmental destruction is seen as the most important factor (*cf.* Baldassare & Katz, 1992), whereas in an *altruistic value orientation*, beliefs about negative consequences for others is the most important reason for action. Finally, in *a biospheric*

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*value-orientation*, the perceived consequences for the biosphere are the primary basis for action. However, the authors failed to reproduce this model in empirical testing. Instead of identifying a distinct biospheric value orientation they found a combined biospheric-altruistic value orientation and an egoistic value orientation (Stern & Dietz, 1994). These authors also note that only those values identified by the literature as relevant, i.e., biospheric-altruistic and egoistic values, do in fact predict environmental involvement. It is also interesting to note that Stern & Dietz (1994) found positive intercorrelations among egoistic, social-altruistic and biospheric values, implying that those who are more concerned about the environment also are more concerned about negative consequences for people.

Elaborating on this line of research is Thompson & Barton's (1994) approach to environmental concern. However, their argument is that egoistic and social-altruistic values can be included in *an anthropocentric motive*, whereas biospheric values are close to an *ecocentric motive*. Consequently, instead of understanding people as pro or contra environmental protection, as appears to be the case in Stern & Dietz's (1994) work, people can be seen to have different *reasons or motives* for acting environment-friendly. Thus, *ecocentrism* implies valuing nature for it's own sake, leading to the argument that nature should be protected because it has intrinsic value. In contrast, *anthropocentrism* is based upon the argument that nature should be protected because of its importance in maintaining or improving the quality of life for people. Because ecocentrists will have more reasons than anthropocentrists to act environment-friendly, they are assumed to behave environmentally responsible more often.

While the NEP-scale measures rather general environmental attitudes, Schahn & Holzer (1990) have developed a more specific attitudinal measure. Items from a short version of their instrument were included in the present study. The items cover attitudes towards themes such as reduced energy-consumption in the household, less energy use for transportation, environmentally responsible purchases, societal involvement, garbage collection and recycling, reduced water consumption, and protecting own health.

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The inclusion of both general and specific measures in the present studies, emphasises two important issues in research on relations between values, attitudes and behaviour: First, corresponding levels of specificity is known to increase the strength of attitude-behaviour relations (see, for example, Fishbein & Ajzen, 1975). Second, exploration of the relationship between general and specific environmental attitudes can shed light on the mechanisms through which general attitudes/values may influence behaviour. One important question here is whether the effects on behaviour are direct or indirect, through influencing more specific attitudes. For example, Grob (1995) found strong support for a model of environmental attitudes and behaviour where personal, philosophical values were allowed to affect both other attitudinal components and environmental behaviour directly.

As mentioned above, considering a broad range of environmental behaviours in this type of research is important. Thus, in the present study, responsible environmental behaviours are understood as comprising several more or less interrelated domains. An exclusive focus on only one domain (for example, recycling) is not recommended, as one runs the risk of completely missing the target. For example, a person intellectually involved in environmental issues, who perhaps reads a lot about them, may not be an active recycler and  he/she may even have arguments that recycling is not really the solution to environmental problems. Also, within each domain, single behaviours are assumed to be manifestations of an underlying dimension, meaning that multiple items are needed in order to measure each domain in a satisfactory manner.

The purpose of the present study was to examine the nature of the relations between environmental concern and environmental behaviours. The general question is to what extent environmental concern, both general and specific, predict environmentally responsible behaviours. This involves more specific research questions such as the following:
- Are some dimensions of general environmental concern stronger predictors of environmentally responsible behaviour than other dimensions?
- Are some behavioural domains more clearly determined by environmental concern than others?

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- Are specific attitudes stronger predictors of environmentally responsible behaviours than the more general dimensions of environmental concern?

## Method

**Pilot study.** *Participants* were 243 voluntary male (n=140) and female (n=103) Norwegian university and college students, divided into fairly equal parts of students from social science (n=99) and technology (n=143) programs at the Norwegian University of Science and Technology in Trondheim. The participants were recruited among students attending university courses during spring 1996 with questionnaires distributed immediately after courses to those willing to participate. The questionnaires were completed immediately and handed in to a research assistant.

**National survey**. The data collection was made possible through a grant from the Research Council of Norway's programme for Environmental Quality of Life. It is a representative survey of Norwegian men and women older than 15 år. Surveys were mailed to a total of 3845 participants. The initial response rate was, unfortunately, quite poor, so efforts were done to increase the participation rate. This resulted in a total of 1413 participants, a net response rate of 37%. Data collection started in March and the final data were handed over at the end of August 1999. The sample had a slight overweight of women (n=713 or 50,5%) as compared to 45,7%(n= 646) male participants. Sex was not indicated for 54 persons or 3,8% of the sample.

The behavioural and environmental concern items on which the present analyses are based were parts of a larger questionnaire designed to explore a wide range of potential psycho-social predictors of environmentally responsible behaviours, and included the following:

└a)    A Norwegian translation (Strumse & Aasetre, 1994) of 10 selected items from the *"New Ecological Paradigm scale"* (Dunlap *et al.,* 1992). For each item, subjects were asked to choose one of five alternatives: 'strongly disagree', 'disagree', 'neither agree nor disagree', 'agree', 'strongly agree'.

└b)    A Norwegian translation of 16 items from Thompson & Barton's (1994) scale measuring anthropocentric and ecocentric motives for caring for the environment.

The response format was identical with what is described under (a).

└c)     A list of 7 value items, drawn from various sources (Rokeach, 1973; Schwartz, 1994; Strumse, 1991), and selected in order to reflect a materialistic value orientation (egoistic, traditional and , freedom). For each item, subjects were asked to choose one of five alternatives: 'very important', 'important', 'neither important nor unimportant', unimportant, 'very unimportant'.

└d)     A Norwegian translation of 10 specific environmental attitude items drawn from the literature (Schahn & Holzer, 1990; DeYoung, 1993) as well as originally constructed items. Also here, the response format was identical with what is described under (a).

└e)     A list of 31 environmental behaviour items, drawn from the literature (DeYoung, 1993; Smith-Sebasto, 1994) as well as originally constructed items. For each item, subjects were asked to choose one of five alternatives: 'very often', 'often', 'sometimes', 'seldom', 'never'.

## Results

**Descriptive statistics.** In the following, all variables employed are index variables computed on the basis of previous factorial analyses not reported in the present paper. As can be seen in table 1, five environmental concern indices and four environmental behavioural indices. The descriptive properties of environmental concern and behaviour index variables, as well as their internal consistency measured by the standardised Cronbach's alpha coefficient, are given in table 1. Results from the pilot study and the national survey are organised pairwise under the headings. Thus, we see that the number of single item variables computed into index variables is identical for Materialistic Value Orientation (MVO), specific environmental attitudes (SEA), and environmentally responsible consumption (ERC). For other indices, there are small deviations. In most cases, the reason for this is that the index giving the best internal consistency was chosen in each single case. An exception is found for the transportation behaviour data in the pilot study: Here, very few subjects used cars or motor bikes, thus these single item variables could not be used in any meaningful way in statistical analyses.

Looking first at the *environmental concern* variables, it is worth noting that the overall mean

ratings are very similar in both studies. The NEP index received a mean of 3.61 in the pilot study and slightly less, 3.52 in the national survey, both indicating a moderate support of the New Ecological Paradigm. Likewise, we see a high agreement with a Materialistic Value Orientation in both the pilot study and the representative sample of the Norwegian population. Ecocentric attitudes are high in the pilot study and slightly higher in the population sample. Also for specific environmental attitudes, there is a close correspondence between the results from the pilot study and the population sample, in both cases showing relatively high mean ratings (3.77 in the pilot study and 3.86 in the population sample). The only major divergence between the data sets is found in the case of anthropocentrism (AC), with a relatively strong support in the pilot study (3.77), but a low rating in the population sample (2.62).

For the *environmentally responsible behaviour* variables, however, the picture is more complex: In the case of  Environmentally Responsible Consumption, the mean ratings are very close in the two samples, with a moderate mean of 2.95 in the pilot study and 3.06 in the population sample.  Quite similar results are seen also for Environmental Involvement, being clearly low in both samples (2.28 versus 2.15). However, for the presumably more context - dependent  behaviours, the rating levels differ sharply: Waste reduction behaviour received a low mean rating of 2.56 ("seldom" to "sometimes") in the pilot study, in contrast,  in the population sample this behaviour was rated as high as 4.07 ("often"). This may, in part at least, be due to the time gap between the two studies: While the pilot study was conducted during 1996, the national survey data were collected in 1999. During this time, curbside recycling has gradually been implemented nation-wide. The opposite pattern is seen for Transportation behaviour, with the pilot sample reporting a high frequency of environment - friendly transportation (mean = 4.10, i.e., "often"), and the population mean being quite low (2.57, or "seldom" to "sometimes"). Here, it should be recalled that the pilot study subjects are university students, of which almost none owns or uses motorised vehicles. Finally, table 1 also includes the standardised Cronbachs alpha for each index. The internal consistency is somewhat low (.63 and .67) for the two transportation behaviour indices, but acceptable (between .70 and .85) for all other indices.

**Table 1.**
**Dimensions of environmental concern and in environmentally responsible behaviours, Descriptives and internal consistency as measured by the standardized Cronbachs alpha from pilot study (n=243) and national survey (n=1413).**

| Sumscore label | # of items Pilot study | National survey | Mean Pilot study | National survey | SD Pilot study | National survey | Alpha values Pilot study | National survey |
|---|---|---|---|---|---|---|---|---|
| New Ecological Paradigm (NEP) | 10 | 9 | 3.61 | 3.52 | .51 | .58 | .76 | .76 |
| Materialistic value orientation (MVO) | 7 | 7 | 4.17 | 4.15 | .41 | .47 | .76 | .83 |
| Ecocentrism (EC) | 7 | 4 | 3.94 | 4.11 | .54 | .67 | .81 | .79 |
| Anthropocentrism (AC) | 9 | 8 | 3.70 | 2.62 | .43 | .67 | .70 | .77 |
| Specific environmental Attitudes (SEA) | 10 | 10 | 3.77 | 3.86 | .45 | .56 | .76 | .85 |
| Environmentally Responsible Consumption (ERC) | 12 | 12 | 2.95 | 3.06 | .68 | .68 | .83 | .83 |
| Environmental Involvement (EI) | 7 | 9 | 2.28 | 2.15 | .58 | .58 | .81 | .81 |
| Waste Reduction behavior (WRB) | 5 | 3 | 2.56 | 4.07 | .86 | .83 | .72 | .72 |
| Transportation behavior (TB) | 2 | 4 | 4.10 | 2.57 | .74 | .80 | .63 | .67 |

Not reported in the present paper, the general patterns in the two studies for the bivariate correlations among environmental concern indices and behaviour indices are strikingly similar. The most numerous and strongest correlations found between, on the one hand environmental concern, and consumption and involvement behaviours on the other. Fewer and/or weaker significant correlations were seen between environmental concern indices and transportation and waste reduction behaviour indices. It is worth noting that in both studies, a Materialistic Value Orientation is practically non-correlated with environmentally responsible behaviours. The only exceptions here are two weak correlations in the population sample between Materialistic value orientation, and Environmentally Responsible Consumption. Moreover, in both studies, NEP and Ecocentrism are moderately and positively correlated with Environmentally Responsible Consumption and Environmental Involvement.

**Table 2**

**Hierarchical regression: Environmental beliefs, values and attitudes as predictors of responsible consumer behaviour**

| | | Pilot study (n= 243) | | | | National survey (n=1413) | | |
|---|---|---|---|---|---|---|---|---|
| | | Block 1 | Block 2 | Block 3 | | Block 1 | Block 2 | Block 3 |
| | | Beta | Beta | Beta | | Beta | Beta | Beta |
| NEP | | .20** | .16* | -.02 | | .27** | .22** | .03 |
| MVO | | -.12 | -.14* | -.13* | | .11** | .09** | .03 |
| $R^2$ | .06** | | | | .09** | | | |
| EC | | | .11 | -.02 | | | .18** | .10** |
| AC | | | .03 | .00 | | | -.03 | -.02 |
| $R^2$ | .08** | | | | .12** | | | |
| $R^2$ change | .01 | | | | .03** | | | |
| SEA | | | | .50** | | | | .49** |
| $R^2$ | ,.25** | | | | .30** | | | |
| $R^2$ change | .18** | | | | .18** | | | |

$R^2$ = Explained variance, *: p <.05, **: p<.01, ***: p<.001.

**Hierarchical multiple regressions** were performed using environmental concern indices as predictor variables and environmental behaviour indices as criterion variables. Regressions

were run in three blocks for each of the criterion variables. In block 1, NEP and Materialistic value orientation (MVO) were entered, in Block 2 Ecocentrism (EC) and Anthropocentrism (AC) were added, and in block 3 Specific environmental attitudes (SEA) were entered into the equation.

*Predictors of environmentally responsible consumer behaviour* (see table 2). For both studies, the total variance explained is comparable, 25% in the pilot study and somewhat higher, 30%, in the national survey. The major portions of the variance are in both studies accounted for by specific environmental attitudes, increasing significantly the explained variance by approximately 18% in both studies. However, effects of more general values and attitudes were also observed: In block 2, NEP and MVO are significant direct predictors in both studies, and in the national survey, also Ecocentrism emerges as a significant predictor. However, when SEA is entered into the analysis in the pilot study, only MVO remains a direct predictor, while in the national survey, ecocentrism is the only significant predictor besides SEA. In the pilot study, MVO is a negative predictor, i.e., suggesting that rejection of materialism predicts green consumer behaviour. Moreover, keeping in mind the strong correlation between NEP and SEA it is reasonable to regard NEP as underlying specific environmental attitudes.

The results suggest, first, that environmental concern explains an important proportion of variance in environmentally responsible consumer behaviours. Most important here is Specific environmental attitudes, but also ecocentric attitudes and ecological view of human - nature relations seem to be underlying the more specific pro-environmental attitudes. Rejection of materialism tend to be weakly associated with green consumer behaviour.

*Predictors of environmental involvement* (see table 3). Both data sets yielded overall results carrying clear similarities with the results for consumer behaviour: In block 3, Environmental concern variables explained a total of, respectively, 25 (pilot study) and 26% (national survey) of the variance in environmental involvement. Thus, environmental concern explains a substantial proportion of the variance, and the results from the pilot study are by and large reproduced in the national survey. A closer look at the details reveals that at the final step of the analysis, the only direct predictor in the pilot study was SEA, whereas in the national survey, also ecocentrism remained a significant predictor. However, going back to block 1, it can be seen that NEP and MVO did prove themselves to be significant predictors in both

studies, explaining together approximately 6% of the variance. The effect of MVO is quite

**Table 3.**
**Hierarchical regressions : Environmental beliefs, values and attitudes as predictors of environmental involvement**

| | Pilot study (n= 243) | | | National survey (n=1413 | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Block 1 | Block 2 | Block 3 | Block 1 | Block 2 | Block 3 |
| | Beta | Beta | Beta | Beta | Beta | Beta |
| NEP | | .20** | .16* | -.02 | .24** | .20** | .01 |
| MVO | | -.12* | -.14* | -.13* | .05* | .03 | -.03 |
| $R^2$ | .06** | | | .06** | | |
| | | | | | | |
| EC | | | .11 | -.02 | | .16** | .08** |
| AC | | | .03 | .00 | | -.01 | -.01 |
| $R^2$ | .08** | | | .085** | | |
| | | | | | | |
| $R^2$ change | .01 | | | .022** | | |
| | | | | | | |
| SEA | | | | .50** | | | .49** |
| | | | | | | |
| $R^2$ | .25** | | | .26** | | |
| | | | | | | |
| $R^2$ change | .18** | | | .18** | | |

$R^2$ = Explained variance, *: p <.05, **: p<.01

weak however.  In block 2, NEP and MVO remains significant in the pilot study, but in the population sample, only NEP continues to have a direct effect.  Here, however, Ecocentrism emerges as a significant predictor. The closeness of results of the two studies suggests the relative independence of physical or social constraints of involvement behaviour, and thus an increased importance of psychological characteristics, such as attitudes and values.

As will be clear  below, the picture is quite different for waste reduction and transportation behaviour in at two respects: First, the variance explained by environmental concern drops dramatically, second, their relative predictive power of the variables is less similar in the two studies.

*Predictors of waste reduction behaviour* (see table 4). Environmental concern explains a total of 8% (pilot study) and 6% (national survey), much smaller proportions of the variances

can be explained by individual differences in environmental attitudes and values, suggesting social and physical constraints as the most important factors. In addition, there are some clear differences between the two data sets: First, NEP and MVO does not appear to influence waste reduction behaviour at all in the pilot sample. In contrast, in the population sample, NEP does appear to have some effect, emerging as a significant predictor in block 1.

**Table 4.**
**Hierarchical regression: Environmental beliefs, values and attitudes as predictors of waste reduction  behaviour**

| | Pilot study (n= 243) | | | | National survey (n=1413) | | |
|---|---|---|---|---|---|---|---|
| | Block 1 | Block 2 | Block 3 | | Block 1 | Block 2 | Block 3 |
| | Beta | Beta | Beta | | Beta | Beta | Beta |
| NEP | .04 | -.01 | -.11 | | .06* | .05 | -.05 |
| MVO | -.10 | -.12 | -.12 | | .04 | .02 | -.02 |
| $R^2$ | .01 | | | .004* | | | |
| EC | | .15* | .08 | | | .07* | .02 |
| AC | | .03 | .02 | | | .05* | .06* |
| $R^2$ | .04 | | | .01** | | | |
| $R^2$ change | .02 | | | .01** | | | |
| SEA | | | .27** | | | | .25** |
| $R^2$ | .09** | | | .06** | | | |
| $R^2$ change | .05** | | | .05** | | | |

$R^2$ = Explained variance
*: p <.05, **: p<.01

This effect is in turn absorbed in block 2 by Ecocentrism and Anthropocentrism, both proving to be  weak, but significant predictors here. Also in the pilot study, Ecocentrism proves to be a significant predictor in block 2, but this effect is absorbed in block 3 by SEA, which is the only remaining direct predictor in the pilot study. In the national survey SEA increases variance explained in block 3 by a statistically significant 5%, allowing only anthropocentrism to retain its direct predictive power. Thus pro-environmental specific attitudes appears to be the most important factors, although in particular ecocentric attitudes

appear to be underlying the more specific ones. Ecocentrism, in turn, appears to be related to support of the NEP.

*Predictors of transportation behaviour* (see table 5). Results from both data sets confirms expectations that values and broad attitudes only play a minor role in determining individual variation in Transportation behaviour patterns: In block 1, neither NEP nor MVO has any

**Table 5.**
**Hierarchical regressions : Environmental beliefs, values and attitudes as predictors of responsible Transportation behaviour**

| | | Pilot study (n= 243) | | | | National survey (n=1413) | | |
|---|---|---|---|---|---|---|---|---|
| | | Block 1 | Block 2 | Block 3 | | Block 1 | Block 2 | Block 3 |
| | | Beta | Beta | Beta | | Beta | Beta | Beta |
| NEP | | | -.02 | -.06 | -.12 | | .14** | .12** | .01 |
| MVO | | | -.04 | -.01 | -.01 | | .02 | -.01 | -.04 |
| $R^2$ | .00 | | | | | .02** | | | |
| | | | | | | | | | |
| EC | | | | -.05 | -.09 | | | .11** | .07* |
| AC | | | | .22** | .20** | | | .06* | .06* |
| $R^2$ | .04* | | | | | .03** | | | |
| $R^2$ change | .04** | | | | | .02** | | | |
| | | | | | | | | | |
| SEA | | | | | .16* | | | | .27** |
| $R^2$ | .06* | | | | | .09** | | | |
| $R^2$ change | .02* | | | | | .05** | | | |

$R^2$ = Explained variance, *: $p < .05$, **: $p < .01$, ***: $p < .001$.

significant predictive power in the pilot study, whereas in the national survey, NEP does have a weak effect. In the pilot study, anthropocentrism appears considerably more powerful than in the population sample, causing a significant 4% change in explained variance, as contrasted by only 1,5% change in the population sample caused by Ecocentrism and anthropocentrism together. However, in the national survey, the predictive power of specific attitudes is considerably larger than in the pilot study, together with weak effects of ecocentrism and anthropocentrism. One main difference between the results from the two

data sets is that in the pilot study, anthropocentrism is in fact the most important predictor of transportation behaviour, whereas specific attitudes play the most important part in the

national survey.

## Concluding remarks

The results reported in the present paper demonstrates the following general points:

└1) Environmental concern should be regarded as important predictors of environmentally responsible behaviours.

└2) Individual variations in environmental concern is more important for relatively context-independent environmental behaviours.

└3) The fact that the pilot study results were confirmed in a national survey, also confirms the usefulness of the environmental concern and environmental behaviour dimensions employed. This is further emphasised by the fact that these dimensions in all cases are, at best, only moderately correlated.

Environmental concern explained an important proportion of variance in environmentally responsible consumer behaviours. Most important here is Specific environmental attitudes, but ecocentric attitudes and an ecological view of human - nature relations seem to be underlying the more specific pro-environmental attitudes. Rejection of materialism tended to be weakly associated with green consumer behaviour.

Also for environmental involvement, environmental concern variables explained, in both studies, a substantial proportion of the variance. Specific attitudes were most important in both studies, although in the national survey, also ecocentrism remained a significant predictor. However, both agreement with an ecological view of human-nature relations and materialism influenced environmental involvement indirectly.

However, for waste reduction and transportation behaviour, the variance explained by environmental concern dropped dramatically, indicating other factors such as social and physical constraints to be more important. Some of the variance in waste reduction behaviour is explained by pro-environmental specific attitudes, and an indirect effect is found for ecocentric attitudes. A similar relationship is seen in the case of transportation behaviour, although the results from the pilot study suggest that anthropocentrism may play a role among some subgroups.

Some of the environmental concern and behaviour dimensions appear to have general support in all segments of the population, indicated by very similar results in the two data sets. The mean ratings tell us that Norwegians, being clearly ecocentric, agree that nature should be valued and protected for it's own sake, and that they tend to disagree with the view that nature should be protected only because of its importance for people. Moreover, participants were clearly pro-environment on specific issues, suggesting that people are quite ready to act environment-friendly. At the same time, materialism is supported, thus, everybody appears to appreciate the conveniences of an affluent society. This may function as a barrier against adopting more environmentally responsible behaviour patterns.

Participants in both studies reported moderate levels of environmentally responsible consumer behaviours, indicating that with competitive prices, the market would welcome organic food and other environmentally sound products. Low environmental involvement suggests the need for putting environmental issues back on the political agenda, Also, it is likely that the strong materialistic trend overshadows environmental issues. While the population sample reported high a level of waste reduction behaviour, the student sample was low in this respect, perhaps due to the time gap between the two studies, thus reflecting that a good job has been done getting the population to understand the need for waste reduction. The opposite was true for transportation behaviours, with the population reporting clearly low levels of environment-friendly transportation. Thus, if one wants to increase environmentally sustainable transportation patterns, measures should be taken to make such transportation options attractive and accessible. This is hardly the case in Norway today, with public transportation fares being the most expensive in Europe.

In particular, more research is recommended on the psychological aspects of choosing sustainable transportation and of environmental involvement.  Another issue that should be examined is whether a materialistic value orientation counteracts actual environmentally responsible behaviours.

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